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ELEMENTARY ACCOUNTING

ELEMENTARY ACCOUNTING:

theory, technique, and applications

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COLUMBUS 16, OHIO

ing lack of emphasis on accounting applications. The elementary course was, in short, satisfying only the needs of students who planned a professional career in accounting. The report from one of these studies suggested that the elementary course place increased emphasis upon basic principles, theory, and the use of accounting as a managerial tool. Budgeting, cost accounting, and the analysis of financial data by both external and managerial groups were specifically mentioned as worthy of more extensive coverage.

The conclusions reached by those who conducted these studies have been taken into consideration in developing this text. It is becoming increasingly apparent that the traditional introductory course of the past does not completely satisfy the needs of contemporary business education. Recent developments in quantitative analysis and the application of the social sciences to business education have required additional emphasis, as evidenced by the coverage in this text, upon cost behavior and analysis, budgetary planning and the analysis of budgetary variances, accounting controls, standard costs, modern methods of data processing, and the analysis of operating expenses. Further, the nature and role of generally accepted accounting principles as applied to the preparation and analysis of financial reports for external groups are an integral part of the introductory course.

Prior to completion of the elementary accounting course, there has been no effective means by which students planning a career in accounting can be separated from those who plan careers in other areas. For this reason, the elementary course offered in most colleges and universities must satisfy the needs of both groups. The similar and yet diverse needs of both student groups have led to the arrangement of this text into four major sections:

Part I	Double-entry accounting
Part II	Measuring and reporting ownership equities
Part III	Accounting principles underlying external reports

Part IV Accumulation and analysis of financial data for internal management purposes

Any one of the latter three parts may be covered after completion of the first. While the training of a student in Business Administration should cover each of the four areas, the text is sufficiently flexible for a one-semester service course for students whose major fields of concentration lie outside Business Administration. Students in the College of Arts and Sciences, Pharmacy, or similar fields may need only Parts I and III, while engineering students may best be served by Parts I and IV.

The delineation between those topics associated with external reporting and those associated with internal analysis has been undertaken in order to emphasize these two differing but equally important aspects of accounting. Although certain types of accounting data are equally applicable to internal and external analysis, both accounting and nonaccounting majors, upon completion of the elementary course, should recognize the need for and limitations of accounting principles. At the same time, they should have a working knowledge of the applications of accounting data in the solution of managerial problems.

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Part I

DOUBLE-ENTRY ACCOUNTING

The first seven chapters of this text will provide a working knowledge of the structure and mechanics of contemporary double-entry accounting. An understanding of these techniques is basic to the analysis, interpretation, and uses of accounting data. As a knowledge of numbers is essential to the processes of addition and subtraction, so is a knowledge of the framework of accounting fundamental to an intelligent interpretation of financial data.

Attention in this section should be focused upon the nature of accounting data and the mechanics by which such information is accumulated and reported. An understanding of the purposes of the procedures and techniques presented in this section is more important than memorizing the processes themselves.

1

Financial reports: basic construction and uses

Success in any business venture depends in large measure upon the availability of financial information. The operator of a business must decide, for example, when to raise or lower prices, employ more workers, secure needed funds from creditors, acquire new machinery, increase the company's advertising, or cease operations entirely. Such decisions are always difficult but their difficulty would be compounded without adequate financial data.

Every individual associated with business will at one time or another utilize data of a financial nature. Bankers, prospective investors, governmental agencies, organized labor, and security analysts, among others, use such information constantly in their daily activities. These groups find financial data vital, for example, when considering the purchase or sale of securities, selecting among alternative investment possibilities, and extending or refusing credit. Indeed, financial information is needed in virtually all areas of our free enterprise system, and an explanation of the means by which accounting satisfies this need is the basic purpose of this text.

Accounting defined

Accounting is the process of recording, accumulating, reporting, analyzing, and interpreting the financial effects of business transactions. The Committee on Terminology of the American Institute of Certified Public Accountants has defined accounting as:

> . . . the art of recording, classifying, and summarizing in a significant manner and in terms of money, transactions and events which are, in part at least, of a financial character, and interpreting the results thereof.[1]

[1] *Accounting Terminology Bulletin 1,* American Institute of Certified Public Accountants, New York, 1953, p. 9.

Recording an event or transaction reduces it to writing; thus recording is the first step in the accounting process. Almost every company has its own standard documents devised to facilitate the recording process. The specific content and the routing of these forms to the proper persons is a most important aspect of the accounting process.

The next step is the accumulation of data to increase its usefulness. The amount of a single transaction, such as a fifty cent sale, may not be important within itself, but the total sales made during the day or during the month is of considerable significance. Thus the accumulation process is primarily one of arranging and classifying accounting data into meaningful categories.

Periodically, accounting data must be summarized and reported. The reports reflect the company's financial position and the results of all transactions completed during a specified period of time. The content of reports and the frequency with which they are compiled depend in large part upon the needs of those who use the data; however, tradition and general applicability have standardized certain basic financial reports.

Analysis and interpretation of financial data is the final and most important step in the accounting process, for financial information, correctly applied, is an essential tool in measuring and guiding the progress of a business enterprise.

The accounting entity

The *accounting entity* is the organization for which financial data is being accumulated and reported. Any business, activity, association, or group which engages in business transactions comprises an accounting entity. The needs of creditors and owners for financial information and the laws of the various states necessitate the maintenance of each business as a separate accounting entity. The profitability and financial condition of each business must be measured separately if the financial data is to be meaningful.

A non-profit organization, as well as a profit-making enterprise, is considered an accounting entity. A charity hospital, for example, or a church, school, fraternal organization, or the city, state, or federal government comprises an accounting entity in which transactions must be accounted for and the results reported to interested persons. This text, however, is directed primarily toward accounting for profit-making business enterprises.

The business as a whole is the accounting entity for purposes of reporting to those outside the immediate operations of the company,

such as creditors, governmental agencies, or stockholders who do not participate actively in the company's management. For the purposes of internal management, however, parts of the same business may be divided into separate accounting entities. The management of a company with branches in different cities frequently treats each branch as a separate accounting entity. Separation in such cases facilitates the financial measurement of each branch. Similarly, management sometimes divides the company's operations into territories, each territory or region comprising a separate entity within the business.

The need for accounting information

Accounting information is utilitarian, or, stated in other terms, the value of accounting data depends directly upon how well it serves the purposes of those who use it. The needs of those groups who use accounting data most frequently are summarized below.

Management

Those who own or manage a business need periodic accounting information relative to the revenues realized and the expenses incurred by the business. Reports to these persons should reflect the profitability of the company and its ability to pay its debts. Financial information must be sufficiently detailed so that unprofitable products may be identified, excessive expenses located, inefficient operating areas spotted, and the efficiency of employees measured. Indeed, the consistent and diverse needs of management for financial information can be satisfied only by relatively frequent and detailed accounting reports.

Investors

Investors and prospective investors need information concerning a company's profits or losses and its financial position. These data provide a basis for judging the safety of owners' investments and the company's expected future earnings. Persons who are considering an investment need financial data that will allow them to compare the risks and profitability of alternative investment possibilities. Since risk and future profitability can be measured only by long-range trends and projections, financial data covering a number of years is usually necessary.

Governmental agencies and economic analysts

The accumulation and reporting of financial data is fundamental to the entire tax structure of our federal, state, and local govern-

ments. Federal income taxes, sales taxes, franchise taxes, payroll taxes, and other forms of governmental assessments are based upon a company's properties, profits, and business transactions. The federal income tax, for example, is computed as a percentage of taxable income and is assessed against corporations as well as individuals.

Economic analysts employed by private and governmental agencies accumulate and study reported financial data. The results of these studies are used as a basis for determining the status of the national economy and are valuable to governmental officials at all levels in establishing monetary and fiscal policy.

Creditors

Banks and other credit-granting institutions need financial information as a basis for determining the ability of a company to repay a loan. When judging the risks involved in an extension of credit, the lender must have data concerning the properties owned by a company, debts owed other creditors, and the company's profit history and prospective earnings. The use of credit is an important part of business environment, and the availability of financial data is a prerequisite to a sound credit policy.

The basic financial reports

The two basic financial reports are the *income statement* and the *balance sheet*. The income statement is designed to reflect the profits of a company over a specificed period of time and contains a presentation of revenues earned and expenses incurred during that period. The balance sheet, on the other hand, is designed to reflect the financial position of the company by presenting all the properties owned by the business and all debts or other claims against those properties.

The income statement and the balance sheet are discussed in the remainder of this chapter. Other financial reports used by management for control purposes or by creditors and owners for analyzing profitability or financial position are treated in subsequent chapters.

The income statement

The income statement reports the revenues earned by a company during a given period of time and all the expenses which were incurred in earning those revenues. The difference between the revenues and the expenses appearing on the statement is the net income or loss for the period. Exhibit 1–1 illustrates the income statement of the Battlesmith Company for the year 1964.

EXHIBIT 1–1

THE BATTLESMITH COMPANY

Income Statement

For the Year Ended December 31, 1964

Revenues:		
Sales of merchandise	$124,300	
Repair services	5,700	
Total revenue		$130,000
Less Expenses:		
Cost of merchandise sold	$ 64,500	
Rent on the building and equipment	13,000	
Salaries and wages	21,000	
Insurance	2,100	
Taxes	1,800	
Lights and water	4,200	
Supplies consumed	1,150	
Advertising	3,820	
Fuel	4,800	
Total expenses		116,370
Net Income for the Year		$ 13,630

Persons interested in the financial affairs of the Battlesmith Company can determine from data appearing in the income statement that a net income of $13,630 was earned during 1964. The total revenues received from each source and the nature and amounts of individual expenses are presented. A net income was realized during the year, because revenues totaled $130,000, while the expenses incurred in realizing those revenues totaled only $116,370. Had expenses exceeded revenues, the result would have been a net loss for the year.

The accounting period

As noted previously, the income statement is based on the measurement of revenues and expenses within a stated period of time. The period normally chosen for the measurement purpose is one year. Many companies use a calendar year, so that their income statements cover a one-year period ending on December 31. Other companies use a *natural business year,* which ends on the last day of a

month other than December. The natural business year is particularly useful to companies having high and low points of activity during the calendar year resulting from operations of a seasonal nature.

The point of lowest activity is selected as the ending point of a natural business year. Automobile manufacturers, for example, time the end of their accounting period to fall between the end of one year's production and the beginning of the next. The accounting period should be carefully selected so that the income statements cover a representative time period.

In addition to the annual income statement, most companies prepare special monthly and quarterly income statements. These statements are useful in locating excessive expenses, in comparing one season's operations with those of another, and in planning for future operations. Although intended primarily for management's use, these statements are sometimes released to persons outside the business.

Matching revenues and expenses

The income statement is based upon the process of "matching" revenues with the expenses incurred in earning those revenues. This matching process is accomplished by careful assignment of revenues to the accounting period in which they are realized and the assignment of expenses to those accounting periods in which they are incurred.

Revenues may be realized before cash is collected from customers, and expenses may be incurred before payment of cash. In other words, the point of receipt or disbursement of cash does not measure the point at which revenue is realized or an expense incurred. To illustrate, suppose a company sells merchandise to a customer for $600, and the customer is to pay for the merchandise at a later date. Revenue is realized at the point of sale, although cash was not received, because the company has a legal claim against the customer for the $600. Similarly, a company may receive advertising services costing $120 from a newspaper with an agreement to pay for the services at a later date. The advertising expense has been incurred and must be included in the determination of net income even though the $120 has not yet been paid.

The accuracy of the net income or loss for any one accounting period is directly dependent upon precision in assigning revenues and expenses to the correct period. The matching process is the foundation upon which the determination of net income is based and is an integral part of the subject matter of this text.

The balance sheet

The balance sheet is a financial report which reflects the properties invested in a business and the equities, or rights, which various groups have in these properties. The balance sheet is based upon the equation:

$$ASSETS = EQUITIES$$

The term *assets* is commonly used in accounting reports to indicate properties. While the terms asset and property are synonymous, accounting terminology is somewhat standardized, and the term assets is more frequently used.

The term equities may be defined as a right in property or a claim against assets. The equation ASSETS = EQUITIES is a way of expressing the fact that the amount of properties equals the rights to or claims against that property.

There are two principal types of equities—those of the creditor and those of the owner. A creditor's equity is called a liability and is a debt or obligation representing the creditor's rights in the assets of the company. Owner's equity is sometimes called proprietorship, or capital, and represents the owner's rights in the assets of the business. The balance sheet equation is thus expanded to include these commonly used terms as follows:

$$assets = liabilities + owners' \ equity$$

The balance sheet derives its name from the fact that it is divided into two balancing sections. The assets section, which appears on the left side, lists all the properties which have been invested in the business; the equities section, appearing on the right, lists all equities which owners and creditors have in those properties. Exhibit 1–2 illustrates the form of a relatively simple balance sheet prepared for the Battlesmith Company as of December 31, 1964. Note the balance between the total assets and the total equities at the bottom of the statement in Exhibit 1–2.

Nature of equities

The concept of an equity is sometimes difficult to grasp, but it is basic to a thorough understanding of the accounting process. The technical definition of equity as applied to accounting developed from a colloquial usage meaning "the amount or value of a property or properties above the total of the liabilities." The term owners'

EXHIBIT 1–2

THE BATTLESMITH COMPANY
Balance Sheet
December 31, 1964

ASSETS		EQUITIES	
Cash on hand and in banks	$ 2,000	Payable to creditors	$14,000
Receivable from customers	11,000	Taxes payable to government	6,000
Inventory of merchandise on hand	18,000	Owners' equity	48,000
Equipment	9,000		
Building	23,000		
Land	5,000		
Total Assets	$68,000	Total Equities	$68,000

equity thus assumed meaning as the amount of properties left to the owner after the payment of all liabilities.

The owners' equity is sometimes called a "residual equity." The term residual equity is based upon the fact that creditors have a prior claim against the company's assets. If a company goes out of business, its creditors must be paid in full before any assets may be distributed to the owners.

Although the liabilities have a preferential claim on assets and rank ahead of owners' equity in case the business ceases operations, there is no relationship between specific liabilities and specific properties. A creditor may have an equity in the properties of a business without having legal title to or a claim against any specific item of property. The balance sheet of The Battlesmith Company presented in Exhibit 1–2 indicates that the company owes its creditors $14,000 and owes an additional $6,000 in taxes. The creditors have a claim totaling $14,000 against the *total* assets of the company, and the government has a $6,000 claim against the *total* assets of the business. Should the company fail to pay its taxes or its debts, any one or several of the company's assets may be taken to satisfy these claims. In the case of insufficient assets to satisfy all claims, the creditors share pro-rata, and there will, of course, be nothing distributed to the owners.

Forms of business ownership

There are three principal forms of business ownership: **proprietorships, partnerships, and corporations.** A proprietorship is owned by a

single individual and is formed or discontinued with relative ease. A partnership is a business owned by two or more individuals. Other than the agreement among the several partners, there are comparatively few regulations and restrictions that pertain to a partnership. The corporate form of business ownership is quite different from a proprietorship or partnership. A corporation is given existence by state law and exists as a separate "person," distinct and apart from its owners.

All of the larger business enterprises in our country and a major portion of the smaller companies are corporations. The corporate form of organization has certain advantages, including the ease with which ownership shares may be traded without disruption of the business and the limited liability of the shareholders in case of bankruptcy. The discussions and examples in this text are primarily of the corporate form of ownership.

Corporate ownership

The owners' equity in a corporation, that is, the "stockholders' equity," is composed of two parts: (1) the original investments of the owners and (2) earnings retained in the business. The investment of the individual owners is evidenced by stock certificates issued to them by officers of the company in exchange for cash or other assets. The stockholders have an equity in the assets of the business equal to their original investment, and all profits (or losses) made by the corporation accrue to them.

The original investment of the stockholders is reflected in the balance sheet as *capital stock*. Although shares of capital stock are transferable and are traded frequently on the stock exchanges, such transactions are personal transfers of ownership from one individual to another. The original investment remains with the company as permanent capital, even though ownership of the shares may change hands.

The second part of stockholders' equity, as shown on the balance sheet, is that portion of the company's earnings of the current and prior years which have been retained for expansion purposes. Many large corporations began with small investments by the original owners and grew through retention of earnings. That portion of stockholders' equity resulting from the retention of profits is called *retained earnings*. The total of the capital stock and retained earnings constitutes the total stockholders' equity in the business.

Segregation in the balance sheet of the stockholder's investment for capital stock and the company's retained earnings provides important information for stockholders and creditors. Capital stock represents a permanent investment which normally is not withdrawn until the company ceases to operate. Retained earnings, on the other hand, represents an owners' equity created by profits, which may be distributed to the owners at any time in the form of dividends. The distinction between capital stock and retained earnings is so important that state laws require careful distinction between these two elements of ownership.

Classifications of assets and liabilities

Since the balance sheet is designed primarily as a means of reporting a company's financial status, the assets and liabilities are usually *classified* in a manner that assists in measuring the company's current debt-paying ability. Classification means a grouping of assets and liabilities according to their nature. The major classifications of assets are (1) current assets, (2) fixed assets, and (3) other assets; the major classifications of liabilities are (1) current liabilities and (2) long-term debt.

Current assets

For classification in the balance sheet, current assets are defined by the Committee on Accounting Procedure of the American Institute of Certified Public Accountants in *Restatement and Revision of Accounting Research Bulletins* (Bulletin Number 43) as "cash and other assets or resources . . . which are reasonably expected to be realized in cash or sold or consumed during the [next] normal operating cycle of the business." A normal operating cycle, in the absence of special circumstances, is assumed to be one year. In addition to cash, the principal current assets are accounts receivable from customers and inventories, since these usually are converted into cash within one year. In addition, any office supplies or store supplies which are on hand as of the balance sheet date fall within the definition of current assets, since they are reasonably expected to be consumed during the next operating cycle. Certain prepaid amounts are also considered current assets according to the definition given above. A prepaid amount is one which has been paid in advance. When rent or salaries are paid in advance, the payment gives rise to an asset which appears in the balance sheet as prepaid rent or prepaid salaries.

The various current assets are normally listed within the current asset section of the balance sheet in the order in which they are expected to be realized in cash, or as they otherwise become available for debt-paying purposes. Thus, the usual order is cash, followed by receivables, inventory, supplies on hand, and the prepaid items.

Fixed assets

Fixed assets are those which are used in the normal operations of the business, have a life longer than one operating cycle, and will not be sold in the normal course of business. Fixed assets include buildings, equipment, machinery, land, and similar assets employed in the operations of the company. Although there is no prescribed sequence for listing items within the fixed asset section, they are frequently listed in order of their stability, the shortest lived being listed first.

Other assets

Occasionally a company has assets which are neither current nor fixed; these assets are classified as "other assets" and include such items as investments which will be held for several years and nonoperating properties which are being held for expansion purposes. This classification usually appears below the fixed asset section, and since it contains a variety of items, the listing is usually in order of importance, the largest item being listed first.

Current liabilities

Current liabilities are those which will be paid within the next accounting period or, expressed another way, those which will require the expenditure of a current asset. Current liabilities include accounts payable, notes payable, taxes payable, rent payable, and other debts which will become due within the next year. There is no prescribed sequence for listing liabilities within the current liabilities section, although they are frequently listed according to the significance of their amounts, the largest being placed first.

Long-term debt

Long-term debt includes those liabilities which are not due within the next accounting period (one year). Examples of long-term debt would be a note payable, due in five years, and a twenty-year mortgage payable. There is no prescribed sequence for listing items within this classification.

A classified balance sheet is illustrated in Exhibit 1–3.

EXHIBIT 1–3

THE SAMUEL-HARBIN COMPANY

Balance Sheet

December 31, 1964

ASSETS			EQUITIES		
Current Assets:			*Current Liabilities:*		
Cash	$ 1,000		Accounts payable	$ 8,000	
Notes receivable	5,000		Notes payable	2,000	
Accounts receivable	7,500		Taxes payable	1,000	
Merchandise inventory	13,000		Total current liabilities		$11,000
Supplies	500		*Long-term Debt:*		
Total current assets		$27,000	Notes payable (due in 1966)	$ 2,000	
Fixed Assets:			Mortgages payable (due in 1974)	13,000	
Equipment	$ 6,000		Total long-term debt		15,000
Machinery	4,000		Total liabilities		$26,000
Building	20,000				
Land	9,000				
Total fixed assets		39,000	*Stockholders' Equity:*		
			Capital stock	$40,000	
Other Assets:			Retained earnings	10,000	
Long-term investments	$ 2,900		Total stockholders' equity		50,000
Land held for expansion	7,100				
Total other assets		10,000			
Total assets		$76,000	Total equities		$76,000

Measuring financial condition

The classifications within a balance sheet provide a means of quickly evaluating the current debt-paying ability of a business. For example, the current assets and the current liabilities are set apart and subtotaled, thus indicating the total dollar amount of assets now owned which will probably become available within the next year to pay the current liabilities. The balance sheet of the Samuel-Harbin Company shown in Exhibit 1–3 indicates that the company has $27,000 of current assets to cover $11,000 of current liabilities.

Current ratio

The ratio of current assets to current liabilities is called the *current ratio.* The Samuel-Harbin Company has a current ratio of $27,000 ÷ $11,000, or 2.4 to 1. This ratio means that current assets are 2.4 times as great as current liabilities and indicates that the company should be able to pay its current liabilities as they become due. A current ratio of less than 1 to 1 indicates that a company may have difficulty paying its current liabilities. Many analysts believe that a ratio below 2 to 1 reflects a weak financial position.

Owners' equity-to-debt ratio

Total liabilities and total owners' equity provide comparative figures for evaluating the composition of the equities and the relative risks assumed by owners and creditors. The relationship between owners' equity and total liabilities is expressed in the *owners' equity-to-debt ratio.* The balance sheet of the Samuel-Harbin Company indicates a total owners' equity of $50,000 and total liabilities of $26,000. The owners' equity-to-debt ratio is thus $50,000 to $26,000, or 1.92 to 1. The relative risk assumed by the owners is thus almost twice that assumed by the creditors. Obviously, the creditors would prefer a high ratio, while the owners may prefer a low ratio with less financial risk to themselves. For this reason, there is no arbitrary minimum acceptable ratio.

The analysis of financial statements is discussed in detail in subsequent chapters.

The accounting profession

As made more obvious in subsequent chapters, accountancy is a profession encompassing a specialized body of knowledge. A rigorous professional training is necessary for competency in accounting, and the field of accountancy is sufficiently broad to permit specialization.

Some of the more significant areas of specialization are auditing, tax planning, budgeting, cost accumulation and analysis, systems design and installation, and governmental accounting. Specialization is possible even within these areas. An accountant specializing in systems design and installation, for example, may become an expert in bank systems, public utility systems, or in the installation and applications of electronic data processing equipment.

The certified public accountant

The certified public accountant offers professional services to the public on a fee basis. Professional codes of ethics govern the activi-

ties of the certified public accountant, and his professional opinion concerning the financial statements of a company is highly regarded in the business world. An accountant must meet rigid educational requirements and pass an extensive professional examination in order to identify himself as a Certified Public Accountant (CPA).

The CPA states whether, in his opinion, the financial statements of a company present fairly its financial position and results of its operations. This opinion is of value to those outside the business who want an independent expert to examine the financial statements prepared by the company's management. The CPA also acts as a financial and business consultant and frequently provides assistance in such specialized areas as income tax planning and the development of accounting systems. The CPA's knowledge of all phases of accounting and the financial affairs of business is becoming increasingly valuable to management. As a result, public accountancy is one of the fastest growing professions.

The private accountant

The private accountant works as an employee or officer of a company. With the exception of a few small businesses, every company requires the service of one or more trained accountants.

The top accounting position in commercial, industrial, or governmental organizations is the *controller*. The controller is an officer of the company and also serves as financial consultant and analyst. In addition, he is assigned the responsibility of coordinating all the company's activities of an accounting nature. These activities usually include internal auditing, budgeting, systems design and installation, cost accounting, preparation of the company's tax returns, and other related activities. Accountants in charge of each of these areas are specialists and frequently serve as assistants to the controller. The controller is a member of executive management and is usually responsible for the formation of financial policies.

Questions

1-1. Define accounting and discuss whether it is an art requiring judgment and interpretation or a science that follows set principles and laws.

1-2. What are some of the ways in which financial information is used

by (a) the management of a company; (b) by owners and investors; (c) by governmental agencies; (d) by creditors?

1-3. Discuss accounting as a profession. Do you see opportunity for specialization in accounting and, if so, what might some of these opportunities be?

1-4. What is the nature of the work of a public accountant as opposed to that of a private accountant?

1-5. Describe an Income Statement and state what financial information it is designed to convey.

1-6. Why is it important to know the period of time covered by an income statement? Where is the period of time covered shown in the statement?

1-7. What is a natural business year? At what level of operations should it start and end?

1-8. What is meant by "matching incomes and expenses"? For profit measurement purposes do incomes and expenses necessarily relate to the period in which they are paid in cash? Why or why not?

1-9. Describe a Balance Sheet. What financial information is this statement designed to convey?

1-10. What is the equation upon which the balance sheet is based? Define each term used in the equation.

1-11. Why is a distinction between invested capital and the earnings reinvested in a business important? What terms are used in a balance sheet of a corporation for these two elements of owners' equity?

1-12. Explain the ranking of equities in case a company is bankrupt; that is, which class of equities must be satisfied before another class receives any assets?

1-13. In what order are assets normally listed on a balance sheet? In what order are liabilities listed?

1-14. Define a current asset and give several examples of assets that would be classified as current.

1-15. Define a fixed asset and give several examples of assets that would be classified as fixed.

1-16. Distinguish between current liabilities and long-term debt. Give an example of each.

1-17. What is a classified balance sheet? Why is classification helpful in measuring the financial condition of a business?

1-18. Define a current ratio and describe how it is computed. State its significance.

1-19. Define an owners' equity-to-debt ratio and describe how it is computed. State its significance.

Exercises

1-20. The Alberta Company had the following assets, liabilities, and capital accounts on December 31, 1964.

Cash	$ 2,000
Accounts payable to creditors	3,200
Trucks	8,000
Capital stock	30,000
Buildings	41,000
Receivable from customers	1,600
Salaries payable to employees	2,300
Land	3,000
Merchandise inventory on hand	7,400
Retained earnings	12,500
Notes payable due in 1967	5,000
Mortgages payable due in 1972	10,000

REQUIRED

Prepare a classified balance sheet in good form using the above amounts.

1-21. The Bollinger Company uses a natural business year ending on July 31 of each year. On July 31, 1964, the company had accumulated the following data:

Salaries expense	$ 7,000
Fuel	2,400
Revenues from the sale of products	56,500
Insurance	1,000
Taxes	2,100
Cost of the products sold	28,000
Supplies used	700
Advertising	3,200
Utilities	2,000
Rent on the building and equipment	4,100

REQUIRED

Prepare an income statement for the company for the year.

1-22. The president and sole owner of the Trowell Company approached the First National Bank of Georgetown with a request for a one-year loan of $3,000 for operating purposes, presenting the balance sheet shown below:

THE TROWELL COMPANY

Balance Sheet

December 31, 1964

ASSETS		LIABILITIES	
Cash in the company's bank account	$ 500	Accounts payable to creditors	$ 1,100
Cash in Mr. Trowell's personal account	400	Mortgage payable on store building (Due 1970)	4,000
Receivable from customers	1,000	Taxes payable	800
Personal residence	25,000	Mortgage payable on personal residence (Due 1965)	20,000
Merchandise inventory	4,000	Total Liabilities	$25,900
Store building	11,000		
Store equipment	1,900		
Supplies on hand	200		
		CAPITAL	
		Capital stock $10,000	
		Retained earnings 2,700	
		Equity in personal property 5,400	
		Total capital	18,100
		Total liabilities	
Total Assets	$44,000	and capital	$44,000

REQUIRED

1. The balance sheet is incorrectly prepared, since it contains Trowell's personal assets and liabilities. Prepare a corrected balance sheet for the Trowell Company.
2. Using the corrected balance sheet, compute the current ratio and the owners' equity-to-debt ratio.
3. Do you feel the business is in sound financial condition?

1-23. John Train operates an advertising agency and prepares advertising copy which he places in newspapers, on radio, and occasionally on TV. He receives a lump-sum amount from a client and uses this amount to advertise the client's products in the most effective manner.

During 1964 the Train Advertising Agency received $205,100 in cash. A total of $103,000 was paid for advertising on radio and TV, and $40,000 for newspaper advertising. Payments were also made as follows: salaries, $28,000; supplies, $2,000; rent, $3,600; and taxes, $5,000. Included in the $205,100 cash receipts was a $10,000 payment received on December 28 for services to be rendered during the coming year, and $5,000 borrowed from the bank to be repaid in one year.

REQUIRED

Prepare an income statement for the year 1964.

Problems

1-24. The Frankfort Company began operations on January 1, 1964, and accumulated the following financial information during the year:

Mortgage on building (due in 1969)	$15,000
Cash	2,000
Revenue from the sale of products	73,600
Merchandise inventory	11,000
Cost of merchandise sold	51,000
Trucks	5,000
Accounts payable	1,900
Accounts receivable	4,000
Buildings	22,500
Capital stock	25,000
Retained earnings	1,750
Building rent expense	11,200
Salaries expense	6,050
Salaries payable to employees	850
Advertising expense	3,600

REQUIRED

Separate the data needed for the balance sheet from that needed for an income statement, and prepare the two financial statements. The balance sheet should be fully classified.

1-25. William Smith had $1,000 cash, which he used to purchase all the stock of a newly formed corporation. He then paid $200 cash to the owners of a ball park for the exclusive right to sell cold drinks, popcorn, and peanuts for a three-day period beginning July 6, 1964, while a circus was in town. He purchased cold drinks, popcorn, and peanuts the day before the circus began, at a cost of $700. He hired five students to sell the items in the stands and paid them $30 each for the three-day period. He also paid a sign maker $15 for several signs clearly stating the prices he was charging for the cold drinks, popcorn, and peanuts. At the close of the three-day period he had collected $1,200 in cash from sales and had returnable cold drinks on hand that had cost $70.

REQUIRED

Prepare an income statement and a balance sheet for Smith after the end of the three-day circus.

1-26. The following transactions were completed by The Forbes Corporation during the year ended December 31, 1964:

(a) $10,000 cash was invested, and capital stock was issued.
(b) $6,000 of the cash was spent for office furniture.
(c) $2,000 of the cash was spent for a truck.
(d) The company earned a profit of $700, all of which was received in cash.
(e) Supplies which cost $60 were purchased but not paid for. None of the supplies was consumed.
(f) Merchandise inventory of $1,000 was bought for cash. None of the merchandise had been sold.
(g) $1,000 cash was borrowed from the bank, for which the company gave a note payable due in six months.

REQUIRED

Prepare a balance sheet as of December 31 with classified assets, liabilities, and capital.

1-27. The Swenson Corporation is concerned about its financial condition. A few days ago W. T. Swenson approached the Second National Bank for a $5,000 loan because the corporation's cash balance was very low. The bank's credit officer requested a balance sheet to appraise this request for a loan. The Swenson Corporation had not maintained formal records of its financial position, and Swenson called you in on July 31, 1964, to assist him in preparing the neces-

sary financial statement for the bank. In the course of the discussion Swenson informed you of the following assets:

Cash in the cash register	$ 100
Owed to the Swenson Corporation by customers	1,400
Cash in Mr. Swenson's personal bank account	800
Cash in the Swenson Corporation's bank account	250
Cost of merchandise on hand	8,400
Mr. Swenson's personal residence	25,000
Office building owned by the Swenson Corporation	14,000
Office furniture owned by the Swenson Corporation	2,200
U.S. Government bonds owned by Mrs. Swenson	1,000

Swenson also listed the following liabilities:

Owed to the Swenson Corporation's creditors	$ 6,000
Salaries owed to employees	800
Taxes owed to the government by the Swenson Corporation	305
Mortgage due in 1968 on Mr. Swenson's residence	10,000
Mortgage due in 1972 on the Swenson Corporation's building	5,000

Further, Mr. Swenson informed you that all the capital stock was owned by him and that he had invested $10,000 for it some years ago. He did not know the exact amount of the retained earnings of the company.

REQUIRED

1. Prepare a balance sheet (retained earnings must be estimated to balance the statement).
2. Compute the current ratio.
3. Compute the owners' equity-to-debt ratio.
4. If you were the credit officer of the bank, would you think the current ratio and owners' equity-to-debt ratio appear sufficiently strong to justify approval of the $5,000 loan? What other information would you want before making a final decision on the proposed loan?

1-28. The Sabletop Company is a real estate agency which was formed on January 1, 1964, by three brothers, who received equal numbers of shares of stock in the company. None of them recognized the need for gathering financial information until the end of 1964. At that time a question arose concerning how profitable the company had been during the year. You have been asked to help them construct an income statement for the year, and they present you with the following information:

Commissions received in cash during the year	$60,000
Commissions earned but for which no cash has been received	5,000
Salaries paid to employees	14,000
Rent through November, 1964, on the office building (paid during the year)	5,500
Rent for December, 1964, on the office building (not yet been paid)	500
Office supplies purchased and used during the year	700
Income received by one of the brothers on a rental house he owns personally	3,000
Advertising paid for during the year	20,000
Advertising completed but not yet paid for	1,000
Telephone costs paid during the year	450
Telephone costs for December, 1964, not yet paid	40
Repairs on office furniture in December, not yet paid	120

REQUIRED

Using whatever part of the data you deem appropriate, prepare an income statement for the year ending December 31, 1964.

1-29. The following data of the Wilson Company were accumulated during the year ended December 31, 1964:

Cash on hand	$ 1,250
Salary expenses	11,000
Revenue from the sale of products	60,000
Accounts receivable	3,000
Supplies consumed	1,000
Office furniture	6,000
Merchandise inventory on hand	9,700
Cost of products sold	35,000
Interest expense	800
Equipment	12,000
Equipment expense	2,900
Accounts payable	3,000
Notes payable (1971)	12,000
Capital stock	15,000
Retained earnings	(To be computed)
Rent payable	1,000
Office furniture expense	700

REQUIRED

Separate the data appearing on a balance sheet from that for an income statement and prepare the two financial statements. Be cer-

tain the balance sheet is fully classified. The amount of the retained earnings is not given; this figure will be the amount necessary to bring the balance sheet into balance.

1-30. (a) L. Y. Blaky is considering the formation of a corporation on January 1, 1964, to operate a small printing business. He has estimated that an investment of $5,000, with all the capital stock issued to himself, will be sufficient to begin the business. This $5,000 will be used to buy presses which cost $4,000. He will need one month's supply of inks and papers which cost $1,200, but he will not have to pay for these until the following month. He will have to hire one helper, which he estimates will cost $400 per month. In addition, he will have to rent space in a small building for $175 per month, and his utility expenses for telephone and electricity will be $50 per month. He believes that he can secure orders and complete printing work for his customers for a total of $2,500 during the first month. If the other costs of using the printing press will be $200 per month, will he make a profit during this first month?

REQUIRED

Prepare an estimated income statement as it would appear under these assumptions on January 31, 1964.

(b) At the end of January, 1964, Blaky's records show that his actual printing revenues were $2,200, and he had $400 of the inks and supplies on hand. All other costs and expenses were exactly as he had estimated.

REQUIRED

Prepare an income statement for the month of January to reflect the results of actual operations.

Cases

1-31. L. P. Donovan, who owns all the stock in the Donovan Company, presented the following balance sheet to his banker along with a request for a $2,000 loan, payable within one year. Donovan stated that he needed the loan to buy new equipment to replace old, worn equipment.

DONOVAN COMPANY

Balance Sheet

December 31, 1964

ASSETS			EQUITIES		
Current Assets:			*Current Liabilities:*		
Cash	$ 400		Accounts payable	$ 350	
Receivable from customers	7,000		Taxes payable	100	
Merchandise (at cost)	10,000		Total current liabilities		$ 450
Total current assets		$17,400	*Long-term Debt:*		
Fixed Assets:			Mortgages payable (due Dec. 31, 1966)		30,000
Equipment	$ 3,000		Total liabilities		$30,450
Building	20,000		*Owners' Equity:*		
Land	10,000		Capital stock	$15,000	
Total fixed assets		33,000	Retained earnings	4,950	19,950
Total assets		$50,400	Total equities		$50,400

The Donovan Company has been in existence for five years, and all profits during that time have been retained; thus retained earnings reflects the total earnings of the company over a five-year period.

Would you, as a banker passing on this loan request, consider the company in sound financial position? Will it, in your opinion, be able to pay its debts as they mature and still remain a solvent, continuing enterprise?

1-32. The Willowby Company has been in financial difficulty for the past few years due to continued losses instead of profits. Their balance sheet and income statement for the year ended December 31, 1964, are shown on page 25.

Several alternatives face the company. It can (a) continue as in the present, (b) cease operations and go out of business, (c) borrow money from the bank on a two-year note, or (d) the stockholders may invest more money in the business. The following factors can be expected under each of these alternatives:

(a) If the company continues at the present rate, there is little possibility that its losses will change in the next seven years.

WILLOWBY COMPANY

Balance Sheet

December 31, 1964

Current Assets:			*Current Liabilities:*		
Cash	$ 200		Accounts payable	$ 8,000	
Accounts receivable	1,000		Rent payable	1,000	
Inventory	3,000		Salaries payable	800	
Total current assets		$ 4,200	Total current liabilities		$ 9,800
Fixed Assets:			*Capital:*		
Office furniture	$10,000		Capital stock	$35,000	
Trucks	25,000		Accumulated losses	(5,600)	
Total fixed assets		35,000	Total capital		29,400
Total assets		$39,200	Total liabilities and capital		$39,200

WILLOWBY COMPANY

Income Statement

For the Year Ended December 31, 1964

Sale of products		$100,000
Less: Costs and expenses		
Cost of products sold	$70,000	
Rent	5,000	
Salaries	16,000	
Supplies	1,000	
Office furniture expense	1,000	
Truck expense	3,000	
Insurance	500	
Advertising	8,000	
Total costs and expenses		104,500
Net loss for the year		$ (4,500)

(b) If the company liquidates, all the assets except cash can be sold for $30,000. The costs which will be incurred in disposing of the assets will be $1,000.

(c) If funds are borrowed from the bank, $15,000 will be needed. With this money the liabilities will first be paid, $4,000 will be

spent for advertising (in addition to the advertising already being undertaken), and the balance of the borrowed money will be kept for general purposes as it is needed.

As a result of having to borrow the money, an interest expense of $1,000 will be incurred during each of the next two years; advertising expenses will increase $4,000 as indicated above. Sales of the company's products can be expected to increase by $10,000 as a result of the additional advertising.

(d) If more funds are invested by the stockholders, only an additional $12,000 can be raised. Of this amount, the liabilities will be paid first, and $2,000 will be spent for further advertising. As a result, sales will increase by $6,000. There is no interest expense for funds invested by stockholders, since they will receive any additional profits made by the company.

Which course of action would you follow, using the above data? Support your answer. What further financial information would you want before making a final decision?

2

Summarizing the effects of transactions

An accounting transaction arises as a result of any act that affects the amount, nature, or composition of a company's assets or equities. A transaction has taken place when a company buys merchandise from its suppliers. Assets have been affected as a result of that transaction, since the company has new assets in the form of merchandise. If the company sells merchandise to a customer, another transaction has been completed wherein merchandise has left the company and another asset or assets have taken its place. If the customer pays for the merchandise, the new asset that flows into the company is cash; if the customer has agreed to pay for the merchandise at a later date, the new asset becomes an account receivable. If an account receivable was created, an additional transaction takes place when the customer pays the amount he owes. The payment transaction changes the nature of the assets, because the receivable is replaced with cash.

Most transactions involve the accounting entity and a second party outside the entity, for example, those involved in the purchase or sale of merchandise or services. Every company, however, also has internal transactions which affect assets and equities but do not involve persons outside the business. The consumption of an asset such as office supplies illustrates an internal transaction, since the amount of an asset has been reduced without involving an outside party.

Business operations consist of a continuous series of transactions. Even the smallest business engages in a number of transactions each day. One of the purposes of accounting is to record the stream of transactions so that their effects upon properties and equities can be correctly reflected in the financial reports and the company's profitability can be measured.

Accounting transactions illustrated

Suppose L. P. Turner operates The Toggery, a men's clothing store. He arrives at work in the morning, unlocks the door and, in sequence, completes the following acts:

Removes cash from the safe and places it in the cash register for making change.

Makes a sale, delivers the merchandise to the customer, and places the cash received in the cash register.

Receives a shipment of shoes from a supplier. He has agreed to pay for this merchandise next month.

Talks with a young man and agrees to hire him as a clerk.

Opens the shipment of shoes received above and places them on the display shelves.

Transfers money which was in the safe to the company's checking account at the bank.

Writes a check in payment of the month's rent and mails it to the owner of the building.

Some of these acts represent financial transactions which affect the assets and equities of his company. Others cannot be considered accounting transactions because they have no effect upon the nature or amount of either assets or equities. Removing cash from the safe and transferring it to the cash register, transferring money from the safe and depositing it in the bank, and placing shoes on the display shelves do not represent accounting transactions. These acts represent only a physical transfer of assets from one location to another. The amount, nature, or composition of the assets or equities in those assets has not changed.

The sale which was made to a customer represents an accounting transaction because the amount and composition of assets is changed. Receiving a shipment of shoes represents a transaction because a new asset is acquired and a liability to pay for the asset is created; both assets and creditors' equities are affected. Hiring the new clerk does not represent an accounting transaction. No asset was affected, and no liability was created. A liability to the new clerk will not exist until he actually begins work and earns wages. Another accounting transaction takes place with the payment of the rent, which decreases the company's assets and reduces the owners' equity.

Accumulating amount of like transactions

A transaction may be *recorded,* that is, reduced to writing, as soon as all the facts concerning that transaction are known. However, the cost of recording each transaction separately and in full would be excessive, and some short cuts can be taken in the recording process. Most businesses accumulate the amounts of like transactions and record only the total.

For example, the cost of recording separately and in full all information about each sale made in a "Five and Dime" variety store would require an excessive amount of clerical effort. Most companies with a large number of small sales use a cash register to accumulate the basic information needed about sales transactions. Special keys on the register are used to indicate such information as the class of merchandise sold, the sales person making the sale, and the department in which the merchandise was sold. At the end of the day totals are taken from all the registers and added together, so that the results of all the thousands of sales made during the day can be recorded as one transaction. Salaries, wages, purchases of merchandise, payment of expenses, and collection of receivables from customers are illustrations of other areas wherein transactions of like nature may be accumulated before being recorded. Frequently a company will accumulate like transactions for the entire month, recording the totals of these transactions only at the end of the month when the financial statements are prepared.

The basic accounting transactions

Most accounting transactions fall into one of nine basic groups. While there may be many variations within each group, almost all accounting transactions can be placed in one of these categories.

1. Investment of assets by the owners.
2. Withdrawal of assets by the owners.
3. The borrowing of funds.
4. Repayment of borrowed funds.
5. Sale of goods or services to customers, either for cash or on account.
6. Collection of receivables from customers or others.
7. Purchase of assets, services, or facilities.
8. Payment of the liability incurred in the purchase of services or facilities.
9. Recording internal transactions, that is, the use or consumption

of assets, services, or facilities (office supplies, advertising services, etc.).

Each of these nine basic transactions affects the assets and/or equities of the company. The effects of each type of transaction on the balance sheet are discussed separately below.

Effects of basic transactions on the balance sheet

Each of the nine basic transactions listed above will affect the balance sheet, for each of these transactions has a direct effect upon assets or equities. The effect of each type of transaction is illustrated below by the use of (+) or (−) in the balance sheet. Note particularly that *the balance sheet equation (assets = liabilities + proprietorship) remains in balance after each transaction.*

1. An investment of assets in the business by the owners: Assets are increased, and owners' equity is increased by a like amount.

Assets	(+)	Liabilities	
		Owners' equity	(+)

2. Withdrawal of assets from the business by the owners: Assets are decreased, and owners' equity is decreased by a like amount. (The retained earnings portion of owners' equity is decreased if profits are withdrawn.)

Assets	(−)	Liabilities	
		Owners' equity	(−)

3. The borrowing of funds: Assets are increased, and liabilities are increased by a like amount.

Assets	(+)	Liabilities	(+)
		Owners' equity	

4. Repayment of borrowed funds: Assets are decreased, and liabilities are decreased by a like amount.

Assets	(−)	Liabilities	(−)
		Owners' equity	

5. Sale of goods or services, either for cash or on account: Assets are increased (either cash or accounts receivable), and owners' equity is increased by a like amount. These sales produce revenue, and thus the increase in owners' equity is in retained earnings.

Assets	(+)	Liabilities	
		Owners' equity	
		(Retained earnings)	(+)

6. Collection of receivables: One asset is increased (cash), and another is decreased (accounts receivable). This transaction does not affect equities.

Assets	(+)	Liabilities	
	(−)	Owners' equity	

7. Purchase of assets, services, or facilities: Assets are increased. If the asset is paid for immediately, another asset (cash) is decreased; if the asset is to be paid for later, liabilities are increased.

If purchased for cash:

Assets	(+)	Liabilities	
	(−)	Owners' equity	

If purchased on account:

Assets	(+)	Liabilities	(+)
		Owners' equity	

8. Payment of the liability incurred when assets, services, or facilities are purchased on account: Assets are decreased, and liabilities are decreased by a like amount.

Assets	(−)	Liabilities	(−)
		Owners' equity	

9. Consumption of assets, services, or facilities (office supplies, advertising services, etc.): Assets are decreased, and owners' equity is decreased by a like amount. The retained earnings portion of owners' equity is reduced, for the consumption of assets creates expenses. These expenses enter into the determination of profit or loss.

Assets	(−)	Liabilities	
		Owners' equity	
		(Retained earnings)	(−)

Effects of basic transactions on the income statement

The income statement is a matching of revenues and expenses for the accounting period. A review of the nine basic types of transactions shown above indicates that revenues and expenses are generated by transactions of type 5 and type 9, above. Transactions of type 5 give rise to revenue, and retained earnings is increased because of the company's having realized this revenue. Transactions of type 9 give rise to expenses, and retained earnings is decreased by all expenses. ***The income statement is, in effect, a presentation of the revenue and expense items that increase or decrease retained earnings***

during an accounting period. Exhibit 2–1 illustrates the determination of net income and the presentation of revenue and expenses in the income statement.

EXHIBIT 2–1

THE WILSON COMPANY
Income Statement
For the Year Ended December 31, 1964

Revenues:			
Sales of products		$63,400	– Increases retained earnings
Expenses:			
Cost of products sold	$30,800		
Salaries	18,000		
Supplies	1,600		– Decreases retained earnings
Utilities	2,400		
Total expenses		52,800	
Net income		$10,600	

Acquisition and consumption of assets

The assets acquired by a company may be either tangible properties or such intangible assets as services or facilities. The acquisition of land, buildings, equipment, merchandise inventory, and office supplies illustrates the purchase of tangible assets. Salaries and wages paid to employees, utilities services such as water and light, and advertising services illustrate intangible assets.

At the same time that a company is acquiring productive assets, many of these assets are being consumed in the company's operations. Acquisition of assets and their consumption are thus a continuous process, occurring simultaneously in many cases. As stated previously, the *consumption* of either a tangible or an intangible asset gives rise to an expense, thereby reducing retained earnings.

Acquisition and immediate consumption

Many of the assets, services, or facilities purchased by a business will be consumed immediately. When the acquisition and the consumption of an asset or service occur during the same accounting

period, both acquisition and consumption may be recorded as one transaction. There is little need to record advertising services, for example, as an asset when it is known at the time the service is purchased that it will be entirely consumed during that accounting period. The payment for the advertising is thus recorded as a reduction of cash and as an expense, thereby reducing retained earnings.

To illustrate further, suppose that a company receives electric service from a local public utility company and is billed $50 during the period in which the electricity is consumed. The cost of the electricity consumed is an expense of the current period, and the payment of the bill should be recorded so that both consumption and payment are combined. The effect of the purchase of this fully consumed asset is a reduction of cash and, because an expense was incurred, a corresponding reduction in retained earnings.

ASSETS			EQUITIES	
Cash	(−$50)	$$	Liabilities	$
			Capital Stock	$
			Retained Earnings (−$50) (This reduction will appear on the income statement as *Water and Light Expense.*)	$
		$$		$$

Acquisition for future consumption

The future productive life of each asset, service, or facility determines how it will be recorded. If, as discussed in the previous section, it will clearly be consumed during the current period, it is recorded as an expense; however, if it will be consumed during future periods, it is recorded as an asset. With the exception of cash and monetary assets, the *assets reflected on the balance sheet are thus those having benefits which will be realized in future accounting periods.* The consumption of these assets is then recorded as a separate accounting transaction at the end of the accounting period during which they are consumed.

Suppose, for example, that a company purchases office supplies at a cost of $300. These supplies are expected to last for several accounting periods and are thus recorded as an asset when acquired. The transaction for the acquisition of the supplies has the following effect on the balance sheet:

ASSETS		EQUITIES	
Cash (−$300)	$	Liabilities	$
Office supplies on hand (+$300)	$	Capital stock	$
		Retained earnings	$
	$$		$$

Suppose, then, that $40 of the supplies are consumed during the first accounting period. The asset is reduced, and the expense of $40 is recorded as a reduction of retained earnings.

ASSETS		EQUITIES	
Office supplies (−$40) (Reduced by $40 due to consumption of supplies.)	$$	Liabilities	$
		Capital stock	$
		Retained earnings (−$40) (This reduction will appear on the income statement as *Office Supplies* expense.)	$
	$$		$$

The remaining $260 of supplies will be carried as an asset on the balance sheet.

Consumption of assets and profit measurement

As discussed previously, all transactions for the purchase of assets or services must be recorded as either (1) assets or (2) expenses of the current period. If the purchase of an asset that will be consumed in the future is recorded as an expense of the current period, the profit of the current period will be understated.

Ascertaining the time at which an expense is incurred is one of the most important aspects of income determination, because not all transactions affect the company's profit immediately. For example, when equipment is purchased for cash, one asset (cash) is decreased while another (equipment) is increased. The actual purchase of the asset does not affect the immediate profit or loss of the company. However, when the equipment is used or consumed, an expense has been incurred, and the expense created by the consumption of the asset enters into the determination of profit for that period.

The consumption of an asset, as discussed previously, is an internal transaction and is frequently spread over many accounting periods.

For example, a building may be purchased in 1964 with an estimated life of forty years. The transaction to acquire the asset is recorded in 1964, the year of purchase, and each accounting period for forty years thereafter must absorb its share of the cost incurred because the building is being consumed in the operations of the business. Profits for any one year of the company's operations cannot be correctly computed unless the expense incurred through the consumption of the building is spread in an equitable manner over each year the building is used.

The balance sheet as a pool of unconsumed costs

Most of the assets appearing on the balance sheet represent the unconsumed portion of the cost of productive assets. Cash and accounts receivable are exceptions, because they represent funds now available, or which will soon be available, for the purchase of other productive assets or services, or for the payment of liabilities. Land is another exception, for land itself will not be consumed unless the company is physically extracting portions of it for sale, as would be the case for gravel pits or quarries. The following breakdown of the assets on the balance sheet into consumable and nonconsumable assets illustrates this pool of unconsumed costs.

Cash or "monetary" assets	Cash Notes receivable Accounts receivable
"Pool of productive assets" which will be consumed in the company's operations	Merchandise inventory Store supplies Prepaid rent Equipment Machinery Buildings Prepaid insurance
Normally unconsumable assets	Land Perpetual franchise

Basic transactions and financial statements illustrated

An accounting transaction, as previously defined, is any action that affects assets or equities. Each transaction must be so recorded that its effects are correctly reflected in the financial statements.

The following business situation is presented to illustrate the effect on the balance sheet of the basic accounting transactions. Each

transaction is described and analyzed, and the corresponding change in the balance sheet is shown. Note carefully the development of income and expense information in the retained earnings section of the balance sheet. Also note that the balance sheet remains in balance after each transaction.

1. *Transaction:* Stockholders invested $1,000 and an automobile worth $3,000 in The Downtown Taxicab Company. A corporation was formed, and the stock certificates were issued for the investment.

   Analysis: A new accounting entity has been formed, separate and apart from the owners' personal affairs. The business has assets which must be recorded, and the stockholders have full equity in the assets at this time.

Balance Sheet

ASSETS		EQUITIES	
Cash (Increased by $1,000)	$1,000	*Liabilities*	
Automobiles (Increased by $3,000)	3,000	*Owners' Equity*	
		Capital Stock (Increased by $4,000)	$4,000
	$4,000		$4,000

2. *Transaction:* The company needed additional funds. The company's president went to a local bank and borrowed $2,500, repayable within one year. The bank required that a note payable be signed in the name of the corporation.

   Analysis: The company now has additional cash, and the creditors' equity has been increased by the amount of the borrowed funds.

Balance Sheet

ASSETS		EQUITIES	
Cash (Increased by $2,500)	$3,500	*Liabilities*	
Automobiles	3,000	Notes payable (Increased by $2,500)	$2,500
		Owners' Equity	
		Capital Stock	4,000
	$6,500		$6,500

3. *Transaction:* A second automobile was purchased for $3,000 cash.

   Analysis: Automobiles increased by $3,000, and cash decreased by a like amount. Equities have not changed.

Balance Sheet

ASSETS		EQUITIES	
Cash (Decreased by $3,000)	$ 500	*Liabilities*	
Automobiles (Increased by $3,000)	6,000	Notes payable	$2,500
		Owners' Equity	
		Capital Stock	4,000
	$6,500		$6,500

4. *Transaction:* $800 cash was collected from customers' fares.
   Analysis: The fares constitute revenue which has been earned. Cash is increased and owners' equity (retained earnings) is increased by a like amount.

Balance Sheet

ASSETS		EQUITIES		
Cash (Increased by $800)	$1,300	*Liabilities*		
Automobiles	6,000	Notes payable		$2,500
		Owners' Equity		
		Capital Stock	$4,000	
		Retained Earnings (Increased by $800)	800	4,800
	$7,300			$7,300

5. *Transaction:* The company paid $40 for one week's advertising in the local newspapers.
   Analysis: The advertising will be completely consumed in the current accounting period, and there is no assurance that it will have any benefit in future periods. This transaction reduces cash and reduces owners' equity (retained earnings), since it is an expense of the current period.

Balance Sheet

ASSETS		EQUITIES	
Cash (Decreased by $40)	$1,260	*Liabilities*	
Automobiles	6,000	Notes payable	$2,500
		Owners' Equity	
		Capital Stock	4,000
		Retained earnings (Decreased by $40)	760
	$7,260		$7,260

6. *Transaction:* The company bought gas and oil for $300. The supplier agreed to allow the company to pay for the fuel at a later date.

Analysis: This gas and oil is sufficient to last for several accounting periods. It should therefore be carried on the balance sheet as an asset and its consumption recorded periodically. Assets are increased, and since the fuel is not paid for, a liability is created.

Balance Sheet

ASSETS		EQUITIES		
Cash	$1,260	*Liabilities*		
Gas and oil (Increased by $300)	300	Accounts payable		
Automobiles	6,000	(Increased by $300)	$ 300	
		Notes payable	2,500	$2,800
		Owners' Equity		
		Capital Stock	$4,000	
		Retained earnings	760	4,760
	$7,560			$7,560

7. *Transaction:* The company leased one of the automobiles to another company for use as a limousine. As a result of the use of the automobile to date, the customer owes the company $250.

Analysis: Income is earned from service rendered and is recorded when earned, even though payment will not be received until a later date. The result is an increase in assets (accounts receivable) and an increase in owners' equity (retained earnings).

Balance Sheet

ASSETS		EQUITIES		
Cash	$1,260	*Liabilities*		
Accounts receivable		Accounts payable	$ 300	
(Increased by $250)	250	Notes payable	2,500	$2,800
Gas and oil	300			
Automobiles	6,000	*Owners' Equity*		
		Capital Stock	$4,000	
		Retained earnings (Increased by $250)	1,010	5,010
	$7,810			$7,810

8. *Transaction:* The company used $200 cash to pay a portion of the note payable owed the bank. The company also paid the $300 accounts payable for fuel.

Analysis: The company's cash is decreased, and liabilities are decreased by a like amount.

Balance Sheet

ASSETS		EQUITIES		
Cash (Decreased by $500)	$ 760	*Liabilities*		
Accounts receivable	250	Accounts payable (Decreased by $300)	$ –0–	
Gas and oil	300	Notes payable (Decreased by $200)	2,300	$2,300
Automobile	6,000	*Owners' Equity*		
		Capital stock	$4,000	
		Retained earnings	1,010	5,010
	$7,310			$7,310

9. *Transaction:* The company collected $100 from the company which leased the automobile in Transaction 7.

Analysis: The collection of the receivable increases cash by $100 and decreases the receivable by a like amount. (No revenue results from the collection of the receivable, since the revenue was recorded at the time it was earned.)

Balance Sheet

ASSETS		EQUITIES		
Cash (Increased by $100)	$ 860	*Liabilities*		
Accounts receivable (Decreased by $100)	150	Notes payable		$2,300
Gas and oil	300	*Owners' Equity*		
Automobiles	6,000	Capital stock	$4,000	
		Retained earnings	1,010	5,010
	$7,310			$7,310

10. *Transaction:* The company paid $400 to the stockholders as a dividend.

Analysis: A dividend is the term applied to distribution of profits by a corporation to its stockholders. The dividend reduces cash and also reduces the company's retained earnings.

Balance Sheet

ASSETS		EQUITIES		
Cash (Decreased by $400)	$ 460	*Liabilities*		
Accounts receivable	150	Notes payable		$2,300
Gas and oil	300	*Owners' Equity*		
Automobiles	6,000	Capital stock	$4,000	
		Retained earnings (Decreased by $400)	610	4,610
	$6,910			$6,910

11. *Transaction:* Assets have been consumed during the period, and this consumption must be recorded to reflect correctly the profit or loss for the month.

Analysis: The amount of gas and oil consumed can be determined by measuring the gas and oil unused at the end of the accounting period. Assume that $100 of gas and oil was on hand at the end of the period—thus $200 of the gas and oil has been consumed ($300 purchased less $100 unused, equals $200 consumed).

Determination of that portion of the cost of the automobiles which has been consumed is more difficult than for gas and oil consumption. One method frequently used is to spread the cost of the automobiles over a period equal to their useful lives. If the automobiles are expected to have a two-year life, the cost assigned to each month would be 1/24 of the original $6,000 cost, or $250 per month. That portion of the cost of the fixed asset which is assigned to an accounting period is called *depreciation expense.*

The effect on the balance sheet of the consumption of assets is a reduction of assets and of retained earnings. The cost of using the assets represents an expense, which reduces owners' equity (retained earnings).

Balance Sheet

ASSETS		EQUITIES		
Cash	$ 460	*Liabilities*		
Accounts receivable	150	Notes payable		$2,300
Gas and oil (Reduced by $200)	100	*Owners' Equity*		
Automobiles (Reduced by $250)	5,750	Capital stock	$4,000	
		Retained earnings (Reduced by $450)	160	4,160
	$6,460			$6,460

The income statement as an analysis of retained earnings

As illustrated in the preceding situations, those transactions which give rise to revenues increase retained earnings, and those which give rise to expenses decrease retained earnings. The distribution of profits to owners through dividends also decreases retained earnings. The transactions of the taxicab company, which were described in the preceding illustration, are as follows:

	RETAINED EARNINGS		
	Increases	*Decreases*	*Balance*
Fares earned and collected in cash (Transaction 4)	$800		$ 800
Advertising (Transaction 5)		$ 40	760
Fares earned but not collected (Transaction 7)	250		1,010
Dividends distributed to owners (Transaction 10)		400	610
Consumption of gas and oil (Transaction 11)		200	410
Apportioned cost of automobiles (Transaction 11)		250	160

The income statement for the taxicab company is shown below. It presents the revenues, expenses, and the resulting net income for the month. Dividends paid to stockholders are excluded, since dividends represent a *distribution* of profits and should not be considered in the *determination* of profits.

DOWNTOWN TAXICAB COMPANY

Income Statement

For the Month Ended January 31, 1964

Revenue from taxicab fares		$1,050
Less expenses:		
Advertising	$ 40	
Gas and oil	200	
Automobile depreciation	250	
Total expenses		490
Net income for the month		$ 560

The $160 balance of retained earnings is the $560 net income less the $400 distributed to the owners as a dividend. This $160 is presented in the final balance sheet of the taxicab company shown with Transaction 11.

The statement of retained earnings

The effects of the profits or losses of an accounting period and the dividends paid during that accounting period are reflected in a *Statement of Retained Earnings*. The statement begins with the balance of retained earnings at the beginning of the period, adds the net income shown in the income statement (or subtracts a net loss), and subtracts any dividends paid during the period. The final figure is the ending balance of retained earnings. The statement of retained earnings of the Downtown Taxicab Company during its first month of operations would appear as follows:

DOWNTOWN TAXICAB COMPANY
Statement of Retained Earnings
For the Month Ended January 31, 1964

Retained earnings, January 1, 1964		–0–
Add: Net income for January	$560	
Less: Dividends paid	400	
Increase in retained earnings during the month		$160
Retained earnings, January 31, 1964		$160

If the company earns net income of $680 during the following month and pays dividends of $500, the statement of retained earnings would appear as follows for its second month of operations:

DOWNTOWN TAXICAB COMPANY
Statement of Retained Earnings
For the Month Ended February 28, 1964

Retained earnings, January 31, 1964		$160
Add: Net income for February	$680	
Less: Dividends paid	500	
Increase in retained earnings during the month		180
Retained earnings, February 29, 1964		$340

The balance sheet reflects the assets and equities in a business as of the last day of an accounting period; the income statement reflects the net income (or net loss) realized during an accounting period; the statement of retained earnings reflects the combined effects on the owners' equity of the net income (or loss) and dividends paid. These three statements are the most important financial reports, and together they convey the basic financial information needed by owners, creditors, and other persons interested in the operations of a business.

Questions

2-1. Define an accounting transaction. State whether or not the following transactions affect the balance sheet and, if so, what the effect is.

(a) Sold merchandise to a customer.
(b) Bought and paid for office supplies.
(c) Moved merchandise from the warehouse to the sales area.
(d) Received a shipment of merchandise to be paid for next month.
(e) Wrote a letter to a supplier asking if he carried a certain brand of merchandise.
(f) Sold merchandise to a customer to be paid for next week.
(g) Bought a new store fixture.
(h) Hired a new employee who will begin work next week.
(i) Consumed office supplies.

2-2. Why are like transactions accumulated and summarized? Name several transactions which could be totaled and treated as a single transaction.

2-3. Describe a transaction that will:

(a) Increase an asset and increase owners' equity.
(b) Increase an asset and increase a liability.
(c) Increase an asset and decrease another asset.
(d) Decrease an asset and decrease a liability.
(e) Decrease an asset and decrease owners' equity.
(f) Increase a liability and decrease owners' equity.

2-4. Indicate whether the following transactions of the Smart Laundry will increase or decrease assets, liabilities, and owners' equity.

(a) Purchased land for cash.
(b) Paid a creditor an amount owed him.
(c) Invested cash in the business.
(d) Owners withdrew cash from the business in the form of dividends.

(e) Borrowed cash from the bank.
(f) Provided laundry services for a customer who will pay later.
(g) Collected an amount owed to the laundry by a customer.
(h) Consumed office supplies which were bought in the previous year.

2-5. Describe the interrelationship of the income statement and the balance sheet. In what way is the income statement an analysis of certain transactions that affect retained earnings? Which transaction affecting retained earnings is not considered in the determination of net income for the period?

2-6. Describe the accounting treatment of a productive asset or service acquired for future consumption. How does this treatment differ from the acquisition of an asset or service which will be completely consumed during the current period?

2-7. Most assets may be broadly classified as (a) cash or monetary assets, (b) consumable assets, and (c) assets not normally consumed. Which of the following are considered assets to be consumed during future periods?

(a) Accounts receivable
(b) Buildings
(c) Land
(d) The cost of a three-year insurance policy
(e) Trucks
(f) Cash
(g) Merchandise inventory
(h) Notes receivable
(i) Machinery

2-8. Describe how the cost of an asset such as a truck may be apportioned to the periods of its useful life.

2-9. Name the three financial statements discussed in this chapter and explain the purpose of each.

2-10. Analyze the following transactions, stating what asset, liability, or owners' equity item is increased or decreased by the transaction.

(a) Cash is invested in the business, and capital stock is issued to the owners.
(b) Cash is borrowed from the bank, and a note which is due in 1968 is given.
(c) A building is purchased for cash.
(d) A service is rendered by the business for a customer, who agrees to pay at a later date.
(e) Advertising services are rendered by a newspaper, and the company agrees to pay the newspaper next month.

(f) The newspaper is paid for its advertising services rendered in the above transaction.
(g) A customer pays the amount he owes the company.
(h) A dividend is paid in cash to the owners.
(i) The building depreciation expense is recorded for the period.
(j) Salaries of the current period are paid in cash.
(k) The consumption of office supplies on hand is recorded.

Exercises

2-11. The Bellanti-Smart Real Estate Company completed the following transactions during the year ended December 31, 1964. These transactions are numbered and entered in the work sheet on page 46.

Transaction	Description
(a)	Owners invested assets and issued stock to themselves.
(b)	Assets were purchased for cash.
(c)	Money was borrowed from the bank (to be repaid in three years).
(d)	Commissions from clients were earned on account.
(e)	Assets were purchased on account.
(f)	Salary expenses were paid in cash.
(g)	Commissions were earned from clients and received in cash.
(h)	Accounts payable were paid.
(i)	Payment was received for work done on account.
(j)	Consumption of assets was recorded.
(k)	Rent expense incurred but not to be paid until next month was recorded.
(l)	Dividends were paid to owners.

REQUIRED

Total the columns and prepare a classified balance sheet and an income statement. The consumption of each individual asset should appear separately on the income statement.

2-12. On December 31, 1964, the Noblet and Peterson Employment Agency had the following items on its balance sheet: Cash, Accounts Receivable, Office Supplies, Office Furniture, Typewriters, Accounts Payable, Capital Stock, and Retained Earnings.

(a) The owners invested $3,500 cash and received capital stock.

BELLANTI-SMART REAL ESTATE COMPANY

Transaction Work Sheet

	Cash	+	Accounts Receivable	+	Office Supplies	+	Typewriters	+	Salesmen's Automobiles	+	Office Furniture	=	Accounts Payable	+	Rent Payable	+	Notes Payable	+	Capital Stock	+	Retained Earnings
(a)	+$5,000						+$300		+$8,000										+$13,300		
(b)	− 3,000				+$500						+$2,500										
(c)	+ 4,000																+$4,000				
(d)			+$2,500																		+$2,500
(e)											+ 1,000		+$1,000								
(f)	− 700																				− 700
(g)	+ 1,200																				+ 1,200
(h)	− 600												− 600								
(i)	+ 1,700		− 1,700																		
(j)					− 200		− 30		− 800		− 100										− 1,130
(k)															+$250						− 250
(l)	− 1,200																				− 1,200

(b) Three typewriters were purchased for cash, $800.
(c) Office furniture was purchased for cash, $2,000.
(d) Office supplies were purchased on account, $300.
(e) A fee of $200 was earned from a client, to be paid at a later date.
(f) The office supplies purchased in transaction (d) were paid for.
(g) Fifty dollars in cash was received from the customer in transaction (e).
(h) The consumption of office supplies in the amount of $60 was recorded.
(i) Estimated depreciation of $40 on office furniture was recorded.

REQUIRED

Set up a columnar work paper similar to that illustrated in Exercise 2-11 and record the transactions for 1964 listed below by inserting the amounts under the proper heading. Place a + or − beside each amount to indicate its effect on the balance sheet item and identify the transaction by placing an (a), (b), (c), etc. to the left of each transaction.

2-13. The Hartford Van Company operates a business which moves household furniture from one location to another. The following items appear on the company's balance sheet: Cash, Notes Receivable, Moving Supplies, Trucks, Moving Tools, Office Furniture, Accounts Payable, Capital Stock, and Retained Earnings.

(a) The owners invested $10,000 cash and issued capital stock to themselves for that amount.
(b) A moving van costing $8,000 and office furniture costing $1,000 were purchased for cash.
(c) Moving supplies costing $400 and moving tools costing $700 were bought on account, to be paid for at a later date.
(d) Household goods were moved for a customer, who gave his note for $600 in payment.
(e) Household goods were moved, and the customer paid for the service with $500 cash.
(f) The customer in transaction (d) above paid one-half of his note in cash.
(g) The $400 owed for moving supplies in transaction (c) was paid in cash.
(h) The owners withdrew $300 from the business in dividends.
(i) The consumption of productive assets was recorded as follows:

Moving supplies	$100
Trucks	80
Moving tools	50
Office furniture	70

REQUIRED

Record the transactions in a work sheet similar to that shown in Exercise 2-11. Use + and − beside each amount and letter each transaction for identification.

2-14. The Anita Bruller Travel Agency receives a 5% commission on all travel tickets which it sells. The agency collects from the customers the full price of all tickets sold, but by previous agreement only 95% is paid to the rail, air, or steamship company. The cash received increases cash; the 5% commission increases the owners' equity; and the 95% increases a liability to the passenger carriers. The following transactions were completed:

(a) Issued capital stock for $2,000 cash.
(b) Purchased office equipment for $1,200.
(c) Collected $20,000 cash from customers for travel tickets.
(d) Purchased supplies of $200.
(e) Paid salaries of $500.
(f) Paid the passenger carrier the agreed amount for the tickets issued in transaction (c).
(g) Issued tickets to a customer for a cruise around the world, $6,000. The customer is to pay for the tickets later.
(h) Borrowed $5,700 from the bank, giving a note payable.
(i) Paid the passenger carrier for the tickets issued in (g).
(j) Issued tickets to customers for $10,000 cash.

REQUIRED

1. Set up a work sheet similar to that used in Exercise 2-11, with columns for Cash, Receivable from Customers, Supplies, Office Furniture, Payable to Passenger Carriers, Notes Payable, Capital Stock, and Retained Earnings.
2. Enter the transactions on the work sheet.
3. Total each column to insure that the balance sheet equation is in balance.

2-15. The Ten-Pin Bowling Alley had the following assets and equities on December 31, 1964: Cash, $2,000; Notes Receivable, $5,000; Supplies, $1,650; Equipment, $26,000; Building, $32,000; Land, $14,000; Accounts Payable, $1,550; Mortgage Payable, $40,000; Capital Stock, $30,000; Retained Earnings, $9,100. The following transactions were completed during 1964:

(a) Collected $103,000 cash from bowling fees.
(b) Paid salaries of $68,000.
(c) Purchased supplies of $11,500 for cash.
(d) Paid dividends of $10,000 to owners.

(e) Collected the note receivable of $5,000, plus $200 interest.
(f) Paid an annual installment of $2,000 on the mortgage payable, plus $1,600 of interest expense.
(g) Recorded the consumption of $12,000 of supplies during the year.
(h) Recorded depreciation of $4,000 on the equipment.
(i) Recorded depreciation of $1,000 on the building.

REQUIRED

1. Record the balances and transactions listed above in a work sheet similar to that used in Exercise 2-11.
2. Prepare a balance sheet, an income statement, and a statement of retained earnings for the year.

Problems

2-16. The Schiff Automobile Rental Company has the following items in its balance sheet: Cash, Accounts Receivable, Gas and Oil Supplies, Automobiles, Office Furniture, Accounts Payable, Notes Payable, Capital Stock, Retained Earnings. The transactions described below were completed during the month of December, 1964.

(a) Cash of $13,000 was invested, and capital stock was issued.
(b) Six automobiles were purchased for $10,000 cash.
(c) Several months' gas and oil supplies were bought for $1,600 cash.
(d) Office furniture was purchased for $2,000. A note payable in six months was given to the office supplier.
(e) Cars were furnished to customers for $1,000. Payment is to be received at a later date.
(f) Washing and greasing costs of $300 were incurred, to be paid for in the following month.
(g) Salary costs of $600 were incurred and paid in cash.
(h) Cars were furnished to customers, who paid $800 cash.
(i) Rent of $100 on the office building was paid in cash.
(j) Office supplies of $200, all to be consumed in the current period, were purchased and paid for in cash.
(k) Advertising of $50 was paid in cash.
(l) Receivables of $600 were received in cash from customers.
(m) Accounts payable of $100 were paid in cash.
(n) Gas and oil supplies of $70 were consumed.
(o) The depreciation cost (consumed portion) of the automobiles was $200.

(p) The depreciation cost (consumed portion) of the office furniture was $20.

REQUIRED

1. Accumulate the above transactions on a work sheet similar to that used in Exercise 2-11; total the work sheet.
2. Prepare a balance sheet and an income statement for the month.

2-17. The Dumas Company completed the following transactions during the year ended December 31, 1964:

(a) Cash of $5,000 was invested and the capital stock issued.
(b) Office equipment costing $2,400 was purchased for cash.
(c) Services of $6,000 were performed for customers on account.
(d) Office supplies costing $720 were purchased on account.
(e) Salaries of $2,600 were paid in cash.
(f) Receivables of $4,000 were collected from customers.
(g) Accounts payable of $520 were paid.
(h) Advertising of $200 was bought and paid for in cash.
(i) Dividends of $1,000 were paid to owners.
(j) Taxes of $300 were paid in cash.
(k) Cost of office equipment consumed was $120.
(l) Cost of office supplies consumed was $240.

REQUIRED

1. Record the transactions in a work sheet similar to that used in Exercise 2-11, setting up balance sheet items which you think are necessary and appropriate; total the work sheet to insure that the balance sheet is in balance.
2. Analyze the retained earnings and prepare an income statement for the year.

2-18. P. P. Farelli opened a small barber shop on June 30, 1964. He invested $1,000 cash for the capital stock of the company. He borrowed $2,000 cash from the bank, signing a two-year note payable for that amount. He purchased barber chairs for $1,800 and rented a barber shop for $100 per month, paying $600 rent in advance for the period ending December 31, 1964. Farelli hired two barbers, paying them $3,000 each in salary for the six months ended December 31, 1964. He received $10,320 from customers during that time and purchased $900 of barbers' supplies, $220 of which had not been paid for by December 31, 1964. He estimated the portion of the cost of the barber chairs consumed in the six-month period to be $200, and only $150 of the barber supplies were left by the end of the year.

REQUIRED

Prepare a balance sheet and income statement for Farelli's Barber Shop for the six-month period.

2-19. William A. Phillips operates a beach concession which rents umbrellas, floats, and other beach equipment. He also sells cold drinks and candy. Each year he closes the business on September 15 and reopens on May 1. He had the following items on his balance sheet on September 15 of last year:

Assets	
Cash	$ 500
Umbrellas and floats	1,950
Furniture and fixtures	875
Food and drink supplies	40
	$3,365
Liabilities (none)	
Capital	
Capital stock	$1,000
Retained earnings	2,365
	$3,365

The food and drink supplies are not perishable and are carried over from one season to the next. The furniture and fixtures are used only in preparing and selling food and drinks. During the season in 1964 Phillips bought new umbrellas and floats which cost $1,000, furniture and fixtures which cost $500, and food and drink supplies which cost $6,490. All of these were paid for in cash except for $560 of the food and drink supplies. He sold $6,420 of food and drink, all of which was collected in cash, except for a $120 amount he has not collected from a company for which he supplied equipment and food for an employees' party. Williams also collected $3,600 cash from the rental of umbrellas and floats. He estimates that the portion of the cost of umbrellas and floats applicable to this season is $710, and the portion of the cost of the furniture and fixtures applicable to this season is $300. He had food and drink supplies of $270 left at the end of the year.

REQUIRED

1. Set up a work sheet similar to the one shown in Exercise 2-11 and enter the beginning balances for the current season and the transactions which Phillips undertook during the season.

2. Prepare an income statement for the current season. Compute from the available information the amount of the net profit resulting from the sale of food and drink and the amount resulting from the rental of beach equipment.

2-20. Samuel Grant operates a small dry cleaning establishment. He does not understand why his cash balance is increasing while his profit has been practically zero for the past five years. He had the following balance sheet on January 1, 1964:

Cash	$ 3,000
Accounts receivable	420
Cleaning supplies	200
Cleaning vats and presses	6,400
Office equipment	2,900
Buildings	15,000
Total assets	$27,920
Accounts payable	$ 300
Mortgage on building (due in 1970)	10,000
Capital stock	10,000
Retained earnings	7,620
Total liabilities and capital	$27,920

During 1964 he completed the following transactions:

(a) Performed cleaning services of $28,000 for cash.
(b) Collected the receivables owed to him on January 1, 1964.
(c) Performed cleaning services of $390 on account.
(d) Paid the accounts payable owed on January 1, 1964.
(e) Bought cleaning supplies for $6,000 cash.
(f) Consumed $6,100 of cleaning supplies during the year.
(g) Paid salaries of $20,000 in cash during the year.
(h) Recorded the depreciation of $1,200 on cleaning vats and presses.
(i) Recorded the depreciation of $750 on the building.
(j) Recorded the depreciation of $300 on the office equipment.

REQUIRED

1. Record the balances on January 1 and the above transactions on a work sheet similar to the one in Exercise 2-11.
2. How much profit did Grant make during the year?
3. How much did the Cash account increase during the year?
4. Explain why the increase in cash is greater than the profit.

2-21. The trucking firm of Karol and Mertz has been in operation for some years. The balances appearing on their balance sheet at the beginning of 1964 were as follows: Cash, $780; Trucking Fees Receivable, $1,900; Office Supplies, $320; Gas and Oil Supplies, $1,780; Truck Repair Tools, $2,850; Office Furniture, $4,520; Trailers, $29,000; Tractors, $21,650; Accounts Payable, $630; Salaries Payable, $490; Taxes Payable, $820; Notes Payable (1966), $10,000; Capital Stock, $40,000; and Retained Earnings, $10,860. The following transactions were completed during 1964:

(a) Salaries payable of $490 were paid in cash.
(b) Trucking fees receivable of $1,200 were collected.
(c) Taxes payable of $820 were paid in cash.
(d) Gas and oil supplies of $2,300 were purchased on account.
(e) Trucking fees of $30,000 were earned and collected in cash.
(f) Accounts payable of $2,600 were paid.
(g) One-half of the note payable ($5,000) was paid. The holder of the note was also paid interest of $400. (Treat the $400 as an expense.)
(h) Office supplies of $600 were purchased on account.
(i) Advertising services of $800 in a national magazine were bought and paid for.
(j) Salaries of $16,000 were paid in cash.
(k) Truck licenses for the year were bought for $2,100 cash.
(l) Trucking services of $8,000 were rendered to customers on account.
(m) Truck repair tools of $1,250 were purchased on account.
(n) Trucking fees receivable of $5,000 were collected in cash.
(o) A trailer which was listed on the balance sheet at $3,000 was sold for $3,400 cash. (The $400 should be considered income.)
(p) Dividends of $4,000 were paid in cash to stockholders.
(q) At the end of the year the company owed property taxes of $900 and salaries of $500. These are expenses of the current year and must be recorded even though not yet paid.
(r) The depreciation expenses during the year were: Office Supplies, $500; Gas and Oil Supplies, $3,000; Truck Repair Tools, $700; Office Furniture, $500; Trailers, $2,600; and Tractors, $2,100.

REQUIRED

1. Using a work sheet as shown in Exercise 2-11, record the following transactions for 1964, lettering each one to correspond with the letter beside the transactions as given above.
2. Prepare a balance sheet.
3. Analyze the retained earnings account after all transactions have been recorded and prepare an income statement for the year.

Cases

2-22. Les Moore operates a speedboat concession on a small lake in a city park. He takes passengers on five-minute rides for 50¢ per person. His boat, which holds twelve persons, cost $6,700 two years ago, and the combination ticket office–tool house cost $1,200. He has a twelve-year franchise on the concession, with ten years remaining, for which he paid the city a total of $3,600. He has one helper, who is paid an hourly wage of $1.50, and his only other cost is fuel for the boat. He buys fuel once each month and stores it in a 200-gallon tank in his tool house.

Moore maintains accurate records of all cash transactions, but nothing more. He stated that he did not need any other records and that he could tell from the number of customers he served whether he had a good week or a poor one. He has calculated that 100 customers per week would bring in sufficient cash to pay his expenses. During the past week he had 150 customers, which was about average, and his bank account increased $20. Thus, Moore is convinced that his operation is profitable.

Do you agree? What considerations relative to the determination of net income is Moore ignoring? Would you want additional accounting records? Why, or why not?

2-23. For several years prior to January 1, 1964, Frank Waters was employed as manager of the Seabreeze Restaurant, which specialized in seafood. He received a salary of $10,000 per year. On January 1, the owners of the restaurant offered to sell all the capital stock of the business to him for $15,000 cash, making him the sole owner. Waters studied the profits and the present financial condition of the business carefully, using the financial statements on page 55.

The income statement and balance sheet are typical of the company's operations. The net profit has been slowly increasing. During 1960 net profits were $2,000; in 1961, $2,200; in 1962, $2,400; and in 1963, $3,500. He was disturbed, however, by the mortgage of $10,000 on the building. This would be due in two years.

Waters concluded from the study that if he bought the capital stock, he would have to raise the required $15,000 by selling a rental apartment house which he owned. This rental property was earning $4,000 per year at the present time.

Waters felt that if he bought the capital stock and owned the business completely, he could perform the following each year for at

SEABREEZE RESTAURANT

Balance Sheet

December 31, 1964

ASSETS			LIABILITIES AND CAPITAL		
Current Assets:			*Current Liabilities:*		
Cash	$ 800		Accounts payable		$ 600
Food and supplies inventory	1,200		*Long-term Liabilities:*		
Total current assets		$ 2,000	Mortgage on building (due 1966)		10,000
			Total liabilities		$10,600
Fixed Assets:					
Building	$12,000		*Stockholders' Equity:*		
Fixtures	4,000		Capital stock	$5,000	
Total fixed assets		16,000	Retained earnings	2,400	
			Total capital		7,400
Total assets		$18,000	Total liabilities and capital		$18,000

SEABREEZE RESTAURANT

Income Statement

For the Year Ended December 31, 1964

Revenue from the sale of food		$65,000
Less costs and expenses:		
Cost of food	$32,000	
Salaries	24,000	
Office supplies	1,000	
Insurance	500	
Licenses and taxes	800	
Depreciation on buildings	700	
Depreciation on fixtures	600	
Telephone and utilities	1,800	
Total costs and expenses		61,400
Net profit for the year		$ 3,600

least the next two years and should, with experience, do even better after that time:

(a) Realize $70,000 revenue, received in cash, from the sale of foods.

(b) Purchase and consume $34,000 of food supplies, all paid in cash.
(c) Pay $20,000 per year in salaries. (Salaries would be lower because he would reduce his own salary to $6,000 per year.)
(d) All other costs and expenses would be the same as in the income statement of 1964 and all would be paid in cash except the depreciation on buildings and fixtures. These expenses would not require cash, because they are transactions recording the consumption of assets already paid for.

Frank Waters comes to you for financial advice. He wants to know if it would be more profitable for him to keep his rental property and remain as manager of the business or to buy the stock and become sole owner of a business whose profits are slowly growing. He also requests advice about his cash position at the end of two years and whether he can pay the mortgage of $10,000. What advice would you give? What other information of a nonfinancial nature enters into the decision?

3

Accumulating financial data: the journal and ledger

The methods employed in the previous chapter are in most cases inadequate for efficient accumulation of financial data. The multiplicity of transactions which a business completes during an accounting period necessitates a systematic and efficient manner of gathering data for the financial statements. The purpose of this chapter is to present the basic procedures employed in accumulating financial data.

The data accumulating process utilized by most companies consists of (1) establishing an *account* for each item which appears in the financial statements, (2) analyzing each transaction to ascertain which accounts are affected, (3) recording the results of the analysis in a *journal,* (4) transferring these amounts from the journal into the appropriate accounts in the *ledger,* and (5) preparing financial statements from the balances of the individual ledger accounts.

The account

One of the primary accounting records is the *account.* A separate account must be maintained for each item appearing in the financial statements. The account is used to accumulate the effects of all transactions concerning that item. The form of the account is illustrated in Exhibit 3–1.

Note that the account form is divided into two identical sides, which are separated by a heavy ruled line. The division of the ac-

EXHIBIT 3–1

Sheet No._____ Account Title_____ Account No._____

Date		Explanation	Ref.	Amount	Date		Explanation	Ref.	Amount

count into two parts facilitates separation of those amounts which increase from those amounts which decrease the balance of the account. Use of the Date, Explanation, and Reference columns is explained later in this chapter, and only the basic use of the account as a device for accumulating increases and decreases is considered now. This fundamental use of the account may be illustrated by the following skeletal form, frequently referred to as a "T" account.

CASH	
Increases	Decreases

CAPITAL STOCK	
Decreases	Increases

The Cash and Capital Stock accounts are used as illustrations. Note that increases in the Cash account appear on the left side of the account, while increases in the Capital Stock account appear on the right side. The rules concerning which accounts have increases on the left and which have increases on the right are explained in the following sections of this chapter.

Debits and credits

The left side of the account is the *debit* side, and the right side is the *credit* side. The terms debit and credit are deeply embedded in accounting terminology, and each transaction is expressed in terms of its debit and credit effect on the accounts.

Debit side	Credit side

An account is said to be *debited* when an amount is entered on the left side of the account and *credited* when an amount is entered on the right side. The effects of a transaction are stated in terms of debits and credits instead of left and right, or increases and decreases.

The *balance* of an account, which is the amount reported in the financial statements, is the difference between the total debits and the total credits entered in that account. The Cash and the Capital Stock accounts previously illustrated indicate that some accounts are increased with debit (left side) entries, while others are increased with credit (right side) entries. ***Regardless of its effect on the account balance, an amount entered on the left side is a debit, and an amount entered on the right side is a credit.***

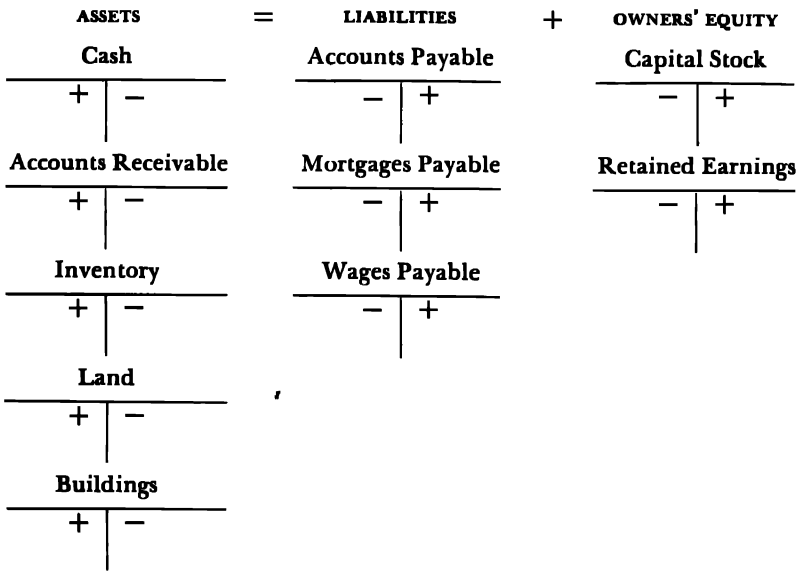
Debits and credits in balance sheet accounts

The framework of debits and credits parallels the balance sheet. Since assets appear on the left side of a balance sheet, the left sides of all asset accounts contain increases; since all liability and owners' equity accounts appear on the right side of the balance sheet, the right sides of these accounts contain increases.

Thus the nature of the account determines whether a debit (left side) entry will increase its balance or whether a credit (right side) entry will increase the balance. Presented on page 60 is the basic balance sheet equation, with several illustrative accounts beneath each part of the equation. Note that all asset accounts are increased when amounts are entered on the debit side, and that all liability and owners' equity accounts are increased when amounts are entered on the credit side.

The rules of debit and credit for balance sheet accounts may be summarized as follows:

Debits:	Increase asset accounts.
	Decrease liability and owners' equity accounts.
Credits:	Increase liability and owners' equity accounts.
	Decrease asset accounts.



Analysis of transactions

All transactions must be recorded in such a manner that the balance sheet equation remains in balance. The framework of double entry accounting is such that *each transaction has an equal dollar amount of debits and credits.* When each transaction is recorded with an equality of debits and credits, or left and right side entries, the balance sheet equation automatically remains in balance.

To illustrate the analysis of transactions into debits and credits, the following examples are given. Note carefully the equality of the debits and credits in each transaction.

1. *Transaction:* A corporation is formed, and \$10,000 of Capital Stock is issued to stockholders for cash.
   Analysis: Cash is increased; *debit* Cash for \$10,000.
   Capital Stock is increased; *credit* Capital Stock for \$10,000.

CASH	
(+)	(−)
\$10,000	

CAPITAL STOCK	
(−)	(+)
	\$10,000

2. *Transaction:* Office supplies are bought for \$250. These supplies will last for several accounting periods and are recorded as assets until consumed.

Analysis: Office Supplies is increased; *debit* Office Supplies for $250.
Cash is decreased; *credit* Cash for $250.

CASH	
(+)	(−)
	$250

OFFICE SUPPLIES	
(+)	(−)
$250	

3. *Transaction:* Land which cost $6,000 is bought with a cash down payment of $2,000. A mortgage payable is signed for the $4.000 balance.
Analysis: Land is increased; *debit* Land for $6,000.
Cash is decreased; *credit* Cash for $2,000.
Mortgages Payable is increased; *credit* Mortgages Payable for $4,000. (Note the equality of debits and credits in this transaction even though more than two accounts are affected.)

CASH	
(+)	(−)
	$2,000

LAND	
(+)	(−)
$6,000	

MORTGAGES PAYABLE	
(−)	(+)
	$4,000

Debits and credits in income statement accounts

As explained in Chapter 1, the income statement is the financial report which reflects all revenue and expense data included in the computation of net income or loss for the accounting period. Since revenues and expenses increase or decrease the company's retained earnings, separate accounts are needed to accumulate the detail of individual revenues and expenses for preparation of the income statement. Thus, accounts are established for each item that appears in the income statement, as well as for those appearing in the balance sheet.

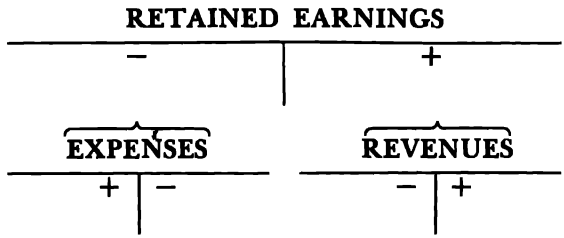
The original balance sheet equation

ASSETS = LIABILITIES + OWNERS' EQUITY

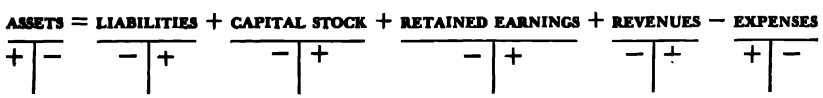
is thus expanded to include revenue and expense accounts as follows:

ASSETS = LIABILITIES + OWNERS' EQUITY
CAPITAL STOCK + RETAINED EARNINGS + REVENUE − EXPENSES
BALANCE SHEET ACCOUNTS
INCOME STATEMENT ACCOUNTS

Expenses have the effect of decreasing retained earnings, and revenues have the effect of increasing retained earnings, as explained in Chapter 2. Expense and revenue accounts are thus separate elements of the Retained Earnings account. Revenues and expenses may be visualized as *sub-accounts* under retained earnings, with expenses on the left, or decrease side, and revenues on the right, or increase side, of that account. Expenses are thus increased with a debit, and revenues are increased with a credit.



Increasing an expense has the effect of decreasing retained earnings; increasing a revenue has the effect of increasing retained earnings. The complete framework of debits and credits for both balance sheet and income statement accounts may be illustrated as follows:



The rule of debits and credits is expanded to include revenue and expense transactions as follows:

Debits: Increase asset and expense accounts.
Decrease liability, capital stock, retained earnings, and revenue accounts.

Credits: Increase liability, capital stock, retained earnings, and revenue accounts.
Decrease asset and expense accounts.

The following transactions illustrate the analysis and recording of transactions affecting revenue and expense accounts.

1. *Transaction:* A law firm renders $470 of services for its clients and receives payment in cash.
Analysis: Cash is increased; *debit* Cash for $470.
Revenue is increased; *credit* Revenue From Professional Fees for $470.

CASH	
(+)	(−)
$470	

REVENUE FROM PROFESSIONAL FEES	
(−)	(+)
	$470

2. *Transaction:* Salaries of $200 are paid to employees.
Analysis: Salaries Expense is increased; *debit* Salaries Expense for $200.
Cash is decreased; *credit* Cash for $200.

CASH	
(+)	(−)
	$200

SALARIES EXPENSE	
(+)	(−)
$200	

The ledger

All the accounts for balance sheet and income statement items comprise the *ledger.* Accounts are numbered and arranged in the ledger in the order of their appearance in the financial statements; balance sheet accounts are placed first, in the order of their listing in the balance sheet, followed by income statement items in the order of their listing.

The accounts are customarily maintained in the ledger in loose-leaf form, held together in a binder, but they may be kept on cards in a filing tray. Regardless of the physical form of the accounts, however, the ledger is the name given to the entire group of accounts.

The journal

Accounts are the basic device for accumulating the effects of business transactions upon the individual items that are reported in the financial statements, but any single transaction is easily lost in the volume of figures which are entered in the accounts. A separate record of each transaction is needed, and an accounting *journal* is used for this purpose. Each transaction is entered in the journal before amounts are transferred to the ledger accounts. Thus the journal is a book of *original entry,* containing a permanent chronological listing of all transactions and the analysis of each transaction into debits and credits.

Use of the journal (1) provides a complete record of all transactions, (2) reduces the possibility of error when transactions are first recorded, and (3) permits several persons to record transactions at the same time. If transactions were recorded directly in the accounts, as previously done in the illustrative transactions in this chapter,

there is a strong possibility that debits would be entered as credits, or vice versa, that an incorrect figure would be entered in the ledger, or that a transaction would not be entered at all. Such errors would be almost impossible to trace without access to some record in which the transaction is described in its entirety.

Form of the journal entry

The form of a journal entry is illustrated in Exhibit 3–2; this form has been standardized in accounting practice and should be carefully followed. The form and arrangement of the account titles, amounts, and explanations are important in interpreting transactions that have been journalized. Note the equality of the debits and credits in each transaction and their identification by placement on the page.

Attention should be given the following important points in preparing a journal entry:

Date: The year should appear at the top of the date column on each page but need not be repeated on that page. The month also appears at the top of each page and need not be repeated unless transactions for the following month are entered on that page. The day of the month is entered beside each transaction. The date entered is the one on which the transaction is recorded and may in some cases be different from the date the transaction occurred. In such case, the date of occurrence is included in the description of the transaction.

Debits: The account (or accounts) to be debited is recorded first. The name of the account is entered to the extreme left of the Description column, and the amount of the debit is entered in the Debit column on the same line.

Credits: The title of the account to be credited for the same transaction is written on the next line and clearly indented to distinguish it from the debited account. An indenture of five spaces is standard. The amount of the credit is then entered in the credit column on the same line.

Description: The description of the transaction is written on the next line and is indented to avoid confusion with account titles. It should be as brief as possible and yet contain all information essential to an understanding of the transaction.

Exhibit 3–2

Journal			Page		
Date		Description	Post Ref.	Debit	Credit
1964					
June	1	Cash		10,000.00	
		Capital Stock			10,000.00
		Issued capital stock for cash			
	4	Office Supplies		250.00	
		Cash			250.00
		Purchased office supplies			
	7	Land		6,000.00	
		Mortgage Payable			4,000.00
		Cash			2,000.00
		Purchase of land in Block 7, Parcel 5, Lot 9.			
	11	Cash 9/c Dr.		470.00	
		To Professional Fees			470.00
		Services rendered to clients for cash during week ended June 11.			
	30	Salary Expense		200.00	
		Cash			200.00
		Paid salaries earned during the month June			

Spacing: Most accountants prefer to leave a space between each entry for the sake of neatness and to reduce the possibility of confusion between entries.

The posting process

Posting is the process of transferring into ledger accounts the debits and credits which have been entered in the journal. The journal is a chronological listing and analysis of all business transactions, and the accounts in the ledger are devices to accumulate the effects of those transactions; consequently, the debits and credits appearing in the journal must be posted to the appropriate ledger accounts.

The posting process may be described by the following steps:

1. Locate in the ledger the account corresponding to the first debit entry in the journal. Enter on the debit side of the ledger the date of the transaction as recorded in the journal, the page number of the journal, and the amount of the debit.

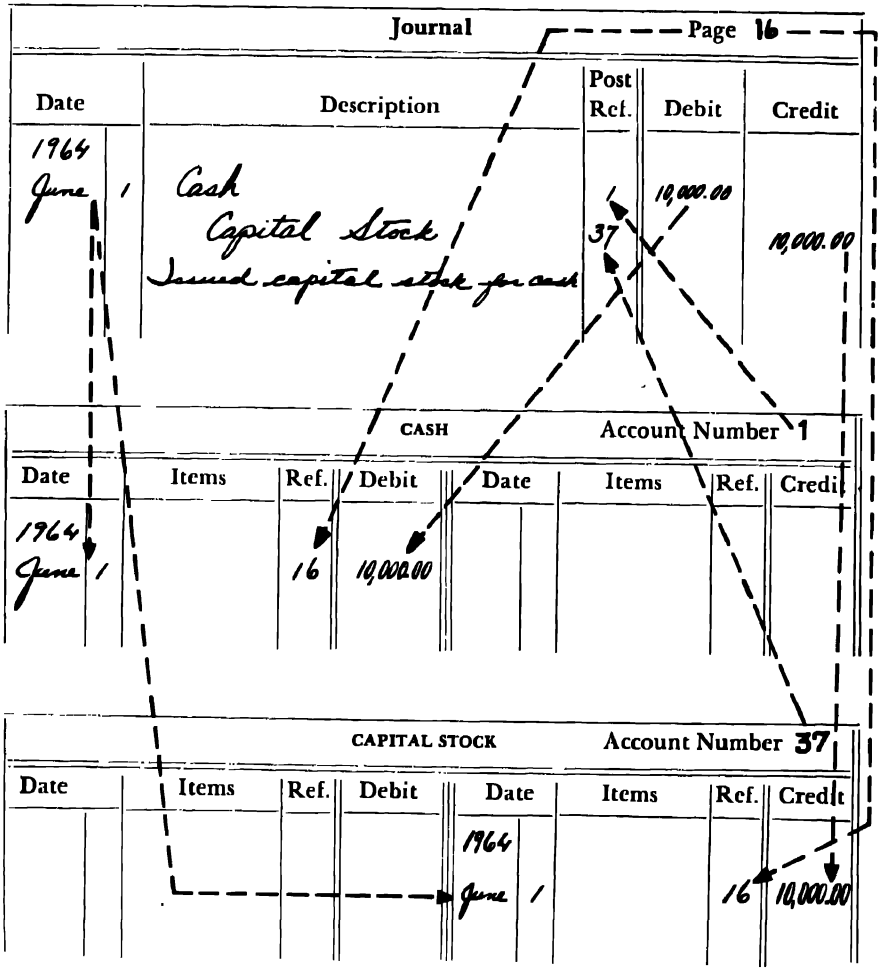
2. Enter in the journal reference column the ledger account number to which the posting was made.

3. Repeat the steps for the credit portion of the entry, being careful that the date, journal page number, and amounts are entered on the credit side of the ledger account.

These steps are illustrated in Exhibit 3–3. Note that the date, amount, and journal page are entered in the ledger, and the ledger account number is entered in the journal, thus providing a complete *cross-reference* between the ledger and the journal. The posting reference in the ledger account indicates the source in the journal of each posted transaction, and the posting reference in the journal indicates that the amount has been posted. One of the basic rules of accounting is that no transaction is recorded in the ledger that has not first been entered in the journal.

Some accountants post each journal entry immediately, while others wait until several journal entries are recorded before posting. If several journal entries are to be posted in sequence, the debit amounts of all the transactions may be posted first, followed by all the credits. This procedure reduces the possibility of entering an amount on the wrong side of the ledger account. However, since the final result is the same in either case, the individual accountant may follow his own preference concerning posting procedure.

EXHIBIT 3–3



Journals and ledgers illustrated

The following transactions illustrate the use of the journal and ledger and the relationship of the ledger balances to the financial statements. The completed journal is shown in Exhibit 3–4, and the ledger, after posting, is shown in Exhibit 3–5. The illustrative problem contains the transactions of William Lake, cafe operator. On January 1, 1964, his ledger accounts have the following balances: Cash, $1,000; Receivable From Customers, $130; Cafe Supplies,

$200; Cafe Fixtures, $6,400; Kitchen Appliances, $1,740; Accounts Payable to Suppliers, $240; Notes Payable on Fixtures, $3,200; Capital Stock, $4,000; Retained Earnings, $2,030. These balances are in the ledger accounts as a result of transactions in prior accounting periods; consequently, no journal entries are necessary in the current period to record these amounts. Note that the word "Balance" appears in the ledger beside each of these amounts, and a check mark (✓) appears in the posting reference column to indicate that the balances were not posted from a journal entry.

During the month, Lake completed the transactions which are described and analyzed below:

Jan. 4. Purchased food supplies on account for $2,000. Since food supplies are normally consumed during the same monthly accounting period in which they are purchased, they are recorded as an expense when bought.
Debit: Food Supplies Expense
Credit: Accounts Payable to Suppliers

Jan. 7. Purchased cafe supplies for $200 cash. Since these supplies will last for several months, they are recorded as an asset when bought.
Debit: Cafe Supplies
Credit: Cash

Jan. 9. Received $4,060 from customers for food served during the month.
Debit: Cash
Credit: Revenue from Sale of Food

Jan. 13. Billed customers with charge accounts a total of $360 for food served.
Debit: Receivable from Customers
Credit: Revenue from Sale of Food

Jan. 17. Collected $410 cash from customers with charge accounts.
Debit: Cash
Credit: Receivable from Customers

Jan. 23. Paid $1,910 of the amount owed to food suppliers.
Debit: Accounts Payable to Suppliers
Credit: Cash

Jan. 27. Paid salaries of $470.
Debit: Salaries Expense
Credit: Cash

Jan. 30. Paid $500 rent for the month.
Debit: Rent Expense
Credit: Cash

Jan. 31. Determined that $75 of the cafe supplies had been consumed during the month. Since these supplies were recorded as an asset when bought, the cost of the portion consumed during this accounting period must be recorded as an expense.
Debit: Cafe Supplies Expense
Credit: Cafe Supplies

Jan. 31. Determined that $130 of the food supplies were still on hand at the end of the month. Since these were debited to an expense account when purchased, the expense must be reduced and the asset recorded before financial statements are prepared for the month.
Debit: Food Supplies
Credit: Food Supplies Expense

Jan. 31. Determined that the depreciation expense for the month was $50 on the kitchen appliances and $70 on the cafe fixtures. Income for the month cannot be computed correctly until an expense is recorded for the expired portion of the cost of these assets. (More refined procedures for recording depreciation are discussed in a later chapter, but the process is basically that of reducing the asset and increasing expenses.)
Debit: Depreciation Expense—Kitchen Appliances
Credit: Kitchen Appliances
Debit: Depreciation Expense—Cafe Fixtures
Credit: Cafe Fixtures

Jan. 31. Dividends of $600 were paid in cash to the owners. This transaction represents a distribution of profits to owners and reduces both Cash and the Retained Earnings account.
Debit: Retained Earnings
Credit: Cash

The trial balance

Since the debit and credit framework of double entry accounting requires an equal dollar amount of debits and credits for each transaction, the sum of all the debit balances in the ledger accounts must, as a consequence, equal the sum of all the credit balances. A *trial balance* is a list of the balances in the ledger accounts at the end of

EXHIBIT 3–4

JOURNAL Page 13

Date		Description	Post Ref.	Debit	Credit
1964					
Jan.	4	Food Supplies Expense	12	2,000.00	
		Accounts Payable to Suppliers	7		2,000.00
		Purchased food supplies on account.			
	7	Cafe Supplies	3	200.00	
		Cash	1		200.00
		Purchased cafe supplies for cash.			
	9	Cash	1	4,060.00	
		Revenue from Sale of Food	11		4,060.00
		Received cash for sale of food.			
	13	Receivable from Customers	2	360.00	
		Revenue from Sale of Food	11		360.00
		Sent bills to credit customers.			
	17	Cash	1	410.00	
		Receivable from Customers	2		410.00
		Collections from customers' accounts.			
	23	Accounts Payable to Suppliers	7	1,910.00	
		Cash	1		1,910.00
		Paid accounts due to suppliers.			
	27	Salaries Expense	14	470.00	
		Cash	1		470.00
		Paid salaries for the month.			
	30	Rent Expense	15	500.00	
		Cash	1		500.00
		Paid rent for the month.			
	31	Cafe Supplies Expense	13	75.00	
		Cafe Supplies	3		75.00
		Recorded consumption of supplies.			
	31	Food Supplies	4	130.00	
		Food Supplies Expense	12		130.00
		To record unused food supplies originally debited to expense.			
	31	Depreciation Expense—Kitchen Appliances	16	50.00	
		Kitchen appliances	6		50.00
		To record depreciation expense on kitchen appliances.			
	31	Depreciation Expense—Cafe Fixtures	17	70.00	
		Cafe fixtures	5		70.00
		To record depreciation expense on cafe fixtures.			
	31	Retained Earnings	10	600.00	
		Cash	1		600.00
		To record dividends paid.			

EXHIBIT 3–5

Ledger

CASH — Account No. 1

Date		Items	Post Ref.	Debit	Date		Items	Post Ref.	Credit
1963					1964				
Dec.	31	Balance	✓	1,000.00	Jan.	7		13	200.00
1964						23		13	1,910.00
Jan.	9		13	4,060.00		27		13	470.00
	17	(1790.00)	13	410.00		30		13	500.00
						31		13	600.00

RECEIVABLE FROM CUSTOMERS — Account No. 2

Date		Items	Post Ref.	Debit	Date		Items	Post Ref.	Credit
1963					1964				
Dec.	31	Balance	✓	130.00	Jan.	17		13	410.00
1964									
Jan.	13	(80.00)	13	360.00					

CAFE SUPPLIES — Account No. 3

Date		Items	Post Ref.	Debit	Date		Items	Post Ref.	Credit
1963					1964				
Dec.	31	Balance	✓	200.00	Jan.	31		13	75.00
1964									
Jan.	7	(325.00)	13	200.00					

FOOD SUPPLIES — Account No. 4

Date		Items	Post Ref.	Debit	Date		Items	Post Ref.	Credit
1964									
Jan.	31		13	130.00					

CAFE FIXTURES Account No. 5

Date		Items	Post Ref.	Debit	Date		Items	Post Ref.	Credit
1963 Dec.	31	Balance 6330.00	✓	6,400.00	1964 Jan.	31		13	70.00

KITCHEN APPLIANCES Account No. 6

Date		Items	Post Ref.	Debit	Date		Items	Post Ref.	Credit
1963 Dec.	31	Balance 1690.00	✓	1,740.00	1964 Jan.	31		13	50.00

ACCOUNTS PAYABLE TO SUPPLIERS Account No. 7

Date		Items	Post Ref.	Debit	Date		Items	Post Ref.	Credit
1964 Jan.	23		13	1,910.00	1963 Dec.	31	Balance	✓	240.00
					1964 Jan.	4	330.00	13	2,000.00

NOTES PAYABLE ON FIXTURES Account No. 8

Date		Items	Post Ref.	Debit	Date		Items	Post Ref.	Credit
					1963 Dec.	31	Balance	✓	3,200.00

CAPITAL STOCK Account No. 9

Date		Items	Post Ref.	Debit	Date		Items	Post Ref.	Credit
					1963 Dec.	31	Balance	✓	4,000.00

RETAINED EARNINGS Account No. 10

Date		Items	Post Ref.	Debit	Date		Items	Post Ref.	Credit
1964 Jan.	30		13	600.00	1963 Dec.	31	Balance 1,430.00	✓	2,030.00

REVENUE FROM SALE OF FOOD Account No. 11

Date		Items	Post Ref.	Debit	Date		Items	Post Ref.	Credit
					1964 Jan.	7		13	4,060.00
						13	4,420.00	13	360.00

FOOD SUPPLIES EXPENSE Account No. 12

Date		Items	Post Ref.	Debit	Date		Items	Post Ref.	Credit
1964 Jan.	4	1,870.00	13	2,000.00	1964 Jan.	31		13	130.00

CAFE SUPPLIES EXPENSE Account No. 13

Date		Items	Post Ref.	Debit	Date		Items	Post Ref.	Credit
1964 Jan.	31		13	75.00					

SALARIES EXPENSE Account No. 14

Date		Items	Post Ref.	Debit	Date		Items	Post Ref.	Credit
1964 Jan.	27		13	470.00					

RENT EXPENSE Account No. 15

Date		Items	Post Ref.	Debit	Date		Items	Post Ref.	Credit
1964 Jan.	30		13	500.00					

DEPRECIATION EXPENSE—KITCHEN APPLIANCES Account No. 16

Date		Items	Post Ref.	Debit	Date		Items	Post Ref.	Credit
1964 Jan.	31		13	50.00					

DEPRECIATION EXPENSE—CAFE FIXTURES Account No. 17

Date		Items	Post Ref.	Debit	Date		Items	Post Ref.	Credit
1964 Jan.	31		13	70.00					

the accounting period, with the debits and credits separated and totaled to prove their equality.

The balance in each ledger account must be computed before the trial balance is prepared. The ledger accounts in Exhibit 3–5 illustrate the process of totaling the debits and credits in each account. The difference between the two, representing the balance of the account, is written in small figures and circled in the Items column on the appropriate side of the ledger.

The trial balance drawn from the ledger account balances in Exhibit 3–5 would appear as shown on page 75.

While the trial balance is a check on the mathematical accuracy of the ledger balances, it proves nothing more than the equality of the total debit and total credit balances. It does not indicate that each posting was made to the correct account. Furthermore, the trial balance would still be in balance even though a complete entry had been omitted in posting, or offsetting errors had been made in posting amounts or computing balances in the accounts. It is essential, however, to establish the equality of debits and credits before the financial statements are prepared, and a trial balance is necessary for this reason.

EXHIBIT 3–6

WILLIAM LAKE CAFE
Trial Balance
January 31, 1964

Account	Dr	Cr
Cash	$ 1,790.00	
Receivable from customers	80.00	
Cafe supplies	325.00	
Food supplies	130.00	
Cafe fixtures	6,330.00	
Kitchen appliances	1,690.00	
Accounts payable to suppliers		$ 330.00
Notes payable on fixtures		3,200.00
Capital stock		4,000.00
Retained earnings		1,430.00
Revenue from sale of food		4,420.00
Food supplies expense	1,870.00	
Cafe supplies expense	75.00	
Salaries expense	470.00	
Rent Expense	500.00	
Depreciation expense—kitchen appliances	50.00	
Depreciation expense—cafe fixtures	70.00	
	$13,380.00	$13,380.00

Preparing statements from the trial balance

As stated previously, the three principal financial statements are the Balance Sheet, Statement of Retained Earnings, and the Income Statement. These financial statements are prepared from the totals in the trial balance, as illustrated in Exhibit 3–7.

The income statement is usually prepared first, since the net income from this statement is needed to complete the statement of retained earnings. The statement of retained earnings is usually prepared next and reflects the net effect of profits and dividends upon owners' equity. Since this statement is an analysis of all items which affect retained earnings, it must begin with the balance of retained earnings at the beginning of the period and not with the amount that appears in the trial balance at the end of the year.

Exhibit 3–7 illustrates the preparation of the statement of retained

EXHIBIT 3–7

WILLIAM LAKE CAFE

Trial Balance

For the Month Ended January 31, 1964

	Dr	Cr
Cash	$ 1,790.00	
Receivable from customers	80.00	
Cafe supplies	325.00	
Food supplies	130.00	
Cafe fixtures	6,330.00	
Kitchen appliances	1,690.00	
Accounts payable to suppliers		$ 330.00
Notes payable on fixtures		3,200.00
Capital stock		4,000.00
Retained earnings		1,430.00
Revenue from sale of food		4,420.00
Food supplies expense	1,870.00	
Cafe supplies expense	75.00	
Salaries expense	470.00	
Rent expense	500.00	
Depreciation expense—kitchen appliances	50.00	
Depreciation expense—cafe fixtures	70.00	
	$13,380.00	$13,380.00

WILLIAM LAKE CAFE

Income Statement

For the Month Ended January 31, 1964

Revenue from the sale of food		$4,420.00
Less Expenses:		
Food supplies expense	$1,870.00	
Cafe supplies expense	75.00	
Salaries expense	470.00	
Rent expense	500.00	
Depreciation expense—kitchen appliances	50.00	
Depreciation expense—cafe fixtures	70.00	
Total expenses		3,035.00
Net income		$1,385.00

WILLIAM LAKE CAFE

Statement of Retained Earnings

For the Month Ended January 31, 1964

Retained earnings, Jan. 1, 1964		$2,030.00
Add: Net income for month	$1,385.00	
Less: Dividends paid	600.00	
Increase in retained earnings		785.00
Retained earnings, Jan. 31, 1964		$2,815.00

WILLIAM LAKE CAFE

Balance Sheet

January 31, 1964

ASSETS

Current assets:		
Cash	$1,790.00	
Receivable from customers	80.00	
Cafe supplies	325.00	
Food supplies	130.00	
Total current assets		$ 2,325.00
Fixed assets:		
Cafe fixtures	$6,330.00	
Kitchen appliances	1,690.00	
Total fixed assets		8,020.00
Total assets		$10,345.00

EQUITIES

Current liabilities:		
Accounts payable to suppliers	$ 330.00	
Notes payable on fixtures	3,200.00	
Total liabilities		$ 3,530.00
Owners' equity:		
Capital stock	$4,000.00	
Retained earnings	2,815.00	
Total owners' equity		6,815.00
Total equities		$10,345.00

earnings. The $1,430 balance of retained earnings in the trial balance is the result of the $2,030 beginning balance, less dividends of $600. Thus the statement of retained earnings starts with the $2,030 beginning balance, adds the net income of $1,385 from the income statement, and subtracts the $600 of dividends. The final $2,815 balance of retained earnings is then used to complete the balance sheet.

Questions

3-1. Describe an account, its construction, and the purpose it serves.

3-2. What is a debit; a credit? Is the term debit synonymous with increase?

3-3. Explain how the framework of debits and credits parallels the balance sheet; that is, what accounts normally have debit balances and which normally have credit balances?

3-4. Which of the following accounts would be increased by a debit and which would be increased by a credit?

(a) Cash
(b) Accounts Payable
(c) Capital Stock
(d) Land
(e) Mortgages Payable
(f) Inventory

3-5. State which account you would debit and which you would credit for the following transactions:

(a) Issue of capital stock for cash to begin the business.
(b) Purchase of land for cash.
(c) Purchase of office supplies on account.
(d) Payment of accounts payable.
(e) Receipt of cash in payment of an account.
(f) Purchase of a building, for which part of the purchase price was in cash and a mortgage payable given for the balance.

3-6. What is meant by the statement that revenue and expense accounts are elaborations of the retained earnings account? Also indicate whether debits or credits increase revenue accounts and expense accounts.

3-7. Analyze the following transactions into the accounts which would be debited and those which would be credited, using revenue and expense accounts in the analysis.

(a) Paid salaries to employees.
(b) Collected rental revenue in cash.
(c) Billed tenants for rentals.
(d) Collected the rentals for which bills were sent in part (c).
(e) Paid for office supplies which were consumed immediately.
(f) Incurred an advertising expense in a local newspaper, to be paid later.
(g) Paid for the advertising in part (f).

3-8. Describe the form of a journal entry. Why is a journal used to record transactions?

3-9. Describe the posting process and the importance of journalizing a transaction before posting it.

3-10. Describe the cross-reference process and indicate why referencing is done.

3-11. What is a trial balance? What is the reason for its preparation?

3-12. In what order are the financial statements prepared; that is, can a balance sheet be completed before the income statement? Why or why not?

3-13. In what order are accounts normally arranged in the trial balance? Why is this order used?

3-14. Describe a transaction which has the following effect:

(a) Increases an asset and increases owners' equity.
(b) Increases an asset and increases a liability.
(c) Increases an asset and decreases an asset.
(d) Decreases an asset and decreases owners' equity.
(e) Decreases an asset and decreases a liability.

Exercises

3-15. The accounts of the Troy Company contain the following balances at the end of an accounting period:

Rental revenue	$ 50
Insurance expense	50
Office supplies expense	50
Land	1,085
Retained earnings	50

Cash	900
Rent expense	75
Interest expense	25
Salaries expense	125
Store equipment	900
Office supplies on hand	35
Advertising expense	65
Notes payable	365
Revenue from fees	1,500
Accounts payable	700
Buildings	5,000
Accounts receivable	1,000
Capital stock	5,000
Mortgage payable, due in 1975	1,645

REQUIRED

Prepare a trial balance, arranging the accounts in the order in which they would appear in the ledger and segregating debit and credit balances in trial balance fashion.

3-16. The Medalton Company completed the following transactions during 1964:

(a) Issued capital stock for $3,500 cash.
(b) Bought equipment for $1,750 cash.
(c) Performed services for customers and collected $850 cash.
(d) Bought office supplies on account for $155.
(e) Paid salaries of $600 in cash.
(f) Performed services for customers on account and sent them bills for $640.
(g) Paid accounts payable of $100.
(h) Paid rent expense of $180.
(i) Collected $400 of the accounts receivable.
(j) Recorded consumption of $100 of office supplies purchased previously.

REQUIRED

Set up ledger accounts in T-account form for Cash, Accounts Receivable, Office Supplies on Hand, Equipment, Accounts Payable, Capital Stock, Revenue from Services, Salaries Expense, Rent Expense, and Office Supplies Expense. Record the entries directly into the T-accounts. Since this exercise is designed to provide familiarization with the debit and credit framework, no journal entries are required and therefore no dates or posting references are necessary.

However, place the transaction letter (a, b, c, etc.) beside each amount entered in the T-accounts.

3-17. The following errors were made by an inexperienced bookkeeper:

(a) Salaries of $350 were paid, but the journal entry was prepared and posted for $530.
(b) Office furniture costing $3,000 was bought for cash. The entry debited Office Supplies Expense and credited Cash.
(c) The Accounts Receivable account had debit postings of $6,200 and credit postings of $4,000. The account balance was computed to be $3,200, and this amount was entered on the trial balance.
(d) A $679 debit to cash was posted to the Cash account as a debit of $697.
(e) The credit, but not the debit, portion of an entry was posted.
(f) An entry for the cash payment of rent expense was debited to Salaries Expense and credited to Rent Expense.
(g) Office Supplies Expense, with a balance of $492, was omitted from the trial balance.
(h) A transaction for the cash purchase of equipment costing $3,700 was posted as a $3,900 credit to Cash and $3,900 debit to Equipment.

REQUIRED

State what effect each error would have on the trial balance, that is, whether the account balances are correct and in balance. If it will not balance, explain why.

3-18. The list of accounts used by the Klaze Company is given below, with a listing of transactions completed during 1964:

ACCOUNTS

1. Cash
2. Notes receivable
3. Accounts receivable
4. Office supplies on hand
5. Trucks
6. Furniture and fixtures
7. Notes payable
8. Accounts payable
9. Taxes payable
10. Wages payable
11. Capital stock
12. Retained earnings
13. Service revenue
14. Office supplies used
15. Rent expense
16. Taxes expense
17. Salaries expense

TRANSACTIONS

(a) Bought office supplies for cash. (Record as an asset.)
(b) Paid rent for the month in cash.
(c) Bought furniture and fixtures for cash.
(d) Performed services for cash.
(e) Paid cash dividend to owners.
(f) Billed customers for services performed.
(g) Bought postage stamps for cash.
(h) Accepted a note receivable in payment of his account receivable.
(i) Paid the note payable with cash.
(j) Paid salaries for the month in cash.
(k) Gave a note payable to apply on an account payable.
(l) Sold postage stamps at cost to a customer for cash.
(m) Recorded the office supplies consumed during the month.

REQUIRED

Using the list of accounts, select the accounts to be debited and credited in journalizing the transactions, and prepare journal entries without amounts, dates, or explanations for each of the transactions.

3-10. The account titles used by the Penwick Company and the transactions which that company completed during 1964 are given below:

ACCOUNTS

1. Cash
2. Notes receivable
3. Accounts receivable
4. Supplies on hand
5. Land
6. Buildings
7. Equipment
8. Accounts payable
9. Notes payable
10. Mortgage payable
11. Capital stock
12. Retained earnings
13. Storage fees
14. Rental revenue
15. Salary expense
16. Supplies used
17. Gas, water, and electricity used
18. Insurance expense
19. Miscellaneous expense

TRANSACTIONS

(a) A building was purchased, with a cash down payment, and a mortgage payable was signed for the balance.
(b) Equipment was purchased and a note payable given for the full amount.
(c) Supplies were purchased on open account. (Record as an asset.)

(d) Rent was collected for the current month from a sublease on part of the building.
(e) Customers were billed for storage services.
(f) Storage services were rendered for cash.
(g) The month's water bill was paid in cash.
(h) A customer gave a note receivable to apply on his account.
(i) Accounts payable were paid.
(j) Collections were received from customers on amounts previously billed.
(k) Salaries were paid in cash.
(l) The supplies consumed during the month were recorded.
(m) A customer was reimbursed in cash for an overcharge of storage fees previously collected.
(n) Cash dividends were paid to owners.
(o) Equipment was sold at cost for cash.

REQUIRED

Using the account numbers and titles provided, prepare a list of the account(s) to be debited and the account(s) to be credited for each transaction.

Problems

3-20. The following transactions were completed by the Johnson TV Repair Company during the month of January:

Jan. 2 Issued capital stock for $5,000 cash.
3 Purchased store equipment for $4,000 cash.
3 Rent for the month, $200, was paid in cash.
4 Performed repair services for cash, $430.
10 Purchased office supplies on account, $80 (debit office supplies on hand).
16 Performed repair services and mailed bills to customers, $620.
25 Paid for the office supplies purchased on January 10.
29 Collected $320 from customers who had been sent bills on January 16.
30 Paid his helper a $300 salary for the month.
31 Office supplies costing $50 had been consumed during the month.

REQUIRED

Prepare journal entries using the account titles you feel are appropriate. Post to ledger T-accounts and prepare a trial balance after all transactions are posted.

3-21. The Scott Carpet Cleaners completed the following transactions during March:

March 2 Paid three months' rent in advance, $375.
8 Collected accounts receivable, $425.
10 Paid accounts payable, $60.
12 Collected accounts receivable, $300.
15 Billed customers for first half of month, $320.
20 Paid owners $200 cash in dividends.
24 Purchased supplies for cash, $15 (record as an asset).
31 Billed customers for last half of month, $480.
31 Paid cash for miscellaneous expenses, $10.
31 Received an invoice for gas and oil and other automobile expenses for the month, $65.
31 Recorded the expense arising from expiration of one month of the prepaid rent, paid on March 2.
31 Recorded supplies consumed during the month, $40.

REQUIRED

1. The company's ledger contains the following accounts: Cash, Accounts Receivable, Prepaid Rent, Supplies on Hand, Automobiles, Accounts Payable, Capital Stock, Retained Earnings, Fee Revenue, Automobile Expense, Rent Expense, Supplies Used, Miscellaneous Expense. Assign numbers to the ledger accounts, beginning with 1, and begin with a journal page numbered 6.

   Enter directly into the ledger the following balances which were on the books at the beginning of the month: Cash, $1,500; Accounts Receivable, $725; Supplies on Hand, $50; Automobiles, $1,500; Accounts Payable, $60; Capital Stock, $3,000; Retained Earnings, $715.

2. Journalize the transactions, post to the ledger accounts, and prepare a trial balance.

3-22. The Jackson Company completed the following transactions during July, 1964:

July 1 Issued $3,000 of capital stock for cash.
2 Purchased cleaning equipment which cost $8,000, paying $2,000 cash and giving a note payable for the balance.

July 5 Purchased cleaning supplies for $200, on account (debit Supplies Expense).
8 Cleaning services rendered for cash, $950.
9 Paid salaries, $250.
10 Paid rent for the month, $100.
16 Performed cleaning services, $620, and sent bills to customers.
29 Paid salaries, $210.
30 Paid $100 of the amount due for the supplies purchased on July 5.
31 Collected $320 from customers who were billed on July 16.
31 Recorded the periodic apportionment of the cost of cleaning equipment, $120 (debit Depreciation Expense; credit Cleaning Equipment).

REQUIRED

Establish the following ledger accounts: Cash, Accounts Receivable, Cleaning Equipment, Accounts Payable, Notes Payable, Capital Stock, Cleaning Revenues, Salary Expenses, Rent Expense, Supplies Expense, Depreciation Expense. Number the ledger accounts in numerical sequence beginning with 1, and number journal pages beginning with 1.

Journalize the transactions, post the amounts to the ledger accounts, and prepare a trial balance.

3-23. The trial balance of the Wilson Amusement Park appeared as follows on January 1, 1964:

Cash	$ 780	
Notes receivable	2,000	
Supplies on hand	320	
Park equipment	8,420	
Buildings	12,300	
Land	3,500	
Accounts payable		$ 540
Notes payable		1,600
Capital stock		20,000
Retained earnings		5,180
	$27,320	$27,320

During the month of January the following transactions were completed:

Jan. 2 Received $470 cash from sale of tickets.
3 Paid $380 of the accounts payable.
7 Collected $600 cash from sale of tickets.
8 Paid salaries of $535.
12 Paid $500 on the note payable, plus $25 interest expense.
15 Paid cash for supplies for the next several months, $630.
16 Paid cash dividends to owners, $700.
16 Purchased additional park equipment, cost $1,030.
20 Collected $520 cash from sale of tickets.
21 Repaired park equipment, cost $240. The repair bill was received and is to be paid next month.
22 Sold park equipment at cost, $795.
22 Paid salaries of $610.
24 Collected the note receivable, $2,000, plus $150 interest income.
25 Bought supplies for cash, $90.
26 Paid $170 of the accounts payable.
31 Recorded the supplies which were consumed during the month, $470.
31 Recorded the depreciation expense for the month on the park equipment, $100.
31 Recorded the depreciation expense for the month on the building, $70.

REQUIRED

1. Set up ledger accounts for the items in the beginning trial balance and additional accounts for Revenue from Ticket Sales, Interest Income, Salaries Expense, Interest Expense, Supplies Used, Equipment Repairs, Depreciation Expense—Equipment, and Depreciation Expense—Buildings. Number the ledger accounts in numerical sequence beginning with 1. Enter the beginning balances directly into the ledger accounts.
2. Journalize the transactions and post to the ledger accounts. Number the journal pages beginning with 8.
3. Prepare a trial balance.
4. Prepare an income statement, statement of retained earnings, and a balance sheet.

3-24. The General Services Company was formed by two friends, W. P. Byrd and J. L. Gibbs. Both were excellent mechanics and handy men but knew little about business records and financial data.

Their attorney drew up articles of incorporation for their new company on November 13, 1964, and each invested $2,000 for one-half of the company's stock at that time, depositing the funds in a company bank account.

Transactions, in sequence, which the company completed during the period November 13 through November 30 are described below.

Nov. 14 Gibbs rented a small shop for the company's operations, agreeing to pay a rental of $100 per month. The landlord agreed that a $50 rental would be sufficient to cover the remainder of November. The rent is not payable until the last day of each month.

15 Byrd agreed to repair a tractor for William Jennings for $270, payable when the repairs were completed.

16 Gibbs purchased repair parts for the tractor for $30, on open account.

16 A telephone was installed in the shop; a charge of $17 is to be paid at the end of the month for the installation.

17 Shop tools were bought by Byrd for $372 cash. These tools are expected to last several years.

18 Gibbs painted a sign for a local merchant for $30. He paid $10 for paint supplies which he used and collected the $30 in cash.

21 The tractor was completed and accepted by the owner, who paid the repair bill of $270.

23 Shop supplies sufficient for several months' operations were purchased for $259 cash.

27 Gibbs repaired two lawn mowers and an electric clock for $20 cash.

28 Byrd constructed special counters in a grocery store. He paid $40 cash for special materials and sent the grocer a bill for $250.

28 Gibbs paid the shop rent of $50 for November.

29 The telephone bill of $17 was paid.

29 Byrd repaired the electric motor on a pump for $55 cash.

29 The $30 owed for repair parts for the tractor was paid.

30 Byrd and Gibbs signed a contract with the L. P. G. Company to repair all damaged metal tanks which the company brought to them at a rate of $10 per tank, plus materials.

30 The L. P. G. Company brought two tanks in for repairs. The repairs were completed, using $5 of shop supplies; consequently, a bill for $25 was sent to the company.

30 Byrd estimated that a total of $200 of the shop supplies was on hand at the end of the period.

REQUIRED

Record the original investment and the transactions in general journal form, post to ledger accounts, and prepare a trial balance for the company as of November 30. Since the company is newly formed, no ledger account titles have been established; open ledger accounts as needed, using appropriate titles. (Some of the transactions may require no entry until a later date.)

3-25. The Pratt Moving Company had the following trial balance on December 1, 1964:

Cash	$ 2,730	
Office supplies on hand	490	
Trucks	19,510	
Notes payable		$ 3,520
Capital stock		15,000
Retained earnings		4,210
	$22,730	$22,730

The company completed the following transactions during December, 1964:

Dec. 1 Paid $200 rent for the month of December.
2 Collected $1,330 for moving services rendered.
3 Purchased oil and gas for the trucks for $270 (debit Oil and Gas expense).
4 Paid a $500 installment on the note payable, plus $100 interest expense.
5 Paid salaries of $490.
6 Collected $775 cash and a $220 note receivable for moving services rendered.
10 Paid $692 for a one-year insurance policy on the trucks (debit Prepaid Insurance).
12 Paid salaries of $510.
13 Bought office supplies on account, $154 (debit Office Supplies on Hand).
18 Collected the $220 note receivable, plus $5 interest income.
20 Collected $692 cash for moving services rendered.
23 Purchased oil and gas for trucks, $187.
25 Paid $800 in cash dividends to stockholders.
28 Paid $83 for truck repairs.
31 Paid salaries of $715.

Dec 31 Recorded consumption of $40 of office supplies during the month.
31 Recorded depreciation on the trucks of $200 for the month.
31 Prepaid insurance of $40 expired during the month.

REQUIRED

1. Establish ledger accounts for the items in the trial balance, and enter the amounts in the trial balance directly into the accounts. Also establish additional accounts for: Notes Receivable, Prepaid Insurance, Accounts Payable, Revenue from Moving Services, Interest Income, Rent Expense, Oil and Gas Expense, Interest Expense, Salaries Expense, Insurance Expense, Office Supplies Expense, Depreciation on Trucks, and Truck Repairs. Number the ledger accounts in sequence, beginning with 1. Begin journal page numbers with 17.
2. Journalize the transactions listed above.
3. Post to the ledger accounts.
4. Prepare a trial balance as of December 31, 1964.
5. Prepare an income statement, statement of retained earnings, and a balance sheet.

Cases

3-26. Jim Jasper began a men's tailoring shop on January 1, 1963. His balance sheets contained the following data at the end of 1963 and 1964:

	December 31,			
	1963		1964	
Cash	$ 750		$ 1,500	
Accounts receivable	1,400		600	
Cloth and supplies	100		200	
Prepaid insurance	200		100	
Equipment	10,000		10,200	
Accounts payable		$ 1,300		$ 1,900
Notes payable (due in 6 months)		1,100		700
Capital stock		9,000		9,000
Retained earnings		1,050		1,000
	$12,450	$12,450	$12,600	$12,600

On December 31, 1964, Mr. Jasper asked you to analyze the trial balances and give him some indication as to whether or not his financial position is better than at the same time in 1963. He stated that he was very concerned about the business, since a $50 loss was reported in 1964 (thus reducing retained earnings by that amount). However, he could not understand why his cash balance is twice as great as last year when the company has reported a loss for the year. How would you answer Mr. Jasper's inquiries?

3-27. Lester Berg began his own business in 1964 and decided to maintain his own records. He had studied accounting ten years before but could not remember the procedural detail of recording transactions. He remembered that assets must equal equities and that these two elements were entered into the accounts on opposite sides. He decided, therefore, that he would enter all asset increases on the right side of ledger accounts and all equity increases on the left side. He recorded all transactions directly in the ledger, since he felt the journal was a duplication of effort. Revenues and expenses were entered directly in the retained earnings account, and no separate accounts were established for revenue and expense items. At the end of the first month he had entered about 300 transactions, and his trial balance was as follows:

	Dr	*Cr*
Cash		$ 1,200
Accounts receivable		3,700
Office supplies on hand		550
Equipment		4,900
Buildings		12,600
Land		9,000
Capital stock	$30,000	
Retained earnings	1,950	
	$31,950	$31,950

Mr. Berg approached James Nelson about the possibility of purchasing stock in the company. The proceeds from the stock issue would be used for expansion purposes. Nelson requested a set of financial statements, claiming that the trial balance which Berg had prepared was inadequate, incorrect, and misleading. Would you agree with Nelson? What must be done to prepare the financial statements which Nelson wants? What would you recommend that Berg do so that his financial records would serve their designated purposes?

4

Periodic adjustments

Balance sheets and income statements are prepared at regular intervals, usually at the end of each month, quarter, and year. The processes by which the data for these statements are accumulated should utilize all possible efficiencies. Two techniques which save considerable effort and expense are (1) accumulating the totals of similar transactions and recording only one entry for the total, and (2) establishing accounting routines, which include use of *adjusting entries* at the end of the period.

To illustrate the accumulation of data from like transactions, consider the manner by which a retail store records cash sales. The total of all cash sales during the day is accumulated in the cash registers, and a single entry is usually made at the close of business each day. In some cases an entry is not prepared until the end of the week. Credit sales slips may be accumulated and totaled daily or weekly, and credit purchases may also be recorded in a summary entry.

In the further interest of efficiency, most companies follow an established accounting routine in recording their transactions. The routine of one company may call for a weekly recording of salary expenses, while that of another may require daily recording of wages as they are earned. Office supplies may be recorded as an asset when purchased, but could just as easily be recorded as an expense. Established company policy usually governs the recording of such transactions; expediency and efficiency play a major role in determining that policy.

At the end of the accounting period, adjusting entries are prepared so that all accounts reflect precisely the assets and liabilities of the business and all revenues realized and expenses incurred during the period. If salaries are normally recorded only once each week as they

are paid, for example, an adjusting entry is necessary if the accounting period ends in the middle of a week. The adjusting entry is necessary to record accrued (unpaid) salaries that have been earned but not paid. To illustrate further, if office supplies are recorded as an asset when purchased, an adjusting entry is necessary to record the portion of those supplies which has been consumed during the period. Unless these adjusting entries are made, both the balance sheet and the income statement will contain incorrect amounts.

Types of adjusting entries

An adjusting entry may be defined as an entry deferred until the end of the accounting period, either because of expediency or because the figures are not known until that time. The six types of adjusting entries discussed in this chapter are required to correct the account balances for the preparation of financial statements:

1. Accrued liabilities
2. Accrued receivables
3. Prepaid expenses
4. Unearned revenues
5. Depreciation expense
6. Bad debt expense

Adjusting entries are not corrections of errors; they are a planned part of the process of accumulating financial data and preparing that data for financial statement presentation. In all cases, the adjusting entries are made at the end of the period.

Accrued liabilities

Many expenses, such as salaries or interest on notes payable, are incurred on a day-by-day basis. Payment, however, is usually made weekly, monthly, or at some other agreed-upon interval. An accounting routine is frequently established wherein the expense is recorded during the period only if paid, and an adjusting entry is prepared at the end of the accounting period for the salaries or interest expense which has been incurred but is unpaid.

The adjusting entry is necessary to record the liability which the company has incurred for the unpaid salaries or interest and the related salary or interest expense. Thus the adjusting entry for accrued liabilities is a debit to an expense account and a credit to a current liability account.

Accrued salaries payable

Salary expenses are usually recorded when paid; any unpaid salaries at the end of the period are recorded with an adjusting entry which debits Salary Expense and credits Salaries Payable. To illustrate, assume that a company pays its salaries weekly, on each Friday, and records the expense at that time. Assume further that the salaries are $250 per week, or $50 per day for a five-day week. If December 31 falls on Wednesday, the expense and the liability for the unpaid salaries for the portion of the week from Monday through Wednesday is recorded as follows:

Dec.	31	Salaries Expense	$150	
		Salaries Payable		$150
		To record unpaid salaries for the last three days of the year.		

The ledger accounts after this entry is posted appear as follows:

Salaries Expense

(Balance in the unadjusted trial balance)	$13,000		
Dec. 31 Adjustment	150		

Salaries Payable

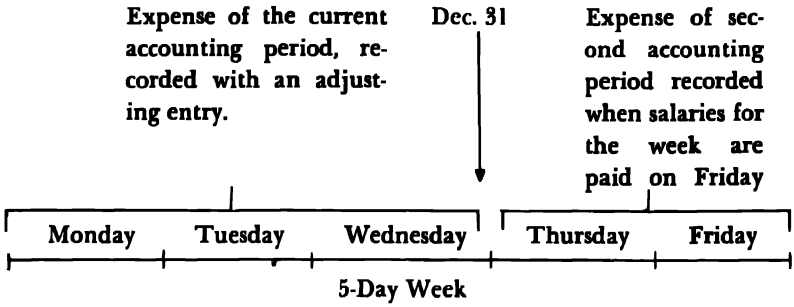
		Dec. 31 Adjustment	$150

The Salaries Payable account is shown as a current liability in the balance sheet. The balance of the Salaries Expense account, which now contains all salaries expense applicable to the year, whether paid or unpaid, is correct for income statement purposes.

The accrued salaries payable must be considered when the wages are paid at the end of the week. The entry for the payment of salaries the following Friday will debit Salaries Payable for the $150 accrued portion and Salaries Expense for the remaining $100, as follows:

Jan.	2	Salaries Expense	$100	
		Salaries Payable	150	
		Cash		$250
		To record the payment of salaries for the week ended on January 2.		

Thus the salaries of the first three days are recorded as an expense of the current accounting period, and the salaries of the remaining two days as an expense of the subsequent accounting period. This may be illustrated as follows:



Accrued interest payable

The interest expense on notes and mortgages accrues with the passage of time. In the normal accounting routine, interest expense is usually recorded when paid, and all unpaid interest expense is recorded with an adjusting entry at the end of the period. To illustrate, assume that a company owes a $10,000 mortgage payable, with interest at 6% payable each November 1. If the accounting period ends on December 31, two months' interest will be unpaid and therefore unrecorded. The December 31 adjusting entry to record the expense and the liability for the accrued interest is:

Dec.	31	Interest Expense	$100	
		Interest Payable		$100
		To record two months' interest accrued on a $10,000, 6% mortgage payable.		

The ledger accounts after the adjusting entry is posted appear as follows:

Interest Expense

(Balance in the unadjusted trial balance)	$500		
Dec. 31 Adjustment	100		

Interest Payable

	Dec. 31 Adjustment	$100

The interest payable account is a current liability, since it must be paid within the next year. The interest expense account, after the adjusting entry, contains a full year's interest and is correct for income statement purposes.

When the year's interest is paid the following November 1, the entry debits Interest Payable for the $100 portion of the interest applicable to the preceding year and debits Interest Expense for $500, which is the portion of the interest applicable to the current year.

Nov.	1	Interest Expense	$500	
		Interest Payable	100	
		Cash		$600
		Paid one year's interest on the $10,000, 6% mortgage.		

This may be illustrated as follows:

Expense of the first ten months, recorded when interest is paid	November 1	Expense of the last two months, recorded with an adjusting entry
January through October		November and December

Accrued taxes payable

Income taxes, property taxes, and other forms of governmental assessments which apply to one accounting period are frequently paid during the next period. Property taxes for the year 1964, for example, may not be payable until sometime in 1965. The tax expense, however, and the liability for unpaid taxes must appear in the financial statements prepared as of December 31, 1964. An adjusting entry must therefore be made to record the property tax expense and liability.

To illustrate, assume that a company's property taxes for the year 1964 are $1,040, payable March 31, 1965. The following adjusting entry is made on December 31, 1964:

Dec.	31	Property Tax Expense	$1,040	
		Property Taxes Payable		$1,040
		To record the property taxes for 1964, due in March, 1965.		

Property Tax Expense appears in the 1964 income statement, and Property Taxes Payable is shown as a current liability on the balance sheet. Property Taxes Payable is debited when the taxes are paid in the next accounting period.

Accrued receivables

Some types of revenue accrue with the passage of time. Efficiency in the recording process is achieved by recording these revenues as payment is received in cash, with an adjusting entry at the end of the accounting period for those revenues earned but not yet received in cash. Revenue from rentals and interest revenue on notes receivable are examples of items which are frequently recorded with adjusting entries at the end of the accounting period.

The adjusting entry for accrued receivables is a debit to a receivable account and a credit to a revenue account.

Interest receivable

The revenue from interest-bearing notes or mortgages which the company may own is usually received only on stated annual or semi-annual dates; frequently the terms of the receivable state that interest is not due until the maturity date of the note or mortgage. Since interest accrues with the passage of time, an adjusting entry is prepared at the end of the accounting period to record interest earned but not yet received in cash.

To illustrate, assume that a company received from a customer on November 1, 1964, a five-month $5,000 note receivable, with 6% interest payable at the maturity of the note. Since no interest has been paid as of December 31, the unrecorded interest receivable and interest income are recorded as follows:

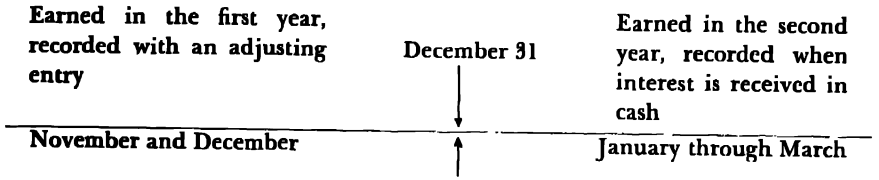
Dec.	31	Interest Receivable	$50	
		Interest Income		$50
		To accrue interest from November 1 at 6% on a $5,000 note receivable.		

Interest Receivable is shown as a current asset in the balance sheet, and Interest Income appears in the income statement. When the

interest is received during the next accounting period, the Interest Receivable account is credited for $50, and Interest Income is credited for the remaining $75.

Apr.	1	Cash	$125	
		Interest Receivable		$50
		Interest Income		75
		To record receipt of interest on a $5,000 note for five months @ 6%.		

The recognition of the total $125 of interest, earned partially in each of the two years, may be illustrated as follows:



Rent receivable

Rental revenue also accrues on a time basis and must be adjusted to the date of the financial statements. If the owner of a building has earned but not received two months' rent totaling $240 as of December 31, the following adjustment is necessary:

Dec.	31	Rent Receivable	$240	
		Rental Revenue		$240
		To record earned but unpaid rental incomes.		

Rent Receivable is a current asset and is credited when rent is received in cash.

Prepaid expenses

Assets, services, or facilities purchased for consumption during an accounting period are frequently not fully consumed. The remaining portion represents a *prepaid expense*, or an expense paid in the current period which applies to the next accounting period. When payment was made, the asset, service, or facility may have been debited to (1) an expense account, or (2) an asset account, depending upon the policy of the company. An adjusting entry is necessary

in either case, however, in order to insure that the consumed and unconsumed portions of the asset, service, or facility are correctly reflected in the accounts.

Prepaid expenses initially recorded as assets

The company's accounting routine may be so established that office supplies, premiums on insurance policies, rent, and similar assets or services are debited to asset accounts when purchased. Adjusting entries are made at the end of each accounting period transferring from the asset account to an expense account the consumed or expired portion of the asset.

Assume, for example, that office supplies totaling $380 were purchased during the period and debited to Office Supplies On Hand when acquired. At the end of the period a physical count determines that $70 of the supplies are actually on hand. The consumption of $310 of the supplies ($380 purchased less $70 remaining) is recorded by transferring this amount from the asset account to an expense account, as follows:

Dec.	31	Office Supplies Expense	$310	
		Office Supplies on Hand		$310
		To record supplies consumed during the year.		

The ledger accounts appear as follows after this entry is posted:

Office Supplies on Hand

Balance in the unadjusted trial balance	$380	Dec. 31 Adjustment	$310

Office Supplies Expense

Dec. 31 Adjustment	$310		

To illustrate further, suppose $240 is paid on January 1 for a three-year insurance policy. If the $240 premium is debited to prepaid insurance, an adjusting entry at the end of the year is necessary

to transfer the one-year expired portion of the premium to an expense account. Since insurance expires with the passage of time, one-third of the three-year policy has expired, and thus one-third of the $240 premium is transferred from Prepaid Insurance to Insurance expense.

Dec.	31	Insurance Expense	$80	
		Prepaid Insurance		$80
		To record one year's expense on a three-year insurance policy which cost $240.		

The ledger accounts after the adjusting entry is posted appear as follows:

Prepaid Insurance

Balance in the unadjusted trial balance	$240	Dec. 31 Adjustment	$ 80

Insurance Expense

Dec. 31 Adjustment	$ 80		

The $160 balance remaining in the Prepaid Insurance account is a prepaid expense applicable to future accounting periods and appears as a current asset on the balance sheet. The $80 of insurance expense appears on the income statement.

Prepaid expenses initially recorded as expenses

The company's accounting routine may be such that office supplies, premiums on insurance policies, and similar items are debited to expense accounts when paid. While this policy is in many cases less desirable than an original debit to an asset account, it is nevertheless used in many cases. When the debit is originally made to an expense account, an adjustment is necessary at the end of the accounting period to transfer from the expense account any unconsumed portion which will apply to future periods.

To illustrate, suppose the $380 of office supplies discussed above are debited to Office Supplies Expense when bought, and $70 of

these supplies are still unconsumed at the end of the year. The adjusting entry transfers the $70 of unconsumed supplies to an asset account.

Dec.	31	Office Supplies on Hand	$70	
		Office Supplies Expense		$70
		To record the unconsumed supplies on December 31.		

The ledger accounts after posting are as follows:

Office Supplies on Hand

Dec. 31 Adjustment	$ 70		

Office Supplies Expense

Balance from the unadjusted trial balance	$380	Dec. 31 Adjustment	$ 70

To illustrate further, suppose that the three-year insurance premium of $240 previously discussed is debited to Insurance Expense when paid. At the end of the year, the unexpired portion of $160, representing the insurance coverage for the two following years, must be transferred from the expense account to Prepaid Insurance, as follows:

Dec.	31	Prepaid Insurance	$160	
		Insurance Expense		$160
		To record the two-year unexpired portion of a three-year insurance policy which cost $240.		

Comparison of the two methods

The net results of the two accounting procedures, one initially debiting such items as office supplies and insurance to asset accounts, and the other debiting the same items to expense accounts, are

	If Originally Debited to Asset			If Originally Debited to Expense		
Office Supplies						
When purchased:	Office Supplies on Hand	$380		Office Supplies Expense	$380	
	Cash		$380	Cash		$380
	Purchased office supplies.			Purchased office supplies.		
December 31 adjustment:	Office Supplies Expense	$310		Office Supplies on Hand	$ 70	
	Office Supplies on Hand		$310	Office Supplies Expense		$ 70
	Recorded unconsumed supplies.			Recorded unconsumed supplies.		
Final result:	Prepaid asset balance $ 70			Prepaid asset balance $ 70		
	Expense balance 310			Expense balance 310		
Insurance						
When purchased:	Prepaid Insurance	$240		Insurance Expense	$240	
	Cash		$240	Cash		$240
	Purchased 3-year policy.			Purchased 3-year policy.		
December 31 adjustment:	Insurance Expense	$ 80		Prepaid Insurance	$160	
	Prepaid Insurance		$ 80	Insurance Expense		$160
	Recorded expired portion of premium.			Recorded expired portion of premium.		
Final result:	Prepaid asset balance $160			Prepaid asset balance $160		
	Expense balance 80			Expense balance 80		

identical after the adjusting entries have been made. In each case, the expense and the prepaid asset accounts contain the correct amounts for financial statement presentation. The original entry, the adjusting entry, and the resulting balances are presented above for comparative purposes. Note that the final prepaid asset and expense account balances are the same, regardless of the method used.

Unearned revenues

Revenue from the sale of merchandise or services is sometimes received in advance. Such revenues are not earned until the customer receives the goods or services, and it is frequently impossible or inexpedient to determine at the time of the transaction whether or not the revenue will be earned by the end of the accounting period. Consequently, revenues collected in advance may be credited to either a revenue account or a liability account, and an adjusting entry is made at the end of the period. After the adjusting entry is made, the revenue actually earned is reflected in a revenue account and the unearned revenue is reflected in an unearned revenue account.

Unearned revenues initially recorded as liabilities

The company's accounting routine may be so established that revenues which have not been earned when received are credited to a liability account: Rental revenues received in advance are credited to unearned rental revenue; interest revenues collected in advance are credited to unearned interest revenue; and magazine or book subscriptions received in advance by a publisher are credited to unearned subscription revenue. These unearned revenue accounts have credit balances and represent current liabilities, since the goods or services have not been rendered to the customer. At the end of each accounting period any revenue which has been earned must be transferred out of this liability account to a revenue account.

To illustrate, assume that on November 1 a landlord receives from a tenant $1,200 for a full year's rent in advance. The following entry is made when the rent is received:

Nov.	1	Cash	$1,200	
		Unearned Rental Revenue		$1,200
		Received a year's rent in advance.		

When financial statements are prepared on December 31, the two months' earned rent is transferred from the Unearned Rental Revenue account to the Rental Revenue account:

Dec.	31	Unearned Rental Revenue	$200	
		Rental Revenue		$200
		To record two months' rent as earned.		

The remaining ten months' unearned rent is left in the Unearned Rental Revenue account and appears as a current liability on the balance sheet.

Unearned revenues initially recorded as revenue

The company's accounting routine may be such that all revenues, whether earned or unearned at the time of receipt, are credited to revenue accounts. Adjustments are then made to transfer any unearned revenue to a liability account prior to the preparation of financial statements. The receipt of a year's rent in advance on November 1 would thus be recorded as follows:

Nov.	1	Cash	$1,200	
		Rental Revenue		$1,200
		Received one year's rent.		

When financial statements are prepared on December 31, the ten months' unearned rent is transferred from the Revenue Account to a liability account.

Dec.	31	Rental Revenue	$1,000	
		Unearned Rental Revenue		$1,000
		To record as a liability ten months' unearned rent.		

The final results of the two methods, one recording revenues in an Unearned Revenue Account and the other recording revenues in a Revenue Earned account, are identical after the adjusting entry is recorded. In both cases two months' rent of $200 is considered earned, and ten months' rent of $1,000 is unearned.

Depreciation adjustments

An asset used in business operations with a life extending into future accounting periods is recorded as a fixed asset when bought, and

its cost is apportioned to those accounting periods during which the asset has revenue-producing ability. The periodic expense resulting from the cost apportionment of fixed assets is called *depreciation expense* and is recorded in an adjusting entry at the end of each accounting period.

Fixed assets represent in many cases the major part of a company's assets. Since many years may pass before an asset is fully depreciated, its original cost is retained in the fixed asset account. A special account is established to record that portion of the original cost which has been depreciated; this account is a contra account to the asset and is called *accumulated depreciation*. The accumulated depreciation account, as the name implies, has a credit balance and accumulates over the life of the asset that portion of the asset's cost which has been absorbed as depreciation expense.

In previous chapters the apportionment of the cost of fixed assets over their productive life was discussed briefly. At that point entries were illustrated wherein the asset account was credited directly for the expired portion of its cost. This method, however, was used only to emphasize the process of allocating the cost of a fixed asset over the periods of its productive life. The need for information relative to the asset's original cost and the portion of that cost which has been consumed as depreciation expense necessitates a separate account for the accumulated depreciation. Presentation in the financial statements of both the asset's original cost and the total accumulated depreciation to date on the asset provides a relative measure of the asset's age, remaining productivity, and unconsumed cost.

To illustrate the depreciation adjustment, assume that a company purchases office equipment at a cost of $10,000. The expected annual depreciation expense of $980 is recorded as follows:

Dec.	31	Depreciation Expense—Office Equipment ..	$980	
		Accumulated Depreciation—Office Equipment		$980
		To record annual depreciation on office equipment.		

The Depreciation Expense account appears in the income statement, and the Accumulated Depreciation account appears in the balance sheet as a subtraction from the cost of the asset. The balance sheet presentation of office equipment at the end of its first year of useful life and after the first depreciation adjustment is:

ASSETS

Current assets:		
. . . . .		
. . . . .		
Fixed assets:		
Office equipment—at original cost	$10,000	
Less accumulated depreciation	980	$9,020

The $9,020 net undepreciated cost of the asset is its *book value*. Book value may be defined as the original cost less accumulated depreciation. An additional $980 depreciation expense is recorded at the end of each accounting period. At the end of the fourth year of the asset's life, for example, the ledger accounts for the office equipment and its related accumulated depreciation appear as follows:

Office Equipment

1963			
Jan. 1	$10,000		

Accumulated Depreciation—Office Equipment

		1963	
		Dec. 31	$980
		1964	
		Dec. 31	980
		1965	
		Dec. 31	980
		1966	
		Dec. 31	980

The balance sheet would reflect these accounts as follows:

Office equipment—at cost	$10,000	
Less accumulated depreciation	3,920	$6,080

There should be a clear understanding at this point that depreciation is a periodic allocation of the original cost of an asset. Thus the balance sheet amounts, as shown above, indicate only that the asset has an original cost of $10,000, that $3,920 of this cost has been recorded as depreciation expense, and that $6,080 is to be carried forward and recorded as an expense of future periods. The balance sheet amounts do not indicate the current market value of the asset or the amount which it would bring on the market if sold.

Computing periodic depreciation expense

Periodic depreciation expense is computed by dividing the original cost of an asset less any estimated salvage value by the number of accounting periods during which it is expected to be productive. This procedure is known as *straight-line* depreciation, and the computation may be illustrated as follows:

$$\frac{\text{Cost} - \text{Estimated salvage value}}{\text{Estimated life}} = \text{Periodic depreciation expense.}$$

The annual depreciation expense for office equipment costing $10,000, with an expected salvage value of $200 and a ten-year estimated life is $\frac{\$10{,}000 - \$200}{10} = \$980$ per year.

The $980 annual depreciation expense will result, over a ten-year period, in a total expense of $9,800. The $200 estimated salvage value remains as the difference between the asset's cost and the accumulated depreciation. The balance sheet at the end of the tenth year reflects the office equipment as follows:

Office equipment—at cost	$10,000	
Less accumulated depreciation	9,800	$200

If the asset remains in use beyond the ten-year estimated life, no further depreciation expense is recorded, and the $200 book value of the asset remains in the accounts until the asset is sold or traded. If more or less than $200 is received at that time, a gain or loss on the sale is recorded for the difference.

Assets not subject to depreciation

Depreciation, by definition, is the periodic amortization of the cost of an asset over those accounting periods in which the asset is useful and has utility in the revenue-producing activities of the company. If an asset has no determinable life, it is not normally subject to depreciation. Land and perpetual franchises, for example, have unlimited lives, and their cost is therefore not normally subject to periodic depreciation.

Loss on uncollectible accounts

When a company sells goods or services on account, there is the perpetual risk of uncollectible accounts. In most cases, some portion

of the company's credit sales will eventually prove to be uncollectible. The loss resulting from uncollectible accounts and the credit sales which produced the bad accounts must be recorded in the same accounting period if revenues and expenses are to be correctly matched.

A complication arises in matching the bad debts expense with the revenue which created the receivables, because (1) the amount must be estimated and (2) the exact customers whose accounts are uncollectible are not known on the balance sheet date. If a company has accounts receivable owed by several hundred customers, for example, there is a strong likelihood that one or more of the individual receivables will not be collected, and yet there is, of course, no certain knowledge concerning which customer, if any, will not pay.

When the bad debt expense is recorded, a credit is made to an account entitled *allowance for uncollectible accounts*. This account, in effect, "holds" the amount provided for bad accounts until specific receivables are known to be uncollectible.

To illustrate, suppose that a company has found from past experience that bad debts normally are 1% of credit sales. If credit sales for the year are $120,000, the estimated loss on uncollectible accounts is $1,200; that amount is recorded at the end of the period by means of an adjusting entry as follows:

Dec.	31	Bad Debt Expense	$1,200	
		Allowance for Uncollectible Accounts		$1,200
		To record estimated loss due to uncollectible accounts.		

The bad debt expense appears on the income statement; the Allowance for Uncollectible Accounts, which has a credit balance, is subtracted on the balance sheet from Accounts Receivable. If the Accounts Receivable on December 31 are $15,000 the balance sheet will reflect the company's receivables as follows:

ASSETS

Current assets:		
.....		
.....		
Accounts receivable	$15,000	
Less Allowance for uncollectible accounts	1,200	$13,800

The $13,800 reflects the net collectible receivables which the company owns. If, during the following year, specific accounts are determined to be uncollectible, they are written off the books, using the Allowance for Uncollectible Accounts to absorb the write-off.

Mar.	14	Allowance for Uncollectible Accounts .	$1,150	
		Accounts Receivable		$1,150
		To write off the accounts of Samuel Smith ($700) and William Jones ($450) as uncollectible.		

Note that use of the Allowance for Uncollectible Accounts makes it possible to match expenses with revenues and at the same time permits the write-off of bad accounts at a later date when they are known to be uncollectible.

The receivables written off will rarely be the exact amount of the Allowance for Uncollectible Accounts. Any remaining balance or shortage in the Allowance for Uncollectible Accounts is considered when the allowance is computed for the next accounting period. This procedure is discussed in a subsequent chapter.

Questions

4-1. What is meant by the statement that "adjusting entries at the end of the accounting period are a planned part of the accounting routine"?

4-2. Distinguish between an expense which is accrued and an expense which is prepaid at the end of the accounting period. Give an example of each.

4-3. Distinguish between a revenue which is accrued and one which is unearned, and give an example of each.

4-4. State whether each of the following is prepaid or accrued and whether it is an asset or a liability:

(a) Office supplies on hand.
(b) Interest on a note receivable paid in advance.
(c) Premiums received by an insurance company for policies extending into the next year.
(d) Property taxes for the current period not due until the next accounting period.
(e) Subscriptions received by a publishing company extending into future accounting periods.

(f) Insurance premiums paid on policies extending into future accounting periods.
(g) Rent for the current period not due until the next accounting period.
(h) Salaries earned but not yet paid.

4-5. An apartment house owner establishes the following policies in his accounting routine:

(a) All office supplies are recorded in the Office Supplies on Hand account when purchased.
(b) All rentals received are credited to Rental Revenues.
(c) Salary expenses are recorded during the period as salaries are paid.
(d) Insurance premiums are debited to Insurance Expense.

Name the accounts to be debited and credited at the end of the period to adjust the accounts for statement preparation.

4-6. On January 1, 1964, William Toole purchased for $300 an insurance policy extending to January 1, 1966. He contends that the full $300 is an immediate expense, stating that his cash is down by that amount so he certainly must have incurred an expense. How would you answer him?

4-7. A company prepares adjusting entries at the end of each month. On June 1 the company received a $5,000 note receivable, bearing interest at 6%, due on August 31. Prepare the adjusting entry on June 30, July 31, and for receipt of the principal and interest on August 31.

4-8. Define depreciation, and describe how periodic depreciation is computed.

4-9. Why is the accumulated depreciation account used instead of recording depreciation as a direct credit to the asset account? Describe how the asset and the accumulated depreciation accounts appear in the balance sheet.

4-10. The Lorry Company purchased office equipment which cost $10,000 on January 1. The asset is estimated to have a six-year life and a salvage value of $400. Prepare the entry to record the annual depreciation expense on December 31.

4-11. What is an allowance for uncollectible accounts? State why it is needed and how it appears on the balance sheet?

4-12. (a) A company estimates that one-half of 1% of its credit sales will never be collected. During the year its credit sales were $105,000. What entry is necessary at the end of the year to record the bad debts expense?

(b) If Harry Short's account of $70 is determined to be uncollectible, what entry is made to write off the bad account?

4-13. A company has established the following policies relative to recording operating transactions during the accounting period. State what adjustment might be necessary for each at the end of the accounting period.

(a) Salaries are recorded as expenses when paid.
(b) Office supplies are recorded as assets when bought.
(c) Rent is recorded as expense when paid.
(d) Payment of insurance premiums is debited as prepaid insurance.
(e) Rentals received in advance from tenants are recorded as unearned when received.
(f) Interest on notes payable is recorded as an expense when paid:
  (1) When interest is deducted in advance by the lender.
  (2) When interest is payable with the principal of the note.

Exercises

4-14. The following data relate to the accounts of the Prather company:

(a) The Prepaid Insurance account has a $750 balance—$250 of this amount has expired.
(b) Unpaid salaries at the end of the year are $540.
(c) The Interest Expense account has a $120 balance—$40 of this amount is prepaid and applies to the next year.
(d) The Office Supplies on Hand account has a $620 balance. The actual supplies on hand at the year's end total $240.
(e) The Prepaid Rent account has a balance of $1,200, which was a full year's rent paid in advance. Of this amount $300 is prepaid and applies to the next year.

REQUIRED

Journalize adjusting entries necessary at the end of the company's year on December 31.

4-15. I. J. S. Reed rented a building to a tenant on August 1, receiving $3,600 for the next twelve months' rent at that time. Record the receipt of the rental on August 1 and the adjustment on December 31 if the original receipt had been credited (a) to Unearned Rental Revenue and (b) to Rental Revenue.

2. On March 1 Harold Lumpart paid $480 for a two-year insurance policy. Record the payment of the $480 premium and the adjusting entry necessary on December 31 if the original payment had been recorded as (a) Prepaid Insurance and (b) Insurance Expense.

4-16. The following data relate to the accounts of the Atex Company, whose adjusting entries are prepared annually on December 31.

(a) The company has a five-day week, with a weekly payroll of $2,000, paid on Friday and recorded as expense when paid. December 31 falls on Tuesday.

(b) The Office Supplies Expense account has a balance of $730 before adjustment. A count reveals that there are $180 of supplies on hand on December 31.

(c) The company owns a $5,000 note receivable, dated June 30 of the current year. The note bears interest at 6%. Interest is recorded by the company during the year only when received.

(d) The Prepaid Rent account has a balance of $2,400, representing a full year's rent paid in advance for the year March 1 to February 28.

(e) The company subleased on July 1 a part of its building, receiving a year's rent of $950 in advance at that time. This was credited in full to Unearned Rent Income.

(f) The Interest Income account has a credit balance of $600, representing the interest paid in advance by a customer on his 6%, one-year, $10,000 note. The note is dated April 30 of the current year.

(g) The Unexpired Insurance account has a balance of $360, which is a three-year policy paid on January 1 of the current year.

REQUIRED

Prepare the necessary adjusting entries.

4-17. The following are selected accounts from the trial balance of the Mono Corporation's books, whose accounts are adjusted and closed annually on December 31:

	Dr.	Cr.
Unearned subscription revenue		$ 7,800
Allowance for uncollectible accounts		150
Sales fixtures	$12,000	
Accounts receivable	18,000	
Sales		90,000
Office supplies expense	270	

REQUIRED

Prepare year-end adjustments using the following data:

(a) One per cent of the sales will probably prove to be uncollectible.
(b) Subscriptions were received during the year as follows:

One-year subscriptions beginning July 1	$1,800
Two-year subscriptions beginning October 1	2,100
Three-year subscriptions beginning April 1	3,600
	$7,800

(c) The sales fixtures were purchased on January 1 of the current year. They are estimated to have a $1,000 salvage value and a ten-year life.
(d) There are $60 of office supplies on hand at the end of the year.
(e) There were $860 of unpaid salaries at the year's end. Salary expenses are recorded during the year only when paid.

4-18. The Enfield Company purchased office equipment costing $7,000 on April 1, 1964, and office equipment costing $3,000 on November 1, 1964. Each machine is estimated to have a $100 salvage value and a five-year life. The company records depreciation expense at the end of each year on December 31.

REQUIRED

1. Prepare journal entries for the purchase of the equipment and the depreciation expense as of December 31, 1964, and December 31, 1965.
2. Prepare the fixed asset section of the company's balance sheet as of December 31, 1965.

4-19. Past experience of the Ellison Company indicates that approximately 1 per cent of its sales will result in uncollectible accounts. Its sales during 1964 were $95,000 and during 1965 were $120,000.

REQUIRED

1. Record the adjusting entry on December 31, 1964, for estimated uncollectible accounts.
2. Record the entry on June 16, 1965, to write off the $940 account of Larry Waters.
3. Record the adjusting entry on December 31, 1965, for estimated uncollectible accounts.
4. If the company has uncollected receivables of $17,000 on De-

cember 31, 1965, indicate how the receivables and related allowance would appear on the balance sheet prepared as of that date.

4-20. Complete the requirements as given for each of the following unrelated transactions:

(a) Salaries total $4,000 per week for a five-day week, recorded as an expense each Friday when payment is made. Prepare the adjusting entry if the last day of the accounting period falls on Tuesday; also prepare the entry for payment of the week's wages on the following Friday.

(b) A $5,000 note receivable from a customer was received on November 1. The note is a six-months, 6% note due on April 30 of the following year. If the company records interest income during the year only when received, prepare an adjusting entry for interest accrued on December 31, the end of the company's fiscal year; also prepare the entry for receipt of the principal and interest on April 1.

(c) A year's rent of $840 was paid to the owners of a building by the tenant on March 31. The rent was paid in advance, extending to March 31 of the following year.

(1) Prepare the entry for the receipt of the rent by the owner if he records all rents as revenue when received; prepare the adjusting entry if the company's fiscal year ends on December 31.

(2) Record the receipt of the rent from the tenant if rent is recorded as prepaid when originally received; prepare an adjusting entry if the fiscal year ends on December 31.

Problems

4-21. Presented below are the transactions which the Barrett Corporation completed during the year and data for adjustments at the end of the period.

(a) Issued capital stock for $8,000 cash.
(b) Paid a year's rent of $1,200 in advance. The company records rent paid in advance as prepaid rent.
(c) Purchased office equipment for $4,000.
(d) Billed fees to clients, $13,000.
(e) Bought office supplies on account, $800. The company records office supplies as assets when bought.
(f) Collected $10,000 of accounts receivable.

(g) Paid salaries of $9,000. Salary expenses are recorded when paid.
(h) Paid a $1,000 insurance premium. Insurance expense was debited.
(i) Paid $700 of the accounts payable.

Adjustment data as of December 31:

One-third of the rent is prepaid.
There are $100 of the office supplies on hand.
Unpaid salaries which have not been recorded total $250.
Six hundred dollars of the insurance is prepaid.
The office equipment has a five-year life and no scrap value. The equipment was purchased at the beginning of the current year.
Estimated uncollectible accounts are 1 per cent of fees billed during the year.

REQUIRED

1. Establish ledger accounts for Cash, Accounts Receivable, Allowance for Uncollectible Accounts, Prepaid Insurance, Prepaid Rent, Office Supplies on Hand, Office Equipment, Accumulated Depreciation on Office Equipment, Accounts Payable, Accrued Salaries, Capital Stock, Fee Income, Rent Expense, Office Supplies Expense, Salary Expense, Insurance Expense, Depreciation Expense, and Bad Debt Expense.
2. Journalize the transactions, including adjusting entries.
3. Post to the ledger accounts.
4. Prepare a trial balance.

4-22. Listed below are account balances from the Wilton Company's ledger before and after adjusting entries are journalized and posted.

	Account	Balance before adjustment	Balance after adjustment
(1)	Estimated uncollectible accounts	$ 100 (credit)	$ 800 (credit)
(2)	Office supplies on hand	375	100
(3)	Accrued salaries payable	–0–	420 (credit)
(4)	Rental revenue	3,700 (credit)	3,600 (credit)
(5)	Prepaid insurance	1,200	800
(6)	Interest expense	450	400
(7)	Allowance for depreciation—buildings	7,800 (credit)	8,400 (credit)
(8)	Prepaid taxes	320	180
(9)	Interest income	200 (credit)	250 (credit)
(10)	Advertising supplies on hand	335	130

REQUIRED

From these amounts determine what the adjusting entries were and prepare them in journal form. Each part of the problem, numbered (1) through (10), requires an adjusting entry independent of other parts of the problem.

4-23. Presented below is the trial balance of the Comstock Company, which was taken from its ledger prior to preparing adjusting entries.

Cash	$ 18,525	
Accounts receivable	42,000	
Allowance for uncollectible accounts		$ 500
Inventory	105,500	
Office supplies on hand	2,000	
Prepaid insurance	10,855	
Store furniture	68,000	
Allowance for depreciation—store furniture		4,200
Notes payable		4,000
Accounts payable		25,000
Rent collected in advance		3,500
Dividends payable to stockholders		1,500
Bonds payable (due 1980)		50,000
Capital stock		100,000
Retained earnings		40,500
Sales		340,000
Cost of merchandise sold	290,000	
Salesmen's salaries	18,000	
Advertising	3,700	
Miscellaneous selling expenses	700	
Taxes	420	
Office salaries	3,000	
Rent expense	4,500	
Interest expense	2,000	
	$569,200	$569,200

(a) Store furniture has a ten-year life and no scrap value. At the beginning of the year, the balance in the Store Furniture account was $62,000. The $6,000 additional item was acquired July 1. Compute depreciation to the nearest month on each item.

(b) One account receivable totaling $450 is uncollectible. The account is to be written off at this time. The experience of the corporation indicates 1 per cent of sales will be uncollectible.

(c) Six hundred dollars of advertising supplies, originally debited to advertising expense, are on hand at the end of the period.

(d) Two thousand dollars of the prepaid insurance has expired.
(e) The bonds payable accrue interest at 6 per cent, payable each July 1. No interest expense has been recorded since the last payment on July 1 of the current year.
(f) The rent collected in advance represents a single payment of $3,500 on July 1 for a year's rent in advance by a tenant who subleased part of the company's building.
(g) Three hundred dollars of the interest expense is prepaid.
(h) Office salaries of $1,000 are unpaid and have not been recorded.

REQUIRED

1. Enter the balances of the unadjusted trial balance in ledger accounts.
2. Using the adjustment data below the trial balance, journalize adjusting entries needed at the end of the company's fiscal year on December 31.
3. Post the adjusting entries to the ledger accounts, establishing new accounts when needed.
4. Prepare a balance sheet and an income statement in good form.

4-24. Complete the requirements as stated for each of the following independent cases:

(a) Ten thousand dollars was borrowed from the bank on November 1, in return for a 6%, six-months note payable. Interest is payable when the principal is due.

Prepare the entry on November 1 when the note was issued, on December 31 to accrue interest, and when the note and interest were paid on May 1.

(b) A customer gave a $5,000 note to the company on April 1 in payment of his account. The note is a 4%, one-year note with interest to be paid when the principal is due.

Prepare the entry on April 1 for receipt of the note, on December 31 to accrue interest, and when the note and interest were paid on the maturity date.

(c) Salaries are $8,000 per week for a five-day week, paid each Friday. Salary expenses are recorded during the period when salaries are paid. December 31 falls on Wednesday.

Prepare the entry for the accrual on December 31 and the payment of the week's wages on the first Friday of the next period.

(d) A year's rent of $6,000 was received in advance from a tenant on August 1.

(1) Prepare the entry for receipt of the rent if it is recorded as

unearned rental revenue; prepare the adjusting entry on December 31.

(2) Prepare the entry for receipt of the rent if it is recorded as rental revenue when received; prepare the adjusting entry on December 31.

(e) The prepaid insurance account has a balance of $480, made up of three premiums paid as follows:

(1) A three-year policy purchased on July 1 for $240.
(2) A one-year policy purchased on November 1 for $120.
(3) A one-year policy purchased on December 1 for $120.

Prepare the entry for the payment of the premiums and the adjusting entry on December 31 if the original entry was a debit to prepaid insurance when the premiums were paid.

4-25. The Talman Appliance Repair Company has the following trial balance at the beginning of their fiscal year on January 1.

Cash	$ 3,000	
Notes receivable	5,000	
Accounts receivable	12,000	
Allowance for uncollectible accounts		$ 400
Accrued interest receivable	200	
Prepaid insurance	750	
Office supplies on hand	325	
Office furniture	3,600	
Accumulated depreciation—office furniture		1,300
Buildings	26,000	
Accumulated depreciation—buildings		6,200
Accounts payable		1,900
Mortgages payable (due 1980)		20,000
Accrued interest payable		1,000
Accrued salaries payable		540
Capital stock		15,000
Retained earnings		4,535
	$50,875	$50,875

The following transactions were completed during the period:

Jan. 5 Paid salaries for the first week of the current period, $2,720. This includes the Accrued Salaries Payable on January 1.
8 Collected $50,000 cash from repair services rendered during the period.
13 Sent bills for $20,000 to clients for repair services rendered during the period.
14 Wrote off accounts receivable of $370 as uncollectible.

15 Collected $21,000 of accounts receivable.
16 Paid salaries of $60,000.
27 Collected the $5,000 note receivable, plus $240 interest. The $200 of accrued interest receivable on January 1 applied to this note.
28 Paid one year's interest of $1,200 on the mortgage. The accrued interest payable in the January trial balance applies to the mortgage payable.
29 Bought office supplies of $400.
30 Paid an insurance premium of $120.
31 Paid $3,000 of dividends to stockholders.

Adjustment data on January 31:

Two per cent of credit sales are estimated to be uncollectible.
Depreciation on buildings is based on a $2,000 scrap value and a twenty-year life.
Depreciation on office furniture is based on no scrap value and a ten-year life.
Salaries of $250 have accrued and are unrecorded.
$370 of the insurance has expired.
$140 of office supplies are on hand.

REQUIRED

1. Establish ledger accounts and enter the January 1 balances. In addition to accounts in the trial balance, accounts will be needed for Repairs Revenue, Interest Income, Salary Expense, Interest Expense, Bad Debts Expense, Depreciation on Building, Depreciation on Office Furniture, Insurance Expense, and Office Supplies Expense.
2. Journalize and post the transactions completed during the period and the adjusting entries at the end of the period.
3. Prepare a trial balance after adjusting entries are posted.
4. Prepare an income statement, statement of retained earnings, and a balance sheet.

4-26. Listed below are transactions of the Smith Corporation covering a one-year period.

Jan. 2 J. J. Smith invested $1,000 cash to begin the business, issuing capital stock to himself.
2 Smith signed a $1,000, two-year, 6% note payable at the bank. The bank deducted the two years' interest in advance, giving $880 cash for the $1,000 note payable. Debit prepaid interest for the $120.
2 Smith paid a year's rent of $1500 in advance for a building in which to operate. Debit prepaid rent.

3 Smith purchased a three-year insurance policy, paying a premium of $360 for the policy. Debit prepaid insurance.

He made sales on account of $100,000 during the year. He collected $60,000 of the receivables.

Mar. 1 Smith received a $30,000 note receivable from one customer in payment of an account. The note is a two-year, 5% note receivable with interest due when the note is due.

Apr. 6 Smith paid $120 city taxes in advance for a year. The city's tax year begins and ends on April 30. Debit tax expense.

June 30 Smith borrowed another $2,000 from the bank, agreeing to pay interest at 6% per year. The interest is due and payable when the note is due in two years.

30 Smith bought a truck for cash, $3,000; estimated scrap value $200; expected life, four years.

30 Smith sub-leased half of his building, which he was renting to a sub-leasor, receiving two years' rental in advance, $2,000. Credit Unearned Rental Revenue.

He paid $40,000 salaries for the year, recording salary expense when salaries were paid. His payroll was $1,000 per week for a five-day week, payable each Friday. December 31 is on Wednesday.

Smith estimated that 5% of his accounts receivable would be uncollectible.

REQUIRED

1. Journalize the transactions.
2. Prepare all necessary adjusting entries at the end of the year on December 31. Review each transaction completed during the year to determine what adjusting entries are needed. Watch the dates of the transactions carefully when preparing the adjusting entries.

Cases

4-27. The Metro Lumber Company owns and operates a saw mill in Northwestern Oregon, and also owns timber rights on several large tracts in the vicinity of its saw mills. Repair parts for the company's equipment are expensive, but the company finds that carrying a

supply of repair parts is necessary to prevent delays in operations due to machinery breakdowns.

Some 250 different repair parts are on hand, costing from $5 to $20 each. These repair parts were debited to expense when acquired, and no adjusting entry has ever been made; consequently, no asset appears on the company's balance sheet for repair parts.

The repair parts are stored in a locked storage room, and a "parts requisition" form must be signed and approved by the mill superintendent before a part is removed and used. Approximately 150 parts are used each month and are purchased for replacement at approximate three-month intervals.

Recommend an accounting system that will be efficient and yet will provide correct data for the company's monthly financial statements. Consider in your answer how amounts are to be accumulated for accounting entries relative to repair parts.

4-28. The Ballstate Electronic Service Corporation began operations on June 30. L. P. Turner, who promoted and began the business, was well trained in technical TV and radio matters but knew very little about accounting and financial reports. Mrs. Turner kept all the company's records but had no previous accounting training. Consequently, she did nothing more than record all cash receipts and disbursements, keep a list of all receivables and payables, and maintain a record of all assets used in the company's operations.

At the end of the year, on December 31, Mrs. Turner prepared the financial statements shown below. These statements were to be used as a basis for requesting a bank loan.

BALLSTATE ELECTRONIC SERVICE CORPORATION
List of Assets Owned and Debts Owed
December 31, 1963

Assets owned	
Receivable from customers	$ 940
TV and radio repair equipment (at cost)	2,200
Truck (at cost)	3,000
	$6,140

Debts owed	
Overdraft at bank	$ 600
Note payable on truck	1,200
	$1,800

BALLSTATE ELECTRONIC SERVICE CORPORATION

Cash Received and Paid

December 31, 1963

Received		
From issue of capital stock to begin the company	$ 1,300	
From customers	17,400	$18,700
Paid		
Salaries	$12,000	
For repair parts	2,100	
For truck	3,000	
For repair equipment	2,200	19,300
Loss for the period		$ 600

Mr. Turner was concerned about the accuracy of these statements in reflecting a correct picture of the financial operations of the company. He is not sure from these statements whether the company is making a profit or a loss and what the current financial position is. He asks you to reconstruct the statements.

In discussion with Turner you ascertain that the truck and equipment have an approximate life of four years. The truck has an estimated salvage value of $200, but the equipment has no salvage value. There are $300 of repair parts on hand and $200 of unpaid salaries on December 31.

Is the company profitable? What is its current financial position? Would you recommend that Mrs. Turner change her method of accumulating data during the accounting period? State why or why not.

5

The accounting cycle: preparation of financial statements

The ledger accounts of those items which appear on the balance sheet are frequently called *real* accounts, since they represent assets owned, liabilities owed, and owners' equities as of the balance sheet date. Revenue and expense accounts, on the other hand, are frequently called *nominal* or *temporary* accounts, since they are created to accumulate revenue and expense data for a period of time, usually one year. Amounts accumulated for periods longer than one year have little significance in appraising operations, and therefore each year begins with a new accumulation. Since revenues and expenses are sub-accounts under retained earnings, the income statement accounts must be closed (1) to reduce their balances to zero in preparation for the next accounting period and (2) to transfer the net income or loss of the period to retained earnings. This process is primarily mechanical in nature and is called "closing the books."

The closing process

The closing process consists of journalizing and posting entries which transfer the balances of all income statement accounts to a summarization account, entitled the *Income Summary*. The balance of this account then contains the net income or loss for the period and is closed to the retained earnings account. The income summary account is used only as a clearing account at the end of each account-

ing period; no transactions other than closing entries are posted to it. The purpose of the account is to provide a mechanism for summarizing all revenues and expenses, thereby recording permanently in the books of account the final net income or loss for the period.

In the absence of special circumstances, a year is considered a normal accounting period, and the ledger accounts are "closed" only at the end of each fiscal year. Financial statements may be prepared monthly, quarterly, or as frequently as desired, but the process of transferring balances from revenue and expense accounts through the income summary to retained earnings is completed annually after the annual financial statements have been prepared.

To illustrate the closing process, assume that a company has the following adjusted trial balance (account balances after posting adjusting entries) on December 31, 1964, before closing entries are prepared:

LEDBETTER SUPPLY COMPANY
Adjusted Trial Balance
December 31, 1964

	D	
Cash	$ 900	
Accounts receivable	2,100	
Office equipment	9,400	
Accumulated depreciation—office equipment		$ 1,400
Accounts payable		800
Accrued salaries payable		200
Capital stock		6,000
Retained earnings		3,200
Revenue from services		5,400
Depreciation expense—office equipment	700	
Salaries expense	2,800	
Supplies expense	600	
Utilities expense	200	
Rent expense	300	
	$17,000	$17,000

The Revenue From Services account has a credit balance, and a $5,400 debit to that account will reduce its balance to zero; the offsetting credit is to the Income Summary account.

Dec.	31	Revenue from Services	$5,400	
		Income Summary		$5,400
		To close the revenue account.		

The ledger accounts after this entry is posted appear below. Note that the Revenue From Services account has a zero balance and the $5,400 has been transferred to the Income Summary account.

Income Summary

	(a)	5,400

Revenue from Services

(a)	5,400	5,400

All the expense accounts in the trial balance have debit balances; consequently, these accounts must be closed with a credit. Using compound entry form, the following closing entry is made to transfer the balances of all expense accounts to the Income Summary account.

Dec.	31	Income Summary	$4,600	
		Depreciation Expense		$ 700
		Salaries Expense		2,800
		Supplies Expense		600
		Utilities Expense		200
		Rent Expense		300
		To close the expense accounts.		

After this entry is posted, all expense accounts have zero balances, and the Income Summary has a balance equal to the net income for the period. The final step in the closing process is to transfer the balance of the Income Summary account to Retained Earnings. Since the revenues closed to the Income Summary total $5,400 and the expenses total $4,600, a debit to the Income Summary and a credit to Retained Earnings as the final entry transfers the $800 profit from the Income Summary to Retained Earnings.

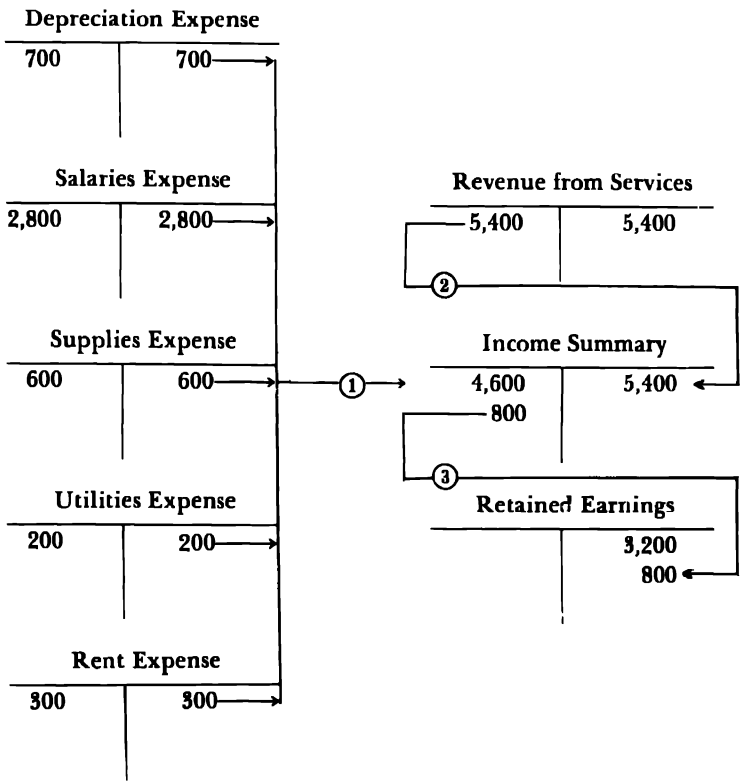
Dec.	31	Income Summary	$800	
		Retained Earnings		$800
		To close the balance of the income summary account.		

The closing process may be summarized in the following steps, which are illustrated in Exhibit 5–1.

1. Close all revenue accounts by debiting them for the amount of their balance and credit the Income Summary account.
2. Close all expense accounts by crediting them for the amount of their balance and debit the Income Summary account.

3. Close the Income Summary with a debit (if there is a net income for the period) or a credit (if there is a net loss for the period), with the offsetting debit or credit to Retained Earnings.

EXHIBIT 5–1



Ruling accounts

In order to facilitate the determination of account balances in succeeding periods, ledger accounts are ruled after the posting of closing entries, and any balances in the accounts are brought forward. The ruling process separates postings during the current period from those of the next period. If the accounts were not ruled periodically, the accumulated postings of many accounting periods would make it difficult to compute an account balance. There is no uniform ruling procedure, but the following steps are generally applicable:

(1) When an account contains only one posted amount, no ruling is necessary. The Land account shown below illustrates this situation.

(2) When an account contains only two equal entries, one a debit and the other a credit, a double ruled line is drawn immediately below the amounts, extending through all but the explanation columns, thus closing off this part of the account and segregating it from any postings in the ensuing period. The Office Supplies Expense account shown below is an illustration of this situation.

(3) When an account contains several offsetting debits and credits, the two sides of the account are added and the totals written below on the same line of the ledger. A double ruled line is then drawn beneath the totals in the manner described above. The Salary Expense account is an illustration of this situation.

(4) When an account with several entries has a balance remaining after final posting, the balance is entered on the offsetting side of the ledger, column totals are entered on both sides of the account, and a double ruled line is drawn below the totals. The balance is then entered below the ruled lines, thus carrying forward a single amount into the next accounting period. A check mark is entered in the reference column opposite the word "balance" to indicate that the amount is not the result of a posting. The Cash account shown below illustrates this situation.

Land

Date	Explanation	Ref.	Amount	Date	Explanation	Ref.	Amount
1963 Dec. 4		20	4,000.00				

Office Supplies Expense

Date	Explanation	Ref.	Amount	Date	Explanation	Ref.	Amount
1963 Dec. 14		22	820.00	1963 Dec. 31	Closing	25	820.00

Salary Expense

Date	Explanation	Ref.	Amount	Date	Explanation	Ref.	Amount
1963 Dec. 7		21	500.00	1963 Dec. 31	Closing	25	2,200.00
14		22	600.00				
21		22	550.00				
28		24	550.00				
			2,200.00				2,200.00

Cash

Date		Explanation	Ref.	Amount	Date		Explanation	Ref.	Amount
1963					1963				
Dec.	4		20	1,500.00	Dec.	5		20	300.00
	16		21	700.00		9		21	1,100.00
	23		23	1,400.00		30		25	650.00
						31	Balance	✓	1,550.00
				3,600.00					3,600.00
1964									
Jan.	1	Balance	✓	1,550.00					

The post-closing trial balance

A *post-closing trial balance* is usually prepared after all closing entries have been journalized and posted. This trial balance, known as a post-closing trial balance, verifies the equality of the debit and credit balances in the ledger accounts after all revenues and expenses have been closed, the net income transferred to retained earnings, and the accounts ruled.

The post-closing trial balance contains only balance sheet accounts, which are not closed. Such a trial balance prepared for the Ledbetter Supply Company, whose closing entries were previously illustrated, is shown below:

LEDBETTER SUPPLY COMPANY
Post-closing Trial Balance
December 31, 1964

	Debit	Credit
Cash	$ 900	
Accounts receivable	2,100	
Office equipment	9,400	
Accumulated deprecation—office equipment		$ 1,400
Accounts payable		800
Accrued salaries payable		200
Capital stock		6,000
Retained earnings		4,000
	$12,400	$12,400

Note that the Retained Earnings account in the post-closing trial balance reflects accumulated earnings of all prior periods, as well as

for the period just ended, and is the amount appearing in the balance sheet. Revenue and expense accounts have been closed and do not appear in the post-closing trial balance.

The preparation of a post-closing trial balance is sometimes accomplished by totaling debit and credit balances separately on an adding machine to insure that the ledger is in balance. A listing of account titles and their balances before addition, as illustrated, may not be necessary, since the post-closing trial balance serves only to insure the equality of the debits and credits at the beginning of the ensuing accounting period.

The accounting cycle

The *accounting cycle* is a recurring series of steps taken to accumulate data for the financial statements. These steps, in order of their sequence, are:

DURING THE YEAR

(1) *Journalizing:* The process of analyzing daily operating transactions and recording them in the journal.

(2) *Posting:* The process of entering amounts in the ledger accounts where the effects of operating transactions are accumulated.

END OF THE YEAR* ONLY

(3) *Adjusting the account balances:* The process of journalizing and posting entries which adjust the ledger account balances so that they reflect accurately all assets and equities as of the end of the period and all revenues and expenses applicable to the period.

(4) *Preparing financial statements:* The process of arranging and presenting for analysis the financial data accumulated in the above steps.

(5) *Closing the books:* The process of transferring the balances of all revenue and expense accounts, through the income summary account, to retained earnings, thus clearing the accounts for the ensuing period.

* Techniques for preparing monthly and quarterly statements are discussed in a subsequent section.

This series of steps is repeated each accounting period. Mechanical checks of accuracy, such as the trial balance, adjusted trial balance, and post-closing trial balance may be utilized at various points during the accounting cycle. As the company's transactions become more numerous or the number of ledger accounts grows, the need for mechanical accuracy checks increases.

The work sheet

The work sheet is an analytical device which accumulates data for the adjusting and closing entries and facilitates the preparation of the financial statements. A work sheet is not a part of the accounting records, but it is a useful tool in completing several of the steps in the accounting cycle.

The work sheet consists of a series of debit and credit columns which serve to (1) summarize the effects of the end-of-the-period adjustments and (2) classify account balances according to the financial statement in which they appear. The series of columns in the working papers is a convenient means of organizing data, though it may not be needed if there are only a few ledger accounts or periodic adjustments. In many cases the work sheet reduces the time required to prepare statements and permits more timely financial reporting.

Although the work sheet may take a number of different forms, the most commonly used work sheet has five pairs of debit-credit columns: (1) the trial balance, (2) the periodic adjustments, (3) the adjusted trial balance or trial balance after adjusting entries, (4) the income statement, and (5) the balance sheet. These columns appear in the work sheet illustrated in Exhibit 5–2, and the completion of the work sheet is discussed below.

Trial balance columns

The amounts in the trial balance columns have been taken directly from the general ledger, and no adjusting entries have been entered at this point.

Adjustments columns

The debit and credit adjustments columns contain all the periodic adjustments necessary to convert the account balances to the correct amounts for financial statement presentation. The trial balance of the Pillstone-Barton Company shown in the illustrative work sheet requires the following adjustments, which are lettered in the work sheet for identification:

EXHIBIT 5-2

THE PILLSTONE-BARTON COMPANY

Work Sheet

For the Year Ended December 31, 1964

	Trial Balance		Adjustments		Adjusted Trial Balance		Income Statement		Balance Sheet	
	Debit	Credit	Debit	Credit	Debit	Credit	Debit	Credit	Debit	Credit
Cash	300				300				300	
Accounts receivable	1,240				1,240				1,240	
Allowance for uncollectible accounts		40		(b) 100		140				140
Office supplies on hand	400			(a) 275	125				125	
Store equipment	4,700				4,700				4,700	
Accumulated depreciation—store equipment		940		(c) 470		1,410				1,410
Buildings	21,200				21,200				21,200	
Accumulated depreciation—buildings		6,200		(c) 800		7,000				7,000
Land	4,000				4,000				4,000	
Accounts payable		500				500				500
Mortgages payable		5,100				5,100				5,100
Capital stock		10,000				10,000				10,000
Retained earnings		3,700				3,700				3,700
Revenue from services		27,760				27,760		27,760		
Salaries expense	18,000		(d) 350		18,350		18,350			
Telephone and telegraph	2,900				2,900		2,900			
Interest expense	200				200		200			
Advertising	1,300				1,300		1,300			
	54,240	54,240								
Office supplies expense			(a) 275		275		275			
Bad debts expense			(b) 100		100		100			
Depreciation expense—store equipment			(c) 470		470		470			
Depreciation expense—buildings			(c) 800		800		800			
Salaries payable				(d) 350		350				350
			1,995	1,995	55,960	55,960	24,395	27,760	31,565	28,200
Net income							3,365			3,365
							27,760	27,760	31,565	31,565

(a) $275 of the office supplies were consumed during the year and are transferred from Office Supplies on Hand to Office Supplies Expense. Note that the Office Supplies Expense account does not appear in the original trial balance but is entered immediately below it.

(b) The Bad Debts Expense is estimated to be $100 for the year. Estimated Uncollectible Accounts is increased by this amount, and Bad Debts Expense is entered as an adjustment below the original trial balance.

(c) Depreciation Expense is $470 on store equipment and $800 on buildings. New accounts are also placed on the work sheet for these two expenses.

(d) Accrued salaries of $350 are recorded, debiting Salaries Expense and entering a new account for Salaries Payable.

The amount of each adjustment is entered in the appropriate adjustments debit or credit column on the same horizontal line as the account which it adjusts. The debits and credits must be equal for each adjusting entry. The adjustments columns are then totaled to insure the equality of the debit and credit adjustments.

Adjusted trial balance columns

The adjusted trial balance columns are the result of combining the original trial balance and the adjustments. The amounts for each account listed in the trial balance and for each new account entered below the trial balance are extended horizontally. Adjustment data are added or subtracted as the amounts are extended. For example, since the cash account has no adjustments, the original amount is extended from the trial balance columns to the adjusted trial balance columns. The Estimated Uncollectible Accounts, however, has a $40 credit in the original trial balance and a $100 credit in the adjustments column; consequently, the adjusted trial balance column is a $140 credit.

The amounts appearing in the adjusted trial balance columns are the amounts that will appear in the financial statements. The balances in the adjusted trial balance column are thus used in the preparation of financial statements after they have been extended to the income statement and balance sheet columns.

Income statement and balance sheet columns

Each amount in the adjusted trial balance columns is extended to either the income statement or the balance sheet columns. Care must

be exercised in seeing that each amount is extended correctly, that is, that a debit is not entered in a credit column, or vice versa.

After all figures in the adjusted trial balance columns have been extended, the four income statement and balance sheet columns are totaled. Neither the totals of the two income statement columns nor those of the balance sheet columns will be equal, the difference being the net income or loss for the period. The net income or loss is computed as the difference between the total debits and total credits in the income statement columns, and this amount is entered on the line below the preliminary totals in both the income statement and the balance sheet columns. If the work sheet has been correctly prepared, the amount of net profit or loss will bring both the income statement and the balance sheet columns into balance.

If the work sheet does not balance when the net income or loss is added to both the income statement and balance sheet columns, all addition and all extensions should be carefully reviewed. However, errors such as the extension of an income statement debit into the balance sheet debit column will not cause the work sheet to be out of balance and cannot be detected automatically.

Statements prepared from the annual work sheet

After the work sheet is completed, the income statement and balance sheet are prepared, using the amounts shown in their respective columns. Although the work sheet is useful in the preparation of the financial statements, it does not take the place of the formal statements. The income statement and balance sheet must be prepared in proper form for reporting purposes.

All the accounts and figures needed to prepare the income statement are available on the work sheet before the statement is prepared. Thus the work sheet provides a check on the accuracy of the preparation of the income statement. The income statement drawn from the work sheet in Exhibit 5–2 is shown on page 133.

The accounts and figures for the balance sheet are taken from the balance sheet columns of the work sheet, but the net income for the period must be added to Retained Earnings when the balance sheet is prepared. The balance sheet drawn from the work sheet in Exhibit 5–2 appears below. Note that the $7,065 balance of Retained Earnings in the balance sheet is the $3,700 balance in the work sheet plus the $3,365 net income for the period.

The statement of retained earnings reflects all transactions which have affected retained earnings during the period. This statement is

EXHIBIT 5–3

THE PILLSTONE-BARTON COMPANY
Income Statement
For the Year Ended December 31, 1964

Revenues from services		$27,760
Less operating expenses:		
Salaries expense	$18,350	
Telephone and telegraph	2,900	
Interest expense	200	
Advertising	1,300	
Office supplies expense	275	
Loss on uncollectible accounts	100	
Depreciation expense—store equipment	470	
Depreciation expense—buildings	800	
Total expenses		24,395
Net income		$ 3,365

EXHIBIT 5–4

THE PILLSTONE-BARTON COMPANY
Balance Sheet
December 31, 1964

ASSETS				EQUITIES			
Current assets:				*Current liabilities:*			
Cash		$ 300		Accounts payable	$ 500		
Accounts receivable	$ 1,240			Salaries payable	350		
Less Uncollectible accounts	140	1,100		Total current liabilities		$ 850	
Office supplies		125		*Long-term debt:*			
Total current assets			$ 1,525	Mortgages payable		5,100	
Fixed assets:				Total liabilities		$ 5,950	
Store equipment	$ 4,700			*Owners' equity:*			
Less Accumulated depreciation	1,410	$ 3,290		Capital stock	$10,000		
Buildings	$21,200			Retained earnings	7,065		
Less Accumulated depreciation	7,000	14,200		Total owners' equity		17,065	
Land		4,000					
Total fixed assets			21,490				
Total assets			$23,015	Total equities			$23,015

Exhibit 5–5

JOURNAL					
Date		Description	Post Ref	Debit	Credit
		Adjusting Entries			
1964					
Dec.	31	Office Supplies Expense		275	
		Office Supplies on Hand			275
		To record office supplies consumed during the year.			
	31	Loss on Uncollectible Accounts		100	
		Allowance for Uncollectible Accounts			100
		To record estimated bad debts expense for the year.			
	31	Depreciation Expense—Store Equipment		470	
		Accumulated Depreciation—Store Equipment			470
		To record depreciation expense for the year.			
	31	Depreciation Expense—Buildings		800	
		Accumulated Depreciation—Buildings			800
		To record depreciation expense for the year.			
	31	Salaries Expense		350	
		Salaries Payable			350
		To record salaries accrued but unpaid.			
		Closing Entries			
	31	Revenue from Services		27,760	
		Income Summary			27,760
		Closed the revenue account.			
	31	Income Summary		24,395	
		Salaries Expense			18,350
		Telephone and Telegraph			2,900
		Interest Expense			200
		Advertising			1,300
		Office Supplies Expense			275
		Loss on Uncollectible Accounts			100
		Depreciation Expense—Store Equipment			470
		Depreciation Expense—Buildings			800
		Closed the expense accounts.			
	31	Income Summary		3,365	
		Retained Earnings			3,365
		Closed the balance of the income summary account.			

usually prepared by analyzing the Retained Earnings account and is not normally prepared from the work sheet.

Recording adjusting and closing entries from the work sheet

Since all adjusting entries and all the final amounts appearing in the balance sheet and income statement appear on the work sheet, the adjusting and closing entries can be journalized from the data on the work sheet. The adjusting and closing journal entries taken from the Pillstone-Barton Company work sheet are shown in Exhibit 5–5, as they appear in the journal.

After the adjusting entries are posted, the ledger accounts contain the same amounts as appear on the financial statements. Entries are then prepared to close all revenue and expense accounts which appear in the income statement columns of the work sheet. Compound entries are commonly used in closing, with one entry to close all amounts in the debit income statement column of the work sheet, and one entry to close all amounts in the credit column.

Interim statements

Although revenue and expense accounts normally are closed only at the end of the accounting year, financial statements for management purposes or for creditors are prepared at more frequent intervals. Such statements are identical in form to annual statements, but are called *interim statements* because they are prepared during the fiscal year.

A balance sheet reflects only asset and equity amounts as of a given point of time, and an interim balance sheet serves the same purpose as one prepared at the end of the fiscal year. The income statement, however, contains revenue and expense data accumulated over a period of time, and the heading of the income statement must state the exact time period covered. Interim income statements are prepared monthly for management's use, and these monthly reports usually contain revenues and expenses both for the month and for the full portion of the accounting year that has elapsed. Thus a company which has an annual accounting period ending each December 31 would prepare an income statement at the end of July, for example, containing revenue and expense amounts for the month of July, as well as the period from January 1 to July 31. Such an income statement is presented in Exhibit 5–6.

Comparison of the monthly amounts with the year-to-date figures provides a basis for comparing and interpreting revenues and ex-

EXHIBIT 5–6

BROWN SPECIALTY SHOP
Income Statement

	For the month of July, 1964		January 1–July 31 Year-to-date	
Revenue from services		$15,000		$103,500
Less operating expenses				
Salaries	$9,000		$60,400	
Supplies	700		5,100	
Depreciation—office equipment	500		3,800	
Depreciation—building	1,000		7,000	
Telephone and telegraph	350		3,600	
Taxes	480		3,300	
Insurance	200		1,400	
Repairs and maintenance	420		1,350	
Total expenses		12,650		85,950
Net income		$ 2,350		$ 17,550

penses. In Exhibit 5–6 both the salaries expense and the repairs and maintenance expense for July are materially greater than the monthly average; consequently, the management personnel of the company are informed as to those areas which may need attention.

Preparing interim income statements

Income statements can be drawn directly from a work sheet; thus the preparation of a work sheet is the only step necessary to gather data for an interim income statement covering the year-to-date. This is one of the most valuable aspects of the work sheet; it facilitates the preparation of interim statements without entailing the journalization and posting of adjusting and closing entries.

When a monthly interim statement is prepared, a trial balance is drawn from the ledger accounts, the adjustments are entered on the work sheet, and both the balance sheet and the income statement for the year-to-date period are then prepared. No adjusting or closing entries are prepared, and the ledger accounts continue to accumulate data.

The income statement for the month is prepared by subtracting amounts on the year-to-date income statement for the previous

month from the current year-to-date amounts. The revenues and expenses for the month of July, for example, are determined by subtracting the amounts on the January 1–June 30 income statement from those appearing on the January 1–July 31 income statement. This may be illustrated as follows:

EXHIBIT 5–7

Condensed Income Statements

	January 1 to June 30	January 1 to July 31	For the month of July
Revenue from services	$80,000	$94,000	$14,000
Less operating expenses:			
Salaries	$54,000	$64,000	$10,000
Rent	12,000	14,000	2,000
Supplies	4,100	5,000	900
Total expenses	$70,100	$83,000	$12,900
Net income	$ 9,900	$11,000	$ 1,100

Correction of errors

There is always the possibility of an error in accumulating financial data. Certain types of errors are apparent because the trial balance will not balance; a journal entry debit posted as a credit, for example, will result in an unbalanced trial balance. This type of error must be located before financial statements or closing entries can be prepared.

Errors such as miscalculating the periodic depreciation expense, failing to record an adjusting entry, or incorrectly recording an asset as an expense, may not be discovered until a subsequent accounting period. The correction of this type of error depends upon whether it is discovered before or after the books are closed.

Errors discovered before the books are closed

If an incorrect journal entry is discovered before posting, a line may be drawn through the erroneous portion of the entry and the correct account title or figure written above it. A line is preferable to an erasure for the sake of neatness and because erasures obliterate figures which may be needed later.

If an incorrect entry has been posted before the error is discovered, a correcting journal entry is required. Suppose, for example, that the following entry incorrectly recorded the purchase of office equipment in the Repairs and Maintenance Expense account:

June	6	Repairs and Maintenance Expense	$250	
		Cash		$250
		Purchased a typewriter.		

If this error is discovered before the accounts have been closed, the correcting entry is:

June	29	Office Equipment	$250	
		Repairs and Maintenance Expense ..		$250
		To correct the entry of June 6 which recorded the purchase of a typewriter as repair and maintenance expense.		

The correcting entry transfers the $250 from the Repairs and Maintenance Expense account, where it was entered in error, to the Office Equipment account, where it should have been entered originally.

Errors discovered after the books are closed

Since revenue and expense accounts are closed through the income summary to the retained earnings account, retained earnings is misstated by any errors which (1) cause misstatements of revenue or expense accounts, and (2) are not discovered before closing entries are posted. Therefore errors affecting revenue or expense accounts which are discovered after the books are closed may be corrected with a debit or credit to retained earnings. Revenues or expenses of the current period should not be misstated because of errors made in prior periods.

Assume, for example, that $500 for the purchase of office equipment on June 30, 1963, was debited in error to Office Supplies Expense. If the error is not discovered until 1964, after closing entries have been recorded on December 31, the correction must be made to Retained Earnings. Since the error caused an overstatement of expenses in 1963, the net income of 1963 was understated, and the closing entries transferred this erroneous income to Retained Earnings. The following correcting entry is thus necessary:

1964 Mar.	16	Office Equipment	$500	
		Retained Earnings		$500
		To correct an error made on June 30, 1963, incorrectly recording office equipment as expense.		

If the correcting entry affects an asset, as shown in the illustration above, consideration must also be given to any unrecorded depreciation expense. Had office equipment been recorded correctly during the previous period, a depreciation expense would also have been recorded; thus the error resulting from omission of depreciation expense must be corrected, as well as the error caused by failure to record the asset. Since both have affected the computation of net income in the prior period, both must be corrections to retained earnings.

Assume the estimated depreciation expense for 1963 on the office equipment to have been $25. The failure to record this depreciation expense resulted in an understatement of expenses with a resulting overstatement of net income and retained earnings. The correcting entry for the depreciation portion of the error is thus:

1964 Mar.	16	Retained Earnings	$25	
		Accumulated Depreciation—		
		Office Equipment		$25
		To correct an error made in 1963 due to failure to record depreciation on office equipment.		

The entries to correct the Office Equipment account and the related Depreciation Expense account may be combined, as shown below:

1964 Mar.	16	Office Equipment	$500	
		Accumulated Depreciation—		
		Office Equipment		$ 25
		Retained Earnings		475
		To correct an error made on June 30, 1963, incorrectly recording office equipment as an expense, and failure to record the related depreciation expense in 1963.		

Errors which misclassify expenses or revenues do not cause misstatements in the net income of the period. A debit to insurance expense which was posted in error to office supplies expense, for example, does not affect the computation of net income. Although the detail of expenses in the income statement is misstated, the final net income which is transferred to retained earnings is correct. If an error of this type is discovered after the books are closed, no correcting entry is necessary .

The statement of retained earnings and correction of errors

The statement of retained earnings is prepared as a means of reporting all transactions which affect retained earnings during the period. Corrections of errors made in previous accounting periods which affect retained earnings must therefore be reported in the statement. One of the primary purposes of the statement of retained earnings is to insure the full disclosure of information concerning errors and other extraordinary transactions which are not included in the income statement.

Exhibit 5–8 illustrates a statement of retained earning containing information relative to errors made in previous accounting periods.

EXHIBIT 5–8

THE LOTTERMAN COMPANY
Statement of Retained Earnings
For the Year Ended December 31, 1964

Retained earnings, December 31, 1963		$41,200
Add: Error due to recording office equipment as expense in 1963	$ 475	
Less: Error in computing the federal income tax expense in 1963	2,100	
Net deduction due to prior years' errors		1,625
Corrected retained earnings, December 31, 1963		$39,575
Add: Net income for 1964	$13,200	
Less: Dividends paid in 1964	12,000	
Net increase from 1964 operations		1,200
Retained earnings, December 31, 1964		$40,775

Note that the errors are reported at the top of the statement and a corrected beginning balance is computed.

Questions

5-1. Distinguish between a real account and a nominal account, naming several of each.

5-2. Describe the closing process and tell why income statement accounts are closed.

5-3. Describe the entry used to close a revenue account; an expense account.

5-4. What purpose is served by the income summary account? Does it have a debit or a credit balance before closing to retained earnings if the company has a net loss?

5-5. Discuss why accounts are ruled at the end of the accounting period. Describe the balancing and ruling process for accounts which have balances to bring forward.

5-6. What is a post-closing trial balance and what purpose does it serve?

5-7. Name the steps in the accounting cycle, stating for each step whether it is a daily routine or one performed at the end of the accounting period.

5.8. Describe a work sheet and the purposes that it serves.

5-9. A debit balance in the trial balance column was extended to the credit income statement column. Will the work sheet balance? Why or why not?

5-10. A credit in the trial balance column was extended incorrectly as a credit to the balance sheet column instead of the income statement column. Will the work sheet balance? Will the net income be correctly stated in the work sheet? Why or why not?

5-11. A bookkeeper insisted that adjusting and closing entries need not be journalized, because they appear on the work sheet which he always keeps. Do you agree? Why or why not?

5-12. What is considered the normal accounting period? Are financial statements needed more frequently than at the end of each accounting period? Describe an interim statement.

5-13. Describe how interim balance sheets and income statements are prepared.

5-14. Describe how an error recording land as an expense is corrected if discovered (a) before the journal entry is posted; (b) after posting but before closing; (c) after closing.

5-15. If errors have been made in previous years so that the net income of those years has been misstated, in what financial statement are the corrections reported in the year of discovery?

Exercises

5-16. The balances in the ledger of the Smith Cotton Sales Company are shown below.

Cash	$ 1,490	
Notes receivable	3,440	
Accounts receivable	200	
Office equipment	900	
Trucks	7,425	
Accounts payable		$ 425
Notes payable		1,500
Capital stock		10,000
Retained earnings		1,840
Commissions earned		2,400
Insurance expense	120	
License and taxes expense	400	
Office supplies expense	175	
Rent expense	250	
Office salaries expense	225	
Salesmen's salaries	500	
Supplies expense	40	
	$15,165	$15,165

REQUIRED

Prepare complete closing entries.

5-17. The accounts and their balances shown below were taken from the ledger of the Willett Company after adjusting entries had been en-

tered and posted. The accounts are not arranged in normal sequence. Assume each account has its normal debit or credit balance.

Land	$ 3,000
Accounts payable	2,050
Notes receivable	2,500
Revenue from commissions	9,000
Accrued interest payable	100
Cash	800
Mortgage payable	4,000
Interest expense	100
Capital stock	10,000
Interest receivable	12
Supplies on hand	275
Office salaries	2,720
Buildings	14,000
Retained earnings	1,120
Sales salaries	4,600
Miscellaneous expense	700
Salaries payable	100
Interest income	12
Supplies expense	475
Revenue from services	2,800

REQUIRED

1. Prepare closing journal entries.
2. Prepare a post-closing trial balance, arranging the accounts with balances in normal ledger sequence.

5-18 The Peters Laundry began operations on January 1, 1964. The following trial balance was prepared at the end of the year:

Cash	$ 1,500	
Accounts receivable	1,000	
Laundry supplies on hand	500	
Buildings	20,000	
Equipment	7,000	
Accounts payable		$ 2,100
Capital stock		26,000
Revenue from laundry services		9,500
Salaries expense	6,000	
Insurance expense	1,600	
	$37,600	$37,600

REQUIRED

Prepare a work sheet, considering the following adjustment data:

(a) Depreciation on laundry equipment, $850.
(b) Depreciation on building, $300.
(c) Prepaid insurance included in insurance expense, $600.
(d) Laundry supplies consumed, $350.

5-19. Shown below are the trial balances of the Valley River Radio Station on March 31 and April 30 after adjusting entries had been entered on the worksheet.

	March 31		April 30	
Cash	$ 1,300		$ 2,370	
Accounts receivable	700		1,250	
Office supplies on hand	360		400	
Office equipment	6,950		6,950	
Accumulated depreciation—office equipment		$ 1,980		$ 2,050
Transmitting equipment	38,540		38,540	
Accumulated depreciation—transmitting equipment		11,840		12,180
Accounts payable		1,030		810
Capital stock		30,000		30,000
Retained earnings		1,040		1,040
Advertising revenues		16,400		22,750
Revenue from rental of equipment		1,920		2,580
Salaries expense	13,500		18,100	
Office supplies expense	820		1,100	
Tax expense	340		460	
Depreciation on office equipment	210		280	
Depreciation on transmitting equipment	1,020		1,360	
Telephone and telegraph	470		600	
	$64,210	$64,210	$71,410	$71,410

REQUIRED

From these two trial balances prepare a single income statement reflecting the results of operations for the period January 1 to April 30 and for the month of April.

5-20. The retained earnings account of the Wells Company is presented below.

RETAINED EARNINGS

Mar. 1	Dividends	$7,500	Dec. 31, 1964	Balance	$120,000
June 27	Correction of error in computing income taxes of the prior year	3,950	Apr. 13	Extraordinary gain on sale of land	6,000
Sept. 1	Dividends	7,500	Nov. 9	Correction of error in computing prior years' depreciation	2,400
Nov. 4	Extraordinary and nonrecurring fire loss	8,300	Dec. 31, 1965	Net income for the year	29,000

REQUIRED

Prepare a statement of retained earnings for the year.

5-21. The following errors, without amounts, were made by an inexperienced accountant:

(a) Failed to accrue salaries expense at the end of the year.
(b) Failed to record depreciation on fixed assets.
(c) Unearned rental income recorded as earned.
(d) Interest expense accrued in excess of the actual amount.
(e) Failed to record accrued interest receivable.
(f) Rental revenue incorrectly recorded as revenue from fees.
(g) Depreciation recorded in excess of the actual amount.
(h) Repair expense debited in error to an asset account, and
(i) depreciation computed on the erroneous amount.
(j) Tax expense underaccrued.
(k) Advertising expense incorrectly recorded as supplies expense.

REQUIRED

Set up a columnar form with four columns similar to that shown below. Then, by using a + to indicate an overstatement and a − to indicate an understatement, show the effect on the financial statements of each of the errors. If the error had no effect, write "no effect" and omit the plus or minus. The effect on the balance sheet should be determined after considering the closing entries. An error debiting the purchase of land to an expense is given as one example.

	Assets	*Liabilities*	*Owners' equity*	*Net income*
Land debited in error to expense	(–)	No effect	(–)	(–)

Problems

5-22. The following balances are in the ledger accounts of the Benson Typewriter Repair Company on May 31, 1964:

Cash	$2,000	
Accounts receivable	1,760	
Notes receivable	8,000	
Delivery truck	1,775	
Accumulated depreciation—trucks		$ 400
Office equipment	2,845	
Accumulated depreciation—equipment		600
Accounts payable		685
Capital stock		9,000
Retained earnings		2,800
Revenue from repairs		8,800
Salaries expense	5,000	
Gas and oil expense	350	
License and taxes	130	
Utilities expense	425	
	$22,285	$22,285

REQUIRED

1. Considering the following adjustment data, prepare a work sheet.
   (a) Depreciation expense on the delivery truck is $375.
   (b) Depreciation on the office equipment is $200.
   (c) Accrued salaries, $80.
   (d) Accrued interest income on the note receivable, $100.
2. Journalize the adjusting entries.
3. Prepare complete closing entries.

5-23. Given below is the trial balance of the Granite Corporation at the end of its first year of operations on December 31, 1964.

Cash	$ 3,211	
Notes receivable	13,156	
Accounts receivable	18,090	
Prepaid insurance	600	
Building	50,000	
Land	5,000	
Equipment	35,000	
Accounts payable		$ 5,379
Notes payable		3,000
Mortgage payable (due 1969)		40,000
Capital stock		50,000
Fee income		58,223
Other income		8,656
Wages and salaries	35,735	
Tax expense	910	
Supplies expense	420	
Advertising expense	1,600	
Interest expense	1,536	
	$165,258	$165,258

REQUIRED

1. Prepare a work sheet, entering thereon the following adjustments:
   (a) Accrued wages and salaries, $700.
   (b) Expired insurance, $450.
   (c) Depreciation on buildings, $1,000.
   (d) Depreciation on equipment, $2,500.
   (e) Accrued interest on notes receivable, $200.
2. Journalize the adjusting and closing entries.
3. Prepare a balance sheet and income statement.

5-24. Blend Paving Contractors, Inc. was formed on May 3, 1964, and completed the following transactions during the month:

May 3 Issued $50,000 of capital stock to L. R. Blend, W. P. Blend, and F. R. Griese for cash.

4 Purchased paving equipment for $36,000. The equipment is expected to have a $1,000 salvage value at the end of its seven-year useful life.

6 Purchased office equipment for $4,000, which is expected to have a ten-year life and no salvage value.

7 Received a $4,300 paving contract by the city of Alston, to be completed by May 28.

8 Received a bill for paving materials, $1,600, for use on the city of Alston contract.

19 Paid salaries of $1,250.
21 Purchased office supplies on account, $305.
24 Completed the city of Alston project. The contract specified that 90% of the price is to be paid upon completion, and the remaining 10% held until any defects in the paving are corrected and the work accepted by the city engineers. A check for the 90% was received. (Record the remaining 10% as receivable.)
26 Spent $180 for travel expenses to Chicago to bid on an airport runway paving contract. The contract was awarded to another company.
27 Received a $17,000 paving contract by the Missouri State Highway Authority. Paving is to begin on June 7.
28 Paid salaries of $1,100.

REQUIRED

1. Journalize the transactions, using the account titles which you feel are appropriate. Set up ledger T-accounts and post the transactions to the ledger accounts.
2. Prepare a work sheet, using the account balances and the following adjustment data:
   (a) Depreciation on office equipment and paving equipment is to be recorded to the nearest month.
   (b) Office supplies costing $120 had been consumed.
   (c) Accrued salaries were $150 at the end of the month.
3. Journalize the adjusting and closing entries and post to the ledger accounts.
4. Prepare a post-closing trial balance.

5-25. The Eastern River Ferry Company had the following balances in its ledger accounts at the close of the preceding year:

Cash	$ 1,560	
Office supplies on hand	380	
Prepaid insurance	640	
Ferry boats	43,275	
Accumulated depreciation—boats		$20,650
Repair equipment	8,975	
Accumulated depreciation—equipment		3,420
Franchise from state	5,000	
Accounts payable		965
Notes payable		10,000
Capital stock		20,000
Retained earnings		4,795
	$59,830	$59,830

The following transactions were completed during the year:

(a) Received ferrying fees of $63,620 from the state.
(b) Paid salaries of $50,495.
(c) Purchased office supplies on account, $1,750.
(d) Purchased for cash and consumed fuel costing $23,218.
(e) Paid accounts payable of $1,910.
(f) Purchased for cash repair equipment costing $2,400.
(g) Paid $1,000 on the principal of the note payable, plus $800 interest expense.
(h) Received ferrying fees of $23,970 from individual customers.
(i) Paid an insurance premium of $250.
(j) Paid a cash dividend of $3,000.

REQUIRED

1. Record the beginning balances in ledger accounts. In addition to the beginning balances, open ledger accounts for Income Summary, Revenue from Ferrying, Salaries Expense, Fuel Expense, Interest Expense, Office Supplies Expense, Insurance Expense, Depreciation Expense—Boats, Depreciation Expense—Repair Equipment, Franchise Cost.
2. Journalize and post the transactions for the year, using assumed dates for the transactions.
3. Prepare a work sheet, entering the following adjustments:
   (a) Office supplies consumed, $1,520.
   (b) Expired insurance, $320.
   (c) Depreciation on ferry boats, $4,300.
   (d) Depreciation on repair equipment, $700.
   (e) Amortization of ⅕ of the remaining cost (debit franchise cost and credit franchise from the State).
4. Journalize and post the adjusting and closing entries.
5. Prepare an income statement, statement of retained earnings, and a balance sheet.
6. Balance and rule the ledger accounts.

5-26. Bill Hentz operates the Wayside Photography Studio. On December 31, 1964, the company's trial balance appeared as shown on page 150.

REQUIRED

1. Prepare a work sheet, entering thereon the following adjustments:
   (a) Depreciation on delivery equipment, $200.

(b) Depreciation on photo equipment, $600.
(c) Accrued salaries expense, $100.
(d) Photo supplies on hand, $370.
(e) Interest expense accrued on the notes payable, $80.

2. Journalize the adjusting and closing entries.

Cash	$ 3,000	
Accounts receivable	4,000	
Notes receivable	500	
Gas and oil on hand	50	
Photo equipment	8,000	
Delivery equipment	2,000	
Accounts payable		$ 800
Notes payable (60 days)		1,500
Rent payable		400
Taxes payable		100
Notes payable (2 years)		2,200
Capital stock		9,100
Retained earnings		700
Revenue from photo services		17,100
Advertising expense	300	
Photo supplies expense	9,200	
Rent expense	600	
Salaries expense	3,500	
Taxes expense	200	
Utilities expense	150	
Miscellaneous expense	400	
	$31,900	$31,900

Cases

5-27. Troy Bingham owns five short-order cafes in Hartford. He acquired the first of these when serving as a cook, purchasing it from the owner, who needed funds for another venture. Bingham's cooking ability made the cafe a success, and he opened the other four in rapid succession. A single manager, who also serves as cook, operates each short-order cafe with the assistance of several waitresses.

Bingham's only accounting records consist of a two-column "cash book," with one column for all receipts deposited in the bank and the other column for all checks which he has written; he feels that

he does not have time to maintain any additional records. He frequently pays for food directly, using cash in the register at the cafe where the foodstuffs are received. When this happens, the total cash receipts for that day are entered as the amount remaining in the register, and no record is made of the cash payment.

Bingham called in an accountant to help him determine the results of his first year of operations, and the accountant recommended a separate journal, ledger, and monthly financial statements for each cafe. The accountant estimated that this service, if performed by an independent public accountant, would cost approximately $75 per month.

The exact usefulness of such an elaborate system is not clear to Bingham. He has asked your advice, requesting information about how these records should be set up, how many ledger accounts would be needed, how frequently these accounts should be closed, what the financial statements would tell him that he didn't know already, and why separate records are needed for each cafe. How would you answer him?

5-28. The Brandt-Haltom Company was, prior to the current month, a commissioned agent selling imported carpets on a wholesale basis. The company took orders for the products from samples which it maintained and delivered from stocks which it kept on a consignment basis. The carpets in stock were not owned by the Brandt-Haltom Company and could be returned at any time; when a carpet was sold, the company collected the sales price, withheld its commission, and forwarded the balance to the supplier.

A fairly simple set of records was kept by the company, the general ledger consisting of the following accounts:

Cash
Prepaid insurance
Office supplies on hand
Furniture and fixtures
Accumulated depreciation—furniture and fixtures
Accounts payable
Capital stock
Retained earnings
Commissions earned
Salaries expense
Depreciation on furniture and fixtures
Insurance expense
Rent
Office supplies used
Taxes
Advertising

During the current month the company decided to expand its activities, entering into the interior decorating field and also into the sale of paintings and art objects on a commission basis. To facilitate these new ventures, a well-known interior decorator was employed at a fixed salary plus a 10% commission on all interior decorating

contracts. Two employees with special backgrounds in the sale of art objects were also employed on a fixed salary basis.

A building was purchased to provide space for the expanded operations, and two company automobiles were purchased. One automobile was for the use of the interior decorator and the other for the use of the two art salesmen.

The president of the Brandt-Haltom Company wants to know what ledger accounts he should establish in order to measure the profitability of the separate endeavors, as well as the profitability of the company as a whole. What would you advise him? Could a work sheet be devised which would indicate the profitability of each of the three separate ventures and thus keep the number of new records to a minimum?

6

Product and period costs

The examples and problem materials presented thus far have dealt primarily with companies which sell services. However, a major proportion of the businesses in our economy sell products rather than services. For example, merchandising companies buy products ready for resale to customers, and manufacturing companies convert raw materials into a completed product which is then sold. Department stores, grocery stores, and clothing stores are examples of companies whose primary activity is merchandising a variety of products; manufacturing includes such activities as making automobiles, processing food, and refining oil.

Determination of the net income which a business has earned during the accounting period is based upon two interrelated processes: (1) establishing definite points at which revenue is considered earned and (2) matching with it as carefully as possible all expenses which were incurred in the realization of that revenue.

Measurement of the expenses which should be matched with revenues from the sale of products gives rise to several complex accounting problems. Matching expenses with revenues is facilitated by separating costs into two types, *product* costs and *period* costs. Product costs are those which are directly associated with the products that a company manufactures or sells; period costs are those with a stronger relationship to the time period in which they are incurred than to the products manufactured or sold.

Product costs

Product costs are identified with the acquisition of specific products; they are incurred in order that products may be ready and available for sale. These include all costs incurred in acquiring merchandise and any related outlays necessary to transport it to the location where it is to be sold. In the accounting records these costs are accumulated separately from other expenses so that they can be

matched directly with their related revenues. A sale and the cost of the product sold can be directly related, and thus the separate recording of product costs provides the basis for a more accurate matching process.

To illustrate the use of product costs in the determination of net income, assume that the Valaries Automobile Agency purchased three automobiles for sale to its customers at costs of $1,200, $1,500, and $2,000, respectively. During the accounting period the first automobile is sold for $1,450, and the third automobile is sold for $2,700. Thus the revenue from sales during the period is $4,150 ($1,450 plus $2,700), and the cost of products sold is $3,200 ($1,200 plus $2,000). The $1,500 cost of the unsold automobile is recorded as inventory at the end of the accounting period and is thus deferred until revenue from its sale is realized.

Period costs

The relationship between a revenue and the exact expenses incurred to earn it is not always so clearly evident. For example, a salesman may call on a prospective customer many times before the customer places an order. There is no practical means by which such selling expenses as salesmen's salaries and travel costs can be related to the revenue from specific sales except on a time basis. On this basis, the expenses incurred during the period are matched with the revenues of the period.

To illustrate further, there is no expedient means by which the expenses incurred in maintaining the general accounting records can be matched with the revenues from individual sales. In addition, while it is quite likely that the advertising expense incurred during one accounting period may result in revenues during the following period, there is no assurance that the advertising will produce any additional sales. There is no way by which such expenses as general office expenses and advertising can be directly associated with the production of revenue; consequently, these are considered period costs and are recorded as expenses of the same period in which they are incurred. No attempt is made to relate period costs to revenue from the sale of specific units of a company's products.

The following expenses are usually considered period costs; note that any attempt to associate these expenses with individual sales would be difficult and in most cases impractical.

Selling expenses, associated with selling activities. This classification includes sales salaries, depreciation, repairs, and insurance ex-

pense on sales furniture and fixtures, advertising, sales supplies, and rent or depreciation on the store building.

Administrative expenses, associated with general administration of the business. This classification includes accounting salaries and supplies, administrative officers' salaries, depreciation, repairs, and insurance on general office furniture, fixtures and equipment, bad debt losses, and general insurance expenses.

Non-operating incomes and expenses, resulting from events of a non-operating or non-recurring nature. This classification includes interest income, interest expense, and gains or losses on the sale of assets other than merchandise.

Federal income tax expense, assessed against the taxable income of the period.

Product and period costs in financial statements

The income statement of a merchandising company is arranged so that product and period costs are reported separately. Revenues from sales and the related cost of the products sold appear in the upper portion of the statement, and a *gross profit* is shown as the difference between sales revenues and the cost of merchandise sold. Gross profit is the mark-up or margin realized when products are sold for more than their cost. Exhibit 6–1 is an income statement of a merchandising company, with the product and period costs labeled for illustrative purposes.

The gross profit figure on the income statement is a significant measure of a company's ability to merchandise its products. This figure is carefully watched by management, especially when measured as a percentage of sales. Decreases in the gross profit as a percentage of sales may indicate poor merchandising policies which warrant immediate study.

Period costs appear in the financial statements below gross profit and are usually subdivided into broad functional classifications. Separation of operating expenses into selling and administrative expense categories provides a means of measuring the relationship between each expense classification and also serves as a basis for determining unfavorable cost trends by classifications. Disproportionate expenses or expense areas may thus be singled out for attention by management.

Non-operating and non-recurring incomes and expenses are shown after net operating income. These items are primarily financing incomes or expenses, or non-recurring gains or losses, which are not

EXHIBIT 6–1

THE BATTRES FURNITURE STORE
Income Statement
For the Year Ended December 31, 1964

Sales			$223,000	Product costs
Cost of merchandise sold			121,000	Product costs
Gross profit			$102,000	
Less operating expenses:				Period costs
Selling expenses:				Period costs
Sales salaries	$34,000			Period costs
Advertising	17,000			Period costs
Selling supplies	1,000			Period costs
Depreciation expense—sales fixtures	2,800			Period costs
Total selling expenses		$54,800		Period costs
General and administrative expenses:				Period costs
Administrative salaries	$19,000			Period costs
Loss on uncollectible accounts	1,100			Period costs
Office supplies	2,450			Period costs
Insurance	850			Period costs
Total general and administrative expenses		23,400		Period costs
Total operating expenses			78,200	Period costs
Net operating income			$ 23,800	
Non-operating incomes and expenses:				
Interest income		$ 400		
Less: Interest expense		190	210	
Net income before federal income taxes			$ 24,010	
Less: Federal income taxes			7,200	
Net income after taxes			$ 16,810	

directly related to the company's normal operations. The federal income tax expense is the last item subtracted on the statement to arrive at net income. It is closely related to net income and is therefore reported last.

Recording revenues from sales

Merchandising companies record the revenue received from the sale of products in a *Sales* account. Since an asset account such as

Cash or Accounts Receivable is debited when a sale is made, the Sales account has a credit balance. A $4,000 sale of merchandise on account is recorded as follows:

July	14	Accounts Receivable	$4,000	
		Sales		$4,000
		To record a credit sale of merchandise.		

Sales returns and allowances

Occasionally merchandise is defective or fails to meet a customer's specifications. In such cases the customer may be allowed to return the merchandise or he may receive credit if the merchandise is not returnable. Such returns and allowances reduce the revenue which the company realizes from its sales.

The Sales account is not debited for sales returns and allowances. The debit is made instead to a *Sales Returns and Allowances* account, since the extent of returns and allowances is essential information for management. The Sales Returns and Allowances account will always have a debit balance and is a "contra" or offsetting account shown as a direct subtraction from sales in the income statement.

To illustrate, assume that a customer returns merchandise which sold for $270. The entry is:

July	19	Sales Returns and Allowances	$270	
		Accounts Receivable		$270
		Customer credited for returned merchandise.		

An income statement illustrating how sales returns and allowances are reported in the financial statements is shown in Exhibit 6–2.

Sales discounts

Frequently a company will grant cash discounts to credit customers as an inducement to pay the account early. When a customer earns a cash discount by paying early, the reduction in sales revenue is recorded in a *Sales Discounts* account. This account reduces the revenue from sales, and is also subtracted from sales in the income statement.

Sales discounts are stated in such terms as 2/10, n/30, or 2/10 e.o.m. The credit terms 2/10, n/30 mean that a 2% discount may be subtracted from the amount owed if paid within ten days from

the sales invoice date; otherwise the full amount is due within thirty days from the date on the sales invoice. The expression 2/10 e.o.m. means a 2% discount may be subtracted if payment is made within ten day from the first day of the month following the date on the sales invoice. Other frequently used discount terms are 1/60, n/90; 1/20, n/60; and 3/10 e.o.m.

To illustrate, assume that a credit sale of $1,000 is made to a customer on May 14, with terms of 2/10, n/30. Payment made any time prior to May 24 entitles the customer to the cash discount of $20 (2% of $1,000). The Sales Discount account is debited for the $20 sales discount when cash of $980 is received in payment of a $1,000 accounts receivable, as follows:

May	23	Cash	$980	
		Sales Discounts	20	
		Accounts Receivable		$1,000
		Received payment of an accounts receivable less discount.		

Exhibit 6–2 illustrates how the Sales Discounts account is reflected as a deduction from Sales in the income statement.

Although some accountants prefer to list sales discounts as a nonoperating expense at the bottom of the income statement, the contemporary view is that they represent reductions in sales revenue. Therefore they are shown as direct deductions from sales in all illustrations in this text. The deduction of returns, allowances, and discounts from gross sales in the income statement is illustrated below.

EXHIBIT 6–2

THE DUTWEILER COMPANY
Partial Income Statement
For the Year Ended December 31, 1964

Sales		$423,000	
Less: Sales returns and allowances	$3,100		
Sales discounts	2,050	5,150	
Net sales			$417,850
Cost of merchandise sold			229,000
Gross margin			$188,850

Trade discounts

Many companies publish a catalog describing their products and quoting a *list price*. A substantial reduction of this price may be granted certain customers, such as those who buy in large quantities. The discount is frequently increased with the size of the purchase as an inducement to buy in large quantities. Use of a list price with allowed trade discounts provides a convenient method of changing the net price without having to reprint and redistribute catalogs, since only the trade discounts need be altered.

Deductions from list price are called *trade discounts*. This type of discount is considered a means of arriving at the selling price and is not recorded in the accounting records. For example, an item with a list price of $100 may be sold to all wholesale customers with a trade discount of 40 per cent, with an additional 10 per cent discount for purchases of fifty or more units in any one order. The sales price of an order for seventy units would be computed as follows:

List price (70 @ $100)	$7,000
Less: 40% of $7,000	2,800
	$4,200
Less: 10% of $4,200	420
Net sales price	$3,780

The entry for the sale is shown below. Note that the trade discount does not appear in the entry, and the $3,780 is recorded as the sales price. Cash discounts for early payment, such as 2/10, n/30, would then apply only to the $3,780 sales price.

April	7	Accounts Receivable	$3,780	
		Sales		$3,780
		Sold 70 units of product L-134 on account.		

The inventory as deferred product costs

Those product costs associated with sold units become the cost of merchandise sold on the income statement, and those costs associated with unsold units are recorded as ending inventory on the balance sheet. There are two methods by which product costs may be accumulated and assigned to sold and unsold units of merchandise.

The first method is by use of the ***perpetual*** inventory system, wherein all product costs are recorded directly in an inventory ac-

count when purchased. The cost of the units sold are transferred from the inventory account to the Cost of Merchandise Sold account at the time of sale. The balance of the Inventory account reflects the cost of merchandise remaining unsold. Periodic counts of the merchandise on hand are made at least once each year to verify the accuracy of the entries.

The second method, known as the *periodic* inventory system, accumulates the cost of all merchandise acquired during the period in a Purchases account. This inventory system is sometimes called the *physical* inventory method and, as the name implies, a physical count of the merchandise left unsold at the end of the period is necessary to determine the cost of the ending inventory. No entry is made to record the cost of merchandise sold until the end of the accounting period when the physical count is made.

Perpetual inventory records

When a perpetual inventory system is used, the cost of all merchandise acquired is debited to the Inventory account at the time of purchase. Any cost incurred in transporting purchased merchandise to the point of sale is considered a product cost and therefore a part of inventory. For example, a credit purchase of six refrigerators at a cost of $200 each is recorded as follows:

July	12	Inventory	$1,200	
		Accounts Payable		$1,200
		Purchased six refrigerators at a cost of $200 each.		

A transportation cost of $60 incurred in delivering the six refrigerators to the store's location is recorded as follows:

July	21	Inventory	$60	
		Cash		$60
		Freight costs of $10 each on six refrigerators.		

The per unit cost of the refrigerators is thus reflected in the inventory account at $210 each ($200 invoice price plus $10 freight).

As merchandise is sold, the Inventory account is credited and Cost of Merchandise Sold is debited for the cost of the units sold. Two

entries are therefore necessary to record the sale of merchandise: one to record the sale and one to record the cost of the merchandise sold. The entries to record the sale of four of the refrigerators referred to above for $1,600 cash are as follows:

July	30	Cash	$1,600	
		Sales		$1,600
		Sold four refrigerators for $400 each.		
July	30	Cost of Merchandise Sold	$ 840	
		Inventory		$ 840
		Cost of four refrigerators sold, at $210 each.		

The inventory account appears as follows after all entries for the purchase, transportation, and sale have been posted:

Inventory

Original purchase	1,200	Cost of merchandise sold	840
Transportation-in	60		
Balance	*420*		

The balance of $420, representing the cost of the two unsold units, is deferred so that it can be matched with the revenue realized when the units are later sold. The $840 cost of merchandise sold appears in the income statement, representing the product costs associated with the sales revenue realized during the period.

Periodic inventory method

The use of a perpetual inventory system as described above is usually applicable to those companies whose products have relatively large and readily ascertainable unit value. Companies carrying a large stock of relatively low-priced items do not use perpetual inventory records; in the interest of efficiency and reduced clerical effort these companies employ a *periodical* inventory system. In such cases, the accounting process is simplified by recording all purchases in a *Purchases* account and all transportation costs in a *Transportation-in* account. These two accounts accumulate the cost of all products acquired during the period. To illustrate, the entry for a $7,000 credit purchase of merchandise is recorded as follows:

Nov.	28	Purchases	$7,000	
		Accounts Payable		$7,000
		Purchased merchandise on account.		

Payment of $840 in freight costs is recorded:

Nov.	30	Transportation-in	$840	
		Cash		$840
		Paid freight invoices on merchandise purchases.		

At the end of the accounting period the total of the Purchases and the Transportation-in accounts is added to any inventory on hand at the beginning of the period to determine the total merchandise available for sale. The ending inventory is determined by physically counting and costing all unsold units. This inventory figure is subtracted from total merchandise available for sale to determine the cost of merchandise actually sold. The mechanics of this process are illustrated in the income statement in Exhibit 6–3.

Purchases returns and allowances

A special *Purchases Returns and Allowances* account is used to accumulate the cost of merchandise returned to suppliers, or allowances received for defective merchandise. Information relative to the extent of returns and allowances is of value to management, since extensive returns may indicate faulty purchasing procedure. This account has a credit balance, being a contra or offsetting account to purchases. For example, a return of $320 is recorded as follows:

Dec.	12	Accounts Payable	$320	
		Purchases Returns and Allowances		$320
		Returned defective merchandise to the supplier.		

Any allowance granted by the supplier for purchase returns reduces the total cost of merchandise purchased during the period and is subtracted from Purchases in determining the cost of merchandise available for sale, as shown in Exhibit 6–3.

Purchase discounts[1]

Discounts granted by suppliers for payment within a stipulated period of time are recorded in a *Purchases Discounts* account. This

[1] For a description of the *NET* method of recording purchases see Case 6–31 in the assignment material following this chapter.

account has a credit balance and is a reduction in the cost of merchandise purchased. It is reflected on the income statement as a subtraction from Purchases. Thus, payment within the discount date of a $5,000 purchase of merchandise with terms of 1/10, n/60 is recorded as follows:

Nov.	11	Accounts Payable		$5,000	
		Purchases Discounts			$ 50
		Cash			4,950
		Paid accounts payable with terms of 1/10, n/60 within the discount period.			

Some accountants consider purchases discounts to be a form of financial income and place this account at the bottom of the income statement as a non-operating income. However, Purchases Discounts is a reduction of the cost of merchandise purchased and is more clearly reflected as a deduction from Purchases in the income statement.

The pool of merchandise costs

When a periodic inventory system is used, a "pool of merchandise costs" is accumulated that is the sum of (1) the inventory on hand at the beginning of the period, (2) the balances of the Purchases and Transportation-in accounts, and (3) the balances of the Purchases Returns and Allowances and the Purchases Discounts accounts. These amounts are accumulated on the income statement of a merchandising company, and their total is shown as the merchandise available for sale.

As discussed previously, the determination of net income cannot be completed until this pool of costs is apportioned to the cost of merchandise sold during the period and to the ending inventory. A physical count of merchandise on hand at the end of the accounting period is necessary to determine the costs to be apportioned to inventory; the balance is assigned to merchandise sold. The arrangement of the income statement for a merchandising company using a periodic inventory system is shown below. Note the accumulation of the total merchandise available for sale and the subtraction of the ending inventory to determine the cost of merchandise sold. The elements comprising the pool of product costs and the disposition of the pool are indicated at the left of the statement.

EXHIBIT 6–3

NORTON BELL COMPANY
Partial Income Statement
For the Year Ended December 31, 1964

Sales			$430,600	
Less: Sales returns and allowances			7,100	
Net sales				$423,500
Less: Cost of merchandise sold:				
Beginning inventory, Jan. 1, 1964			$ 17,000	
Purchases		$235,000		
Less: Purchases returns and allowances	$6,200			
Purchases discounts	5,850	12,050		
Net purchases			222,950	
Transportation-in			15,000	
Merchandise available for sale			$254,950	
Less: Ending inventory, Dec. 31, 1964			23,000	
Cost of merchandise sold				231,950
Gross profit				$191,550

Composition of the pool of product costs

Disposition of the pool of product costs

Determination of the ending inventory

When a periodic inventory system is used, determination of the ending inventory must precede the preparation of the income statement. Although a physical count of unsold units may be costly, it is a less expensive procedure for a company with a large stock of low-priced items than the perpetual inventory system. The physical count determines the quantity of each product on hand; the unit cost of these products must then be determined from the purchase invoices. Matching the items in the ending inventory with specific invoice prices may be accomplished by one of several acceptable methods. Discussion of these techniques is deferred to a later chapter to pro-

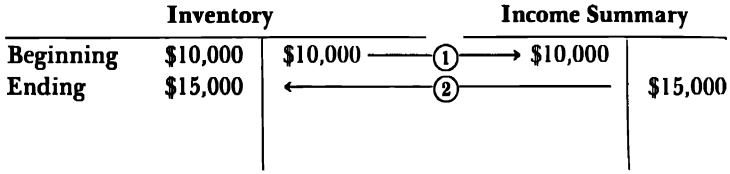
vide a more complete treatment. However, at this point it is necessary to have a clear understanding of the following major points in applying a physical inventory method:

1) The beginning inventory, purchases, transportation-in, and related accounts comprise a pool of product costs, or a total cost of merchandise available for sale.
2) Products on hand at the end of the period must be physically counted and valued to determine the cost of the ending inventory.
3) The ending inventory is subtracted from the total merchandise available for sale to arrive at the cost of merchandise sold during the period.

Recording the ending inventory

When a periodic inventory system is used, entries for the purchase or sale of merchandise do not affect the inventory account. The ending inventory of one period becomes the beginning inventory of the next and remains intact until the final inventory of that period is recorded.

The ending inventory is recorded in two steps as follows: (1) clear the inventory account by closing the beginning inventory to the income summary; and (2) record the ending inventory, with the offsetting credit to the income summary account. This process is illustrated below. The entry labeled (1) transfers the $10,000 beginning inventory to the income summary, thus reducing the balance in the inventory account to zero. The entry labeled (2) then records the $15,000 ending inventory.



Entries to close the beginning inventory and record the ending inventory are frequently combined with the normal closing entries recorded at the end of the period. To illustrate, assume that the Jack Tubbs Grocery Company has the following trial balance on December 31, 1964. The ending inventory of $18,500 has not yet been recorded.

Cash	$ 9,000	
Inventory (Beginning)	14,000	
Equipment	21,500	
Accumulated depreciation—equipment		$ 8,000
Accounts payable		1,100
Capital stock		30,000
Retained earnings		2,100
Sales		105,000
Purchases	70,400	
Transportation-in	5,300	
Salary expense	25,000	
Depreciation expense	1,000	
	$146,200	$146,200

The Sales, Purchases, Transportation-in, Depreciation Expense, and Salary Expense accounts are closed in the usual fashion to the income summary, and at the same time the Inventory account is credited for $14,000 to close the beginning inventory. When revenues are closed to the income summary, the ending inventory is recorded.

Dec.	31	Income summary	$115,700	
		Inventory		$ 14,000
		Purchases		70,400
		Transportation-in		5,300
		Depreciation expense		1,000
		Other expense		25,000
		To close expense accounts and the beginning inventory.		
Dec.	31	Inventory	$ 18,500	
		Sales	105,000	
		Income summary		$123,500
		To close revenue accounts and record the ending inventory.		

After all closing entries are posted, the income summary appears as follows. Although compound entries are normally used to close the accounts, for purposes of this illustration the amount of each account closed is shown individually. The pool of merchandise costs and the subtraction of the ending inventory are enclosed within dotted lines. Since the ending inventory is recorded with the offsetting credit in the income summary, it is automatically subtracted

from those accounts which comprise the cost of merchandise sold, appearing as debits in the income summary.

Income Summary

Purchases	70,400	Sales	105,000	
Transportation-in	5,300			
Beginning inventory, 12/31/63	14,000	Ending inventory 12/31/64	18,500	Cost of merchandise sold
Depreciation expense	1,000			
Salary expense	25,000			

The income statement prepared from data in the previous illustration appears below. Note again the subtraction of the ending inventory from merchandise available for sale.

EXHIBIT 6–4

THE JACK TUBBS GROCERY COMPANY

Income Statement

For the Year Ended December 31, 1964

Sales		$105,000
Less: Cost of merchandise sold:		
Beginning inventory, 12/31/63	$14,000	
Purchases	70,400	
Transportation-in	5,300	
Total merchandise available for sale	$89,700	
Less: Ending inventory, 12/31/64	18,500	
Cost of merchandise sold		71,200
Gross profit		$ 33,800
Less: Operating expenses:		
Depreciation expense	$ 1,000	
Salary expense	25,000	
Total operating expenses		26,000
Net income		$ 7,800

The inventory of $18,500 on hand at the close of this accounting period is carried forward as the beginning inventory of the following period.

Exhibit 6–5

JACK TUBBS GROCERY COMPANY

Work Sheet

For the Year Ended December 31, 1964

	Trial Balance		Adjustments		Adjusted Trial Balance		Income Statement		Balance Sheet	
	Dr	Cr	Dr	Cr	Dr	Cr	Dr	Cr	Dr	Cr
Cash	9,000				9,000				9,000	
Inventory, 12/31/63	14,000				14,000		14,000			
Equipment	21,500				21,500				21,500	
Accumulated depreciation—equipment		7,000		1,000		8,000				8,000
Accounts payable		1,100				1,100				1,100
Capital stock		30,000				30,000				30,000
Retained earnings		2,100				2,100				2,100
Sales		105,000				105,000		105,000		
Purchases	70,400				70,400		70,400			
Transportation-in	5,300				5,300		5,300			
Salary expense	25,000				25,000		25,000			
	145,200	145,200								
Depreciation expense			1,000		1,000		1,000			
Inventory, 12/31/64								18,500	18,500	
			1,000	1,000	146,200	146,200	115,700	123,500	49,000	41,200
Net income							7,800			7,800
							123,500	123,500	49,000	49,000

Inventories in the work sheet

When a work sheet is used to accumulate data for financial statements, the inventories are handled as illustrated in Exhibit 6–5. The trial balance of the Jack Tubbs Grocery Company used earlier in the chapter is also used in this illustrative work sheet.

The beginning inventory, listed in the original trial balance, is extended to the debit Income Statement column of the work sheet. The ending inventory is written several spaces below the original trial balance totals, and the amount is extended (1) as a credit in the Income Statement columns and (2) as a debit in the Balance Sheet columns. The credit in the Income Statement column reduces the merchandise available for sale by the amount of the unsold merchandise; the debit in the Balance Sheet column records the ending inventory as an asset. The amount must be entered as both a debit and a credit to keep the work sheet in balance.

The pool of product costs for manufacturing companies

Manufacturing companies, whose business is converting raw materials into a completed product, must also carefully segregate product from period costs. The product cost structure of a manufacturing company is more complex than that of a merchandising company, for raw material purchases and related returns and discounts, manufacturing labor, and a significant number of factory overhead costs are incurred in the manufacturing process. Each of these cost elements is accumulated in a separate account, but in the aggregate they comprise a pool of costs which must be assigned to unfinished units, completed products, or products sold.

An income statement for the Grail Industrial Ironworks Company is shown in Exhibit 6–6. Note that the Raw Materials, Manufacturing Labor, and Factory overhead costs are accumulated and added to the beginning inventories which a manufacturing company maintains to arrive at total product costs. The costs assigned to ending inventories are subtracted from this total, thus deriving the cost of goods sold.

Subsequent chapters are devoted to the accumulation and analysis of manufacturing costs. However, the basic accounting principle of accumulating and reporting product costs separately from period costs is equally applicable to merchandising or manufacturing companies.

EXHIBIT 6–6

THE GRAIL INDUSTRIAL IRONWORKS COMPANY

Income Statement

For the Year Ended December 31, 1964

Sales				$526,300
Cost of goods sold:				
Raw materials cost:				
Raw materials inventory, 12/31/63:		$ 7,000		
Purchases	$132,000			
Transportation-in	6,000	138,000		
Total raw material available		$145,000		
Less: Raw materials inventory, 12/31/64:		10,000		
Cost of raw materials used			$135,000	
Manufacturing labor costs			140,000	
Factory overhead:				
Heat, light, power		$ 3,200		
Factory insurance		2,900		
Depreciation on factory building		8,400		
Factory supplies		5,100		
Factory taxes		2,000		
Total factory overhead			21,600	
Total manufacturing costs			$296,600	
Add: Beginning inventories, 12/31/63:				
Work in process		$ 13,500		
Finished goods		41,700	55,200	
Total costs			$351,800	
Less: Ending inventories, 12/31/64:				
Work in process		$ 10,700		
Finished goods		32,800	43,500	
Total cost of goods sold				308,300
Gross profit				$218,000
Less: Operating expenses:				
Sales salaries			$103,400	
Advertising			60,000	
Office supplies			15,000	
Total operating expenses				178,400
Net operating income				$ 39,600

Composition of the pool of product costs

Disposition of the pool of product costs

Period costs

Questions

6-1. Define a merchandising company and a manufacturing company. Discuss how the determination of income for these two types of company differs from that of a service company.

6-2. Define a product cost and a period cost, giving an example of each.

6-3. What is gross profit? How is it reflected in the income statement?

6-4. What does the sales account contain, and how is it reflected in the income statement? Could it ever have a debit balance?

6-5. What information of value to management is reflected by the sales returns and allowances account? What kind of balance does it have? Where does it appear in the financial statements?

6-6. Why are cash discounts given? What do the following mean: 2/10, n/30; 2/10 e.o.m.?

6-7. Merchandise was sold to a customer on July 6. What is the last day on which payment can be made and a sales discount earned if terms are (a) 2/10, n/30; (b) 1/30, n/60; (c) 1/10 e.o.m.

6-8. What is a trade discount? If an item with a list price of $1,000 is purchased with a trade discount of 20-10-5, how much does the item cost?

6-9. What is a perpetual inventory? Discuss the entry made for a cash purchase of merchandise and a cash sale of merchandise when a perpetual inventory method is used?

6-10. Distinguish between the perpetual inventory method of accounting for product costs and the periodic inventory method.

6-11. Describe how the cost of merchandise sold is determined when a periodic inventory method is used.

6-12. State what balance (debit or credit) the following accounts normally have and how they appear in the income statement:

Purchases
Sales returns and allowances
Purchases discounts
Sales discounts
Sales
Purchases returns and allowances
Inventory (Beginning)
Inventory (Ending)

6-13. What comprises the "pool of merchandise costs" which is accumulated in a physical inventory system? Discuss the disposition of this pool at the end of the accounting period?

6-14. Describe the process of determining the cost of the inventory on hand at the end of the period if a periodic inventory method is used. Describe how the inventory is recorded after it is computed.

6-15. Describe how the beginning inventory is treated in the work sheet when a periodic inventory method is used; how is the ending inventory handled?

6-16. How does the pool of product costs of a manufacturing company differ from that of a merchandising company?

Exercises

6-17. Given below are data relating to invoices received by a company.

	Invoice date	List price	Trade discount terms	Cash discount terms	Date of payment
(a)	July 10	$ 100	none	2/10, n/30	July 25
(b)	August 3	500	none	2/10, n/30	Aug. 10
(c)	Sept. 27	1,000	none	2/10 e.o.m.	Oct. 8
(d)	Feb. 6	500	40–10	n/30	Feb. 19
(e)	April 10	300	30–20	2/10, 1/30, n/60	May 9
(f)	June 23	1,000	30–5–5	2/10 e.o.m.	July 7

REQUIRED

1. Compute the amount of cash which must be paid for each invoice.
2. Prepare journal entries for the last purchase (June 23) and the payment (July 7) if a periodic inventory method is used.

6-18. Presented below are selected December 31, 1964, account balances from the Waffer Company's ledger.

Purchases	$35,100
Inventory (beginning)	7,000
Sales	53,000
Transportation-in	2,600
Advertising	3,000
Salaries	6,000
Federal income taxes	4,000
Purchase returns and allowances	300
Sales returns and allowances	350

The ending inventory is $9,300.

REQUIRED

Prepare an income statement.

6-19. Presented below are selected account balances drawn from the ledger of the Griffith Company on December 31, 1964. Debit account balances have not been segregated from credit balances.

Purchases	$141,000
Sales returns and allowances	1,400
Inventory (beginning)	28,000
Purchase discounts	700
Salaries expense	34,000
Sales discounts	2,000
Sales	210,000
Purchase returns and allowances	3,000
Advertising expense	12,000
Transportation-in	11,000
Supplies expense	6,000

REQUIRED

1. Prepare complete closing entries if the ending inventory is $37,000.
2. Prepare an income statement.

6-20. The Marigold company completed the following transactions relative to its merchandise inventory:

Jan. 7 Purchased merchandise on account with an invoice price of $700, terms 2/10, n/30.
15 Purchased merchandise on account with a list price of $1,000 and a trade discount of 40-10-10, terms 2/10 e.o.m.
16 Paid the amount owed for the purchase on January 7.
20 Paid $40 cash for the transportation-in cost on the January 7 purchase.
23 Returned for credit merchandise bought on January 15 which had a list price of $100.
Feb. 8 Paid the balance owed on the January 15 purchase.

REQUIRED

1. Journalize the transactions, watching the dates closely to ascertain whether or not a discount has been earned. A *perpetual* inventory method is used.
2. Journalize the transactions if a *periodic* inventory method is used.

6-21. The following transactions were completed by The Skell Company:

Aug. 12 Sold merchandise to Walter Cardd for $800, terms 2/10, n/30.
17 Sold merchandise to Pamelia Watts for $500, terms 2/10, n/30.
19 Walter Cardd returned $100 of the merchandise which he bought on August 12.
20 Pamelia Watts paid for the merchandise bought on August 17.
22 Walter Cardd paid his account in full.

REQUIRED

1. Journalize the transactions, watching the dates closely to ascertain whether a discount has been earned. A periodic inventory method is used.
2. Describe briefly how the entries would differ and how the cost of merchandise sold would be determined and recorded if a perpetual inventory method had been used.

6-22. The December 31, 1964, condensed trial balance of the Penn Garden Supply House appears below:

Cash	$ 4,000	
Inventory (12/31/63)	8,000	
Other assets	10,000	
Accounts payable		$ 2,000
Capital stock		10,000
Retained earnings		6,000
Sales		70,000
Sales returns and allowances	1,000	
Purchases	40,000	
Purchases returns and allowances		2,000
Salaries	20,000	
Advertising	7,000	
	$90,000	$90,000

Adjustment data are: Inventory 12/31/64, $9,000; accrued salaries, $500.

REQUIRED

1. Prepare a work sheet for the year ended December 31, 1964.
2. Journalize the adjusting and closing entries.

6-23. Presented below are selected data from the income statements of a company.

	Sales	Beginning inventory	Purchases	Transportation-in	Ending inventory	Cost of merchandise sold	Gross profit
(a)	100,000	8,000	60,000	4,000	——	61,000	——
(b)	——	12,000	50,000	3,000	10,000	——	38,000
(c)	80,000	10,000	——	5,000	15,000	40,000	——
(d)	110,000	——	70,000	1,000	9,000	——	40,000
(e)	75,000	9,000	40,000	——	8,000	43,000	——
(f)	50,000	3,000	30,000	500	2,000	——	——

REQUIRED

Compute the amounts left blank by working backward or forward with the given amounts. Each part is independent.

Problems

6-24. The December 31, 1964, trial balance of the Macklin Products Company appears below.

Cash	$ 250	
Accounts receivable	1,100	
Inventory (beginning)	6,400	
Office quipment (net)	7,000	
Store equipment (net)	11,000	
Accounts payable		$ 2,400
Federal income taxes payable		2,000
Capital stock		10,000
Retained earnings		4,870
Sales		78,000
Sales returns and allowances	400	
Sales discounts	620	
Purchases	41,000	
Purchases returns and allowances		590
Purchases discounts		410
Transportation-in	1,700	
Salaries	20,000	
Advertising	5,000	
Depreciation on office equipment	800	
Depreciation on store equipment	1,000	
Federal income tax expense	2,000	
	$98,270	$98,270

REQUIRED

1. Prepare complete closing entries if the ending inventory is $5,000.
2. Establish an income summary account. Post the closing entries to this account.
3. Prepare an income statement.

6-25. The Watercraft Boat Company completed the following transactions during June, 1964. A periodic inventory method is used. The terms of all sales are 2/10, n/30.

June 2 Sold merchandise on account to Albert Dale, $510.
4 Purchased merchandise from the Hamilton Manufacturing Company, $1,400, terms 1/20, n/60.
6 Sold merchandise on account to Wilton Green, $700.
9 Paid transportation-in costs of $80 on the purchase of June 4.
10 Purchased merchandise from the Detroit Woodcraft Company, $2,500, terms 2/10, n/30.
11 Returned for credit merchandise costing $200 bought on June 4 from the Hamilton Manufacturing Company.
12 Received returned merchandise from Albert Dale, for which he paid $100 on June 2.
14 Paid the Detroit Woodcraft Company for the purchase on June 10.
15 Received payment in full from Wilton Green.
20 Paid in full the account owed the Hamilton Manufacturing Company (purchase of June 4 less the return on June 11).
22 Sold merchandise on account to Ben Taylor, $650.
23 Received payment in full from Albert Dale (sale of June 2 less return on June 12).
29 Sold mechandise to Robert Smith, $1,320.
30 Received payment in full from Ben Taylor (sale on June 22).
30 Paid transportation-in costs of $45 on the purchase of June 10.
30 Paid salaries, $400; rent, $100; advertising, $120.

REQUIRED

1. Journalize the transactions.
2. Prepare an income statement. The journal entries need not be posted unless the student feels it necessary in preparing the income statement. The beginning inventory was $6,500, and the ending inventory is $8,100.

6-26. The transactions shown below were completed by the Hillside Sporting Goods Shop during September, 1964. The company has a standard policy of allowing terms of 2/30, n/60 to all its credit customers. A periodic inventory method is used. The company's trial balance on August 31 was:

Cash	$ 4,000	
Inventory	9,000	
Capital stock		$10,000
Retained earnings		3,000
	$13,000	$13,000

Sept. 2 Purchased merchandise from the Ace Sports Equipment Co., $1,300, terms 2/10, n/30.
3 Made cash sales of $200.
4 Sold merchandise on account to the Hadley High School, $730.
5 Purchased merchandise from the Sprolls Company, $400, terms 1/30, n/60.
8 Sold merchandise on account to Harold Killeen, $250.
8 The football coach of the Hadley High School returned for credit two defective shoulder pads which he had bought for $30 on September 4.
9 Returned ten defective shoulder pads, total cost $100, bought on September 2 from the Ace Sports Equipment Company.
10 Paid transportation-in costs of $75.
10 Sold merchandise on account to Taylor Grant, $1,600.
11 Paid the balance of the account owed to the Ace Sports Equipment Company for the purchases on September 2.
14 Made cash sales of $360.
15 Paid the Sprolls Company for the purchase of September 5.
17 Paid transportation-in costs of $110.
21 Received payment in full from the Hadley High School.
24 Purchased merchandise from Wisconsin Sports Products, Inc., $570, terms 2/10 e.o.m.
25 Received payment in full from Harold Killeen for the purchase of September 8.
30 Returned $120 of defective merchandise bought on September 25 from the Wisconsin Sports Products, Inc.
30 Paid salaries, $820; advertising, $200; and rent, $100.

REQUIRED

1. Journalize the transactions.
2. Establish ledger accounts for Cash, Accounts Receivable, Inventory, Accounts Payable, Capital Stock, Retained Earnings, Income Summary, Sales, Sales Returns and Allowances, Sales Discounts, Purchases, Purchases Returns and Allowances, Purchases Discounts, Transportation-in, Salaries, Advertising, and Rent Expense. Enter the balances as of August 31, and post all amounts from the above transactions.
3. Prepare an income statement. The ending inventory is $9,800.
4. Prepare and post closing entries and rule the accounts.

6-27. The Falls-Harbin Company sells pianos and organs ranging in price from $200 to $1,500 each. The company uses a periodic inventory method. On January 1 the company had four pianos and two organs in stock at a total cost of $4,700. During January the following transactions were completed:

Jan. 3 Sold an organ to the First Community Church for $800, terms 2/30, n/60.

6 Purchased two pianos and one organ from the Truesound Company for a total cost of $1,800, terms 1/10, n/30.

7 Sold one of the pianos purchased January 6 to James Wilson for $890, terms 2/10, n/30.

8 Sold a piano to Mrs. J. C. Jennings for $1,400, terms 2/10, n/30.

11 James Wilson returned the piano he purchased on January 7. Defective workmanship had resulted in an inferior tone. He was given full credit on his account.

13 The Truesound Company sent a representative to examine the defective piano returned by James Wilson. The representative agreed to allow credit of $400, and the Falls-Harbin Company is to keep the piano, which originally cost $500.

15 Paid the total owed the Truesound Company for the purchase on January 6.

17 The defective piano was given to an orphanage (debit contributions; credit purchases for the $100 remaining cost).

18 The First Community Church paid for the organ purchased on January 3.

19 Purchased one piano from the Nesterhoff Company, a new company in the musical instrument industry. The piano had a list price of $1,000, and the Falls-Harbin Company was given a discount of 20-10, cash terms 1/30, n/60.

20 Paid $15 freight on the piano purchased from the Nesterhoff Company.
22 Sold the piano purchased from the Nesterhoff Company for $1,290 cash. Three more were ordered.
25 Mrs. J. C. Jennings paid for the piano which she purchased on January 8.
30 Paid salaries, $800; rent, $200; advertising, $100; and utilities, $50.

REQUIRED

1. Journalize the transactions.
2. Prepare an income statement. The ending inventory is $5,100. Transactions need not be posted to ledger accounts except to satisfy the student's own needs in solving the problem.

6-28. Presented below is the trial balance of the Judson Nett Company as of December 31, 1964:

Cash	$ 1,000	
Accounts receivable (net)	2,000	
Inventory (12/31/63)	9,000	
Store equipment	14,000	
Accumulated depreciation—store equipment		$ 3,000
Accounts payable		5,000
Capital stock		10,000
Retained earnings		3,260
Sales		97,000
Sales returns and allowances	800	
Sales discounts	520	
Purchases	48,000	
Purchases returns and allowances		950
Purchases discounts		1,010
Transportation-in	2,100	
Salaries	30,000	
Advertising	9,000	
Supplies expense	2,000	
Telephone and telegraph	1,800	
	$120,220	$120,220

Adjustment data for the worksheet are:

(a) Ending inventory, $7,500.
(b) Depreciation on store equipment, $1,000.
(c) Supplies on hand, $400.
(d) Accrued salaries, $550.

REQUIRED

1. Prepare a work sheet for the year ended December 31, 1964.
2. Journalize the adjusting and closing entries.
3. Prepare an income statement and a balance sheet.

6-29. The trial balance of the Maryland Manufacturing Company as of December 31, 1964, appears below.

Cash	$ 1,400	
Finished goods inventory (beginning)	9,200	
Goods in process inventory (beginning)	1,700	
Raw materials inventory (beginning)	2,100	
Plant and equipment (net)	80,500	
Capital stock		$ 70,000
Retained earnings		10,600
Sales		105,000
Raw material purchases	25,000	
Raw material returns and allowances		300
Factory labor	20,000	
Depreciation on factory plant and equipment	4,000	
Factory heat, light, and power	2,000	
Sales salaries	18,000	
Office salaries	16,000	
Advertising	5,000	
Office supplies	1,000	
	$185,900	$185,900

The ending inventories were:

(a) Finished goods	$8,300
(b) Raw materials	2,900
(c) Goods in process	2,000

REQUIRED

Prepare an income statement for the year ended December 31, 1964.

Cases

6-30. Troy Harris owns and operates a "junk" shop, which has gross sales of $30,000 each year. He buys anything of value for as little as pos-

sible. He sells his merchandise to a variety of customers, sometimes receiving ten times his cost and sometimes less than cost. He maintains no inventory and subtracts all purchases from sales in a given period to determine net income.

When asked why he did not consider the inventory in the determination of net income he replied, "I have no way of knowing what these items cost. Taking an inventory of this stuff would take me a week, even if I had a cost, and it isn't worth it. Besides, my net income is accurate enough the way I do it. How can I have a 'cost' of each item when I buy a load of items for a lump-sum price from someone who cleans out his attic?"

Do you agree that Harris' net income is "accurate enough" the way he computes it? What would you recommend?

6-31. L. T. Giese is president and major stockholder of the Williamstown Appliance Company. He is proud of the fact that his company has never borrowed from the bank, and he attributes this to his careful apportionment of available cash to the payment of liabilities. He frequently has to wait until the last due date to pay accounts payable and as a result does not take advantage of his cash discounts.

His typical annual income statement appears as follows:

Sales		$270,000
Beginning inventory	$ 13,000	
Purchases	145,000	
	$158,000	
Ending inventory	15,000	
Total merchandise available for sale		143,000
Gross margin		$127,000
Operating expenses		100,000
Net income		$ 27,000

Fred Moore, a local CPA, suggested that Giese could increase his company's profits if he would borrow funds from the bank, at 8 per cent interest in order to take advantage of all the purchase discounts available to the Williamstown Appliance Company. The normal discounts for such appliances are 2/10, n/60.

Mr. Moore also suggested that Giese use the following procedure in accounting for purchase discounts:

> Record all purchases and accounts payable at *net* amounts. (For example, purchase of a $100 appliance subject to a 2 per cent discount would be recorded as follows):

Purchases	$98	
Accounts Payable		$98

If payment is made within the discount period, a $98 payment will take care of the liability, and the discount would not enter the accounting records at all. If payment is made after the discount period, a *loss* would be recorded, since the discount is lost. In such case, the entry would be:

Accounts Payable	$98	
Discounts Lost	2	
Cash		$100

Do you think profits would increase if Giese took advantage of the 2/10, n/60 discounts with money borrowed at 8 per cent?

What do you think of Moore's suggested method of handling discounts?

7

The elements of an accounting system

An accounting system may be defined as the combined processes and procedures employed to gather and report financial data. No two companies employ accounting systems that are similar in all respects, although certain basic techniques are common to most systems. The data gathering system begins with the preparation of business papers and documents at the source of each transaction. The flow of these documents is then arranged so that as many similar transactions as possible are accumulated before an entry is prepared or posted. A framework of specialized journals and ledgers is also employed to record and summarize the data as efficiently as possible.

This chapter discusses the nature and content of business papers, the use of special journals which reduce the clerical cost of recording the data contained on these documents, and the use of special ledgers. Subsequent chapters discuss the accounting system as a means of control and the processing of mass data with high-speed business machines.

The use of business papers

In most cases it is either impractical or impossible to record a transaction in the journal at the time and place of occurrence. A more efficient system of gathering financial information involves the preparation of business documents at the time of the transaction and the transmission of copies of these documents to designated personnel for accounting purposes.

When a credit sale is made, for example, several carbon copies of the sales invoice are usually prepared, one of which is forwarded to the accounting department. This copy serves both as a source of

accounting data and as permanent documentary evidence of the transaction. It also facilitates the accumulation of data concerning a number of like transactions so that a single entry can be prepared for the total. Credit sales invoices, for example, are frequently accumulated for an entire month before the total is journalized and posted.

Exhibit 7–1 illustrates a sales invoice. Note that the multi-copy document is designed so that it can be completed with a minimum of effort at the time of sale. Note also that the invoices are prenumbered to facilitate the location of any that are misplaced and to provide a convenient mechanism for filing.

EXHIBIT 7–1

WILMAN-HOLKE SPORTING GOODS No. 1246

1304 Grande
Columbus, Ohio

Sold to Mr. L. M. Farnsworth Date April 14, 1963

Address 6108 Julia Street Terms Cash

Columbus, Ohio Sold by LPQ

Quantity	Description	Unit Price	Amount
1	12 gauge automatic shotgun	$89.50	$ 89.50
5	boxes shells	3.00	15.00
			$104.50

Customer's copy

Accounting department copy

File copy

A vast amount of data may be drawn from sales invoices for analytical purposes. Sales may be accumulated from these documents for study by individual products, by customers, terms of sale, salesmen, or seasons of the year.

In most companies, a separate business paper is prepared for each

transaction. Prepared documents similar to the sales invoice in Exhibit 7–1 are used for transactions of a repetitive nature; for example, standard *purchase order* forms are used for purchase transactions, *credit memoranda* for sales returns and allowances, *debit memoranda* for purchase returns, *cash vouchers* for disbursements, and *daily remittance slips* for cash collections. A *journal voucher* for

EXHIBIT 7–2

Purchase Order

BRANTLEY FURNITURE MANUFACTURING CO.

3407 Liberty Drive Los Angeles, California

PURCHASE ORDER

Order No. 73415

To:
Treadway Lumber Mills, Inc.
501 South Front
Seattle, Washington

Ship via:
Western Railway

Date
November 12, 1962

Terms
2/10, n/60, freight coll.

Deliver on or before
Dec. 1, 1963

Subject to inspection at our plant

See reverse side for contract conditions

Item	Quantity	Unit	Description	Unit price	Total
1	1,600	feet	1" x 12" x 8' pine, gr. A	$.06	$ 92.00
2	3,200	feet	1/2" x 12" x 10' pine, gr. B	.04	128.00
					$220.00

Brantley Furniture Manufacturing Co.
By James P. Worthen
Purchasing Agent

Vendor's copy

Purchasing department copy

Accounting department copy

Inventory control copy

Receiving department copy

unusual and nonrecurring entries is used by many companies. Most of the larger companies have hundreds of different business forms, each of which is designed for a specific transaction, with at least one copy flowing into the accounting department.

Although each type of document serves a different purpose, there are many points of similarity. Note that the purchase order in Exhibit 7–2 and the credit memorandum in Exhibit 7–3 are constructed in much the same way as the sales invoice, although they differ in the number of copies prepared and their distribution to various segments of the business. Note again the prenumbering on each form and the minimal amount of effort necessary to enter the data for a transaction.

EXHIBIT 7–3

Credit Memorandum

CREDIT MEMORANDUM NO. 2794

Date April 14, 1963

To Peters Appliance Store
4110 North Loop
Chicago, Illinois

BAGGETT
HOUSEHOLD SUPPLY CO.
710 South Wales Street
Oklahoma City, Okla.

We credit your account as follows:

4 electric clocks, our stock number A-179, defective and returned to us, @ $1.75 each.	$59.00

Customer's copy

Accounting department copy

File copy

Use of special ledgers

A ledger is a group of accounts containing data on related assets, liabilities, revenues, or expenses. The "general" ledger used in previous chapters contains accounts which appear in the basic financial statements. However, the accounts in the general ledger are not designed to reflect fully all the data needed about specific assets. Receivables, for example, are not separated by individual customers in the general ledger. Nor are the original cost and the accumulated

depreciation on individual items of office equipment reflected in the office equipment account in the general ledger.

A *subsidiary ledger* is a group of individual accounts separate from the general ledger, in which the detail of a general ledger account is maintained. The detail of amounts owed by individual customers is called an *accounts receivable subsidiary ledger,* or a *customers' ledger.* The accounts receivable account in the general ledger, known as the *control* account, contains only the total amount of receivables. The total of all the individual accounts in the customers' ledger must equal the balance in the general ledger control account. If the company has only one account receivable, there is no need for a separate accounts receivable ledger. However, if the company has many receivables, it is not practical for the detail of amounts owed by each customer to be reflected in the general ledger.

The *accounts payable subsidiary ledger* is another example of a ledger containing the detail of a general ledger account balance. This subsidiary, sometimes called a *creditors' ledger,* contains a separate record of amounts owed each creditor, the discount terms, and the due dates. The accounts payable account in the general ledger is the control account, and the total of all the individual accounts payable in the subsidiary must balance with this control.

A subsidiary ledger becomes necessary whenever the data concerning a particular account cannot be efficiently maintained in the general ledger. Separate ledgers are thus frequently used for records of nonfinancial data. A subsidiary ledger of prepaid insurance, for example, contains a record of the coverage, expiration date, and policy number of each insurance policy.

Subsidiary ledgers are commonly used for accounts receivable, notes receivable, investments in marketable securities, prepaid insurance, fixed assets, accounts payable, and notes payable. They may also be used for revenues or expenses whose necessary detail would make the general ledger cumbersome. A retail store may use a subsidiary sales ledger to accumulate information concerning the sales made by each department or the total sales revenue received from each product or line of products. Some companies use one subsidiary ledger to accumulate the detail of selling expenses and another to record administrative expenses.

The relationship between the general ledger control account and its subsidiary ledgers is illustrated by the ledger framework of the Fantenberry Company in Exhibit 7–4. Skeleton T-accounts represent the subsidiary ledgers, the exact forms of which are shown later

in this chapter. Note that the total of the individual accounts in each of the subsidiary ledgers equals the balance in the related control account. The Fantenberry Company owns one building and one tract of land and owes only one mortgage; consequently, no subsidiary ledgers are used for these accounts. Note that the subsidiary ledgers are not self-balancing, in that the debits do not equal the credits. All balances in the receivable and truck ledgers normally have debit balances like their respective control accounts. All balances in the accounts payable ledger normally have credit balances since the balance of the control account is a credit.

EXHIBIT 7–4

Ledger System of the Fantenberry Company

General Ledger
Accounts and Balances

Cash	$ 1,400	
Accounts receivable	3,100	
Inventory	16,500	
Prepaid rent	300	
Office supplies	200	
Trucks	6,200	
Accumulated depreciation—trucks		$ 3,900
Buildings	24,000	
Accumulated depreciation—buildings		10,000
Land	2,000	
Accounts payable		2,200
Mortgages payable		14,000
Capital stock		15,000
Retained earnings		4,400
Sales		47,000
Purchases	28,000	
Sales salaries	9,000	
Advertising	1,250	
Office salaries	2,700	
Office supplies	350	
Depreciation expense	1,500	
	$96,500	$96,500

Accounts Receivable Subsidiary Ledger

L. B. Adams		Wm. F. Crow		D. Howard	
600		100		1,300	

Troy Smith		James White	
700		400	

Trucks Subsidiary Ledger

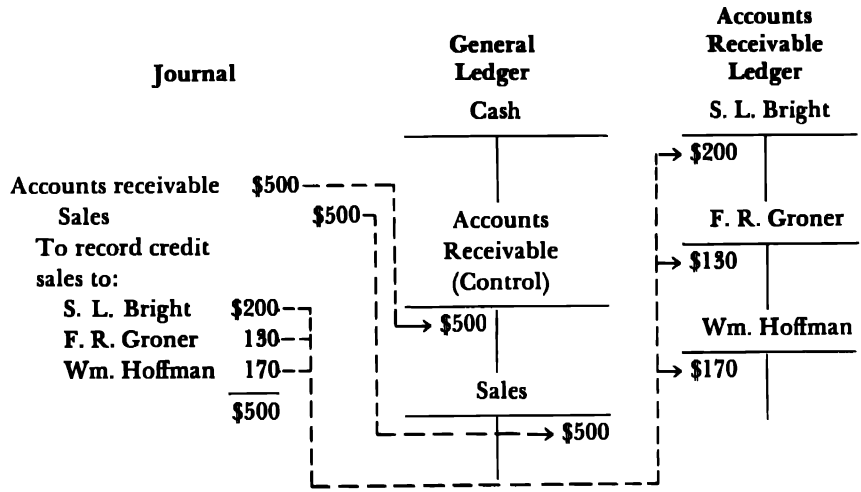
1963 Dodge		1962 Ford		1953 Chevrolet	
1,800		2,100		2,300	

Accounts Payable Subsidiary Ledger

Dray-Peters Co.		Ferguson Co.		Manning Co.	
	800		500		900

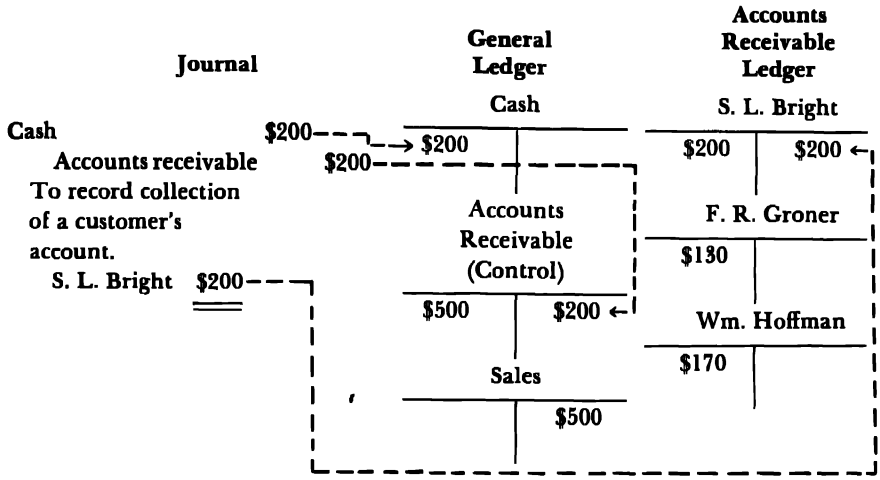
Maintaining balance between control and subsidiary ledgers

The total of all the individual accounts in a subsidiary ledger must equal the balance in the control account; consequently, each amount posted as a debit or credit to a control account must be posted similarly to one or more of the appropriate subsidiary ledger accounts. A credit sale to a customer must be posted as a debit to Accounts Receivable and a credit to Sales in the general ledger, thus maintaining its debit-credit balance; the amount must also be posted to the customer's account in the accounts receivable subsidiary ledger as a debit. The following posting of three credit sales totaling $500 illustrates this procedure:



A payment on account from a customer must be posted as both a debit and a credit to the general ledger and also as a credit to the appropriate subsidiary ledger account. Continuing the above example, a $200 collection from S. L. Bright illustrates the posting of the collection entry. Note that the control account remains in balance with the subsidiary.

The following general rule must be followed to maintain balance between the subsidiary ledger accounts and their respective control account: *When an amount is posted to a control account as a debit (or credit), an equal amount of debits (or credits) must be posted to one or more of the subsidiary ledger accounts.*



Proof of subsidiary balances

The only proof of the accuracy of a subsidiary ledger is that the total of all the individual accounts equals the balance of the control account. Periodically, usually at the end of each month, the subsidiary and control accounts are totaled to insure that they agree. Exhibit 7–5 illustrates a proof of the accounts receivable ledger of the Fantenberry Company, which was illustrated in Exhibit 7–4. The proof of accuracy is frequently prepared on an adding machine tape without listing the customers' names, especially when a large number of accounts is involved.

EXHIBIT 7–5

FANTENBERRY COMPANY
Proof of Accounts Receivable Ledger
July 31, 1963

L. B. Adams	$ 600
Wm. F. Crow	100
Dalton Howard	1,300
Troy Smith	700
James White	400
Total accounts receivable	$3,100

The proof of a subsidiary ledger does not insure that each amount is posted to the correct account. If a sale to Jim Smith is posted in error to Jerry Smith's account, the error may not be discovered unless the customer calls attention to it. However, in view of the possibility that a posting to the subsidiary ledger may have been omitted, periodic proof is an important test of over-all accuracy.

Subsidiary ledger references

The frequent addition of new accounts makes the numbering of the subsidiary ledger accounts impractical. Instead, customers' and creditors' accounts in the subsidiary ledgers are arranged in alphabetical order; fixed asset subsidiary accounts are grouped by location or nature of the asset; insurance policies are listed in the order in which the premium is paid. Since subsidiary ledger accounts are not numbered, a check or other identifying mark is entered in the posting reference column of the journal to indicate that the amount has been posted to the subsidiary ledger.

Date		Account	Post Ref.	Dr	Cr
July	7	Purchases	32	$ 720	
		Accounts Payable	16		$ 720
		Manfred Co. $720	✓		

Note that the references in the preceding journal entry indicate postings to Accounts 32 and 16 in the general ledger; the ✓ indicates that the $720 credit was posted to the Manfred Company's account in the accounts payable subsidiary ledger.

Forms of subsidiary ledgers

The subsidiary ledger account form is not standardized. Since the basic purpose of the subsidiary ledger is to provide a mechanism for recording a considerable amount of detail, the form depends upon the nature of the information needed.

The following subsidiary ledger forms illustrate both the use of subsidiary records and the nature of the information which they may contain.

1. *The three-column ledger form* (Exhibit 7–6). This form is used primarily for accounts receivable and payable, although it is adaptable to most subsidiary ledger needs.

2. *The multi-account ledger form* (Exhibit 7–7). This ledger form contains data for several related items, such as a fixed asset and the related accumulated depreciation.

3. *The register form* (Exhibits 7–8 and 7–9). This form is used primarily to list documents such as notes receivable or insurance policies.

Three-column subsidiary ledgers

The three-column ledger, as illustrated in Exhibit 7–6, contains debit, credit, and balance columns. Each transaction affecting the account of Jack L. French is posted as a debit or a credit, corresponding to the posting in the control account.

Note the cumulative balance and the use of a dash to indicate a zero balance since a dash is least likely to be read as a figure.

EXHIBIT 7–6

Three-column Ledger Account

Customer's Account
Form 7-AY

Name Jack L. French
Address 4108 West Street, Houston

Date		Items	Post Ref.	Debit	Credit	Balance
1963 Oct.	21	Sales invoice 34163	24	$205		$205
	30	Payment	32		$205	--
Nov.	2	Sales invoice 35200	36	180		180
	4	Sales invoice 35412	39	75		255

The three-column ledger form is not restricted to use in the subsidiary ledger. Many companies employ this form in their general ledger, and all machine-posted systems utilize general ledger account forms similar to the three-column form.

Multi-account subsidiary ledgers

A multi-account subsidiary ledger form contains data affecting several related accounts on the same page or account in the subsidiary. Each fixed asset, for example, has an account in the fixed asset subsidiary ledger, and for the sake of efficiency the accumulated depreciation is maintained on the same form. Exhibit 7–7 illustrates a multi-account form for a fixed asset and its related accumulated depreciation.

EXHIBIT 7–7

Multi-account Subsidiary Ledger

ASSET LEDGER

Item Cash Register General ledger classification Sales Furniture and Fixtures

Description 20-key, two-drawer, Style L Tag number 34-1725-329

Date purchased 9/2/61 Vendor National Office Supply

Estimated life 20 years Salvage value $100 Annual depreciation $60

Date	Particulars	Asset			Accum. Deprec.			Book value
		Dr.	Cr.	Bal.	Dr.	Cr.	Bal.	
9/2/61		1,300		1,300				1,300
12/31/61						20	20	1,280
12/31/62						60	80	1,220
12/31/63						60	140	1,160

The total cost of all the assets in this subsidiary ledger will equal the fixed asset account in the general ledger; the current total of accumulated depreciation will equal the balance of that control account in the general ledger.

Registers

A register is a listing of similar documents or business papers. Since subsidiary ledgers are established to provide and maintain the detail of a general ledger account, a register for such documents as notes receivable, notes payable, and insurance policies is a commonly used form of subsidiary ledger. Exhibit 7–8 illustrates an insurance register, and Exhibit 7–9 illustrates a notes receivable register.

The column in the insurance register for the current year's unexpired insurance provides information for the year-end adjusting entry. The balance of the column showing unexpired insurance thus agrees with the unexpired insurance account in the general ledger after the adjusting entry is recorded. The insurance register provides (1) data for computing the periodic insurance expense, (2) a means of reconciling the detail of unexpired insurance with the control account, and (3) data on insurance coverage, policy expiration dates, policy numbers, and the insuring company.

The notes receivable register in Exhibit 7–9 also contains a significant amount of nonfinancial data, including the maker of the notes, the due date, and the place of payment. The amount of the unpaid notes, as indicated by the absence of information in the "disposition" column, will balance with the notes receivable control account in the general ledger.

Use of special journals

Special journals are used to accumulate data from similar transactions and may be established for any transaction which occurs frequently. Use of several special journals, each designed for recording a designated type of transaction, enables several employees to journalize transactions at the same time. Further, establishing a special journal for each repetitive transaction takes advantage of the flow of business papers in that entries can be made in a special journal directly from documents and at any point in their prescribed flow.

The nature of the transactions completed by one company differs from that of other companies to the extent that there is no standardized form for special journals. However, the most frequently used journals are:

The sales journal, used to accumulate credit sales of merchandise.
The purchases journal, used to accumulate credit purchases of merchandise.
The cash receipts journal, used to accumulate cash receipts.

Exhibit 7–8

Insurance Register

Policy Number	Insurer	Coverage			Term		Total Premium	Unexpired Premium			
		Type	Property or purpose	Amount	From	To		12/31/62	12/31/63	12/31/64	12/31/65
1297143	Liberty	Fire & extended coverage	Inventory	$ 50,000	6/30/59	6/30/64	$ 870	$ 261	$ 87		
5-421763	Tri-state Security	Public liability	—	10/m, 5/m	5/1/60	5/1/63	150	17	—		
B49C152	Southern Casualty	Explosion	Boiler	$ 20,000	7/30/61	7/30/64	490	259	95		
L346-132	Western Fire	Fire & extended coverage	Building	200,000	9/1/61	9/1/64	1,920	1,067	427		
CL-5214	Chicago Mutual	Plate glass	All glass	5,000	10/1/61	10/1/63	210	79	—		
14C-15-297	New York Casualty	Fire & extended coverage	Equipment	40,000	1/1/62	2/1/62	640	—	—		
13486-Y	Employer's Mutual	Employee bond	All officers	5,000 each	1/1/62	1/1/63	370	—	—		
7B-721	Eastern Casualty	Theft	Contents	20,000	4/1/62	4/1/64	200	125	25		
								$1,808	$634		

Exhibit 7–9

Notes Receivable Register

Date Received		Payable By	Where Payable	Date of Note	Interest Rate	Time	Year	When Due											Face Value	Disposition
								J	F	M	A	M	J	J	A	S	O	N	D	
1962																				
July	1	Walter P. Kronin	Our office	7/1/62	6%	6 mo.	1963	1												$ 500	pd. 1/1/63
Oct.	25	Ferr Company	1st Nat'l Bank	10/22/62	5%	30 days	1963											21		740	pd. 11/22/63
1963																				
June	4	Lester Pete	Our office	6/4/63	—	1 year	1964						4							2,000	
Aug.	19	F. R. Jackson	Williamston State Bank	8/18/63	6%	60 days	1963										17			250	pd. 10/17/63
Nov.	21	Henry Becker	Our office	11/20/63	—	90 days	1964		18											375	

The cash payments journal, used to accumulate cash payments.
The two-column general journal, used to record any transaction which cannot be recorded in a special journal.

Sales and purchases journals

Journals with a single money column may be used to accumulate repetitive transactions involving only two general ledger accounts. When a transaction of this nature has a single debit and a single credit, the amounts obviously are equal and a single money column will suffice. Furthermore, when a single column journal is used, the total of the money column may be posted in one entry at the end of the month, thereby eliminating the need for daily individual posting to the general ledger.

A single-column *sales journal* is illustrated in Exhibit 7–10, and a single-column *purchases journal* in Exhibit 7–11. Note that each of

EXHIBIT 7–10

The Ballentine Sales Company

SALES JOURNAL Page 1

Date		Sales Invoice Number	Account Debited	Post Ref	Amount
1963					
May	1	40791	Wm. J. Evans	X	$ 120.00
	1	40792	Terry P. Hamilton	X	60.00
	3	40793	Wm. J. Evans	X	20.00
	4	40794	Dan W. Powers	X	45.00
	4	40795	Pat C. Acres	X	372.00
	8	40796	John Bowman	X	91.00
	8	40797	Wm. J. Evans	X	140.00
	12	40798	Pat C. Acres	X	10.00
	19	40799	John Bowman	X	85.00
	27	40800	Terry P. Hamilton	X	207.00
	28	40801	Wm. J. Evans	X	19.00
	30	40802	Dan W. Powers	X	27.00
	31	40803	John Bowman	X	109.00
	31	40804	Pat C. Acres	X	42.00
	31		Accounts receivable dr.—Sales cr.	2/10	$1,347.00

EXHIBIT 7–11

The Ballentine Sales Company

PURCHASES JOURNAL					Page 1
Date		Account Credited	Terms	Post Ref	Amount
1963					
May	2	A and A Appliance Co.	n/30	X	$ 150.00
	4	Central Electric Co.	2/10, n/30	X	240.00
	9	Fulford's Paint Co.	1/20, n/60	X	75.00
	11	A and A Appliance Co.	n/30	X	30.00
	11	Fulford's Paint Co.	1/20, n/60	X	620.00
	15	Patterson Plumbing, Inc.	n/30	X	91.00
	22	Central Electric Co.	2/10, n/60	X	370.00
	29	A and A Appliance Co.	n/30	X	45.00
	30	Patterson Plumbing, Inc.	n/30	X	170.00
	31	Central Electric Co.	2/10, n/30	X	20.00
	31	Purchases dr.—Accounts payable cr.		13/7	$1,811.00

these special journals is devoted exclusively to one particular type of transaction: Only credit sales of merchandise are entered in the sales journal, and only credit purchases of merchandise are recorded in the purchases journal.

Care must be exercised to insure that only the designated transactions are recorded in the special journals. A credit purchase of office supplies, for example, may not be entered in a single-column purchases journal, because only credit purchases of merchandise for resale may be accumulated in that journal. Similarly, a credit sale of any asset except merchandise may not be entered in a single-column sales journal, which accumulates only credit sales of merchandise.

Posting from single-column journals

Most repetitive transactions which are accumulated in single-column journals contain data which must be recorded in subsidiary ledger accounts as well as in the general ledger. If the single-column journal contains data from a transaction affecting a subsidiary and a related control account, the amount of each transaction is posted

daily to the subsidiary ledger and the total of all transactions is posted to the control account in the general ledger at the end of the month. This process is illustrated in Exhibits 7–12 and 7–13.

Note that the posting references appear in both the subsidiary and the general ledgers as S9 and P4. When the accounting system involves the use of more than one journal, each journal must be identified; an S identifies the sales journal, and a P the purchases journal. As indicated previously, in posting from the general journal, a check mark (✓) is placed beside each amount in the posting reference column to indicate that the amount has been posted to a subsidiary ledger account.

The total of the single money column must be posted to the gen-

EXHIBIT 7–12

Posting from the Sales Journal

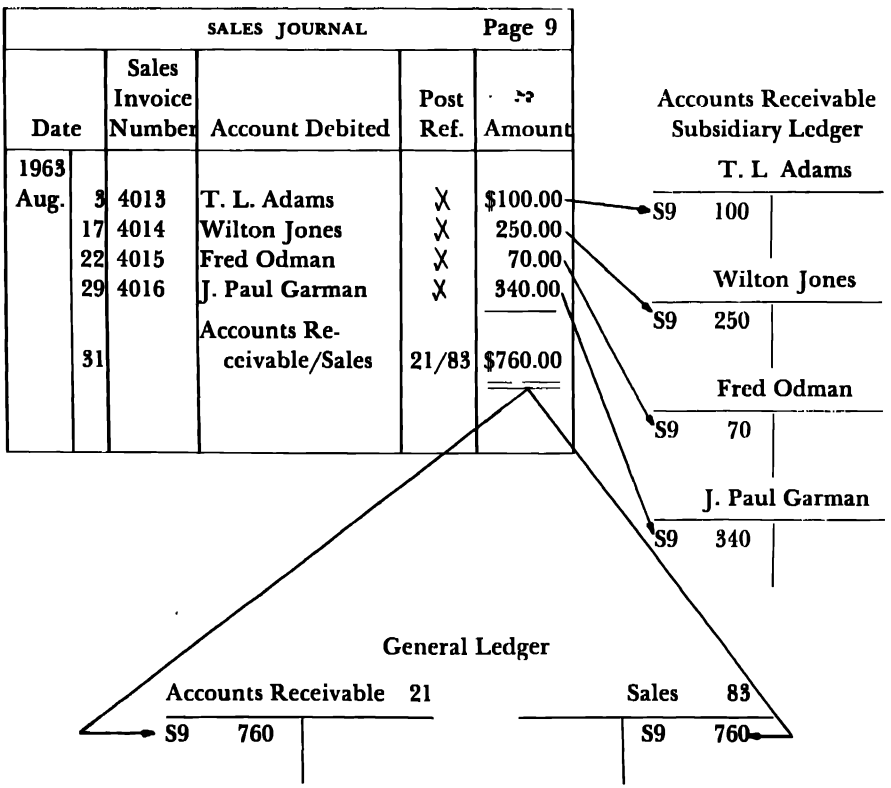
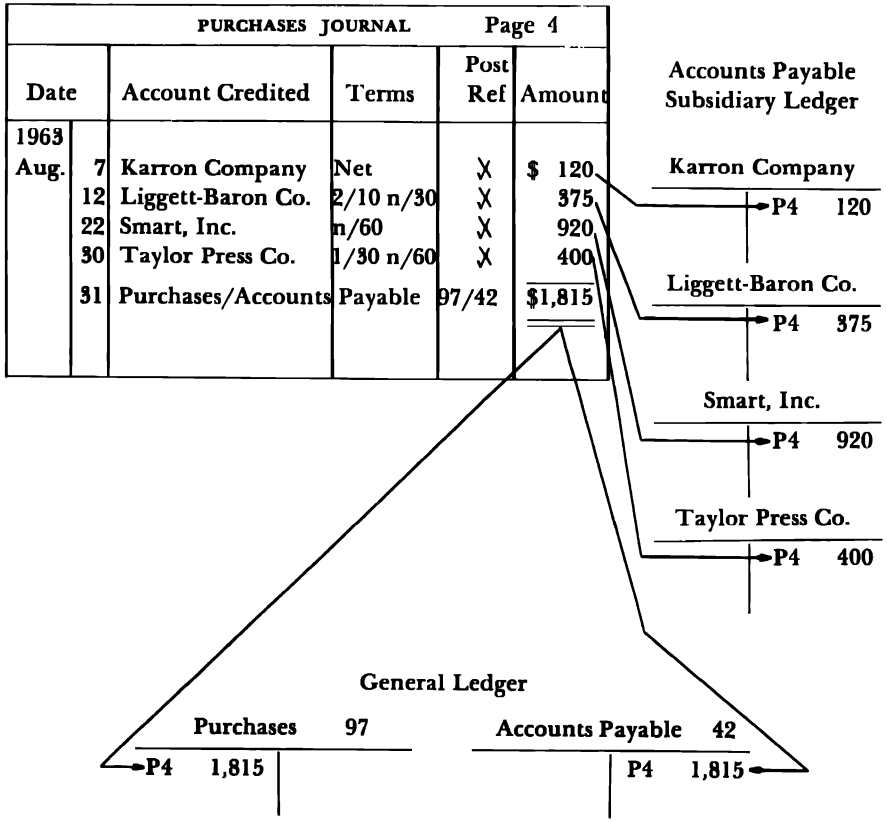


EXHIBIT 7–13

Posting from the Purchases Journal



eral ledger as both a debit and a credit. Note that in the sales journal in Exhibit 7–12 the total of $760.00 is posted as a debit to the Accounts Receivable control and a credit to Sales, and the $1,815.00 total of the purchases journal in Exhibit 7–13 is posted as a debit to Purchases and a credit to Accounts Payable. Posting references to the general ledger accounts are separated by a diagonal line, the first reference applying to the debit and the second to the credit.

The total of the purchases journal is posted in the same fashion as the total of the sales journal, except that the debit is to Purchases and the credit to the Accounts Payable control, as illustrated in Exhibit 7–13. Each individual amount in the purchases journal is posted to the accounts payable subsidiary ledger as a credit. Since the clerical effort required in recording and posting a transaction is greatly

minimized by the use of special journals, single-column journals are also often used to reduce the cost of recording sales returns and allowances, purchases returns and allowances, and transportation-in.

Cash receipts and cash payments journals

Cash transactions are frequently recorded in special journals because transactions affecting cash are repetitive and because control over cash receipts and disbursements is necessary. Control over cash receipts is achieved by segregating the physical handling of cash from the record keeping. Control over cash payments is achieved by making all payments by check, authorizing only one or two responsible employees to sign checks, recording all checks in a special journal, and keeping the responsibility for signing checks separate from that of accounting for cash payments.

Cash receipts journal

A cash receipts journal is illustrated in Exhibit 7–14. All cash receipts, regardless of the source of the receipt, are recorded in this journal. The cash receipts journal is not adaptable to the single-column form because of the many sources of cash receipts. A separate column is used for each of the most common sources, and a Sundry column is provided for receipts from miscellaneous and nonrecurring sources.

When a multi-column journal is used, such as that for cash receipts, a debit and a credit must be entered for each transaction. Since only cash receipts transactions are entered in this journal, the Cash debit column is used for each transaction. One line is normally needed for each transaction, although in special instances, two or more lines will be required.

All multi-column journals should be proved for accuracy before the column totals are posted. The total of all the debit columns in the journal must equal the total of all the credit columns if the transactions have been properly recorded. The proof of the cash receipts journal shown in Exhibit 7–14 is as follows:

Debits		Credits	
Sales discounts	$ 3.05	Sundry	$12,000.00
Cash	13,093.95	Sales	480.00
		Accounts receivable	617.00
Total debits	$13,097.00	Total credits	$13,097.00

Exhibit 7–14

THE BALLENTINE SALES COMPANY

Cash Receipts Journal

Date		Account Credited	Post Ref	Sundry Cr.	Sales Cr.	Accounts Receivable Cr.	Sales Discount Dr.	Cash Dr.
1963								
May	1	Capital Stock	9	$10,000.00				$10,000.00
		Notes Payable	8	2,000.00				2,000.00
	5	Sales	–		$200.00			200.00
	9	Wm. J. Evans	X			$120.00	$2.40	117.60
	10	Sales	–		137.00			137.00
	12	Dan W. Powers	X			45.00	.45	44.55
	13	Wm. J. Evans	X			20.00	.20	19.80
	17	Terry P. Hamilton	X			60.00		60.00
	19	Sales	–		143.00			143.00
	27	Pat C. Acres	X			372.00		372.00
				$12,000.00	$480.00	$617.00	$3.05	$13,093.95
				(–)	(10)	(2)	(12)	(1)

EXHIBIT 7–15

THE BALLENTINE SALES COMPANY

Cash Payments Journal

Date		Check No.	Account Debited	Post Ref	Sundry Dr.	Accounts Payable Dr.	Delivery Expense Dr.	Store Supplies Dr.	Office Supplies Dr.	Purchase Discount Dr.	Cash Cr.
1963											
May	1	101	Office Furniture and Fixtures	5	$ 4,000.00						$ 4,000.00
	1	102	Sales Furniture and Fixtures	6	6,000.00						6,000.00
	2	103	Store Supplies	–				$150.00			150.00
	3	104	Office Supplies	–					$200.00		200.00
	4	105	Delivery Expense	–			$ 70.00				70.00
	10	106	Central Electric Co.	X		$ 240.00				$ 4.80	235.20
	15	107	Salaries Expense	17	600.00						600.00
	18	108	Store Supplies	–				90.00			90.00
	21	109	Office Supplies	–					120.00		120.00
	23	110	Delivery Expense	–			30.00				30.00
	29	111	Fulford's Paint Co.	X		75.00				.75	74.25
	30	112	A and A Appliance Co.	X		150.00					150.00
	30	113	Fulford's Paint Co.	X		620.00				6.20	613.80
	31	114	Salaries Expense	17	600.00						600.00
					$11,200.00	$1,085.00	$100.00	$240.00	$320.00	$11.75	$12,933.25
					(–)	(7)	(16)	(4)	(3)	(15)	(1)

Posting from the cash receipts journal

At the end of each month all columns of the cash receipts journal are totaled, and the total of each column, with the exception of the Sundry column, is posted to the general ledger. Note that in Exhibit 7–16, total cash receipts of $2,258.00 are posted as a single debit to Cash, and that postings at the end of the month are also made for the $12.00 debit to Sales Discounts, the $600.00 credit to the Accounts Receivable control, and the $670.00 credit to the Sales account. As each total is posted, the posting reference is recorded below that column. Each amount in the Sundry column must be posted separately to a general ledger account. Note that in Exhibit 7–16 the $1,000 credit to Notes Payable in the Sundry column is posted to account No. 42 in the general ledger. Since a number of different accounts are usually involved in the sundry column, the total of that column is not posted. The absence of a reference below the sundry column indicates that this total is not posted.

Each individual amount appearing in the Accounts Receivable column must be posted to a customer's account in the accounts receivable subsidiary ledger. A check mark (✓) in the posting reference column indicates that this posting has been made. These postings should be made daily, even though the total is not posted to the control account until the end of the period. An identifying CR precedes the journal page number in the ledger to indicate a posting from the cash receipts journal.

The process of posting from a multi-column journal may be summarized as follows:

During the period:

1. Post each amount affecting a subsidiary ledger.

At the end of the period:

2. Total the columns and prove the equality of the debits and credits in the journal.
3. Post separately each debit or credit in the sundry column to a general ledger account.
4. Post the totals of all columns except the sundry column to the general ledger.

The cash payments journal

The cash payments journal contains a record of all transactions involving cash disbursements. Sound control over cash requires that all cash disbursements be entered in this journal.

Exhibit 7–16

Posting from the Cash Receipts Journal

CASH RECEIPTS JOURNAL — Page 3

Date		Account Credited	Post Ref.	Sundry Dr.	Sales Cr.	Accounts Receivable Cr.	Sales Disc. Dr.	Cash Dr.
1963 Aug.	2	J. B. Little	X			500.00	10.00	490.00
		Sales	—		200.00			200.00
		Notes Payable	42	1,000.00				1,000.00
		Wm. Troy	X			100.00	2.00	98.00
		Sales	—		470.00			470.00
				1,000.00	670.00	600.00	12.00	2,258.000
				(—)	(83)	(21)	(85)	(10)

Accounts Receivable Subsidiary Ledger

J. B. Little
CR3 500.000

Wm. Troy
CR3 100.00

General Ledger

Notes Payable 42
CR3 1,000

Sales 83
CR3 670

Accounts Receivable 21
CR3 600

Sales Discounts 85
CR3 12

Cash 10
CR3 2,258

The cash payments journal is illustrated in Exhibit 7–15. All transactions entered in this journal have a common credit to cash. However, the debit may be to a variety of asset or expense accounts, and a number of debit columns are used, including a sundry debit column for unusual transactions.

Note that check numbers are listed in numerical order in the cash payments journal. In order to control the disbursement of cash, all payments should be made by check; the cash payments journal provides a means of insuring that all checks are properly accounted for and recorded. The name of the person to whom a check is drawn is written on the check stub or on a carbon copy of the check. Therefore the name of the payee need not appear in the cash payments journal.

Journalization in the cash payments journal is similar to that of the cash receipts journal; each transaction must contain an equality of debits and credits, which are entered on the same line in most cases. The procedure for posting is also the same: each amount in the Accounts Payable column is posted to the accounts payable subsidiary ledger; each amount in the Sundry column is posted separately to the general ledger; and the totals of all columns except the sundry are posted at the end of the accounting period. An identifying CP precedes the journal page number in the ledger to indicate a posting from the cash payments journal.

The general journal

Regardless of the number of special journals which a company may use, a "general" journal will still be necessary. This journal is similar to the two-column journal used in all previous chapters. All entries which do not fit the company's special journals, including all adjusting, correcting, and closing entries, are entered in the general journal. A more complete explanation is usually needed for these entries than could be provided in a special journal.

Exhibit 7–17 illustrates the general journal of the Ballentine Sales Company. A relatively few normal operating transactions appear in the general journal, since the majority of a company's transactions can be entered in the special journals. Note that each debit or credit to a general ledger control account is also posted to an account in the subsidiary ledger. An identifying G precedes the journal page number in the ledgers to indicate a posting from the general journal.

EXHIBIT 7–17

THE BALLENTINE SALES COMPANY
General Journal

Page 1

Date		Account and Explanation	Post Ref	Debit	Credit
1963					
May	13	Sales Returns and Allowances	11	$31.00	
		Accounts Receivable	2		$31.00
		Returned merchandise sold on invoice 40796 to:			
		John Bowman $31.00	X		
May	21	Accounts Payable	7	30.00	
		Purchases Returns and Allowances	14		30.00
		Returned merchandise purchased on May 11 from:			
		J. A. Appliance Co. $30.00	X		

Posting subsidiary ledgers from business papers

Greater efficiency in the accounting process frequently is achieved by segregating the duties of posting to subsidiary ledgers from other accounting routines. The accounts receivable ledger, for example, may be maintained by one or more employees whose only task is to post credit sales and cash collections and prepare customers' monthly statements. Other employees are assigned the task of journalizing and posting the totals to the control account. Such a division of labor is facilitated by a routine forwarding of business papers. One copy of a sales invoice, for example, is sent to the employee posting to the accounts receivable subsidiary ledger, and a duplicate copy is sent to the person who handles journalization and posting to the general ledger. When this process is used, a sales journal is not necessary, and the total of all sales invoices for a period may be recorded in one journal entry. Since these documents contain the same data, the balance between the control and the subsidiary is maintained.

When the subsidiary ledger postings are made directly from a copy of a business paper instead of from a journal, the number on the document is entered in the subsidiary ledger as the reference. The copy of the document is then marked *posted* and is filed. The numerical sequence of the sales invoices insures that all invoices are posted. A further proof is provided at the end of each month when the control account and the total of the subsidiary ledger accounts are reconciled.

The flow of business papers and the use of subsidiary ledgers provides the mechanism by which a large mass of financial data is collected and recorded. A small business may have only a few business papers and one or two subsidiary ledgers, but an increased number of documents and subsidiary ledgers becomes necessary as the business grows. A company's system of gathering and recording financial data should be reviewed frequently by its management to insure that the procedures employed are as efficient as possible and the recorded data are adequate but not superfluous.

Questions

7-1. Define an accounting system, and describe its basic elements.

7-2. How are business documents used to reduce the clerical effort of recording and summarizing transactions?

7-3. What is the name generally given to the document used to record the following:

(a) Credit sales transactions
(b) Purchase transactions
(c) Sales returns and allowances
(d) Cash payments

7-4. Define a subsidiary ledger and a control account. State the relationship between the two.

7-5. Does a subsidiary ledger maintain an equality of debits and credits? State whether the following subsidiary accounts normally have debit or credit balances:

(a) Customers' ledger
(b) Creditors' ledger
(c) Fixed asset ledger

7-6. What is a "register" as applied to accounting records? Name several registers.

7-7. Give the distinguishing features of (a) a three-column, (b) a multi-account, and (c) a register form subsidiary ledger.

7-8. Describe the process of posting to subsidiary ledgers. Is it true that a general journal entry affecting a control account must be posted three times?

7-9. Describe (a) how the proof of a subsidiary ledger is undertaken, (b) what errors cannot be discovered by this proof, and (c) how frequently such a proof should be completed.

7-10. Describe the process of posting subsidiary ledger accounts directly from business papers, with the total accumulated for general ledger posting only at the end of the month.

7-11. Describe a single column journal. How are postings to subsidiary ledgers and the general ledger made from a sales journal; a purchases journal?

7-12. Describe the arrangement of columns in the cash receipts journal; in a cash payments journal. Are the columns in these journals fixed, or will different businesses use different column headings?

7-13. Describe the steps in posting from a multi-column journal such as a cash receipts or cash payments journal.

7-14. What posting references are used in the ledger accounts for amounts posted from:

(a) The sales journal.
(b) The purchases journal.
(c) The cash receipts journal.
(d) The cash payments journal.
(e) The general journal.

7-15. What posting reference is entered in the journals to indicate that an amount has been posted to a subsidiary ledger?

Exercises

7-16. The Caffin Mill Company uses the following journals in its accounting system:

Sales journal—single column, for all credit sales.
Purchases journal—single column, for all credit purchases of merchandise.
Cash receipts journal—multi-column, for all cash receipts.
Cash payments journal—multi-column, for all cash payments.
General journal—for all transactions which cannot be entered in the other journals.

REQUIRED

Indicate in which of the journals the following transactions would be entered:

(a) a cash sale.
(b) a credit sale.
(c) a return of merchandise by a customer for cash.
(d) a credit purchase of merchandise.
(e) a credit purchase of office supplies.
(f) a payment of salaries.
(g) a sale of office equipment, with a note received in payment.
(h) a return of merchandise to a supplier for credit.
(i) a payment of cash dividends to stockholders.
(j) a receipt of cash from a customer in payment of his account.
(k) a payment of an accounts payable.
(l) a return of office supplies, bought on account, to the supplier.

7-17. The sales journal, cash receipts journal, and general journal of the Granite Sales Corporation were as follows at the end of November:

Sales Journal

Customer	Ref.	Amount
Carter Jones		200
Wilma Logan		300
James Troll		100
Harold Wilson		500
Carter Jones		70
James Troll		220
Total		1,390

Cash Receipts Journal

Account credited	Ref.	Sundry	Accounts Receivable	Sales Discount	Cash
James Troll			100	2	98
Notes payable		1,000			1,000
Harold Wilson			500	10	490
Cash sales		400			400
Carter Jones			200	4	196
Total		1,400	800	16	2,184

General Journal

Account	Ref.	Dr.	Cr.
Sales returns and allowances		20	
Accounts receivable			20
James Troll $20			

REQUIRED

1. Establish accounts in the accounts receivable ledger for each customer whose name appears in the sales journal. Also establish general ledger accounts for Cash, Accounts Receivable, Notes Payable, Sales Discounts, Sales Returns and Allowances, and Sales.
2. Post all amounts in the three journals.
3. Prepare a proof of the accounts receivable ledger.

7-18. The purchases journal, cash payments journal, and general journal of the Trust and Assurity Company were as follows on July 31:

Purchases Journal

Account	Ref.	Amount
Houston Company		190
Ledbetter, Inc.		1,200
Knowl and Knowl		600
Afton-Tame Co.		140
Ledbetter, Inc.		600
Houston Company		1,500
Total		4,230

Cash Payments Journal

Account debited	Ref.	Sundry	Accounts Payable	Purchases Discounts	Cash
Ledbetter, Inc.			1,200	24	1,176
Salary expense		400			400
Houston, Inc.			190		190
Office equipment		300			300
Knowl and Knowl			600	12	588
Total		700	1,990	36	2,654

General Journal

Account	Ref.	Dr.	Cr.
Accounts payable		120	
Purchases returns and allowances			120
Houston Company $120			

REQUIRED

1. Establish accounts in the accounts payable ledger for each supplier in the purchases journal, and also a general ledger account for Cash, Office Equipment, Accounts Payable, Purchases, Purchases Returns and Allowances, Purchases Discounts, and Salary Expenses.
2. Post all amounts in the three journals.
3. Prepare a proof of the accounts payable journal.

7-19. A company completed the following transactions:

July 1 Collected an account receivable owed by James Arbon, $100, less a 2% discount.
3 Borrowed $1,000 from the bank, giving a six-months note payable.
4 Collected an account receivable from William A. Turner, $200, less a 2% discount.
7 Cash sales for July 1 to 7, $280.
12 Collected $40 interest on a note receivable. (Credit interest income.)
24 Cash sales for July 7 to 24, $780.
29 Collected an account receivable from Harold Miller, $70. Miller did not earn a discount.

REQUIRED

1. Prepare a cash receipts journal with columns similar to Exhibit 7–14.
2. Enter the transactions in the journal.
3. Total the journal and, using assumed ledger references, indicate all postings which would be made from the journal.

7-20. A company completed the following transactions:

Nov. 1 Paid a $200 account payable, less 1% discount, to the Baker Wholesale Company. (Begin check numbers with 108.)

3 Paid cash for office supplies, $30.
6 Paid a $500 account payable, less 2% discount, to the Nolan Wyss Company.
12 Purchased stores supplies for cash, $75.
20 Paid salaries of $750.
26 Paid a $340 account payable to Hein and Bart, Inc. No discounts are granted by this supplier.
27 Paid $70 cash for gas and oil for the delivery trucks. (Debit Delivery Expense.)
28 Paid cash for office supplies, $40.
30 Purchased delivery equipment for cash, $1,500.
31 Paid for repairs to delivery trucks, $60.

REQUIRED

1. Prepare a cash payments journal similar to that in Exhibit 7–15.
2. Enter the transactions in the journal.
3. Total the journal and, using assumed ledger references, indicate in the journal all postings that would be made.

7-21. A bookkeeper made the errors stated below in recording and posting amounts. Single column sales and purchases journals and multiple column cash receipts and cash payments journals similar to those illustrated in this chapter were used.

Error 1. The sales journal was incorrectly totaled as $6,793 instead of $7,693.

Error 2. A sale was made on account, and a note receivable was received from the customer. The sale was entered in the sales journal, with Notes Receivable written in the customer column. A posting was then made to the Notes Receivable account in the general ledger when other sales in the journal were posted to customers' accounts.

Error 3. A sale to J. R. Smith was posted in error to the account of Jim Smyth.

Error 4. A cash sale was entered in the cash receipts journal as a debit in the cash column and a credit in the accounts receivable column. No posting was made to the accounts receivable subsidiary ledger.

Error 5. A credit purchase of office supplies was entered in the purchases journal.

REQUIRED

State for each error (1) whether the general ledger will balance; (2) whether the control account will balance with the subsidiary ledger; and (3) describe how the error should be corrected, assuming all special journals are totaled, ruled, and posted, but closing entries have not yet been made.

Problems

7-22. The Trenchly Company uses a single column sales journal, a multi-column cash receipts journal, and three-column subsidiary ledgers for customers' accounts. Establish a sales journal similar to that in Exhibit 7–10 and a cash receipts journal similar to Exhibit 7–14, a two-column general journal, and subsidiary ledger accounts similar to Exhibit 7–6.

June 2 Made a credit sale to Jack Troy, $120. (Begin sales invoice numbers with 1942.)
3 Cash sales to Ted Berry, $40.
4 Collected the $200 owed by Ben Hagen, less 2% discount.
5 Made a credit sale to F. D. Garrett, $275.
9 Borrowed $1,500 from the bank, giving a note payable.
11 Made a credit sale to Tom Anger, $320.
14 Collected the $100 owed by Morton Beckton, less 2% discount.
20 Made a credit sale to A. J. Waxley, $130.
22 Cash sales to Alfred Dale, $70.
24 Made a credit sale to Jack Troy, $65.
24 Issued credit memorandum No. 78 to Tom Anger for return of merchandise purchased June 11, $50.
25 Collected $300 from A. J. Waxley (no discount earned).
26 Made a credit sale to F. D. Garrett, $195.
28 Received $500 from Tom Anger on account (no discount earned).
29 Received cash from F. D. Garrett for $200 on his account, less a 2% discount.
30 Made a $415 cash sale to Welfred Avery.
30 Issued credit memo No. 79 to F. D. Garrett for return of merchandise purchased on credit, $45.

REQUIRED

1. Enter the following balances as of May 31, 1964, in the individual customers' accounts and the total in the general ledger control for accounts receivable:

Tom Anger, 1120 West Elm	$ 500
Morton Beckton, 900 Abrams	100
F. D. Garrett, 120 East 40th	—
Ben Hagen, 920 Main Street	200
Jack Troy, 75 Southwest Blvd.	—
A. J. Waxley, 41 North Baker, Apt. D	375
Total accounts receivable	$1,175

2. Journalize the transactions.
3. Total the journals and post all amounts affecting the accounts receivable subsidiary ledger and the Accounts Receivable control. Assign numbers to the journal pages and the Accounts Receivable control for posting purposes. Post the entire sales journal first, followed by the cash receipts journal and the general journal.
4. Prepare a proof of accounts receivable as of June 30.

7-23. The Parker Paint Company uses a single column purchases journal similar to that of Exhibit 7–11, a two-column general journal, and a cash payments journal similar to that of Exhibit 7–15 with debit columns for Sundry, Accounts Payable, Purchases, Salaries, and Office Supplies. The company uses three-column ledgers similar to Exhibit 7–6 for the accounts payable subsidiary ledger.

Mar. 1 Purchased merchandise from Home Wholesale, terms 2/10, n/30, $400.
2 Paid Moore-Penick the $120 owed them (no discount allowed). Begin checks with number 473.
3 Paid salaries, $930.
4 Purchased merchandise from Moore-Penick, Inc., terms n/30, $250.
5 Purchased merchandise from Standard Products Co., terms 2/30, n/60, $660.
6 Paid the month's rent, $100.
7 Purchased merchandise from Atlas Lumber, terms 2/10, n/30, $700.
8 Purchased office supplies for cash, $55.

9 Purchased merchandise from Standard Products Co., terms 2/30, n/60, $480.
10 Returned to the Moore-Penick, Inc., $15 of the merchandise purchased from them (debit memo 114).
12 Purchased merchandise from Whippet, Inc., for cash, $150.
13 Paid $500 of the amount owed Standard Products, less 2% discount.
15 Returned to the Atlas Lumber Company for credit $25 worth of the merchandise bought from them (debit memo 115).
16 Paid salaries, $930.
17 Purchased store equipment for $1,200 cash.
20 Purchased merchandise from Jack's Supply House, terms n/30, $1,550.
22 Paid $700 owed to Atlas Lumber Company, less 2% discount.
24 Purchased merchandise from Taylor and Taylor for cash, $150.
29 Purchased office supplies for cash, $30.
30 Purchased merchandise from Atlas Lumber Co., terms 2/10, n/30, $450.
30 Paid Jack's Supply House $940 (no discount allowed).
30 Paid salaries, $930.

REQUIRED

1. Prepare the purchases journal, general journal, and cash payments journal; also open subsidiary ledger accounts for the creditors listed below. Enter the February 28 balances in the accounts payable subsidiary ledger accounts and the total in the general ledger control account.

Atlas Lumber Co., 700 Industrial Dr.	$ 700
Home Wholesale Co., 618 Julia Dr.	—
Jack's Supply House, 50 East Main	940
Moore-Penick, Inc., 109 West 43rd	120
Standard Products Co., 450 Abbott	510
Total	$2,270

2. Journalize the transactions.
3. Total the journal and post all amounts affecting the accounts

payable subsidiary ledger and the general ledger control. Assign numbers to the journal pages and to the general ledger control account for posting purposes. Post the purchases journal first; then post the cash payments journal and general journal.

4. Prepare a proof of the accounts payable ledger.

7-24. The chart of accounts of the Westfalls Company appears below:

10 Cash
11 Accounts receivable (control)
12 Notes receivable (control)
13 Inventory
14 Unexpired insurance (control)
20 Office equipment (control)
31 Accounts payable (control)
32 Notes payable (control)
40 Mortgage payable
51 Capital stock
52 Retained earnings
60 Sales
61 Sales returns and allowances
62 Sales discounts
70 Purchases
71 Purchases returns and allowances
72 Purchases discounts
73 Transportation-in
81 Salaries
82 Rent
83 Office supplies
84 Expired insurance

The company uses single column sales and purchases journals, a two-column general journal, a cash receipts journal similar to that in Exhibit 7–14, and a cash payments journal with debit columns for Sundry, Accounts payable, Purchases, Salaries, and Office Supplies.

Oct. 1 Sold merchandise on account to Harold Stiles, $200; Walter Jones, $350; and Bertha Nelson, $140. Begin sales invoices with number 753.

2 Purchased merchandise on account, all with terms 2/10 e.o.m., from Bridges and Bridges, $630; Roberts Manufacturing Company, $380; and Neilson Company, $1,540.

3 Paid rent for the month, $250. The first check is number 432.

5 Paid $200 of the account owed to Peters Manufacturing Company, earning a 2% discount.

7 Paid the following accounts payable:
Bridges and Bridges, $400 (no discount earned).
Roberts Manufacturing Company, $600 (2% discount earned).
Manchester Specialty Company, $150 (2% discount earned).

8 Collected the following from credit customers:
Mary Sparks, $200 (2% discount earned).

Oct. 8 Ned Green, $150 (2% discount earned).
Walter Jones, $350 (no discount earned).
9 Issued credit memo No. 149 to Bertha Nelson for return of merchandise for credit, $20.
12 Returned $170 of defective merchandise to the Barnes and Holt Company for credit.
15 Cash sales were $1,020.
17 Paid salaries, $1,700, and bought office supplies for cash, $230.
23 Borrowed $1,000 from the bank, giving a six-months note payable.
24 Sold merchandise on account to Bertha Nelson, $240; Bob Burr, $190; and Charles Smith, $410.
25 Purchased merchandise on account, all with n/30 terms from:
Ballard Co., $95
Triple D Co., $140
Nelson & Nelson, $270
27 Paid Neilson Company $540 of the account owed them (no discount earned).
28 Made cash refund to Mary Sparks for return of merchandise, $25.
30 Cash sales October 15 to 30, $975.
30 Received payment on account from Harold Miller for $150 of his account, less a 2% discount.
31 Paid $250 of the account owed the Western Company, earning a 2% discount.
31 Bought merchandise for cash, $180.

REQUIRED

1. Establish the journals and enter the transactions completed during October, 1964.
2. Total the journals. Using the general ledger numbers in the chart of accounts and a ✓ to indicate subsidiary ledger postings, enter all posting references in the journals to indicate where and what amounts you would post.

7-25. The Argon Supply Company uses single column sales and purchases journals, a two-column general journal, a cash receipts journal similar to Exhibit 7–14, and a cash payments journal similar to Exhibit 7–15, with debit columns for Sundry, Accounts Payable, Purchases, Transportation-in, and Salaries. The company's chart of accounts is as follows:

10 Cash
11 Accounts receivable
12 Notes receivable
13 Interest receivable
14 Inventory
15 Office supplies
16 Unexpired insurance
20 Store equipment
20-A Accumulated depreciation —store equipment
30 Accounts payable
40 Capital stock
41 Retained earnings
50 Sales
51 Sales returns and allowances
52 Sales discounts
60 Purchases
61 Purchases discounts
62 Purchases returns and allowances
63 Transportation-in
70 Salaries
71 Depreciation expense
72 Bad debts expense
80 Interest income

Dec. 1 Purchased merchandise on account, all with 2/30, n/60 terms, as follows:
Albert-Hert Company, $640
Zennith Company, $1,450
Herd-Traweek, Inc., $360
Franklin Company, $290

5 Sold merchandise on account to the following customers. (Begin sales invoice numbers with 109.)
Aubry Jones, $300
Virginia Smith, $850
Robert Wise, $200
Nelda Toone, $1,180

6 Returned for credit $50 of the merchandise bought on December 1 from the Zennith Company.

8 Received $20 interest income on the notes receivable (credit interest income).

9 Paid salaries, $1,000 (begin checks with number 36) and transportation-in, $300.

11 Received payments from customers, all earning 2% discounts:
Aubry Jones, $250
Betty Strubble, $500
Aaron Betts, $1,150
Jack Purr, $800

11 Cash sales, December 1 to 10, $1,400.

12 Aubry Jones returned for credit $20 of the merchandise sold to him on December 5.

14 Paid transportation-in, $60.

15 Purchased merchandise on account, all with terms of 2/10, n/30, from:

Mertz-Fram Company, $250
Wilson Carbide, $70
American Co., $890

17 Purchased merchandise for cash, $155.
19 Paid the following accounts payable, earning a 2% discount on each:
Albert-Hert Company, $500
Herd-Traweek, Inc., $300
Franklin Co., $200
23 Cash sales, December 11 to 22, $1,350.
25 Purchased merchandise for cash, $30.
26 Paid transportation-in, $40.
30 Paid salaries of $900.
31 Made cash refund to Robert Wise for return of merchandise sold, $45.
31 Sold merchandise on account to William Neff, $75; Samuel Greer, $120; and Betty Crain, $470.

REQUIRED

1. Establish the journals and enter the transactions.
2. Total the journals. Enter all posting references to indicate the postings which would be made from all journals. Use the account numbers in the chart of accounts for general ledger postings and a ✓ for subsidiary account postings.

7-26. The Produce Wholesalers, Inc. uses a single column sales journal and purchases journal similar to Exhibits 7–10 and 7–11, a cash receipts journal similar to Exhibit 7–14, a two-column general journal, and a cash payments journal similar to Exhibit 7–15, except that the store supplies and office supplies columns may be omitted.

Aug. 1 Issued capital stock for $7,000 cash.
2 Paid rent for the month on an office and warehouse building, $200. (Begin checks with number 101.)
3 Purchased office equipment for cash, $1,000.
3 Paid $4,000 cash for two delivery trucks.
4 Purchased merchandise on account from Sanders Produce Company, $1,250, terms 2/10, n/30.
5 Purchased merchandise on account from Crowe, Inc., $400, terms 2/30, n/60.

7 Sold merchandise on account to Bob Wilson, $300. (Begin sales invoice numbers with 100.)
8 Cash sales August 1 to 7, $370.
9 Paid $1,000 of the account owed to Sanders Produce Company, earning a 2% discount.
10 Sold merchandise on account to Harry Box, $130.
12 Received cash from Bob Wilson, $300, less 2% discount.
14 Purchased merchandise on account from Midwest Supply Company, $630, terms 2/30, n/60.
16 Cash sales for August 8 to 16, $275.
17 Sold merchandise on account to Dorna Lane, $450.
19 Sold merchandise to Abbott Eggert for $370. He gave a sixty-day note receivable in payment.
20 Paid $70 for gas and oil for the delivery trucks. (Debit delivery expense.)
22 Sold merchandise on account to Bob Wilson, $560.
23 Sold merchandise on account to Charles Farnsworth, $210.
24 Received cash on account from Harry Box, $100, less 2% discount.
24 Bob Wilson returned for credit merchandise sold to him for $60.
25 Purchased merchandise on account from Tradewinds Supply Co., $760, terms n/30.
29 Sold merchandise on account to Tom Sappington, $190.
30 Paid salaries of $400.
31 Paid $20 for delivery truck repairs. (Debit delivery expense.)
31 Paid Midwest Supply $500 of the account owed them, receiving a 2% discount on the payment.

REQUIRED

1. Establish the journals and number the journal pages as follows: Sales journal, page 4; purchases journal, page 7; cash receipts journal, page 11; cash payments journal, page 15; and general journal, page 3.
2. Enter the transactions for August, 1964, in the journals; total and rule the journals. Post all amounts to general ledger accounts and to the accounts receivable ledger and the accounts payable ledger. The accounts on page 221 will be needed.
3. Prepare a trial balance as of August 31, a proof of accounts receivable, and a proof of accounts payable.

GENERAL LEDGER			
Account Number	Title	Accounts Receivable Ledger	Accounts Payable Ledger
10	Cash	Harry Box	Crowe, Inc.
11	Accounts receivable	Charles Farnsworth	Midwest Supply Co.
12	Notes receivable	Dorna Lane	Sanders Produce Co.
13	Office equipment	Tom Sappington	Tradewinds Supply Co.
14	Delivery trucks	Bob Wilson	
15	Accounts payable		
16	Capital stock		
17	Sales		
18	Sales returns and allowances		
19	Sales discounts		
20	Purchases		
21	Purchases discounts		
22	Salaries		
23	Delivery expense		
24	Rent expense		

7-27. The Waters Company uses a single column sales journal and purchases journal similar to Exhibits 7–10 and 7–11, a cash receipts journal similar to Exhibit 7–14, a two-column general journal, and a cash payments journal similar to Exhibit 7–15, except that the columns for delivery expense and store supplies may be omitted.

Mar. 1 Issued $10,000 capital stock for cash.
2 Purchased store equipment for $6,000 cash. (Begin check numbers with 100.)
3 Made a credit sale of $300 to Nelson Pitt. (Begin sales invoices with 1001.)
4 Purchased merchandise on account from Atlantic, Inc., $250, terms 2/30, n/60.
8 Made a credit sale of $320 to Wilma Warner.
10 Purchased merchandise on account from Northwest Company, $460, terms 2/10, n/30.
11 Cash sales for March 1 to 11, $365.
12 Paid salaries of $200.
14 Sold merchandise to Tom W. Lelong on account, $230.
18 Received cash from Wilma Warner, $200, less a 2% discount.
19 Paid the $250 owed Atlantic, Inc., less 2% discount.

20 Purchased office supplies on account from the Staff Co., $50, terms n/30.
21 Purchased office supplies for cash, $20.
28 Purchased merchandise from Barnes & Norwood on account, $700, terms 2/10, n/30.
29 Paid $200 of the amount owed the Northwest Company (no discount was earned).
30 Sold merchandise to Nelson Pitt on account, $460.
30 Purchased office supplies for cash, $30.
30 Made a credit sale of $575 to J. T. Ball.
30 Paid $500 of the amount owed Barnes & Norwood, receiving a 2% discount on the payment.
30 Purchased merchandise on account from Dixie Company, $1,100, terms n/30.
31 Cash sales for March 12 to 31, $420.
31 Purchased merchandise on account from Atlantic, Inc., $180, terms 2/30, n/60.
31 Received cash from Nelson Pitt for the $300 due on invoice No. 1001, less a 2% discount.

GENERAL LEDGER

Account Number	Title	Accounts Receivable Ledger	Accounts Payable Ledger
10	Cash	J. T. Ball	Atlantic, Inc.
11	Accounts receivable	Tom W. Lelong	Barnes & Norwood
12	Office supplies	Nelson Pitt	Dixie Company
13	Inventory	Wilma Warner	Northwest Co.
20	Store equipment		Staff Company
21	Accumulated depreciation—store equipment		
30	Accounts payable		
31	Accrued salaries payable		
40	Capital stock		
41	Retained earnings		
42	Income summary		
50	Sales		
51	Sales discounts		
60	Purchases		
61	Purchases discounts		
70	Salaries		
71	Depreciation expense		
72	Supplies expense		

REQUIRED

1. Establish the journals and number all journal pages 1, since this is a new business just beginning operations. Enter the transactions for March, 1963, in the journals.
2. Total the journals and post all amounts to a general ledger, an accounts receivable ledger, and a customers' ledger. The accounts on page 222 will be needed.
3. Prepare a proof of accounts receivable and a proof of accounts payable.
4. Complete a work sheet for the month of March, considering the following adjustments:
   (a) Accrued salaries, $250
   (b) Depreciation on store equipment, $50
   (c) Office supplies used, $30
   (d) Ending inventory, $800
5. Journalize the adjusting and closing entries and post them to the ledger.

Cases

7-28. Albert Trigg inherited from his father a tract of land and $50,000 on October 7, 1963. The land is adjacent to a university and three blocks from a high school. Trigg believes he could make a satisfactory return on investment if a moving picture theater of approximately 1,000 seats were to be constructed on the land, using the $50,000 he now has. He knows that he can earn revenue from the sale of individual tickets, popcorn, candy, and drinks, and rental fees from one-night leases of the theater to special groups. His expenses will be those normally incurred in a theater operation.

If you were Trigg, what financial information would you want your records to provide? What types of records do you think would fit best in this business (include both business forms and books of account). Prepare a chart of accounts for the theater, setting out the revenue and expense accounts you think should be used.

7-29. The owner of the Nightingale Restaurant chain asked your help in setting up the necessary forms and books of account for his business. Each restaurant in the chain of eleven has from five to eight employees and a manager. The purchase of foodstuffs is done mostly from the central office, and the managers order what they need each day from the central storage. They have authority, how-

ever, to purchase certain designated produce items directly, using cash from a small fund which they are allowed to maintain.

How would you control the receipt of cash at each restaurant to prevent unauthorized disappearance or theft?

What information would you want about the business daily; weekly; monthly?

What documents would you use? What information would you want on them?

Design a chart of accounts for the business, including the number and nature of subsidiary ledgers, if in your opinion any are needed.

PRACTICE SET

The practice set *TRAVIS OFFICE SUPPLY COMPANY, INC.*, designed to accompany this text, may be begun at this point. The set is separately bound and contains a description of the company and its operations, a complete set of ledgers and journals, a narrative of transactions completed by the company, and forms for preparing both interim and year-end financial statements.

Part II

MEASURING AND REPORTING OWNERSHIP EQUITIES

Ownership equities in single proprietorships, partnerships, and corporations are dissimilar in nature; consequently, different accounting and reporting procedures have been formulated for each type of business ownership. An understanding of the accounting and reporting processes related to the various forms of business ownership is basic to a meaningful interpretation of financial statements.

Attention should be focused in this section of three chapters on (1) the role of accounting in measuring ownership rights and equities and (2) the recording and reporting processes for owners' investments, profit distributions, and the final liquidation of the business.

8

Proprietorship and partnership equities

A single proprietorship is an unincorporated business owned entirely by one individual, and a partnership is an unincorporated business owned jointly by two or more individuals. There is no capital stock to evidence ownership in a proprietorship or partnership; the only record of individual ownership is the amount of the owners' equity reflected by the accounting records.

There is no *legal* distinction between the assets of a single proprietorship and the personal assets of the owner. If a single proprietorship becomes bankrupt, the unpaid creditors have a legal claim on any personal assets of the owner. This is also true of a partnership. However, it does not hold true for a corporation, because the personal assets of the stockholders are legally separate from those of the corporation. The legal differences between the proprietorship, partnership, and corporate form of business ownership necessitate different forms of owners' equity accounts.

The assets and liabilities of a business depend upon the nature of its operations and not upon the form of ownership. Revenues and expenses are also similar for a proprietorship, partnership, or corporation within the same industry. The only significant difference in the accounts and reports of proprietorships, partnerships, and corporations lies in the treatment of owners' equity. This chapter is primarily concerned with the problems of accounting for single proprietorship and partnership equities.

Single proprietorships

A single proprietorship is owned by one individual, who is usually actively engaged in the management of the company. No legal action

or governmental approval is necessary to begin a single proprietorship. The owner may invest or withdraw capital as he deems necessary, and he may withdraw profits at any time and in any amount. A single proprietorship does not pay federal income taxes as a business entity: the owner pays income taxes on the net income of the business just as he must for any other personal income.

Owner's capital account.

A capital account with a title containing the owner's name is used by single proprietorships to reflect the owner's equity in the assets of the business. Thus a $10,000 cash investment by Logan White to begin a printing business would be recorded as follows:

June	6	Cash	$10,000	
		Logan White—Capital		$10,000
		Initial investment to begin a printing business.		

Additional investments which the owner may later make are recorded in the same capital account, and any withdrawals of permanently invested capital are recorded as reductions of this account.

Owner's drawing account

Since single proprietorships are owned by one person and all income from the business accrues to him, he may withdraw all or any part of that income for his personal use. Any cash or other assets so withdrawn are recorded in a separate *Drawing* account, which is sometimes called the *Personal* or *Withdrawal* account. Permanent reductions of the owner's invested capital are debited directly to the capital account, while personal withdrawals of profits or withdrawals in anticipation of profits are debited to the Drawing account. Thus a personal withdrawal of $800 by the owner is recorded by the following entry:

June	15	Logan White—Drawing	$800	
		Cash		$800
		To record a personal withdrawal of cash.		

The Drawing account is not an expense and is not considered in the determination of net income. The owner's personal drawings are a distribution of profits, just as dividends are distributions of the profits earned by corporations.

Owners of single proprietorships who also manage their businesses sometimes call their personal withdrawals a "salary," arguing that if they did not manage the business, a salaried employee would be necessary for that purpose. However, there can be no expense recorded for assets the owner extracts from the business, regardless of what title may be given the withdrawal. The owner's efforts are expended for the purpose of making profits, and the computation of these profits would be distorted if an arbitrary "salary" were recorded as an expense.

Financial statements of single proprietorships

To illustrate the financial statements of single proprietorships, assume the condensed trial balance of the Brogan Toggery Shop on December 31, 1964, is as follows:

EXHIBIT 8–1

BROGAN TOGGERY SHOP
Condensed Trial Balance
December 31, 1964

Assets	$105,000	
Liabilities		$ 10,000
J. T. Brogan—Capital		90,000
J. T. Brogan—Drawing	6,000	
Revenue		69,000
Expenses	58,000	
	$169,000	$169,000

The income statement would report an $11,000 net income for the year, which is the difference between the revenues of $69,000 and expenses of $58,000. The form of the income statement would not differ from those illustrated previously in this text and thus is not presented.

The balance sheet would appear as shown below. The detail of the assets and liabilities would not differ from those of any other form of business and thus are not shown in detail. The owner's equity section is the only part of the balance sheet which differs from

the corporate statements presented earlier in this text. Note that the drawings of $6,000 are subtracted from the net income of $11,000 in the owner's equity section; the remaining $5,000 of income which was not withdrawn is added to the owner's capital, since he has elected to invest this portion of the profits by leaving it in the business.

EXHIBIT 8–2

BROGAN TOGGERY SHOP

Condensed Balance Sheet

December 31, 1964

ASSETS		EQUITIES			
Assets	$105,000	Liabilities			$ 10,000
		Owner's equity:			
		J. T. Brogan—Capital, 1/1/64		$90,000	
		Net income for the year	$11,000		
		Less Drawings	6,000	5,000	
		J. T. Brogan—Capital, 12/31/64			95,000
Total assets	$105,000	Total equities			$105,000

Closing entries for single proprietorships

The closing entries for single proprietorships are basically the same as for corporations. Revenues and expenses are closed at the end of the fiscal year to the income summary; the net income as reflected in the balance of the income summary account is closed to the owner's capital account. The drawing account is also closed to the capital account; consequently, the difference between net income and personal drawings is reflected as an increase or decrease in the owner's capital account after all closing entries are posted.

Closing entries for the Brogan Toggery Shop, whose trial balance was presented earlier, would be as follows:

Dec.	31	Revenue	$69,000	
		Income Summary		$69,000
		To close revenue account.		

Dec.	31	Income Summary	$58,000	
		Expenses		$58,000
		To close expense accounts.		
	31	Income Summary	$11,000	
		J. T. Brogan—Capital		$11,000
		To close net income to capital.		
	31	J. T. Brogan—Capital	$ 6,000	
		J. T. Brogan—Drawing		$ 6,000
		To close drawings to capital.		

Nature of partnerships

A partnership is an association of two or more persons who operate a business for profit on a co-ownership basis. The only prerequisite to forming a partnership is an agreement by two or more individuals wherein their resources and activities are combined in a joint enterprise. In the absence of an agreement to the contrary, the partners share in the management and in any profits or losses.

The partnership form of business ownership is easier to establish than the corporate form, for no special legal action is necessary. A partnership is a desirable form of ownership when more capital or personal ability is needed than a single individual is able to supply. The ease with which it may be formed is its greatest advantage; its relative instability and the unlimited liability to its owners for losses are its greatest disadvantages. The basic characteristics of partnerships are discussed below.

Instability

A partnership is a voluntary association of individuals which is terminated when any one of the partners disassociates himself from the other partners in the joint enterprise. A partnership may be dissolved voluntarily by the owners, or it may be involuntarily dissolved by the death or personal bankruptcy of any partner. The dissolution of a partnership presents a number of problems, including the distribution of assets and the valuation of the withdrawing partner's equity in the business.

The admittance of a new partner terminates the old partnership and results in the formation of a new partnership. Valuation of the partners' equities in the old business and determination of equities in the new partnership present accounting and financial problems requiring unanimous agreement by the partners; if the partners can-

not agree, the only recourse is the liquidation and dissolution of the partnership.

Co-ownership of property

All property invested in the partnership by the partners ceases to be personal property and becomes jointly owned by all partners. The investing partner receives credit in his capital account for the value of the property; however, his capital account represents an equity in the total of all assets invested in the partnership, and the capital accounts cannot be related to specific assets.

If a partner invests land in a partnership, for example, he no longer has exclusive ownership rights in the land. If he later withdraws from the partnership, he has no legal rights to the original assets which he invested; his capital balance reflects an equity in total assets and not an equity in identifiable properties. For this reason, a careful accounting for each partner's capital is necessary.

Unlimited liability

One of the greatest disadvantages of the partnership form of business ownership is the unlimited personal liability to the partners for debts of the partnership. One partner, acting in his capacity as co-owner of the business, can bind the company by his acts; if these acts create liabilities greater than the assets of the company, any one or all of the partners may be held personally liable for unpaid partnership debts.

Taxes

The ease with which a partnership can be formed and the absence of income tax assessments against the business make it a desirable form of business ownership in many cases. A partnership pays no income tax as a business entity, although each partner must pay personal income taxes on his full share of the profits. The relatively high tax assessed against the profits of corporations frequently makes the partnership form of business ownership appear more attractive.

Formation of a partnership

Although a partnership may be formed by an oral agreement among the partners, a written document called the *Articles of Co-*

partnership should be prepared. The document should contain provisions covering all foreseeable contentions among partners. Articles of Co-partnership usually contain clauses covering the following:

1. Names of the partners and the effective date of the agreement.
2. The nature and scope of the business.
3. The capital to be invested by each partner and the date and form of the investments.
4. The rights and duties of each partner.
5. The method of distributing profits and losses.
6. The amount and nature of any personal drawings to which each partner is entitled.
7. The treatment of any loans which a partner may make to the partnership, the interest rate, and methods of repayment.
8. Duration of the agreement, if any, and acts which may cause the partnership to be terminated.
9. The method to be used in liquidation of the business, and the method of valuing the assets upon liquidation.
10. Provisions covering termination of the partnership upon death or incapacity of a partner.

The Articles of Co-partnership must be signed by each partner, and it then becomes a legally binding document until amended by unanimous agreement of the partners.

Partners' capital and drawing accounts

Each partner's investment is recorded in a separate capital account, which for identification purposes contains the partner's name. A separate drawing account is also used for each partner. The net income or loss at the end of each accounting period is divided among the partners according to their agreement, and each partner's share of the profit or the loss is closed to his capital account. Each partner's drawing account is also closed to his capital account at the end of the period.

To illustrate the use of the partners' capital accounts, assume the Smith–Lantly–Wycoff partnership has the condensed trial balance shown in Exhibit 8–3.

The assets, liabilities, revenues, and expenses are not shown in detail in the condensed trial balance, since only the equity accounts will differ from other forms of business ownership.

The net income reflected by the trial balance is $27,000, derived by subtracting expenses of $61,000 from revenues of $88,000. These expenses and revenues are closed to an income summary account in

EXHIBIT 8–3

SMITH–LANTLY–WYCOFF CO.

Condensed Trial Balance

For the Year Ended December 31, 1964

Assets	$ 54,000	
Liabilities		$ 3,000
Smith—Capital		20,000
Smith—Drawing	6,000	
Lantly—Capital		11,000
Lantly—Drawing	2,000	
Wycoff—Capital		5,000
Wycoff—Drawing	4,000	
Revenues		88,000
Expenses	61,000	
	$127,000	$127,000

the normal manner. If the income is to be divided equally among the three partners, the entry to close the income summary to the partners' capital accounts is:

Dec.	31	Income Summary	$27,000	
		Smith—Capital		$9,000
		Lantly—Capital		9,000
		Wycoff—Capital		9,000
		To close net income to partners' capital accounts, using an equal profit distribution ratio.		

The Drawing accounts are then closed to the Capital accounts with the following entry:

Dec.	31	Smith—Capital	$6,000	
		Lantly—Capital	2,000	
		Wycoff—Capital	4,000	
		Smith—Drawing		$6,000
		Lantly—Drawing		2,000
		Wycoff—Drawing		4,000
		To close partners' drawing accounts to their respective capital accounts.		

The balance sheet of the partnership and a separate statement of partners' capital are then prepared and appear as illustrated in Exhibit 8–4. A separate statement of partners' capital is necessary, because the balance sheet would be unduly bulky if this data were included in the owners' equity section. The balances of the partners' capital accounts at the beginning of the year and the additional investments necessary to prepare the statement of partners' capital are taken from the capital accounts in the ledger.

EXHIBIT 8–4

SMITH–LANTLY–WYCOFF CO.

Condensed Balance Sheet

December 31, 1964

ASSETS		EQUITIES		
Assets	$54,000	Liabilities		$ 3,000
		Owners' equities:		
		Smith—Capital	$23,000	
		Lantly—Capital	18,000	
		Wycoff—Capital	10,000	
		Total owners' equities		51,000
Total assets	$54,000	Total equities		$54,000

SMITH–LANTLY–WYCOFF CO.

Statement of Partners' Capital

For the Year Ended December 31, 1964

	Smith		Lantly		Wycoff	
Capital balances, Dec. 31, 1963		$15,000		$11,000		$ 5,000
Add: Additional investment		5,000				
		$20,000		$11,000		$ 5,000
Add: Share of net income for 1964	$9,000		$9,000		$9,000	
Less: Withdrawals	6,000	3,000	2,000	7,000	4,000	5,000
Capital balances, Dec. 31, 1964		$23,000		$18,000		$10,000

Distribution of partnership net income

The method to be used in distributing the net income or loss to the partners should be clearly stated in the Articles of Co-partnership. In the absence of a specific profit distribution ratio, the courts have held that profits shall be distributed equally; if a profit distribution ratio is stated but no mention is made of losses, the losses are distributed in the same ratio as profits.

The most frequently used methods of distributing profits or losses to partners are:

1. An arbitrary ratio such as 1/2:1/2, 1/3:2/3, or 2/5:3/5.
2. On the basis of the ratio of the partners' capital balances. The ratio of beginning capital, average capital, or ending capital may be used.
3. Allowing "interest" on capital balances to allow for differences in the amount of investment, with the balance distributed according to an arbitrary ratio.
4. Allowing "salary" to one or more partners to allow for differences in the value of services, with the balance distributed according to an arbitrary ratio.
5. Allowing both "interest" on capital balances and a "salary" for services, with the balance distributed according to an arbitrary ratio.

Arbitrary ratio

The partners may agree on any ratio for profit or loss distribution which they feel is equitable. The advantage of this method is its simplicity; the disadvantage is that the ratio may prove inequitable in the future. The entry to distribute a $10,000 profit between Mabry and Troll, who share profits on a 2/5:3/5 basis, is:

Dec.	31	Income Summary	$10,000	
		Mabry—Capital		$4,000
		Troll—Capital		6,000
		To close net income to capital on a 2/5:3/5 basis.		

Ratio of capital balances

Use of a ratio based on the balances of the partners' capital accounts places the primary emphasis in profit sharing upon the value of capital. The Articles of Co-partnership should clearly state whether beginning, ending, or average capital is to be used to de-

termine the ratio and whether drawing account balances are to be considered.

To illustrate, assume that Mabry and Troll have the following capital accounts: a $10,000 net income is to be distributed and drawing account balances are not to be considered in determining the ratio:

Mabry—Capital

			Jan.	1	Balance 5,000
			June	30	Investment 5,000
			Dec.	31	Balance 10,000

Troll—Capital

Mar.	31	Withdrawal of invested capital 10,000	Jan.	1	Balance 20,000
			Dec.	31	Balance 10,000

If a ratio of beginning capital balances is used, the ratio is $5,000: $20,000, or 1/5:4/5. Thus, the $10,000 net income would be distributed to Mabry and Troll in the amount of $2,000 and $8,000, respectively.

If a ratio of ending capital balances is used, the ratio would be $10,000: $10,000, or 1/2:1/2. The $10,000 net income would thus be distributed equally to the partners.

If average capital is used, a separate computation is made to compute the partners' average capital by multiplying the beginning balance and each change in the capital account by the number of months during which each amount exerted an influence on the individual partner's capital balance. For example, the $5,000 beginning balance in Mabry's account is multiplied by twelve months. The $5,000 investment on June 30 affected the balance from June 30 to the end of the year and is multiplied by six months. The result of this multiplication is the product of months times dollars; consequently, if the sum of each partner's month-dollars is divided by twelve months, the average capital can be determined. Using the capital accounts of Mabry and Troll shown above, the computation may be illustrated as follows:

Computation of Partners' Average Capital

Mabry

	$ 5,000 × 12 =	$ 60,000
plus	5,000 × 6 =	30,000
		$ 90,000 ÷ 12 = $7,500 average capital

Troll

	$20,000 × 12 =	$240,000
less	10,000 × 9 =	90,000
		$150,000 ÷ 12 = $12,500 average capital

The profit or loss distribution is based on the average capital ratio of $7,500:$12,500, or $\frac{7,500}{20,000} : \frac{12,500}{20,000}$, or 3/8:5/8. Thus a $10,000 net income for the year would be distributed to Mabry and Troll in the amounts of $3,750 and $6,250, respectively.

"Interest" on capital, balance by ratio

The partners may agree to allow interest on capital as a means of allowing for differences in the partners' investments, with any balance of profits after interest distributed according to a predetermined ratio. Beginning, average, or ending capitals may be used to compute the interest.

Suppose, for example, that Mabry and Troll have agreed to allow 6% interest on beginning capital balances, with any remaining profits or losses divided equally. With beginning capital balances of $5,000 and $20,000, respectively, a $10,000 net income would be distributed as follows:

	Distribution of Net Income		
	To Mabry	To Troll	To Total
Interest:			
6% of $ 5,000	$ 300		$ 300
6% of 20,000		$1,200	1,200
Balance after interest (divided equally)	4,250	4,250	8,500
Total	$4,550	$5,450	$10,000

Although both interest and a ratio were used in the computation of each partner's share of the $10,000 net income, only one entry is necessary to record the profit distribution. The entry is prepared using the totals distributed to each partner as follows:

Dec.	31	Income Summary	$10,000	
		Mabry—Capital		$4,550
		Troll—Capital		5,450
		To distribute net income according to the partnership agreement allowing interest on beginning capital and any balance shared equally.		

If the partnership has a net loss or if profits are insufficient to cover the amount of interest agreed upon, the full amount of interest must nevertheless be included in the computation. The "balance after interest" is then a negative amount which is subtracted from the allowed interest in order to distribute the correct amount of profit or loss. To illustrate, assume that in the preceding illustration the net income is only $500. Profits would then be distributed as shown below. Note that the interest is allowed in full to each partner even though the amounts so distributed are in excess of net income.

Distribution of Net Income

	To Mabry	To Troll	To Total
Interest:			
6% of $ 5,000	$300		$ 300
6% of 20,000		$1,200	1,200
Balance after interest (divided equally)	(500)	(500)	(1,000)
Total	($200)	$ 700	$ 500

In this case Mabry receives a debit (loss) of $200, while Troll receives a credit (profit) of $700. The difference between these two is the $500 net income to be distributed. The entry to close the income summary would be:

Dec.	31	Income Summary	$500	
		Mabry—Capital	200	
		Troll—Capital		$700
		To close net income to partners' capital according to the profit sharing agreement.		

It is necessary to allow each partner his agreed interest, even though it is in excess of the income being distributed, in order to comply with the partners' profit-sharing agreement. The "balance after interest" is used to equate the interest and the total net income to be distributed. The balance after interest is a positive figure if the net income is greater than the total interest being paid the partners; it is a negative amount if the interest exceeds net income.

"Salary" to partners, balance by ratio

When the value of the services of the individual partners is unequal, the partners may agree to allow "salaries" to compensate for this difference. The salary in this case is a part of the profit distribution plan and must not be considered an expense.

To illustrate this method of profit distribution, assume Mabry is allowed a salary of $4,000 and Troll a salary of $5,000, with any remaining profits or losses divided equally. A net profit of $10,000 is distributed as follows:

	Distribution of Net Income		
	To Mabry	To Troll	To Balance
Salary:			
Mabry	$4,000		$ 4,000
Troll		$5,000	5,000
Balance after salaries (divided equally)	500	500	1,000
Total	$4,500	$5,500	$10,000

Note that the balance after salaries equates the amount allowed as salaries and the total net income or loss to be distributed. Thus the balance after salaries, in the above case a positive figure, may be either a positive or a negative amount.

Salaries and interest allowed, balance by ratio

The difference both in partners' investments and in the value of their service may be considered in the distribution of profits by allowing both salaries and interest on capital. To illustrate, assume $6,000 of net income is to be distributed according to an agreement that allows Mabry a salary of $4,000 and Troll a salary of $5,000, with interest at 6% on beginning capital balances and any balance distributed equally. The computation would be as follows:

	Distribution of Net Income		
	To Mabry	To Troll	To Balance
Interest:			
6% on $ 5,000	$ 300		$ 300
6% on 20,000		$1,200	1,200
Salaries:			
Mabry	4,000		4,000
Troll		5,000	5,000
Balance after interest and salaries (shared equally)	(2,250)	(2,250)	(4,500)
Total	$2,050	$3,950	$6,000

Note that both interest and salaries were allowed even though the total interest and salaries exceeded the net income. A negative "balance" was distributed equally in order to distribute exactly $6,000 of net income. If a net loss is to be distributed, salaries and interest in full must still be allowed, since the partners have through these provisions agreed to take into account unequal contributions of capital or services. If salaries and/or interest were ignored when profits were insufficient to cover them, the inbalance in contributions would not be considered and the intent of the agreement violated.

Admission of a new partner

When a new partner is admitted to the business, the old partnership agreement is terminated and a new agreement must be executed. A new partner cannot be admitted without the consent of all existing partners. The equities of the original partners must be adjusted before admission of the new partner; if the adjustment is not made, the continuing partners' equities may be incorrectly stated. Admission of another partner creates a new business entity, and the capital accounts of the continuing partners should reflect the value of the properties which they are investing in the new partnership. The gain or loss resulting from the revaluation of assets is distributed to the continuing partners in their profit or loss ratios.

To illustrate, assume that the partnership of Mabry and Troll is terminated in order to admit a third partner. Their profit and loss ratio before admission of the new partner is 1:2, respectively. If land owned by the original partnership has a value $4,200 greater than its

book value and the inventory is to be written down by $1,200 due to obsolescence, the revaluation entry to adjust the continuing partners' capital accounts prior to admission of the new partner would be:

July	16	Land	$4,200	
		Inventory		$1,200
		Mabry—Capital		1,000
		Troll—Capital		2,000
		To revalue land and inventory and adjust the capital accounts in the profit or loss ratio prior to the admission of a new partner.		

The assets thus appear in the books at their current value, and the partners' capital accounts reflect their equities in those values prior to the formation of the new partnership. With the admission of Schmidtt, the new partner, the entry would be:

July	16	Cash (or other assets at current market value)	$10,000	
		Schmidtt—Capital		$10,000
		To record the investment and admittance of a new partner.		

The assets invested by the new partner are recorded at their current market value at the time of investment. Thus both the new and the continuing partners' equities reflect a consistent basis of valuation.

Recording goodwill

The value of an existing business is frequently greater than the combined current market value of all of its properties, because the company may have a valuable asset in the form of *goodwill*. Goodwill may be defined as the ability to earn profits greater than the average company in the same industry, and is usually the result of an advantageous location, superior management ability, or excellent customer relations. When a partnership is revalued preparatory to admitting a new partner, an asset such as goodwill is sometimes recorded to reflect the value of the business as an established, going concern. While such a practice is sometimes questionable, it is justified by those who record goodwill on the grounds that all assets of the existing business, including any goodwill which it enjoys, should be transferred to the new business entity at their current value.

If the partnership of Mabry and Troll, with a profit and loss ratio of 1:2 respectively, records $6,000 of goodwill prior to admitting a new partner, the entry would be:

Nov.	12	Goodwill	$6,000	
		Mabry—Capital		$2,000
		Troll—Capital		4,000
		To record goodwill in the profit and loss ratio prior to admitting a new partner.		

Withdrawal of a partner

If a partner withdraws from the partnership, he is entitled to his share of the net assets of the firm. The equity of the withdrawing partner as contained in the balance of his capital account usually will not reflect his equity in the current market value of the partnership's assets. The assets of the partnership, therefore, should be revalued to reflect more accurately the withdrawing partner's equity. Any gains or losses resulting from such revaluations are distributed to the partners in their profit or loss ratio. Goodwill is sometimes recorded to reflect the value of the business as a going concern prior to a partner's withdrawal.

After the value of a partner's equity is determined, he may withdraw partnership assets in that amount, or he may sell his equity to the remaining partners, who pay for it with personal assets.

Purchase of an equity by remaining partners

When the retiring partner's capital is purchased by the remaining partners with personal assets, an entry is made transferring the capital of the retiring partner to the capital accounts of the partner or partners who purchased his equity. If Smith and Darrell purchase with their own personal assets the $12,000 capital of Crane, buying equal portions, the entry is:

May	20	Crane—Capital	$12,000	
		Smith—Capital		$6,000
		Darrell—Capital		6,000
		Purchase of retiring partner's equity in equal amounts by the remaining partners.		

Purchase of an equity with partnership assets

Crane's capital account has a $12,000 balance, thus the entry to record purchase of his equity with partnership assets in that amount is:

May	20	Crane–Capital	$12,000	
		Cash		$12,000
		To record purchase of retiring partner's equity with partnership cash.		

After this entry is recorded, the remaining partners' capital accounts have the same balances as they had immediately preceding Crane's retirement.

Liquidation of a partnership

Although a partnership is terminated when a new partner is admitted or when an existing partner withdraws, business operations may continue unchanged. A partnership is *liquidated* when its assets are sold, its liabilities are paid, the remaining assets are distributed to the partners, and the business ceases to exist.

When a partnership is liquidated, any gain or loss realized in converting a partnership asset to cash or other liquid form affects the partners' equities; consequently, such gains or losses are distributed to the partners in their profit or loss ratio. Assets may not be distributed to the partners, however, until all liabilities are paid. The proceeds from converting the remaining assets may be less than expected and, if so, an insufficient amount of distributable assets will be available to pay the creditors.

The steps in the liquidation process may be summarized as follows:

1. Convert assets into distributable form, recording gains or losses in the partners' capital accounts in their profit and loss ratio.
2. Pay all liabilities.
3. Distribute assets to partners according to their capital account balances.

These steps are illustrated in the following series of transactions involving the partnership of Leggett, Williams, and Abbott, who share profits and losses equally. The trial balance of the partnership before liquidation is as follows:

Cash	$ 500	
Inventory	3,400	
Office equipment	8,500	
Accumulated depreciation—office equipment		$ 1,300
Accounts payable		1,100
Leggett—Capital		3,000
Williams—Capital		2,000
Abbott—Capital		5,000
	$12,400	$12,400

Step 1. The office equipment, which cost $8,500 and has an accumulated depreciation of $1,300, was sold for $6,000 cash. The resulting loss is distributed to the partners according to their profit and loss ratio as follows:

Sept.	19	Cash	$6,000	
		Accumulated depreciation—office equipment	1,300	
		Leggett—Capital	400	
		Williams—Capital	400	
		Abbott—Capital	400	
		Office Equipment		$8,500
		Sold office equipment and distributed the loss in the profit or loss ratio.		

The entry to record the sale of the inventory for $4,300 cash is:

Sept.	19	Cash	$4,300	
		Inventory		$3,400
		Leggett—Capital		300
		Williams—Capital		300
		Abbott—Capital		300
		Sold the inventory and distributed the gain in the profit or loss ratio.		

The partnership's trial balance now contains only distributable assets. The equities in those assets are reflected in the equity accounts, as indicated by the trial balance of the partnership at this point.

Cash	$10,800	
Accounts payable		$ 1,100
Leggett—Capital		2,900
Williams—Capital		1,900
Abbott—Capital		4,900
	$10,800	$10,800

Step 2. Since the partnership's creditors have prior claim on partnership assets, these claims must be satisfied in full before any assets are distributed to partners. The entry to record payment of the liabilities is:

Sept.	19	Accounts Payable	$1,100	
		Cash		$1,100
		Paid all liabilities.		

The trial balance is now:

Cash	$9,700	
Leggett—Capital		$2,900
Williams—Capital		1,900
Abbott—Capital		4,900
	$9,700	$9,700

Step 3. The entry for the distribution of assets to partners is shown below. Note that the balance in each partner's capital account measures his equity in the assets to be distributed. The profit or loss ratio is *not* used in the distribution of assets to partners upon liquidation.

Sept.	19	Leggett—Capital	$2,900	
		Williams—Capital	1,900	
		Abbott—Capital	4,900	
		Cash		$9.700
		Final distribution of assets to partners.		

Partners' capital with debit balances

Sometimes the losses suffered in converting the assets into distributable form will, when distributed to partners in their profit or loss ratio, result in a debit balance in a partner's capital account. This debit balance occurs when the losses distributed to a partner exceed his capital balance.

The debit balance reflects the partner's debt to the partnership and, if possible, the partner must pay to the partnership the amount of the debit balance. If he has no personal assets with which to pay the amount owed, the remaining partners must absorb in their profit or loss ratios the loss resulting from his inability to cover the debit balance.

To illustrate, consider a condensed trial balance of a partnership as shown below (shown horizontally to conserve space). The partners, Brown, Kriel, and Netter, share profits in a 20:40:40 ratio, respectively.

Cash	Other assets	Liabilities	Brown—Capital	Kriel—Capital	Netter—Capital
$1,000	$13,000	$2,000	$3,000	$6,000	$3,000

The Other Assets which cost $13,000 are sold for $3,000 cash, and the resulting $10,000 loss is distributed among the partners in their profit and loss ratio. The effect of the transaction on the partners' capital balances is as follows:

Cash	Other assets	Liabilities	Brown—Capital	Kriel—Capital	Netter—Capital
$1,000	$13,000	$2,000	$3,000	$6,000	$3,000
+ 3,000	— 13,000		— 2,000	— 4,000	— 4,000
$4,000	–0–	$2,000	$1,000	$2,000	($1,000)

The capital account of Netter now has a debit balance of $1,000, which represents a debt owed by Netter to the partnership.

Continuing the example, the next step is the payment of liabilities. The trial balance after payment would be:

Cash	Other assets	Liabilities	Brown—Capital	Kriel—Capital	Netter—Capital
$1,000	$13,000	$2,000	$3,000	$6,000	$3,000
+ 3,000	— 13,000		— 2,000	— 4,000	— 4,000
$4,000	–0–	$2,000	$1,000	$2,000	($1,000)
— 2,000		— 2,000			
$2,000	–0–	–0–	$1,000	$2,000	($1,000)

If Netter has sufficient personal assets to pay the liability, he will contribute $1,000 cash to the partnership. An entry debiting cash and crediting his capital account is made. The partnership now has $3,000 available for distribution to partners, as reflected in their capital balances. Brown receives $1,000 and Kriel receives $2,000.

If Netter cannot pay the $1,000 he owes the partnership, the loss

is borne by Brown and Kriel in their profit and loss ratio 20:40, respectively. Thus, Brown would absorb $333 and Kriel would absorb $667 of the loss due to Netter's inability to pay. Writing off the $1,000 debit balance thus produces the following balances in the accounts:

Cash	Other assets	Liabilities	Brown—Capital	Kriel—Capital	Netter—Capital
$1,000	$13,000	$2,000	$3,000	$6,000	$3,000
+ 3,000	— 13,000		— 2,000	— 4,000	— 4,000
$4,000	–0–	$2,000	$1,000	$2,000	($1,000)
— 2,000		— 2,000			
$2,000	–0–	–0–	$1,000	$2,000	($1,000)
			— 333	— 667	+ 1,000
$2,000	–0–	–0–	$ 667	$1,333	–0–

After the loss due to Netter's inability to pay his liability is absorbed, the available cash is equal to the remaining capital balances. Brown receives $667 of the available cash, and Kriel receives $1,333. The partnership assets are distributed, and the company is liquidated.

Questions

8-1. Define and give the distinguishing characteristics of a single proprietorship, a partnership, and a corporation.

8-2. What is a "drawings" account? Discuss the entries that are posted to this account and the disposition that is made of its balance at the end of the accounting period.

8-3. Describe the capital section in the balance sheets of a single proprietorship and a partnership.

8-4. The trial balance of the P. M. Lacy Company, a single proprietorship, contained the following balances: Expenses, $17,000; Revenues, $20,000; Drawing, $2,000. What closing entries would be made?

8-5. Windell and Zorin formed a partnership but failed to specify how profits would be distributed. In case of dispute, how would the courts hold that the distribution be made? If the two partners had

specified how profits were to be distributed but had not specified how losses would be divided, how would the courts hold on losses?

8-6. What are the advantages and disadvantages of the partnership form of business ownership?

8-7. What is an article of co-partnership? Describe the conditions usually covered in such a document.

8-8. Describe the purpose and the content of a "Statement of Partners' Capital."

8-9. Name five methods which may be used to distribute partnership profits and losses. If two partners want to change methods while a third partner does not, can the two partners outvote the third?

8-10. If a profit agreement states that "interest at 6% shall be allowed on capital balances" as a part of the profit distribution agreement, discuss how this statement could lead to controversy between partners.

8-11. Why should assets be revalued before admission of a new partner?

8-12. Define goodwill. Discuss justification for recording goodwill when a new partnership is formed.

8-13. Distinguish between dissolution of a partnership and liquidation of the partnership.

8-14. Are gains or losses on the conversion of assets to liquid form prior to the liquidation of a partnership distributed in the profit and loss ratio or according to the ratio of capital balances? Why?

8-15. List the steps in the liquidation process. Why are liabilities paid before assets are distributed to partners?

8-16. Lemmons has a debit balance in his capital account after conversion losses are distributed. What does this debit balance represent? If Lemmons has sufficient personal assets to cover the debit balance, what entry is made when he pays the deficit in his capital account? What entry is made if he is bankrupt and cannot cover the debit balance?

Exercises

8-17. Presented below is the condensed trial balance of the Waters Press Company, a partnership, after closing entries have been made and posted.

J. T. WATERS PRESS COMPANY

Post-closing Trial Balance

December 31, 1964

Cash	$ 2,500	
Accounts receivable	1,900	
Paper stock	6,200	
Equipment	23,400	
Accumulated depreciation—equipment		$ 2,050
Equipment repair parts	1,050	
Accounts payable		2,700
Salaries payable		300
J. T. Waters—Capital		10,000
F. L. Trame—Capital		20.000
	$35,050	$35,050

Waters had a beginning capital of $7,000, received $4,000 of the annual profits, and had personal drawings of $1,000. Trame had a beginning capital of $22,000, received $2,000 of the annual profits, had personal drawings of $8,000, and invested an additional $4,000 during the year.

REQUIRED

Prepare a balance sheet and a statement of partners' capital.

8-18. (a) K. P. Lott owns and operates his business as a single proprietorship. At the beginning of the year he had total assets of $6,000 and total liabilities of $1,000. At the end of the year his total assets were $7,000, and there were no liabilities.

REQUIRED. Determine the amount of net income (or loss) during the year if he made no additional investments but had made withdrawals of $400 during the year. In solving this problem prepare Lott's balance sheet at the beginning and end of the year.

(b) The partnership of Wynn and Lattimer had assets of $11,000 and liabilities of $2,000 at the beginning of the year. Wynn's capital account was double Lattimer's. Profits and losses are divided equally, and at the end of the year the partnership had assets of $14,000 and liabilities of $1,000.

REQUIRED. Prepare the balance sheet for the end of the year.

8-19. The partnership of A, B, and C divides profits on the basis of average capital (do not consider drawings in computing the average

capitals). Their capital accounts and drawing accounts are given below.

A—Capital			
		Jan. 1	$13,000
June 1	$8,000		

B—Capital			
		Jan. 1	$10,000
May 1	$4,000	Oct. 1	4,000

A—Drawing	
$200	

B—Drawing	
$700	

C—Capital			
		Jan. 1	$10,000
		May 1	10,000

C—Drawing	
$500	

REQUIRED

Prepare closing entries if the income summary contains (1) a profit of $2,400; (2) a loss of $3,000.

8-20. The partnership of A, B, and C has the following profit and loss sharing agreement: (a) Salaries are to be allowed as follows:

A	$5,000
B	7,000
C	2,000

(b) Interest is to be allowed at 6% on ending capitals, which are:

A	$30,000
B	20,000
C	10,000

(c) Any balance is to be divided equally.

REQUIRED

Prepare entries to close the income summary to the partners' capital accounts if:

(1) The Income Summary account contains a $20,000 profit.
(2) The Income Summary account contains a $6,800 profit.
(3) The Income Summary account contains a $2,800 loss.

8-21. The Martin and Nambert partnership divides profits on the basis of average capital. The income summary contains a net income of $12,000.

CASE (A)

Martin—Capital				Nambert—Capital			
		1/1/64	$15,000			1/1/64	$20,000
7/1/64	$ 5,000	11/1/64	15,000	9/1/64	$ 5,000	3/1/64	20,000

CASE (B)

Martin—Capital				Nambert—Capital			
		1/1/64	$10,000			1/1/64	$20,000
11/1/64	$ 5,000	5/1/64	5,000	3/1/64	$10,000	11/1/64	5,000

REQUIRED

Compute the average capitals of each partner and prepare the entry to distribute the profit under each of the two independent cases.

8-22. A, B, and C are partners. Profits are distributed according to the following agreement: A is to receive a salary of $3,000; B a salary of $6,000; and C no salary. Each partner is to receive 6% interest on his beginning capital, and any balance of profit or loss is to be divided equally.

None of the partners had invested or withdrawn capital during the year, and the following balances are in the ledger at the end of the year.

	Drawing Account (Debit Balance)	Capital Account
A	$1,000	$10,000
B	3,000	20,000
C	3,000	25,000

REQUIRED

Prepare closing entries

(1) If the income summary contains a $18,300 profit.
(2) If the income summary contains a $3,000 profit.
(3) If the income summary contains a $6,000 loss.

8-23. The balance sheet for a partnership immediately before liquidation is as follows:

PARTNERSHIP
Balance Sheet
June 30, 1964

Cash	$ 8,000	Accounts payable	$ 5,000
Merchandise	7,000	Mortgage payable	11,000
Building	25,000	X—Capital	5,000
Goodwill	15,000	Y—Capital	20,000
		Z—Capital	14,000
Total assets	$55,000	Total equities	$55,000

X, Y, and Z share profits in a 20:40:40 ratio, respectively.

REQUIRED

Prepare complete entries for the liquidation of the partnership if all assets exclusive of cash are sold for $17,000. Assume that no partner has sufficient personal assets to cover a debit balance in his capital account.

Problems

8-24. The balance sheet of the Galt, Harris, and Jackson partnership is shown below, and applies to each of the independent parts of this problem. Profits and losses are shared equally.

GALT, HARRIS, & JACKSON PARTNERSHIP
Balance Sheet
December 31, 1964

ASSETS		EQUITIES	
Cash	$ 40,000	Accounts payable	$11,000
Notes receivable	8,000	Mortgage payable	5,000
Accounts receivable	30,000	Galt—Capital	30,000
Inventory	40,000	Harris—Capital	70,000
Equipment	15,000	Jackson—Capital	50,000
Building	30,000		
Land	3,000		
Total assets	$166,000	Total equities	$166,000

REQUIRED

1. Galt wishes to withdraw from the partnership. Record his withdrawal under the following independent assumptions:
   (a) Goodwill of $18,000 is recorded and Galt withdraws from the partnership, receiving partnership cash equal to his capital balance.
   (b) The inventory is written down to $34,000, and Harris buys Galt's capital, paying $28,000 personal cash to Galt.
2. Galt, Harris, and Jackson agree to admit Klasson as a new partner. Record Klasson's admission under the following assumptions:
   (a) Goodwill of $12,000 is recorded prior to the admission of the new partner, and the new partner then invests $30,000 in the new partnership.
   (b) The inventory is written down to $31,000 prior to admitting Klasson, who then invests sufficient assets so that he will have exactly 25% of the capital in the *new* partnership.

8-25. John Hammett owns a retail paint store, which he operates as a single proprietorship. His trial balance after closing entries on December 31, 1964, is as follows:

Cash	$ 375	
Accounts receivable	1,250	
Paint inventory	2,720	
Store fixtures	2,670	
Accumulated depreciation—store fixtures		$ 700
Building	20,510	
Accumulated depreciation—building		2,000
Land	2,100	
Accounts payable		970
Mortgage payable		9,800
John Hammett—Capital		16,155
	$29,625	$29,625

Hammett reached an agreement with William Dant on January 2, 1964, whereby Dant would invest $10,000 in the business, receiving one-third of the capital in the new business. Goodwill in the amount of $3,845 is to be recorded prior to his admittance, increasing Hammett's capital to $20,000. Profits or losses are to be divided equally. During 1964 the following transactions were completed:

(a) Purchased paint on account, $34,500.
(b) Sold merchandise on account, $61,520.

(c) Collected accounts receivable of $61,900.
(d) Made a payment of $1,000 on the mortgage principal, plus $500 interest.
(e) Paid selling expenses of $10,230.
(f) Paid accounts payable, $34,200.
(g) Recorded personal withdrawals of $5,000 for Hammett and $7,000 for Dant.
(h) Recorded depreciation for the year of $200 on store fixtures and $1,000 on the building.
(i) Recorded the ending paint inventory of $2,210.

REQUIRED

1. Enter the beginning balances in ledger accounts. Journalize the transactions for the year, including closing entries, and post to the ledger accounts.
2. On January 2, 1965 Dant wished to withdraw from the partnership. The partners agreed that the goodwill should be increased by $1,000 prior to his withdrawal and divided equally between them. Partnership cash was then used to purchase Dant's interest. Record goodwill and Dant's withdrawal and post the transactions to the ledger.

8-26. The balance sheet of Brown, Smith, Peters, and Holt appeared as follows on December 31, 1964:

BROWN, SMITH, PETERS, & HOLT

Balance Sheet

December 31, 1964

ASSETS		EQUITIES	
Cash	$ 40,000	Accounts payable	$180,000
Accounts receivable	70,000	Brown—Capital	100,000
Inventory	50,000	Smith—Capital	40,000
Building	50,000	Peters—Capital	30,000
Land	30,000	Holt—Capital	50,000
Patents	160,000		
Total assets	$400,000	Total equities	$400,000

The partners' profit sharing ratio and their ability to cover debit balances in their capital accounts are as follows:

	Share of profits	Has personal assets to cover debit balances in capital
Brown	20%	Yes
Smith	50	No
Peters	10	No
Holt	20	Yes

REQUIRED

Record complete entries to liquidate the partnership

(1) If all assets except cash are sold for $300,000.
(2) If all assets except cash are sold for $200,000.

8-27. The trial balance of the Pram and Ratcliff partnership appeared as follows after the accounts were closed on December 31, 1964:

Cash	$ 1,790	
Other assets	27,000	
Patents	21,000	
Accounts payable		$ 3,790
Notes payable		5,000
Pram—Capital		15,000
Ratcliff—Capital		26,000
	$49,790	$49,790

Pram and Ratcliff shared profits 60:40 respectively. The business had grown steadily, and the partners decided to bring Simpson into the partnership, using the cash which he is to invest for expansion purposes. The patents were over-valued on the books and were written down to $15,000; the profits of the business indicated the existence of goodwill which was valued and recorded at $10,000. After these adjustments were made, Simpson invested sufficient cash so that he had one-fourth of the capital.

The new partnership was to have a profit and loss sharing ratio of 30:30:40 to Pram, Ratcliff, and Simpson, respectively.

The expansion plans of the company were not profitable, and a loss of $6,000 resulted from operations during 1965.

The partnership decided to liquidate on January 1, 1966, and the entire business, exclusive of the cash balance, was sold to a competitor for $30,000 cash. At the time of sale the patents and other assets and liabilities had the same balances as appeared in the original trial balance.

REQUIRED

Prepare journal entries for the following:

(1) The revaluation of the old partnership and admittance of the new partner.
(2) The loss during 1965 and the distribution of the loss to the partners' Capital accounts. (Credit Cash and debit Income Summary to record the loss.)
(3) The sale of the business and the final liquidation of the partnership.

8-28. Ballinger and Dyker formed a partnership on August 13, 1964. Ballinger invested land valued at $8,000 and buildings valued at $37,000, and Dyker invested cash of $20,000. The partners agreed to divide profits by allowing Ballinger a salary of $6,000 and Dyker a salary of $4,000 for the remainder of the year, with any balance divided equally.

The following transactions were completed during the year:

(a) Purchased merchandise costing $17,000, on account.
(b) Sold merchandise on account, $28,000.
(c) Collected receivables of $26,000.
(d) Paid accounts payable of $16,300.
(e) Paid salaries to employees, $3,400.
(f) Ballinger withdrew $4,000, and Dyker $1,700, for personal use.
(g) Dyker invested $5,000 additional capital.
(h) Paid advertising, $800.
(i) Bought office supplies of $250 for cash.

At the end of the year, the following adjusting entries were recorded:

(a) Depreciation expense on building, $1,000
(b) Accrued salaries payable, $100
(c) Office supplies on hand, $50
(d) Estimated uncollectible accounts, $70
(e) Ending inventory was $2,100.

REQUIRED

1. Journalize the partners' investments and all operating transactions. Post to ledger accounts.
2. Prepare a work sheet at the end of the year, making adjusting entries thereon. (Extend capital accounts and drawing accounts to the balance sheet columns.)
3. Journalize the adjusting entries and the closing entries, distribut-

ing profit according to the agreement. Post to the ledger accounts.

4. Prepare an income statement, statement of partners' capital, and a balance sheet.

8-29. The condensed balance sheet of the partnership of Palley, Rusk, Stoll, and Tieman appeared as shown below on June 17. Disagreements among the partners and repeated losses have resulted in liquidation of the partnership. All partners, with the exception of Tieman, who is bankrupt and has no personal assets, have sufficient personal assets to cover any deficits in their capital accounts. Profits and losses are shared equally.

PALLEY, RUSK, STOLL, & TIEMAN

Balance Sheet

June 17, 1964

ASSETS		EQUITIES	
Cash	$ 21,000	Accounts payable	$ 97,400
Accounts receivable	96,000	Taxes payable	1,600
Inventory	128,000	Notes payable	6,100
Equipment	74,000	Palley—Capital	108,000
Patents	36,000	Rusk—Capital	56,800
		Stoll—Capital	36,000
		Tieman—Capital	49,100
Total assets	$355,000		$355,000

Receivables of $84,000 were collected, and the balance is uncollectible. The remaining assets realized the following amounts: inventories, $82,000; equipment, $50,000; patents, $50,000.

REQUIRED

Prepare general journal entries for the sale of the assets, distribution of any gains or losses, payment of liabilities, and final distribution of cash to the partners.

Cases

8-30. Long, Harne, and Fuller are partners in a bakery in which they share profits equally. Although the demand for the product is steady, there is little possibility of rapid growth. Profits have held

steady at approximately $30,000 per year for the past ten years, and total partners' capital has averaged $100,000.

The partnership owns a tract of land, covering six acres, and the bakery has been constructed on two of the acres. The remaining four acres make a choice building site, since a major city boulevard was constructed beside it six years ago. The city has expanded around the bakery, and the four unused acres have been conservatively estimated to have a value of $90,000.

The original six acres were invested by Fuller when the partnership was formed twelve years ago, and he received capital equal to its fair market value of $16,000 at that time. Fuller feels very strongly that the land should be sold, since he needs his share of the proceeds for use in another business venture. The other two partners feel that it should be held for investment purposes and that in another five years it will be worth approximately $150,000.

Fuller has offered to sell his capital to the other partners for $16,000 (his present capital balance) plus $30,000 (his share of present value of the land) and $14,000 goodwill, or a total of $60,000. The other partners feel that this amount is more than his equity is worth, so they come to you for advice.

What would you recommend? Does Fuller have any prior claim on the land, since he originally invested it? What could Fuller do to force sale of the land? Do you feel the amount Fuller wants for his capital is a fair amount?

8-31. Fred Dutweiler owns as a single proprietor an auto accessory and household appliance store. The business has grown steadily from an original investment of $5,000, and Dutweiler has withdrawn only enough of the profits for his minimum personal needs. Dutweiler's capital has grown through profits as follows (shown at two-year intervals):

	Net Income	Capital
1952	$ 1,600	$ 5,000
1954	3,400	8,600
1956	6,100	12,700
1958	12,000	20,500
1960	21,800	32,600
1962	31,300	40,900
1964	33,200	67,100

Within the past several years Dutweiler has expanded his inventory, increased his accounts receivable, and acquired a new building for his store. As a result, he has expended all available funds and

has borrowed heavily at the bank. His balance sheet on December 31, 1964, contained the following:

Cash	$ 2,000	Accounts payable	$ 17,000
Accounts receivable	16,500	Notes payable	
Inventory	53,100	(due in 1966)	30,000
Prepaid insurance	1,700	Mortgages payable	
Store equipment (net)	22,300	(due in 1970)	90,000
Buildings	88,500	Dutweiler—Capital	67,100
Land	20,000		
	$204,100		$204,100

Recent events have led Dutweiler to believe he should establish branch stores in several other locations in the city. While these locations will undoubtedly produce some additional sales, he is not sure exactly how much sales will increase.

He approached several banks for additional funds to open the proposed branches but was refused. The banks felt his present liabilities were high in relationship to his present assets. W. M. Kempt, learning of Dutweiler's expansion plans, has approached Dutweiler concerning the possibility of a partnership. He is willing to match Dutweiler's present capital for one-half of the profits, arguing that he would be assuming half the risk should the new ventures fail.

Do you think his offer is fair? Would you accept his offer and use the funds for expansion, or leave the business as it is? What would you consider a fair offer, if you feel the present one is unsatisfactory?

9

Corporate formation and stockholders' equity

A corporation is created by law and is given existence when its charter is approved and recorded by state officials. Although a corporation is owned by the individuals who hold shares of stock in the company, the corporation itself is a legal entity with an existence separate and apart from its owners. The corporation may own property, complete transactions, make contracts, sue or be sued in its own name, and in general has all the rights and responsibilities of an individual citizen.

Advantages and disadvantages of the corporate form

The status of a corporation as a separate legal entity has certain special advantages: (1) a limited liability to the owners, (2) an unlimited life, and (3) transferable shares of ownership.

Limited liability

Since the corporation is a legal "person," it has a legal and moral responsibility to pay its debts. If it is not profitable and eventually becomes insolvent, all or any part of the assets which the owners have invested in the company may be used to pay the corporation's debts; however, if these assets are insufficient to cover the debts in full, there is usually no further liability to the owners. Thus the limited liability feature of a corporation indicates that persons investing assets in a corporation cannot lose more than their investment.

Unlimited life

Most corporate charters are granted in perpetuity, so that the corporation has an unlimited life; and those corporations granted a

limited life in their corporate charter may renew the charter when the original term of life expires. Present owners may die, but the corporation as an entity itself will continue. A number of presently active corporations were formed over one hundred and fifty years ago; there are English and French corporations which were formed over two hundred years ago. The life of a corporation will continue until it is dissolved voluntarily by its owners, until it is bankrupt and cannot pay its debts, or until the state revokes its charter for illegal acts.

Transferability of ownership

Shares of corporate stock are transferable and are bought and sold daily on the stock exchanges. The transferability of ownership in a corporation is one of its greatest advantages, for transfer of ownership in a single proprietorship or partnership is frequently difficult.

Tax disadvantage

The separate legal entity status granted a corporation makes it vulnerable to tax assessments, and it must pay an income tax on its earnings, just as individuals are required to do. When the earnings remaining after taxes are distributed to the owners, the profit distributions are taxable again as personal income to the owners. This, in effect, is *double taxation* of corporate earnings. In addition, corporations are subject to franchise taxes, which are assessed by each state in which the company does business. A state's franchise tax is a tax on the right to do business in that state.

Limited activities

The activities of a corporation are limited to those specifically stated in its charter. However, the corporate charter can usually be amended to broaden the company's activities if it should want to expand its operations.

Organization of a corporation

Each state sets a fixed minimum number of stockholders and a minimum investment which are required before a charter is granted. These limitations differ among the states, but usually include at least three stockholders and a minimum investment of $1,000 or $2,000. The incorporators submit to the appropriate state official, usually the secretary of state, an "articles of incorporation," indicating that at least the minimum state requirements for incorporation

have been met. If the articles of incorporation are approved, a corporate charter is issued and recorded, and the corporation is created. The prospective stockholders, or incorporators, who are listed in the articles of incorporation, then issue themselves stock in return for their investment, in accordance with the terms of the charter. Not all of the authorized stock need be issued immediately, however; many corporate charters authorize shares in excess of immediate needs, thereby providing for future stock issues should the need for additional capital arise.

Soon after the charter is granted, a meeting of the stockholders must be called to elect a board of directors and formulate the by-laws of the corporation. At a stockholders' meeting, each stockholder votes the number of shares that have been issued to him. Each share of issued stock is usually entitled to one vote; authorized but unissued shares have no vote. A person holding more than half the issued stock can control the corporation, for the total of his shares permits him to outvote all other stockholders combined.

The members of the board of directors are the representatives of the stockholders and are elected to manage the corporation. The board of directors in turn selects a president and any other necessary officers of the company. Normally the stockholders meet annually to select a new board of directors or re-elect the present directors. The directors usually meet monthly to review the results of operations and set policies for future operations.

Corporate organization costs

The original costs of forming a corporation are recorded in an *Organization Costs* account. These costs consist of legal fees; state incorporation fees; costs of printing stock certificates, articles of incorporation, charter, and by-laws; as well as other incidental organization expenses. These are necessary costs in the establishment of a corporation and thus are assumed to benefit the corporation during its entire life.

The Organization Costs account should be listed in the corporation's balance sheet in the *other assets* classification or in a separate *intangible assets* classification. Organization costs may be carried on the balance sheet indefinitely without amortization. These costs are assumed to have benefit to the company during its entire life, and if the corporate charter places no limit on the life of the corporation, these costs need not be written off. Some accountants feel, however, that organization costs should be written off over a period of not less than five years. The periodic write-off may be made directly to

retained earnings, or it may be recorded as a nonoperating expense and included in the income statement.

Rights of stockholders

Ownership of a share of stock carries with it the following certain rights:

1. The right to participate in the management of the company by voting that share of stock at stockholders' meetings.
2. The right to share pro rata with other shareholders in the earnings of the corporation.
3. The right to participate pro rata in any future stock issues of the company.
4. The right to share pro rata in the distribution of any assets which the corporation may have remaining after operations cease and final debts are paid.

These four basic rights attach to each share of stock unless specifically limited or restricted. Limitations and restrictions on the rights of any shares of stock must be clearly stated in the articles of incorporation. In some cases one or more of these rights are explicitly denied to some shares of stock, but not to others. Such limitations or restrictions create several "classes" of stock which a company may issue. In the absence of any specific limitations, all rights are assumed by law to attach to each share of stock.

Stock certificates and stock records

Ownership in a corporation is evidenced by stock certificates, which can be prepared for any number of shares, just as a bank check can be prepared for any number of dollars.

When the corporation is formed, blank stock certificates are printed and contained in a *stock certificate book,* which is usually bound in book form. Each certificate has a related stub, and these are numbered in sequence so that certificate and stub can be matched. The stub is completed with the name of the stockholder who received the certificate and the number of shares which the certificate represents.

Stock certificates contain all pertinent information concerning the stock, including any limitations or restrictions which have been placed on it. The owner's name, the number of shares, and the validating signatures are entered on the stock certificate when the certificate is issued. Exhibit 9–1 is an illustration of a stock certificate.

When a stockholder sells all or part of his shares to another indi-

Exhibit 9–1

STOCK CERTIFICATE AND STUB

Certificate No. [redacted]

For 200 Shares

Issued to

Samuel T. Weeks

3406 Davis

Kansas City, Mo.

Dated November 3, 1961

FROM WHOM TRANSFERRED

Harold K. Moore

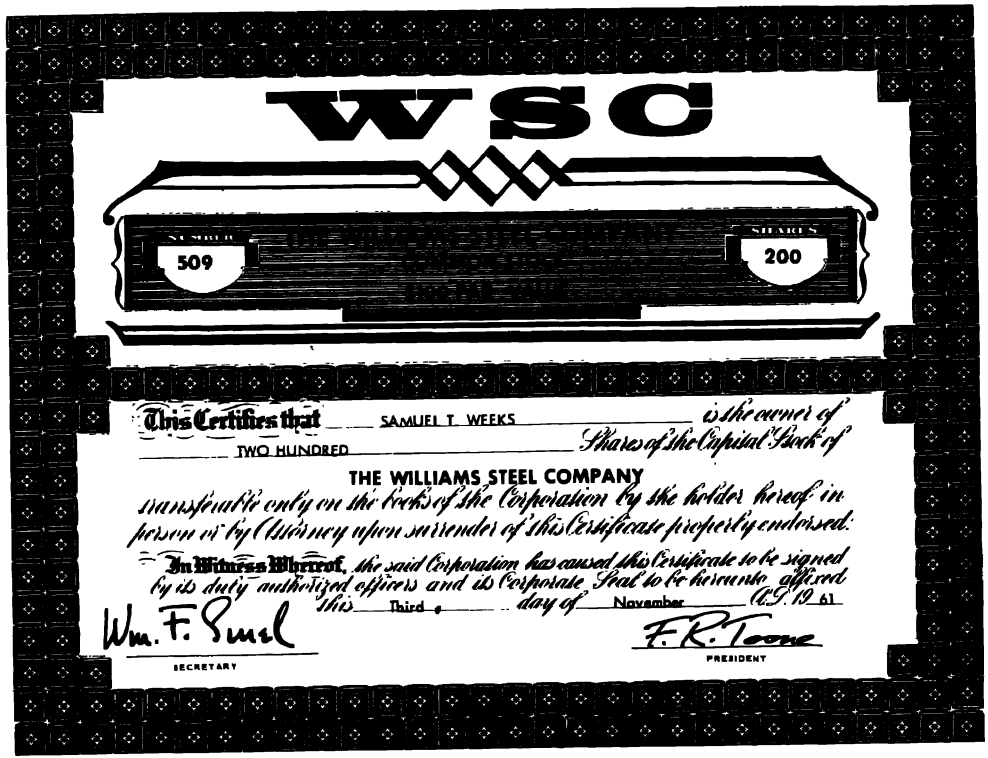
Dated April 17, 1961

No. Original Certificate	No. Original Shares	No. of Shares Transferred
472	500	200

Received Certificate No. 509

For Two Hundred Shares

this Third day of Nov. 1961



vidual, he surrenders his certificate to the company. This certificate is cancelled, and another certificate is prepared in the name of the new stockholder. If the stockholder sells only a portion of his shares to another individual, his certificate is returned to the company, a certificate is prepared for the new stockholder for the number of shares purchased, and another certificate for the amount of the remaining unsold shares is prepared and returned to the original stockholder.

Each corporation maintains a *stockholders' ledger,* listing in alphabetical order the name and address of each stockholder and the total number of shares he owns. This ledger contains a complete record of all stock purchases and sales, as well as the stock currently owned by each stockholder. The stockholders' ledger contains only numbers of shares, and dollar amounts do not appear in the ledger. Exhibit 9–2 illustrates an account in the stockholders' ledger.

EXHIBIT 9–2

Stockholders Ledger

Stockholder Adrian Kenion
Address 432 Front Street
Kansas City, Mo.

Date			Issued		Cancelled		
Month	Day	Year	Certificate Number	Shares	Certificate Number	Shares	Balance of Shares
12	3	56	47351	100			100
7	19	58	52410	200			300
4	30	60	71939	25	47351	100	225

Par value

Arbitrary amounts called *par value* may be assigned to each share of corporate stock. Commonly used par values are $100, $50, $10, and $1 per share. Thus, a corporation whose capitalization is $50,000 may issue 500 shares of $100 par value stock, or one thousand shares of $50 par value stock, or fifty thousand shares of $1 par value stock.

The par value assigned to the shares of stock must be stated in the corporate charter and on each stock certificate. If the stock is assigned no specified par value, it is called *no-par stock*. Par value has legal significance in measuring the legally required capitalization of the corporation and the claims of certain shareholders in the corporation's assets or profits, but it has no relationship to the market price or actual value of the stock.

Classes of corporate stock

Corporations issue two principal types of stock, known as *common* stock and *preferred* stock. Holders of preferred stock enjoy certain privileges which holders of common stock do not have. These rights must be stated in the corporate charter and generally consist of preferences in the distribution of profits and in the right to receive assets upon liquidation of the company. Obviously, limits must be set on the preference given preferred shares. The earnings preference is limited to a stated dollar amount each year, or a percentage of the par value. The preference as to liquidation is usually stated as a fixed dollar "liquidating value." In the absence of a specified liquidating value, the preference of preferred stock is limited to its par value.

Common stock

Common stock is a residual equity, receiving what is left after the preferences of all preferred shares have been satisfied. Common stock is a risk or speculative stock. If the company is highly profitable, the common stockholders will receive the major portion of the profits, since the preferred stock receives a fixed amount; if the company's profit is small, common stockholders will receive only a small return, if any.

Common stockholders are normally given the right to vote and to select the management of the company, while this vote is normally withheld from preferred stockholders. The right to manage the company is usually reserved for the common stockholders, since they must bear the major share of the risks and since preferred stockholders have preference in the distribution of earnings or assets in liquidation.

Preferred stock

The preference attached to preferred stock in the distribution of profits is usually stated as a percentage of the par value of the preferred shares. (No-par preferred stock is rarely used.) Thus, preferred stock which has an annual earnings preference of 6% of its par

value is said to be 6% preferred stock. If the par value of the shares is $100, with one thousand shares of preferred stock issued and outstanding, the first $6,000 of profits which are available for dividends each year belong to the preferred shareholders (6% × $100 par = $6 per share × 1,000 shares = $6,000). Only if yearly earnings available for dividends exceed $6,000 will the common shareholders have any claim on the earnings.

The amount of preference given preferred stock in the assets of the company upon dissolution is called the *liquidating value*. If the liquidating value is more or less than par value, the liquidation value of each share of preferred stock must be separately stated in the articles of incorporation and on each preferred stock certificate. To illustrate, a share of preferred stock may be stated as 6%, par value $100, liquidation value $110. A share of this preferred stock will have an annual priority of $6 on available profits and a $110 priority on assets in liquidation.

Distribution of corporate profits

All incomes and losses realized by a corporation are closed to the Retained Earnings account. The need for a careful distinction between the owners' investments and accumulated incomes and losses has been discussed previously. This distinction is necessary to insure that only earnings are distributed to stockholders and that the owners' contributed capital is not improperly used as a source of dividends.

Dividends may be paid only to the extent of a *credit* balance in retained earnings. Revenues must exceed expenses before retained earnings can have a credit balance, and thus distribution of profits must be limited to the amount of the credit balance. If retained earnings has a debit balance, expenses will have exceeded revenues and the total owners' equity is reduced below the original contributed capital. When retained earnings has a debit balance, the corporation is said to have a *deficit*. This situation is illustrated in the following condensed balance sheet. The owners' contributed capital is $120,000, but accumulated losses in excess of incomes have reduced total owners' equity to only $90,000.

Condensed Balance Sheet Showing a Deficit

Assets	$100,000	Liabilities		$ 10,000
		Common stock	$120,000	
		Retained earnings	(30,000)	
		Total owners' equity		90,000
	$100,000			$100,000

To illustrate further, suppose that a corporation formed on January 1, 1961, realizes profits or losses during the next four years as follows:

Year		Balance of Retained Earnings
1961	Loss of $17,000	$17,000 debit
1962	Loss of $3,000	$20,000 debit
1963	Income of $10,000	$10,000 debit
1964	Income of $19,000	$ 9,000 credit

No dividends can be distributed in 1961 because the loss of $17,000 has resulted in a debit balance in the Retained Earnings account. No dividends can be paid at the end of 1962 or 1963, because a debit balance continues in the Retained Earnings account. Even though a profit is made in 1963, this profit is insufficient to offset prior losses, and a dividend still cannot be paid. At the end of 1964 accumulated profits exceed accumulated losses by $9,000, and a dividend can be paid to the extent of the $9,000 without impairing the owners' contributed capital.

Declaration and payment of dividends

The laws of every state stipulate that earnings of a corporation cannot be distributed to stockholders unless the board of directors has formally approved the dividend. The approval of the board of directors is called the *declaration* of the dividend. After the board of directors has declared the dividend and this fact is made public information, the dividend becomes a liability and must be paid. Stockholders and prospective stockholders who have been informed that a dividend will be paid take this fact into consideration when buying or selling stock, and for this reason the board of directors cannot rescind a decision to pay a dividend after having made the information public.

Since many stocks are traded frequently, the board of directors sets a *date of record* at the time the dividend is declared. The date of record is usually several weeks following the date of declaration. Stockholders who own shares on the date of record receive the dividend. A *date of payment* is also set at the same time the dividend is declared. This date is usually several weeks after the date of record to allow time for recording all stock transfers up to the date of record and for preparing the dividend checks.

Thus there are three important dates in the payment of a dividend:

1. The date of declaration
2. The date of record
3. The date of payment.

If a balance sheet is prepared between the date of declaration and the date of payment, the dividend must appear as a current liability on the balance sheet. The entry made at the date of declaration records the liability for the payment of dividends, as follows:

Jan.	15	Retained Earnings	$10,000	
		Dividends Payable		$10,000
		To record the declaration of a cash dividend to stockholders of record Jan. 31, 1964, to be paid Feb. 15, 1964.		

No entry is necessary on the date of record, since this date determines who shall receive the dividend but does not change the amount or the payment date. The entry at the date of payment is:

Feb.	15	Dividends Payable	$10,000	
		Cash		$10,000
		To record the payment of a cash dividend to stockholders of record on Jan. 31, 1964.		

The board of directors usually will not pay dividends to the full extent of the company's profits. The availability of cash is an important factor in deciding upon the amount of dividends to pay in any given period; other factors include the desire of the stockholders for growth through reinvestment of earnings, as opposed to immediate dividends, and the desire of the board of directors to maintain a stable dividend payment. Thus the credit balance in retained earnings determines only the *legal limit* to which dividends can be paid. The extent to which dividends are actually paid is left to the discretion of the board of directors, and in the absence of special circumstances there is no legal requirement that any dividends be paid at all. Regardless of how profitable the company may be, the board of directors may decide that no dividends should be paid.

Preferred stockholders' equity in earnings

Holders of preferred stock have a prior claim on the earnings which are to be paid in dividends. The extent of this prior claim

depends upon the exact preferences which have been given to the preferred stock in the articles of incorporation. The preferred stock may or may not accumulate unpaid dividends from one year to the next and may or may not be allowed to participate with common stock in excess earnings.

Cumulative and non-cumulative preferred

The claim which preferred shareholders have on earnings paid in dividends may be either *cumulative* or *non-cumulative*. If the preferred shares are cumulative, the distribution of earnings which the preferred shareholders do not receive in any year that a dividend is not declared carries forward to the next year and accumulates until dividends are declared. All accumulated dividends on preferred shares are called *dividends in arrears,* and the entire arrearage must be paid before common stockholders are permitted to receive any dividends.

Non-cumulative preferred stock loses its preference on the earnings of any given year if the board of directors does not declare a dividend from the profits of that year. However, if a dividend is declared, holders of non-cumulative preferred stock must receive their dividends for the current year before common stockholders receive any dividends. To illustrate the rights of preferred and common shareholders, suppose that a company has one thousand shares of 6%, cumulative preferred stock issued and outstanding, par value $100, and two thousand shares of $100 par value common stock issued and outstanding. If the preferred stock is two years in arrears on dividends, not including the current year, and the board of directors decides that $50,000 in cash is to be paid in dividends during the current year, the dividends to be paid to each of the two classes of stockholders is determined as follows:

Total dividend		$50,000
To preferred stockholders for the two years in arrears	$12,000	
To preferred stockholders for the current year's dividend	6,000	
Total to preferred stockholders		18,000
Balance to common stockholders		$32,000

If the preferred stock were non-cumulative, holders of that stock would receive only the $6,000 for the current year, and the balance of $44,000 would apply to common stock.

Participating and non-participating preferred

Preferred stockholders are sometimes given the right to receive more than their preferred rate of dividend by participating with the common stockholders in excess earnings up to a designated point. Preferred stock is then called *participating* preferred. The extent of the participation is stated in such terms as 6% cumulative preferred, par value $100, participating up to 10%. This means that after common stockholders have received an equivalent 6% dividend, participating preferred shareholders receive, in addition to the prior claim of 6%, a pro rata share of the *excess* up to 10% of the par value of the preferred stock.

The participating feature must be stated in the corporate charter and on each preferred stock certificate; unless so stated, the preferred stock is considered to be non-participating.

Suppose that a company has 1,000 shares of 6% cumulative, $100 par value preferred, participating up to 10%, and the preferred stock is two years in arrears on dividends. There are also two thousand shares of $100 par value common stock issued and outstanding. If the board of directors has decided that a total of $50,000 shall be paid in dividends, the amount paid to the two classes of stockholders would be computed as follows:

		To Preferred	To Common	Balance
	Total to be distributed			$50,000
1st preference	To preferred for the two years in arrears	$12,000		38,000
2nd preference	6% to preferred for current year	6,000		32,000
3rd preference	6% to common stock to match preferred. (Note that there is twice as much total par value of common stock as there is total par value of preferred stock.)		$12,000	20,000
4th preference	4% to preferred to satisfy the 10% participating feature. (The 6% already received for the current year is part of the 10% participation.)	4,000		16,000
	Balance to common		16,000	–0–
	Total	$22,000	$38,000	

In this case, the dividends were sufficient to pay more than the 10% in which the preferred stock participated. Had only $39,000 been available for dividends, instead of $50,000, with all other facts remaining the same, distribution would have been made as follows:

	To Preferred	To Common	Balance
Total to be distributed			$39,000
To preferred for the two years in arrears	$12,000		27,000
6% to preferred for the current year	6,000		21,000
6% to common to match preferred		$12,000	9,000
(At this point only $9,000 remains to be distributed. Preferred participates up to 10% but does not have first claim on anything above 6%. The $9,000 must therefore be prorated to preferred and common based on the total par value of each class of stock. There is $100,000 total par value of preferred and $200,000 total par value of common, so a 1/3–2/3 proration of the remaining $9,000 is made.)	3,000	6,000	–0–
Total	$21,000	$18,000	

Issuance of capital stock at par

When common stock and preferred stock are issued, the par value of each class of stock is recorded in a separate capital stock account because of differences in the claims on earnings and assets. These accounts represent the legally required capital contributed by stockholders. The entry for the issuance of $100,000 of common stock for cash at par is:

Apr.	10	Cash	$100,000	
		Common Stock		$100,000
		To record the issuance of 1,000 shares of $100 par value common stock at par.		

The entry to record the issuance of $50,000 of preferred stock for cash at par value is:

Apr.	10	Cash	$50,000	
		Preferred Stock		$50,000
		To record the issuance of 500 shares of $100 par value, 6% preferred stock at par.		

The separate entity and the limited liability features of the corporate organization necessitate a permanent investment by the shareholders for the protection of creditors. This permanently invested capital is required by law and includes the par value of the shares issued or the total proceeds from the issuance of no-par stock. The permanent capital thus invested by shareholders must not be impaired or diluted, or the protection of the company's creditors will be jeopardized. The laws of each state usually set out in detail what is to be considered permanent capital and specifically prohibit many acts which would tend to reduce this permanent capital.

Issuance of stock for a premium

Stock is sometimes issued to stockholders for more than its par value. When this occurs, the par value of the shares issued is recorded separately in the capital stock accounts, thus clearly reflecting the legally required investment. Any excess above par is recorded in a *Premium on Common Stock* or a *Premium on Preferred Stock* account. The entry to record the issuance of one thousand shares of $100 common stock at $105 per share is:

Dec.	5	Cash	$105,000	
		Common Stock		$100,000
		Premium on Common Stock		5,000
		To record the issuance of 1,000 shares of $100 par value common stock at $105 per share.		

The entry to issue five hundred shares of $100 par value preferred stock at $103 per share is:

Dec.	5	Cash	$51,500	
		Preferred Stock		$50,000
		Premium on Preferred Stock		1,500
		To record the issuance of 500 shares of $100 par value preferred at $103 per share.		

The premium received on the issuance of common shares is recorded separately from the premium on preferred shares. While both of these accounts represent a part of owners' equity, as well as a part of owners' investment, the capital invested by each class of stockholder should be shown separately in the accounts and in the balance sheet. Exhibit 9–3 illustrates a corporate balance sheet reflecting par value and premium accounts.

Issuance of capital stock at a discount

A few states permit the issuance of stock at less than its par value, resulting in an investment by stockholders of an amount less than the par value of the shares. The difference between par value and the amount received for the sale of the stock is recorded in a *discount on common stock* account or a *discount on preferred stock* account. These discount accounts will have debit balances, since the proceeds from issuance of the stock are less than the par value.

May	17	Cash	$98,000	
		Discount on Common Stock	2,000	
		Common Stock		$100,000
		To record the sale of 1,000 shares of $100 par value common stock at $98 per share.		

The debit balance in a discount account is subtracted from the par value of the capital stock in a corporate balance sheet, as illustrated in Exhibit 9–3.

In some states when stock is issued at a discount, an assessment for the discount may later be made against the stockholder. The stockholders are thus liable to the corporation because of the deficiency in the legal capital of the corporation created by the issuance of stock at less than par value. Should the company become insolvent and be unable to pay its debts, the stockholders would be liable to the company's creditors for the amount of the discount. This *discount liability* must be paid by the original purchaser of the stock or by any other person who may have purchased the stock from him, provided the purchaser was informed that the stock was originally issued at a discount.

Issuance of no-par stock

In order to prevent the possibility of a discount liability and an overemphasis on the relatively arbitrary par value, some companies

issue no-par stock. No-par stock may be issued at any price not in violation of state laws. The issuance of no-par stock may be recorded by one of three different methods:

1. The full proceeds from the stock issuance may be credited to the common stock account. No premium or discount accounts are used when this method is followed.
2. If the state in which the corporation is granted its charter sets a minimum amount for which each share of no-par stock can be sold, this minimum may be used as a type of "par value." Premiums or discounts may be recorded for the difference between the issuance price of the stock and the legally required minimum price.
3. The board of directors may set an arbitrary per share *stated value* for the no-par stock. The stated value is usually an amount greater than the minimum per share price fixed by state law. Premiums and discounts must then be recorded for the difference between the stated value and the actual issuance price. This method may also be used in states where a minimum *total* investment, such as $1,000, is required.

The entry illustrating the first method of recording no-par stock is shown below. The full proceeds from the issuance of the no-par stock are recorded in the common stock account, and no premiums or discounts are recorded.

July	23	Cash	$68,000	
		Common Stock		$68,000
		To record the sale of 5,000 shares of no-par common stock for $68,000.		

If the board of directors elects to use the minimum allowed by state law or places an arbitrary stated value on no-par shares, the minimum or stated value is treated as a par value for purposes of recording the sale and issuance of stock. Premiums or discounts are recorded for any differences between the issuance price of the stock and the minimum or stated value. A stated value set by the board of directors does not have the legal status of a par value, however, for the stated value has no necessary relationship to the minimum required investment. The entry to record the issuance of one hundred shares of no-par stock for $10,300 on which the board of directors has placed a $10 stated value is:

July	23	Cash	$10,300	
		Common Stock		$5,000
		Premium on No-par Stock in excess of stated value		5,300
		To record the sale of 100 shares of no-par stock, with a $100 stated value, for $10,300.		

Stock issued for property or services

When stock is issued in return for services or for assets other than cash, the fair market value of the services or assets so received should be used as the basis for recording the transaction. Suppose, for example, that machinery with a market value of $1,000 is received by a corporation in exchange for 8 shares of its $100 par value common stock. The machinery should be recorded at its market value, resulting in a premium on the common stock.

Mar.	3	Machinery	$1,000	
		Common Stock		$800
		Premium on Common Stock		200
		To record the issuance of 8 shares of $100 par value common stock in exchange for machinery valued at $1,000.		

The par value of the stock should not be used as a basis for valuing the asset received, since par value has no necessary relationship to actual market value. If the asset or service has no ascertainable market value, the fair market value of the stock issued should be used.

Unscrupulous promoters sometimes issue large blocks of stock to themselves in exchange for property, using the par value of the stock issued to "value" the property. The property thus appears on the company's books at an amount much greater than its actual value. The result is a *watering* of the stock. The assets are overstated on the balance sheet, and the investment by the promoters is overstated by a like amount. One of the purposes of the Securities Exchange Commission (S.E.C.) of the federal government and the securities commissions of the various states is to prevent this practice by those corporations having public issues of stock.

Revaluation of assets upon incorporation

Incorporation of an existing business is not difficult and can be accomplished in a few days. When a single proprietorship or partner-

ship is to be incorporated, the assets appearing on the company's books should be adjusted to their current market values. Since these assets are to be invested in a new corporate entity, the investment should reflect their actual value at the time of incorporation. Any gain or loss recorded in the revaluation should be debited or credited to the owners' capital accounts on the original company's books after the corporate charter is approved. Stock is issued to the owners in the amount of their revalued capital accounts.

Suppose that the partnership of Smith and Williams, who share profits and losses equally, is to be incorporated. Upon incorporation capital stock is to be issued to the partners in the amount of their capital balances. Machinery and equipment have a market value $1,000 greater than the present undepreciated cost on the partnership books. Smith and Williams have capital balances before adjustment of the fixed assets of $10,000 and $12,000 respectively, before adjustment of the fixed assets. The entry to revalue the assets would be recorded on the partnership's books as follows:

Aug.	11	Machinery and Equipment	$1,000	
		Smith—Capital		$500
		Williams—Capital		500
		To revalue assets and adjust partners' capital accounts in the profit or loss ratio.		

The capital accounts as adjusted reflect the partners' equity in the fair market value of the assets. When the corporate charter is approved, stock is issued in the amount of the adjusted capital balances.

Aug.	11	Smith—Capital	$10,500	
		Williams—Capital	12,500	
		Common Stock		$23,000
		To record issuance of common stock to partners in the amount of their capital accounts.		

Sometimes the existing business is highly profitable, and its value as a going concern is greater than the value of the individual assets. *Goodwill* may be recorded as an asset on the books of the existing business, before incorporation, in order to reflect the true value of the original business. When goodwill is recorded, the partners credit their capital accounts in the profit or loss ratio for the amount of

the goodwill. Stock is then issued to the partners in the amount of their adjusted balances.

The corporate balance sheet

A corporate balance sheet will not reflect fully the nature of the corporation's ownership without full disclosure of the following:

1. The number of shares of stock authorized by the articles of incorporation and the number of these shares actually issued.
2. The par value, absence of a par value, or stated value if one is used.
3. The special rights, privileges, or restrictions of each class of stock.
4. Any premiums or discounts arising from the issuance of stock, shown separately by classes of stock.
5. Any accumulated losses or accumulated profits retained by the company.

The capital section of a corporate balance sheet must reflect at least the above basic information about the owners' equity. There are several acceptable ways of arranging this information on a corporate balance sheet, but one of the most desirable is to group and subtotal all preferred stock accounts and all common stock accounts. Retained earnings is shown as a separate item at the bottom of the owners' equity section. Exhibit 9–3 illustrates the owners' equity section of a corporate balance sheet following this arrangement.

Book value

Book value is the dollar equity of each share of stock in the net assets (assets less liabilities) which appear on the balance sheet. Thus, if a company has total owners' equity of $10,500 and 100 shares of stock are outstanding, the book value per share is $105 per share ($10,500 ÷ 100 shares). Only outstanding shares are used in the computation; authorized but unissued shares are not included. To illustrate further, suppose a corporation has the following condensed trial balance:

Assets	$65,000	
Liabilities		$10,000
Common stock (400 shares, $100 par)		40,000
Retained earnings		15,000
	$65,000	$65,000

EXHIBIT 9–3

Partial Balance Sheet Showing Owners' Equity

STOCKHOLDERS' EQUITY			
Contributed capital:			
Preferred stock ($100 par value, 6% cumulative, non-participating, no dividends in arrears, 1,000 shares authorized, 500 shares issued and outstanding)	$50,000		
Premium on preferred stock	23,000		
Total contributed by preferred stockholders		$ 73,000	
Common stock (no-par, with $10 stated value, 10,000 shares authorized, 9,400 shares issued and outstanding)	$94,000		
Premium on no-par stock in excess of stated value	15,000		
Total contributed by common stockholders		109,000	
Total contributed capital			$182,000
Retained earnings			24,000
Total stockholders' equity			$206,000

The corporation has four hundred shares of stock outstanding and a total owners' equity of $55,000; the Common Stock plus the Retained Earnings account represent owners' equity. The book value of each share of common stock, determined by dividing the $55,000 owners' equity by the four hundred shares, is $137.50 per share. Book value thus measures the amount each share of stock would receive if the company were to liquidate, sell its assets without gain or loss, pay its liabilities, and distribute the remaining assets to stockholders.

Book value becomes more difficult to compute when both preferred and common shares are outstanding. When two classes of stock are outstanding, the total owners' equity must first be divided between the two classes. The *liquidating value* of a share of preferred stock (stated on the stock certificate as the amount each preferred share is to receive should the company liquidate), is used to determine the equity of preferred stock. Dividends in arrears must be added to the liquidating value (or par value, if the stock has no specified liquidating value) to determine the total equity of the pre-

ferred shares. Common stock is assigned the balance of the owners' equity after preferred shares have received their equity.

To illustrate, suppose a company has the following condensed trial balance:

Assets	$120,000	
Liabilities		$ 15,000
Common stock (500 shares, $100 par)		50,000
Preferred stock (300 shares, $100 par, 6%, $110 liquidating value, no dividends in arrears)		30,000
Premium on preferred stock		8,000
Retained earnings		17,000
	$120,000	$120,000

The owners' equity is assigned to each class of stock as follows:

Total owners' equity ($50,000 + $30,000 + $8,000 + $17,000)	=	$105,000
Applicable to preferred stock (300 shares @ liquidating value of $110 per share)	=	33,000
Balance applicable to common		$ 72,000

Book value per share of common: $72,000 ÷ 500 shares = $144.00
Book value per share of preferred: $33,000 ÷ 300 shares = 110.00

Had dividends on preferred stock been one year in arrears, the $1,800 arrearage (6% of $30,000) would be added to the $33,000 liquidating value. Thus the book value of the preferred stock would be increased to $116 per share, and the book value of the common stock would be decreased to $140.40.

Book value is not a valid measure of the value of a share of stock, since the owners' equity as it appears on the books does not reflect either the current market value of the assets or the ability of the company to earn profits. Book value cannot be interpreted significantly without a knowledge of the nature of a company's assets and their true market value. However, an increase or decrease in book value per share from one period to another does have significance, for it indicates the *change* in dollar equity per share.

Questions

9-1. Define a corporation and discuss the differences in the partnership, proprietorship, and corporate forms of business ownership.

9-2. What is meant by the limited liability feature of a corporation; the unlimited life feature; transferability of ownership? What disadvantages are there to the corporate form of ownership?

9-3. Discuss step by step the process by which a corporation is formed.

9-4. Describe the process of accounting for the costs of organizing a corporation.

9-5. Name the rights which, unless specifically denied or limited in the corporate charter, attach to each share of stock.

9-6. What records are necessary in accounting for corporate ownership that are not required for other forms of business? What is a stock certificate book; a stockholders' ledger?

9-7. What is par value? Does all stock contain a par value? If not, why is a par value used?

9-8. Distinguish between common stock and preferred stock.

9-9. What is a deficit? Can dividends be paid when a company has a deficit? Why or why not?

9-10. Why is it necessary to set a different date of declaration; date of record; and date of payment of a dividend? What accounting entries, if any, are made on these dates?

9-11. Distinguish between par and no-par value stock; cumulative and non-cumulative stock; and participating and non-participating stock.

9-12. Why is a stock recorded at its par value, with a premium or discount account used to record differences between assets received and par value of the stock?

9-13. What is a discount liability? Who is subject to this contingent liability, the original purchaser of the stock or a present owner?

9-14. Why is no-par stock used? What is a stated value?

9-15. Which of the following determines the amount at which assets acquired by the issuance of stock shall be recorded in the accounts: the par value of the stock; the fair market value of the stock; or the fair market value of the asset received?

9-16. If a partnership or proprietorship is converted to a corporation, is revaluation of the assets permissible under generally accepted accounting principles? Why?

9-17. What basic information should be reflected in the capital section of a corporate balance sheet?

9-18. What is book value? Describe how book value is computed for a company having only common stock; for a company having both common and preferred stock.

Exercises

9-19. The following transactions were completed by the Willow-Rand Corporation.

Jan. 6 Issued 5,000 shares of $100 par value common stock for $512,000 cash.
8 Issued, 1,000 shares of 4% preferred stock, $100 par value, for $97,000 cash.
9 Issued 100 shares of the $100 par value, 4% preferred stock for land with a market value of $11,200.
15 Paid legal fees of $480 and a state fee of $100 incurred in the incorporation of the business.
Dec. 5 Declared a total dividend of $10,000 on the above issued stock, including the 4% dividend on preferred, to be paid on December 20. (Assume the corporation has sufficient retained earnings for this dividend.)
28 Paid the dividends declared on December 5.
31 Amortized one-fifth of the organization costs as an expense. (Debit amortization of organization costs.)

REQUIRED

Journalize the transactions.

9-20. The Blakley Bakery has 1,000 shares of $100 par value common stock and 2,000 shares of 6%, $100 par value preferred stock outstanding.

1. $15,000 is to be paid in dividends. The preferred is non-cumulative and non-participating.
2. $30,000 is to be paid in dividends. The preferred is non-participating but is cumulative and did not receive any dividends in the prior year.
3. $100,000 is to be paid in dividends. The preferred is cumulative,

has not received any dividends in the two prior years, and is participating up to 10%.

REQUIRED

Compute the portion of the dividends which would be paid to preferred and to common in each independent case stated above.

9-21. The following trial balance was taken from the ledger of the Builtmore Company on December 31, 1964:

Cash	$ 1,000	
Accounts receivable (net)	3,000	
Inventory	11,000	
Equipment (net)	31,000	
Buildings (net)	50,000	
Land	20,000	
Organization costs	2,500	
Accounts payable		$ 4,600
Taxes payable		3,100
Dividends payable		5,000
Preferred stock, $100 par value, 6% noncumulative, nonparticipating		50,000
Discount on preferred	2,000	
Common stock, $100 par value		40,000
Premium on common		2,000
Retained earnings		15,800
	$120,500	$120,500

REQUIRED

Prepare a corporate balance sheet.

9-22. The Travis Clothing Manufacturers issued 1,000 shares of stock on July 1, 1964.

(a) The stock is $100 par value common and was issued for $105,000 cash.
(b) The stock is $100 par value, 6% preferred and was issued for $96,000.
(c) The stock is no-par common and was issued for $103,000.

(d) The stock is no-par common, with a stated value of $50 per share, and was issued for $83,000.
(e) The stock was issued for a building. The stock is $100 par value common, and the building has a market value of $89,000.

REQUIRED

Record the issue in each independent case.

9-23. The following accounts are from the ledger of Lester Aggregates Company as of December 31, 1964.

Preferred stock—1,000 shares, $100 par, nonparticipating, cumulative, 6%, liquidating value $105. Last dividend paid Dec. 31, 1962.	$100,000
Premium on preferred stock	20,000
Common stock—1,100 shares, $50 par	55,000
Premium on common stock	5,000
Retained earnings	80,000
	$260,000

REQUIRED

1. Using these data, compute the book value of each share of common and preferred stock. Prepare a schedule showing the figures you have used in computing the book values.
2. James Lester owns 800 shares of the common and 200 shares of the preferred stock. What is the total book value of his stock ownership?
3. The board of directors declared total dividends of $25,200 on December 31, 1964. How much of this dividend would Lester receive?

9-24. Compute the book value per share for each class of stock in each of the following independent cases:

(a)	Common stock, $100 par	$100,000
	Retained earnings	23,000
(b)	Common stock, $100 par	$100,000
	Premium on common stock	17,000
	Retained earnings (deficit)	(23,000)

(c)	Common stock, $100 par	$100,000
	Preferred stock, 6%, $100 par, noncumulative, nonparticipating	100,000
	Premium on preferred	20,000
	Retained earnings	5,000
(d)	Common stock, $50 par	$100,000
	Preferred stock, $100 par, 6%, cumulative, nonparticipating, dividends in arrears two years, not including the current year	50,000
	Premium on common	20,000
	Retained earnings	10,000
(e)	Common stock, $100 par	$100,000
	Preferred stock, $50 par, 6%, cumulative, fully participating, two years in arrears, not including the current year	150,000
	Premium on common	5,000
	Retained earnings	33,000

Problems

9-25. The Trade-Winds Company was formed in 1959 and issued at par 1,000 shares of $100 par value common stock and 1,000 shares of $100 par value, 6%, cumulative, nonparticipating preferred stock. The board of directors wishes to pay one-half of the earnings each year in dividends, retaining the other one-half of earnings for expansion purposes. However, the board wishes to pay preferred dividends in all years in which it may legally do so, even though losses are incurred during that year. Its profits and losses have been as follows:

1959	loss of $12,000
1960	loss of $3,000
1961	profit of $10,000
1962	profit of $23,000
1963	profit of $50,000
1964	profit of $40,000
1965	profit of $2,000
1966	loss of $10,000
1967	profit of $5,000

REQUIRED

Set up a table with the following headings and complete the table by recording the appropriate amounts. Circle the losses and the debit balances transferred to or in retained earnings. The year 1959 is entered as an example. The arrearage and retained earnings balance carries forward from one year to the next.

Year	Profits or (losses)	Total dividends paid to preferred stockholders	Preferred dividends in arrears	Dividends paid to common stockholders	Transferred to retained earnings	Balance of retained earnings
1959	($12,000)	–0–	6,000	–0–	($12,000)	($12,000)

9-26. The Yale Manufacturing Company has $100,000 of 6% preferred and $50,000 of $100 par value common stock outstanding.

REQUIRED

Listed below are four independent cases relative to this stock. Compute the amount of dividends available to each class of stock for each of the three years 1962–1964 if the following amounts are to be paid in dividends: 1962, $14,000; 1963, $9,000; 1964, $18,000.

(a) If the preferred is noncumulative and nonparticipating.
(b) If the preferred is cumulative and nonparticipating, no dividends in arrears.
(c) If the preferred is cumulative and fully participating, no dividends in arrears.
(d) If the preferred is cumulative and participating up to 10%, no dividends in arrears.

9-27. The Masterville Plumbing Company was granted a charter by the State of California on March 3, 1964, authorizing 10,000 shares of no-par common stock and 10,000 shares of 6%, $100 par value, cumulative preferred stock.

The following transactions were completed during the remainder of 1964:

(a) Issued 300 shares of common stock to William Franklin for $30,100; 1,000 shares to Bert Hardin for $120,000; and 3,000 shares to Albert Ward for $380,000.
(b) Issued 2,000 shares of preferred to Larry Hardfin for $207,000.

(c) Ben B. Barnum, a sole proprietor, agreed to invest his business in the corporation. After goodwill was recorded, his trial balance was as follows:

Cash	$ 1,200	
Inventory	8,300	
Accounts receivable	7,500	
Furniture and fixtures	14,900	
Goodwill	5,000	
Accounts payable		$ 2,300
Barnum—Capital		34,600
	$36,900	$36,900

Barnum was given 350 shares of common stock for his entire business, and his assets and liabilities were then recorded on the corporation's books.

(d) Paid an attorney $1,500 for his services in incorporating the business.
(e) Purchased land for $200,000 and a building which cost $670,000. A 6% mortgage payable in ten equal annual installments was given, after a cash down payment of $470,000.
(f) Merchandise costing $125,000 was purchased for cash.
(g) Purchased furniture and fixtures for $63,500 cash.
(h) Advertising of $3,000 and salaries of $11,400 were paid in cash.
(i) Sales on account, $105,000.
(j) Paid one installment of the mortgage, plus interest expense of $12,000 for one-half year.
(k) Received payment of accounts receivable, $60,000.
(l) Recorded depreciation on the building, $9,000; depreciation on furniture and fixtures, $1,500; and bad debts expense of $900.

REQUIRED

1. Journalize the transactions completed during the first year of operations and the closing entries at the end of the year. The ending inventory is $67,300.
2. Prepare a balance sheet as of December 31, 1964. (Posting the transactions to T-accounts is not required but may be helpful in accumulating amounts for the balance sheet.)

9-28. The following accounts appeared in the ledger of the Romberg Corporation on December 31, 1964. (They are not arranged in normal sequence.)

Cash	$ 2,700	
Common stock, $100 par value		$100,000
Premium on preferred		2,000
Organization costs	2,650	
Discount on common	4,600	
Accumulated depreciation—buildings		40,000
Preferred stock, $100 par value, 6%, liquidating value $105, cumulative, $12,000 dividends in arrears.		100,000
Retained earnings		21,000
Accumulated depreciation—furniture and fixtures		12,900
Land	40,000	
Buildings	178,000	
Accounts payable		11,400
Accounts receivable	12,500	
Inventory	38,600	
Allowance for uncollectible accounts		850
Mortgages payable (due 1978)		30,000
Furniture and fixtures	45,100	
Dividends payable to preferred stockholders		6,000
	$324,150	$324,150

REQUIRED

1. Prepare a corporate balance sheet in good form.
2. After completing the balance sheet, compute the book value of each share of common and preferred stock. The preferred stock is two years in arrears, not including the $6,000 declared but unpaid dividend.

9-29. The Hardtop Paving Company was organized on October 12, and its charter authorized 10,000 shares of $100 par value common. The following transactions were then completed:

Oct. 12 Sold stock and issued certificates as follows:
Certificate #1 for 100 shares to James L. Kilton for $10,200 cash.
Certificate #2 for 200 shares to Mary Green for $20,420 cash.
Certificate #3 for 500 shares to Richard Deems for a machine valued at $56,000.

14 Paid organization costs of $2,950.

16 Received certificate #3 from Richard Deems, who instructed the company to transfer 150 shares to Harvey

Moore and return the balance of the shares to him. Certificates #4 and #5 were used for this purpose.

17 Sold shares and issued certificates as follows:
Certificate #6 for 300 shares to Mary Green for $33,000 cash.
Certificate #7 for 70 shares to Ned Hoffman for $7,700 cash.

20 Mary Green sold 50 shares to Henry Kane for $5,700. She returned certificate #2 in order that the shares could be transferred to Kane. Used certificate #8 to issue the shares to Kane and #9 to return the balance to Mary Green.

23 Gave 100 shares, certificate #10, to Robert Glade, an attorney, for his services in incorporation. An agreement to pay him in stock had been made prior to incorporation.

REQUIRED

1. Prepare general journal entries for the transactions requiring journalization.
2. Prepare stockholders' ledger accounts similar to Exhibit 9–2 and post all stock transactions to these accounts.
3. Prepare a list of stockholders and the shares held by each. Compute the book value of the shares held by James L. Kilton and explained briefly why Kilton's book value equity differs from the amount of his investment.

9-30. The Jemmer-Halifax Company is authorized to issue 5,000 shares of $100 par value common and 2,000 shares of $100 par value, 6%, cumulative, nonparticipating preferred. Listed below are the transactions affecting the equity accounts during the first several years of the company's life.

1963

Jan. 4 Issued 3,000 shares of common for $312,000 cash and 2,000 shares of preferred for $200,000.

Dec. 31 At the end of the first year no dividends were declared or paid. Profit for the year was $9,000 (debit "Assets" to record the profit).

1964

Jan. 3 Issued 1,000 shares of common for $131,000 cash.

Dec. 31 Profit at the end of the second year was $40,000. No dividends were declared or paid.

1965

Dec. 31 Profit at the end of the third year was $52,000. Dividends for three years were declared and paid on preferred stock, and a $2 per share dividend on common was paid.

REQUIRED

1. Journalize these transactions.
2. Compute the book value per share of common stock and per share of preferred stock after each transaction.
3. Prepare the capital section of the corporation's balance sheet after all entries are recorded.

Cases

9-31. Alfred Doll inherited $17,000 from a distant aunt and requested information from a stockbroker about a stock in which to invest this money. The broker mentioned several possibilities, but two particular stocks interested Doll: the preferred stock of the Traillite Company, currently selling for $101 per share; and the common stock of the Benson Manufacturing Company, currently selling for $50 per share. The capital sections of the balance sheets of the two companies appear below.

Traillite Company		Benson Manufacturing Company	
Common stock, $100 par	$200,000	Common stock, $20 par	$100,000
Preferred stock, $100 par, 6%, cumulative, fully participating, 3 years' dividends in arrears	100,000	Discount on common	(7,000)
Premium on preferred	15,000	Retained earnings	83,000
Retained earnings	17,000		
	$332,000		$176,000

Both companies were formed five years ago and are in the same industry. Doll took the two financial statements to Smith, a friend of his, for further advice. Smith said, "The book value per share of the Benson common stock is approximately $35 per share, which is less than the $50 current market price. The book value of the Traillite preferred stock is $118, or $17 above current market price. The Traillite stock is therefore the best buy."

Would you accept Smith's recommendation? Are his calculations correct? What information can you draw from these financial statements about the operations of the two companies, their profitability, and the potential of the various stock equities?

9-32. The Red Wing Trucking Line was formed on April 23 for the purpose of transporting fruits and vegetables by refrigerated truck from farm areas in the south and west to the metropolitan areas of the north and east. Afton, Biggs, and Grunther are the three stockholders. Afton contributed $25,000 cash; Biggs contributed land, an office building, and office furniture valued at $34,500; and Grunther contributed assets from a business he previously owned which had the following market values:

Note receivable	$ 2,100
Tractors	34,000
Trailers	27,000
Repair equipment	1,900
	$65,000

The corporate charter authorizes 2,000 shares of $100 par value common stock and 1,000 shares of 6%, cumulative preferred stock, participating up to 10%. The preferred shares have no voting rights.

Biggs is concerned about the fact that if common is issued to all three for their investments, Grunther will have more than 50% of the voting stock and can therefore control the company. Biggs contends that Grunther should take half of his stock in preferred shares so that the votes will be about equally divided and no one person will have control. Grunther is reluctant but is willing to take preferred shares, although he feels that he should be given 325 shares of the $100 par value common and 400 shares of the $100 par value preferred to compensate for giving up some voting rights.

Afton is concerned about Grunther's prior claim on profits if he takes preferred shares. He feels that the cumulative and participating features are such that a holder of preferred could command the major portion of the company's profits.

Grunther, who has been in the trucking business most of his life, feels that the company should realize profits of approximately $12,000 each year. Afton and Biggs are more inclined to feel profits will not be significantly greater than $6,000 per year. In any event, approximately two years of losses must be sustained before any profits materialize.

How would you recommend that the partners solve the problem of stock insurance?

10

Contributed capital and transactions affecting retained earnings

A corporation may purchase or receive as a gift some of its own stock which has previously been issued and paid for by a stockholder. The company's own stock so held is called *treasury stock*. Treasury stock must have been previously issued, must have been fully paid for when originally acquired by a stockholder, and must not be formally canceled. Treasury stock may be received as a gift or in payment of debts due the corporation; it may be purchased to provide shares for distribution to employees, for purposes of reissuance to raise additional capital, or to effect a settlement with a stockholder.

Treasury stock cannot be considered an asset, even though it has a ready market. There is no more argument for considering treasury stock an asset than for considering authorized but unissued shares an asset. When a company purchases some of its own stock, the result of the transaction is a reduction in the company's capitalization, since assets have been returned to the stockholders. Treasury stock must therefore be treated as a subtraction in the owners' equity section of a corporate balance sheet.

Treasury stock—cost method

Treasury stock is usually recorded at cost in a Treasury Stock account. Any balance in this account is then subtracted from the total stockholders' equity when a balance sheet is prepared. Thus, the purchase of twenty shares of the company's own stock at $105 per share is recorded as follows:

Sept.	5	Treasury Stock	$2,100	
		Cash		$2,100
		To record the purchase of 20 shares of $100 par value common stock at $105 per share as treasury stock.		

Holders of treasury stock do not have the rights which attach to shares that are issued and outstanding. Treasury stockholders cannot vote and are not entitled to dividends, since the stock is considered a contraction of a company's ownership.

Many states permit corporations to purchase treasury stock only to the extent of retained earnings. This restriction prohibits a company from purchasing excessive treasury stock in amounts that would reduce owners' equity below the stockholders' original investment. When treasury stock purchases are restricted to the extent of retained earnings, the legal capital of the company is not impaired; retained earnings thus restricted cannot be used as a basis for the payment of dividends.

Reissuance of treasury stock for more than cost

When treasury stock is later sold and reissued by the corporation, the proceeds from the sale may be more than the amount which the company paid for the stock. In this case, the difference must be considered an increase in the capital contributed by stockholders. Transactions in treasury stock are not operating transactions and must not be allowed to increase retained earnings, either through net income or as direct credits.

Assume that the twenty shares of treasury stock purchased above at a cost of $2,100 were later sold for $2,400. The entry would be:

Sept.	20	Cash	$2,400	
		Treasury Stock		$2,100
		Contributed Capital from Treasury Stock Transactions		300
		To record sale of treasury stock for more than its cost.		

The Contributed Capital from Treasury Stock Transactions account becomes a part of Contributed Capital on the balance sheet, since it arises from stockholder transactions. Exhibit 10–1 illustrates the presentation of Contributed Capital from Treasury Stock Transactions in the balance sheet.

Reissuance of treasury stock for less than cost

If treasury stock is reissued at less than its cost, the stockholders have suffered a reduction in their equity. Suppose the treasury stock discussed above, which cost $2,100, is sold and reissued for $1,900 cash. The $200 reduction in owners' equity is reflected by debiting Contributed Capital from Treasury Stock Transactions.

Oct.	9	Cash	$1,900	
		Contributed Capital from Treasury Stock Transactions	200	
		Treasury Stock		$2,100
		To record sale of treasury stock at less than cost.		

The debit to this account, however, may be offset by credits from prior treasury stock transactions. If the account retains a debit balance, it may appear in the contributed capital section of the balance sheet as a deduction from other contributed capital accounts, similar to discounts on common or preferred stock. However, some accountants prefer to close a debit balance in this account into Retained Earnings, following the argument that when treasury stock is sold for less than cost the decrease in capital should be reflected in retained earnings. In the author's opinion, however, a debit balance in the account should remain intact, since future treasury stock transactions may produce increases in the capitalization of the company, thus converting the debit balance into a credit.[1]

Permanent retirement of stock

Capital stock may be purchased by the company and formally retired; the shares in this case are permanently canceled and are never reissued. The entry for the permanent retirement of stock is begun by debiting the capital accounts for any amount credited when the stock was originally issued. This procedure is similar to the par

[1] An alternate method of accounting for treasury stock is to record the shares at par value when bought. Any premiums or discounts recorded when the shares were originally issued are removed from the accounts at the time the treasury shares are acquired. If the cost of the treasury stock is *less* than the amount received when the shares were originally issued, the difference is credited to an account entitled Contributed Capital From Treasury Stock Transactions; if the cost is *more* than originally received, the difference is debited to Retained Earnings. The same premium and discount accounts arising in an original issue of stock are used when the treasury stock is reissued.

value method of recording the purchase of treasury stock. If the stock being retired was issued for a premium, the premiums applicable to the shares being retired are removed from the books. If the cost of the shares being retired is less than the contributed capital originally received for the shares, the difference is credited to a *Contributed Capital from Stock Retirement* account. If cost is greater than the original proceeds from issuance, the difference is a debit to Retained Earnings.

To illustrate, suppose that a company originally issued its shares of $100 par value common stock for $110 per share. A premium of $10 per share was thus recorded when the stock was issued. If the company later purchased for permanent retirement ten shares of the common stock for $103, the entry for the retirement is:

Oct.	12	Common Stock	$1,000	
		Premium on Common Stock	100	
		Cash		$1,030
		Contributed Capital from Stock Retirement		70
		To record the permanent retirement of common stock purchased at a cost less than original issuance.		

Note that the original premium of $10 per share is removed from the accounts, and the difference between cost and the proceeds from original issuance is *credited* to the contributed capital from stock retirement account. Retained earnings should never arise from stock transactions; therefore, any *credit* difference must be recorded as a form of contributed capital.

If another ten shares of the same common stock were bought for $117 per share and retired, the entry would be:

Feb.	10	Common Stock	$1,000	
		Premium on Common Stock	100	
		Retained Earnings	70	
		Cash		$1,170
		To record retirement of stock purchased at a cost in excess of original issuance.		

Note again that the premium is removed but that the difference between cost and the proceeds from original issuance is debited to retained earnings. Retained earnings is *debited* because any excess

paid for the retired stock is considered a distribution of prior earnings to the retiring stockholders.

Donated capital

A company may have assets or other properties given to it. A city, for example, may offer a company land for a business site as an inducement to locate in that city, thereby providing employment to local citizens.

Donated assets are recorded at the fair market value of the asset, and *Contributed Capital from Donations* account is credited in order to reflect donations as a separate source of assets. A gift of land with a market value of $10,000 is recorded by the company as follows:

Dec.	20	Land	$10,000	
		Contributed Capital from Donations		$10,000
		To record the donation of a tract of land by the City of Alston.		

The account is a part of contributed capital and should be so classified on the balance sheet, even though the capital was contributed by someone other than a stockholder. The balance sheet in Exhibit 10–1 illustrates the statement presentation of Contributed Capital from Donations.

Sometimes the company's own stock is returned to the company as a gift. Treasury stock thus donated has no cost and, since treasury stock cannot be recorded as an asset, a memorandum entry is made in the general journal to record the donation.

Dec.	20	(Memo Entry) To record the receipt of a donation of 100 shares of $100 par value common stock to be held as treasury stock.		

If the donated stock is subsequently sold, the entire proceeds are credited to the *Contributed Capital from Donations* account. If the 100 shares of stock recorded in the memo entry above are sold for $150 per share, the entry is:

Dec.	29	Cash	$15,000	
		Contributed Capital from Donations		$15,000
		To record the sale of 100 shares of donated treasury stock.		

Showing the source of corporate capital

The owners' equity section of a balance sheet should contain sufficient detail that both the legal status of the corporation's capital and the source of the capital contributions are understood. Differences in the preferences and rights of classes of stock necessitate a separation of common and preferred on the balance sheet, and premiums and discounts are set apart by classes of stock to reflect the capital contributed by each. Contributed capital from treasury stock, retirement of stock, and donations are not always tied to specific classes of stock. For that reason, these contributed capital items are frequently shown in a separate sub-section of contributed capital. Donations of assets by non-stockholders should be clearly distinguished from stockholder contributions. Exhibit 10–1 shows the stockholders' equity section of a corporate balance sheet arranged to reflect both legal capital and the sources of contributed capital.

EXHIBIT 10–1

Partial Balance Sheet

STOCKHOLDERS' EQUITY			
Contributed Capital:			
From Preferred Stockholders:			
Preferred stock ($100 par, 6% cumulative, 1,000 shares issued and outstanding)	$100,000		
Discount on preferred	(4,000)	$ 96,000	
From Common Stockholders:			
Common Stock ($100 par value, 2,200 shares issued, 2,000 shares outstanding)	$200,000		
Premium on common	12,000	212,000	
Other Capital Contributed by Stockholders:			
From treasury stock transactions	$ 2,000		
From retirement of stock	1,700	3,700	
Contributed by Non-stockholders:			
From donations of land		10,000	
Total Contributed Capital			$221,700
Retained Earnings			32,000
			$253,700
Less treasury stock at cost (200 shares of common stock)			21,000
Total Stockholders' Equity			$232,700

Dividends which reduce contributed capital

In most states the balance of the Retained Earnings account is considered to be the maximum amount of dividends which a company can legally pay. However, some states permit payment of dividends with a reduction in one or more contributed capital accounts, rather than retained earnings. Thus premiums, contributed capital from treasury stock transactions, and contributed capital from stock retirement may be available as a source of dividends, depending upon the laws of the state in which the corporation is chartered. Donated capital arising from gifts of fixed assets by nonstockholders, such as land or buildings, is frequently left unrestricted and under most state laws is available for dividends; contributed capital arising from donations of treasury stock is more frequently prohibited as a source of dividends.

The board of directors must be aware of the legal status of the various contributed capital accounts as a source of dividend declarations. Reduction of these accounts for payment of dividends must not violate the laws of the state. In some states the board of directors can be held personally liable for knowingly declaring and paying dividends that reduce certain contributed capital accounts.

Some state laws specify that the proceeds from the issuance of capital stock shall, in their entirety, be considered the legal capital of the corporation. In such cases, the Premium on Common Stock or the Premium on Preferred Stock accounts may not be debited when a dividend is paid. On the other hand, the state law may specify that the par or stated value of shares of corporate stock shall constitute the legal capital of the corporation, which shall not be diminished by asset distributions in the form of dividends, except in those cases where the corporation is liquidating. This ruling implies that a premium on capital stock may legally serve as a source of dividends, since only par or stated value is legal capital. However, full information should be given stockholders by the board of directors when any account other than Retained Earnings is reduced by the payment of a dividend.

Property dividends

Most dividends are paid in cash. Sometimes, however, a company will distribute profits to stockholders in the form of assets other than cash. Any dividend of assets other than cash is called a *property dividend*. Property dividends are usually resorted to only in unusual cases in which the assets can be divided pro rata among the stock-

holders according to the number of shares held. Fixed assets, such as buildings, machinery, or land, can rarely be distributed pro rata. Sometimes merchandise inventory or investments which the company owns in another company's stock can be distributed as a property dividend.

In many instances there are special advantages in distributing property dividends when it can be accomplished. If the property distributed has a market value greater than its book value, the corporate income tax applicable to an increase in value is avoided. If the asset must be sold to secure cash for dividend purposes, a gain on the sale is subject to corporate income tax.

When property is distributed as a dividend, the recording entry credits the asset at its book amount and debits Retained Earnings. The entry for the distribution of an investment, such as government bonds, is as follows:

Sept.	15	Retained Earnings	$30,000	
		Investment in Government Bonds		$30,000
		To record distribution of a property dividend.		

Restrictions on retained earnings

At this point it must be clearly understood that retained earnings is an owners' equity account, and the amount of retained earnings reflects the amount of assets which flow into the business through profits. Since profits are frequently invested in an enlarged plant, increased inventory, or heavier accounts receivable, very rarely will all of a company's net income, as reflected by retained earnings, be available for payment of dividends.

The stockholders are sometimes not familiar with a company's need for expansion and may not realize why assets accumulated through profits are not available for dividends. For this reason the board of directors may transfer a portion of the company's retained earnings to separate "reserve" accounts. These reserve accounts are a part of retained earnings but are set apart to inform stockholders or other interested persons that part of the assets accumulated through profits are needed for operating purposes and are not available for dividends. When restrictions on retained earnings are recorded, the unrestricted portion is called *unappropriated retained earnings.*

Suppose, for example, that a company has accumulated $100,000 of retained earnings. Of this amount $40,000 has been withheld from dividends to enlarge the plant. The board of directors feels that the

balance sheet should reflect the fact that this accumulation of assets is for plant expansion purposes. An entry may thus be made establishing a *Reserve for Plant Expansion* account.

Jan.	7	Unappropriated Retained Earnings ..	$40,000	
		Reserve for Plant Expansion		$40,000
		To restrict retained earnings by the amount needed for plant expansion.		

Even though it has been restricted by action of the board of directors, the Reserve for Plant Expansion account is a part of retained earnings and is shown on the balance sheet as a separate but integral part of the company's retained earnings.

Retained earnings reserves are sometimes confused with funds (assets) which have been set aside for a specific purpose. A clear distinction must be maintained between setting aside a fund of assets for a specific purpose, such as plant expansion, and a restriction of retained earnings to indicate the unavailability of that amount for dividend payments. Note in the following diagram that entry (A) establishes a special cash fund by debiting one asset account and crediting another, and has no effect upon retained earnings. Entry (B) restricts retained earnings, on the other hand, by debiting one owners' equity account and crediting another, and has no effect upon the composition of assets.

Partial Balance Sheet

ASSETS		OWNERS' EQUITY	
Cr.	Cash	Cr.	Reserve for Plant Expansion
Dr.	Plant Expansion Fund	Dr.	Unappropriated Retained Earnings

Although a company may effect both these transactions, funds are frequently set aside for a specific purpose without restricting retained earnings; and conversly, retained earnings is restricted without any direct effect upon assets.

Legally required restrictions

In some cases a restriction on retained earnings may be required by law. For example, the purchase of treasury stock will in many states automatically restrict retained earnings by the amount of the cost of the treasury stock. Since treasury stock is a contraction of the

capitalization of the company, this legally required restriction of retained earnings prevents the company from reducing its legal capital by purchasing treasury stock in excess of its accumulated profits.

Suppose that a company incorporated in a state requiring such a restriction on Retained Earnings purchases ten shares of treasury stock at a cost of $120 per share. The entry to record the purchase is:

Feb.	7	Treasury Stock	$1,200	
		Cash		$1,200
		To record the purchase of treasury stock at cost.		

The additional entry to restrict Retained Earnings by the cost of the treasury stock is:

Feb.	7	Unappropriated Retained Earnings	$1,200	
		Reserve for the Purchase of Treasury Stock		$1,200
		To restrict retained earnings as required by law for the purchase of treasury stock.		

Contractual restrictions

Restrictions on retained earnings are sometimes written into a contract which the company has signed. For example, long-term notes, mortgages, or bonds payable sometimes contain provisions wherein a specified portion of the company's assets arising through profits are set aside each year for the payment of the debt at its maturity. The entry to reflect this restriction in the accounting records is as follows:

Feb.	21	Unappropriated Retained Earnings ...	$5,000	
		Reserve for Payment of Long-term Debt		$5,000
		To record the restriction of profits to long-term debt contract.		

If the long-term liability is in the form of bonds payable, the restriction is sometimes called a *Reserve for Retirement of Bonds Payable* or a *Reserve for Bond Sinking Fund*. Regardless of the title,

however, the account represents a part of retained earnings restricted for a specific purpose and currently unavailable for dividends.

Discretionary restrictions

The board of directors may wish to restrict retained earnings for purposes not required by law or contract. Such restrictions, made at the discretion of the board of directors, may be for any amount and for any purpose deemed appropriate. Discretionary restrictions are frequently made for plant expansion, retirement of preferred stock, increases in inventory, and possible material losses due to war, fire, or other catastrophes. The entry previously shown establishing a Reserve for Plant Expansion illustrates a discretionary reserve.

Disposition of retained earnings reserves

As indicated previously, all appropriations of retained earnings reserves are a part of retained earnings. At the termination of the legal requirement or the contractual need, or at the discretion of the board of directors, the reserve may be discontinued. There is only one correct way to dispose of a retained earnings reserve—*it must be returned to the Unappropriated Retained Earnings account.*

A Reserve for Treasury Stock, for example, indicates that some of the assets accumulated through profits were used to purchase the company's own stock. When the treasury stock is later sold, the assets used to purchase the treasury stock are returned to operations. As a consequence, the restriction on retained earnings no longer applies, and the reserve is returned to Unappropriated Retained Earnings.

Apr.	13	Reserve for Treasury Stock	$1,200	
		Unappropriated Retained Earnings		$1,200
		To remove the restriction on retained earnings.		

The Reserve for Payment of Long-term Debt, as a further example, was established to indicate that assets were being withheld from dividends to provide for the payment of long-term debt. The entry to record payment of the debt is:

June	18	Notes Payable (or Bonds Payable)	$100,000	
		Cash		$100,000
		To record the payment of long-term debt.		

Payment of the debt reduces both the assets and the liabilities of the company but leaves the total owners' equity unchanged. Since there is no longer a contractual requirement for the restriction, the reserve is returned to Unappropriated Retained Earnings. The entry to remove the restriction is:

June	18	Reserve for Payment of Long-term Debt	$100,000	
		Unappropriated Retained Earnings		$100,000
		To remove the restriction on retained earnings required by long-term debt contract.		

The Reserve for Plant Expansion, established by the board of directors as a discretionary reserve, indicated that assets needed for expansion were not available for dividends. The acquisition of the plant does not affect the owners' equity, although the composition of assets is changed. A discretionary restriction on retained earnings may be continued for as long as the board of directors may wish, but if it is abolished, the balance in the reserve must be returned to Unappropriated Retained Earnings.

Retained earnings restrictions in the balance sheet

Restrictions on retained earnings are shown in the balance sheet under the heading of "Appropriated Retained Earnings." The equities section of a corporate balance sheet reflecting the appropriated and unappropriated retained earnings is shown in Exhibit 10–2.

Use of footnotes to indicate restrictions

Some balance sheets contain footnotes to explain restrictions on retained earnings, and no reserves are shown in the main body of the balance sheet. Footnotes can be more explanatory and more descriptive than formal sub-sections of a balance sheet, but, on the other hand, are also more likely to be overlooked. Each footnote is numbered and thus tied to a specific balance sheet account. Exhibit 10–3 illustrates the use of a footnote to indicate the restriction on retained earnings for plant expansion.

The use of footnotes and the formal restriction of retained earnings in the main body of the balance sheet are both acceptable reporting practices. The use of footnotes has gained additional support

EXHIBIT 10–2

Stockholders' Equity

Contributed Capital			
Common stock (10,000 shares authorized, 9,000 shares issued, $100 par value)		$900,000	
Premium on common stock		30,000	
Stock dividends payable		100,000	
			$1,030,000
Other contributed capital:			
Donated capital			21,000
Total contributed capital			$1,051,000
Retained Earnings			
Appropriated:			
Reserve for treasury stock	$40,000		
Reserve for payment of long-term debt	15,000		
Reserve for plant expansion	30,000		
		$ 85,000	
Unappropriated		72,000	
Total retained earnings			157,000
			$1,208,000
Less Treasury stock at cost (300 shares)			40,000
Total stockholders' equity			$1,168,000

in recent years, primarily because footnotes are more descriptive. Footnotes are also frequently used to explain asset valuations, extraordinary gains and losses, contingent liabilities, and the effects of material and unusual transactions.

Stock dividends

If a significant part of the assets provided by net income are permanently invested in such assets as buildings or equipment, there is little possibility that these assets will become available for dividends. In such cases, the board of directors may wish to "capitalize" permanently a portion of retained earnings by means of a *stock dividend.*

A stock dividend is not a true dividend in that no assets flow out of the corporation to the stockholders. A stock dividend is a pro

EXHIBIT 10–3

Stockholders' Equity

Contributed Capital	
Common stock ($100 par value, 2,000 shares authorized, 1500 shares issued and outstanding).	$150,000
Retained Earnings (Footnote 1)	60,000
Total stockholders' equity	$210,000

Footnote 1. Retained earnings in the amount of $48,000 have been restricted by the board of directors and assets in the same amount are being accumulated for the purpose of expanding the plant. Present plans are to restrict an additional $12,000 annually until assets totaling $120,000 have been accumulated. Expanded facilities are to be constructed at that time.

rata distribution of the company's unissued shares of stock to its existing stockholders. (Occasionally treasury stock is issued as a dividend.) Since the stock dividend is issued pro rata, each stockholder holds a larger number of shares, but his fractional ownership and his total dollar equity in the company are unchanged.

To illustrate the effect of a corporation's distribution of its own shares to stockholders in the form of a stock dividend, suppose a company with a total owners' equity of $50,000 has four stockholders who own shares as follows:

	Number of shares owned	Per cent of the stock owned	Individual equity
Smith	100 shares	10%	$ 5,000
Jones	300 shares	30	15,000
Adams	200 shares	20	10,000
Taylor	400 shares	40	20,000
Total	1,000 shares	100%	$50,000

If the company declares and issues a 10% stock dividend, Smith will receive ten shares; Jones, thirty shares; Adams, twenty shares; and Taylor, forty shares. No additional assets are received by the com-

pany when the shares are issued, and the total owners' equity is still $50,000. After receipt of the stock dividend, their ownership is reflected thus:

	Number of shares owned	Per cent of the stock owned	Individual equity
Smith	110 shares	10%	$ 5,000
Jones	330 shares	30	15,000
Adams	220 shares	20	10,000
Taylor	440 shares	40	20,000
Total	1,100 shares	100%	$50,000

The stock dividend has not changed the percentage of the total stock owned by any stockholder. Each shareholder holds more shares, but the shares represent exactly the same proportion of ownership in the company.

The entry to record a stock dividend transfers from Retained Earnings to Contributed Capital an amount equal to the market price of the shares at the time the dividend is declared. To illustrate, assume that a stock dividend totaling 100 shares of $100 par value common is declared on April 21, payable to stockholders on May 10. The market price on April 21 is $112. The entry for the declaration and issuance of the stock would be:

Apr.	21	Retained Earnings	$11,200	
		Common Stock Dividends Payable		$11,200
		To record a stock dividend of 100 shares of $100 par value common stock, to be issued May 10, 1963. Market price of shares is $112.		
May	10	Common Stock Dividend Payable ...	$11,200	
		Common Stock		$10,000
		Premium on Common Stock		1,200
		To record issuance of the stock dividend declared April 21, 1963.		

The effect of this entry is to reduce retained earnings by an amount equal to that for which the stock could have been sold, transferring that amount into the contributed capital accounts. Note that an account entitled Common Stock Dividends Payable was recorded at

the time of declaration. No assets are required to satisfy this payable since stock will be issued in payment. Thus the Stock Dividends Payable account may not be classified as a liability in the balance sheet; it is a part of capital contributed by stockholders as illustrated earlier in Exhibit 10–2.

Some accountants object to the use of market value to record stock dividends, maintaining that par value should be used for the entry. Those who advocate this procedure maintain that the use of market value tends to perpetuate the illusion of the stock dividend as a distribution of "property" to stockholders.

The American Institute of Certified Public Accountants, however, advocates the use of market value to record a stock dividend, as in the illustrative entries above. This group maintains that market value should be used "in the public interest," thus recording as permanent capital an amount of retained earnings equal to the market value of the shares received by the stockholders.

A stock dividend has been defined by the American Institute of Certified Public Accountants in its *Bulletin 43* as a distribution of shares totaling less than 20 to 25% of the corporation's outstanding shares. A distribution of a larger percentage of outstanding shares is considered a *stock split.*

Stock splits

The distribution of a significant number of the corporation's own shares to its stockholders is called a *stock split.* This type of transaction is frequently undertaken by larger corporations to improve trading in their securities.

The distribution of an appreciable number of shares increases the number of shares outstanding and reduces the market price per share, and as a natural consequence, trading in the corporation's stock is increased. Low priced shares of stock are naturally traded more freely than higher priced shares, and a company realizes a quasi advertising benefit, as well as sounder public relations from active stock trading and wide stock ownership. As in the case of a stock dividend, a stock split does not alter the total owners' equity or the pro rata equity of any stockholder.

Suppose that the board of directors of a corporation with 10,000 shares of $10 par value common stock outstanding decides to "split the stock" by issuing to its stockholders one new share of stock for every two shares outstanding. Thus 5,000 new shares of $10 par value common stock would be distributed.

A stock split is recorded by transferring the par value, or stated value if the stock has no par, from retained earnings to the capital stock account. Thus the entry for the above declaration would be:

Dec.	30	Retained Earnings	$50,000	
		Common Stock Dividends Payable		$50,000
		To record a 1 for 2 stock split, wherein 5,000 shares of $10 par value common stock are to be distributed.		

Stock splits by changing par value

A split may be accomplished without capitalizing any of the company's retained earnings by changing the par value of the shares and so amending the corporate charter. For example, assume that a corporation effects a stock split by amending its charter to reduce the par value of its common stock from $100 to $50. The original shares are called in, and two $50 par value shares are issued for each $100 share formerly outstanding. Thus, twice as many shares will be outstanding without changing the total capitalization of the company. The only entry necessary is a memorandum in the general journal to record the change in the nature of the common stock. The memorandum entry to record this transaction would be:

July	16	(Memo Entry) All $100 par value shares of the common stock were called, and two shares of $50 par value were issued for each old share. The corporate charter was amended for this purpose on June 12, 1963.		

Appraisal capital

Fixed assets should remain on the records of the company at cost until they are sold or until the cost has been charged off through depreciation expense. Sometimes, however, management may want the balance sheet to reflect the current market value of an asset, instead of the cost, especially when the asset's present value is significantly greater than cost. Recording an unrealized increase in the market value of a fixed asset violates generally accepted accounting principles.

Both the cost principle, or recording assets at cost and depreciating that cost over the assets useful life, and the realization principle, or recognizing revenues only when realized, are violated when assets are appraised upward and the unrealized increase in market value appears in the financial statements. Although the asset may clearly have a present market value in excess of cost, future declines in market value are possible, and the present increase in value may never be realized.

However, even though it violates generally accepted accounting principles, the unrealized increase in the market value of an asset is sometimes recorded. When this is done the asset is debited for the amount of the write-up, and an account called *Appraisal Capital* is credited. For example, if land originally purchased at a cost of $20,000 in 1937 is presently worth $45,000, the increased value is recorded as follows:

Dec.	20	Land	$25,000	
		Appraisal Capital		$25,000
		To record the revaluation of Land from cost of $20,000 to present value of $45,000.		

Since the Appraisal Capital account represents neither contributed capital nor retained earnings, it must be shown separately in the owners' equity section of the balance sheet. It cannot be considered a source of assets for dividend payment purposes in most states because it is an unrealized gain. The present increase in value may never be realized in cash, for the market value of the asset may later fall, or even drop lower than original cost.

A footnote to the balance sheet may be used to reflect the increased value of an asset without appraising it upward in the accounts. Even when an asset is actually appraised upward in the accounts, the balance sheet must contain a footnote explaining the appraisal. The footnote should continue to accompany later balance sheets for a minimum of four or five years, and preferably as long as the asset remains on the balance sheet.

When depreciable fixed assets such as buildings or equipment have been revalued upward, depreciation expense must be computed on the appraised amounts. A company would be doubly guilty of violating generally accepted accounting principles if it should write up its assets to improve the balance sheet picture, simultaneously re-

cording depreciation expense on the smaller figure. Depreciation expense on the appraisal portion of a revalued asset is not deductible for income tax purposes.

Terminology in corporate balance sheets

The terminology used in this text is that recommended by The American Institute of Certified Public Accountants and The American Accounting Association in their publications. The term "surplus" is frequently found in corporate balance sheets, although the term is not recommended by the accounting profession. "Earned Surplus" sometimes replaces "Retained Earnings"; "Paid-in Surplus" is sometimes used instead of "Contributed Capital"; "Donated Surplus" is substituted for "Donated Capital"; and "Treasury Stock Surplus" is used instead of "Contributed Capital from Treasury Stock Transactions."

"Surplus" is a generic term and is frequently misunderstood. Anyone who uses or interprets a corporate balance sheet should understand the terminology which may be encountered, including the term "surplus" and its connotations. The American Institute of Certified Public Accountants in its *Terminology Bulletin 1* recommends that "the use of the term *surplus* (whether standing alone or in such combinations as *Capital Surplus, Paid-in Surplus, Earned Surplus, Appraisal Surplus,* etc.) be discontinued."

The term *reserve* is also frequently misunderstood, primarily because of its varied uses. The term reserve may be found in the asset, liability, or owners' equity section of the balance sheet, with a different usage in each section. In the asset section "Reserve for Depreciation" is sometimes used instead of "Allowance for Accumulated Depreciation," and "Reserve for Bad Debts" is used instead of "Allowance for Uncollectible Accounts." In the liability section "Reserve for Federal Income Taxes" is used to indicate the federal income taxes payable, while in the owners' equity section the appropriations of retained earnings are called reserves. In order to prevent confusion, the term reserve is used in this text only to indicate appropriations of retained earnings.

Questions

10-1. Define treasury stock. Is treasury stock with a ready market considered an asset? Justify your answer.

10-2. Discuss the rights incumbent upon treasury stock in regard to voting; dividends. Is it possible for a company to acquire all of its stock as treasury stock?

10-3. Why is any excess over cost received from the sale of treasury stock not considered a profit and therefore not an increase in retained earnings?

10-4. What is the nature of the account "Contributed Capital from Treasury Stock Transactions"? How is it treated in the balance sheet?

10-5. When treasury stock is sold, what account(s) are used to record the difference between cost and proceeds from the sale if cost is greater than the proceeds? If cost is less than the proceeds?

10-6. When stock is acquired and permanently retired or cancelled, what entry is made if cost is less than the amount originally received when the stock was issued? If cost is greater than the amount originally received?

10-7. The city of Westover donated a tract of land valued at $10,000 to a company. What entry would the company make? If a stockholder should donate 100 shares of the company's own stock, what entry would the company make?

10-8. What is a property dividend? What advantage is there in distributing property dividends instead of cash dividends?

10-9. What is the purpose of a retained earnings "reserve"? How are these reserves classified in a balance sheet?

10-10. Name the circumstances which would give rise to a legally required restriction of retained earnings; a contractual restriction; a discretionary restriction.

10-11. What is the disposition of a retained earnings "reserve"?

10-12. What are the advantages in using a footnote instead of a reserve account to indicate a restriction of retained earnings; what disadvantages?

10-13. What is a stock dividend? Is the total owners' equity increased or decreased by a stock dividend? Why?

10-14. What is a stock split and why is it undertaken?

10-15. What is appraisal capital and why would a company want to record it?

10-16. Why is the term "surplus" not recommended terminology for the financial statements of a corporation?

Exercises

10-17. The Sooner Corporation issued 10,000 shares of $100 par value common stock in 1954 at 109 per share. On July 17, the company purchased 100 shares of its own stock on the open market at 112 per share. This stock was subsequently sold as follows:

July 21 40 shares @ 112
July 23 30 shares @ 114
July 27 30 shares @ 108.

REQUIRED

Record the purchase and the sale of treasury stock.

10-18. The Prather Machine Company issued 1,000 shares of $100 par value common stock and 500 shares of $100 par value preferred stock on January 17. The common stock was issued at 105 and the preferred at 103.

On November 17, ten shares of the preferred stock and twenty shares of common stock were donated to the company by a stockholder.

On November 20, the ten shares of donated preferred stock were permanently retired.

On December 3, ten shares of the treasury common stock were sold at 103 per share.

On December 9, ten shares of the treasury common stock were sold at 109 per share.

REQUIRED

Record the donation, the retirement of the preferred stock, and the sale of the treasury common stock.

10-19. The Tronto Company has authorized capital stock of 1,000 shares of no-par common, with a stated value of $20 per share. The stock was originally issued at $25 per share on July 10.

REQUIRED

Record the following transactions in general journal form.

(a) On October 3, 1964, the Tronto Company purchased 100 shares of its own stock on the open market at $27 per share. The treasury stock is carried at cost.

(b) Ten shares of the treasury stock were sold on October 5 for $29 per share.
(c) Ten shares of the treasury stock were sold on October 10 for $23 per share.
(d) Ten shares of the treasury stock were sold on October 15 for $20 per share.
(e) Ten shares of the treasury stock were permanently retired (cancelled) on October 20.

10-20. There are 10,000 shares of $100 par value common and 5,000 shares of 6%, $100 par value, cumulative, nonparticipating preferred authorized in the charter of the Parr-Betts Corporation. The following accounts appeared in the ledger of the company on December 31, 1964.

Common stock	$800,000
Retained earnings	185,200
Reserve for plant expansion	40,000
Treasury stock, common (350 shares at cost)	36,400 (debit)
Preferred stock	300,000
Premium on common	5,000
Contributed capital from retirement of stock	13,500
Discount on preferred	7,000 (debit)
Contributed capital from retirement of stock	4,300
Common stock dividends payable (at par)	50,000
Contributed capital from stock donations	12,200
Donations of land by nonstockholders	17,000

REQUIRED

Prepare the stockholders' equity section of the company's balance sheet.

10-21. The Bloxin Company had the following capital accounts and balances in its ledger on December 1, 1964, at which time the market price of the common stock was $59.

Common stock (5,000 shares authorized, par $50, 2,000 shares issued)	$100,000
Premium on common	13,000
Contributed capital from donations	8,000
Retained earnings	174,000

The board of directors has decided that in view of the company's poor financial position no cash dividends can be paid.

REQUIRED

Prepare journal entries for the following *independent* cases:

(a) On December 1 the board of directors declares a 10% stock dividend. The stock is issued on December 21.
(b) On December 1 the board of directors effects a 100% stock split by voting to issue one additional share of stock for each share outstanding. The stock is issued on December 21.
(c) On December 1 the board of directors declares a property dividend, to be effected by issuing to its stockholders shares of Trell Corporation stock, which the company owns. One share of Trell Corporation stock is to be issued for each share of Bloxin Company stock outstanding. The Trell Corporation stock has a present market value of $5 per share and is on the Bloxin Company's books at its original cost of $2.00 per share. The property dividend is paid on December 21.

10-22. Information is given below for a series of transactions completed by the Ratyll Corporation.

(a) The company issued 100 shares of no-par common stock with a stated value of $50 for $55 cash per share.
(b) When the company's stock had a market price of $55 per share, the company issued 20 shares of its $50 stated value stock for machinery. The machinery had a market value of $1,500.
(c) The company has retained earnings of $32,000. Record (1) the purchase by the company of ten shares of its own stock on the market for $60 per share and (2) the sale of this stock several weeks later for $50 per share.
(d) A 10% stock dividend was declared and paid when the company's stock had a market value of $60 per share. The stock is no-par, with a $50 stated value, and 10,000 shares are outstanding.
(e) A stock split was effected by issuing an additional share of the company's $50 stated value stock for each two shares outstanding. A total of 11,000 shares were outstanding prior to the stock split.
(f) A stockholder donated to the company twenty shares of the stock issued to him in part (a), above. These shares were cancelled and the stock permanently retired.

REQUIRED

Prepare general journal entries for the transactions, as indicated.

Problems

10-23. The Melton Barge Corporation has 1,000 shares of $25 par value stock outstanding and reported a retained earnings balance of $87,450 at the beginning of the year. It completed the following transactions.

Feb. 1 Issued 2,000 additional shares of its $25 par value common stock at $27 per share.
5 Purchased as treasury stock 400 shares of the stock issued in the preceding transaction for $13,000 cash.
8 Sold 300 shares of the treasury stock at $30 per share.
8 Permanently retired the remaining 100 shares of the treasury stock.
10 Received 50 shares of the stock issued in transaction 1 as a donation.
12 Sold the 50 shares of donated stock at $32 per share.
15 Restricted $5,000 of retained earnings for the expansion of its plant.
15 Declared and paid a 10% stock dividend with the company's stock selling for $33.

REQUIRED

Record in journal form the above transactions.

10-24. The Middletown Company completed the following transactions:

1962
Jan. 17 Issued 1,000 shares of $100 par value, 6%, cumulative preferred at $105 per share.
18 Issued 5,000 shares of no-par common, stated value $20, at $27 per share.
Dec. 31 The company had a $26,000 net income for the year. (Debit "Assets".)
1963
July 3 Acquired 100 shares of the company's own common stock, to be held as treasury stock, for $28 per share.
4 Since the state in which the company is incorporated requires a restriction on retained earnings, a reserve for treasury stock was created for the cost of the treasury stock.

Dec. 30 Dividends on preferred stock for 1959 and 1960 were paid.

31 A net loss of $3,000 for the year was closed to retained earnings. (Credit "Assets.")

1964

Apr. 23 Forty shares of the treasury stock acquired on July 3, 1960, were sold for $34 per share. The Reserve for Treasury Stock was reduced accordingly.

Dec. 12 Ten shares of preferred stock were donated to the company by a stockholder.

30 The board of directors declared and paid preferred dividends for the year and a $1 per share common stock dividend.

31 A net income of $31,000 was closed to retained earnings. (Debit "Assets.")

REQUIRED

1. Record the transactions in general journal form.
2. Post to T-accounts.
3. Prepare the owners' equity section of the company's balance sheet as of December 31, 1964.

10-25. The Silica Glass Company had the following owners' equity balances on June 15:

Common stock ($100 par)	$100,000
Preferred stock ($100 par, 6%, cumulative, nonparticipating, no dividends in arrears)	100,000
Unappropriated retained earnings	63,300
Reserve for plant expansion	30,000
	$293,300

The common stock is owned by five stockholders, who hold shares as follows:

	Shares
Smith	300
Barry	100
Logan	150
Tredwell	350
Farb	100
	1,000

On June 16 the company purchased Barry's 100 shares for $180 per share.

On June 29 the 100 shares of treasury stock were sold for $190 per share to Charles Ross.

On July 15 a 10% common stock dividend was declared, and the shares were issued. The stock had a market price of $200 per share.

REQUIRED

1. Journalize the purchase and sale of treasury stock and the issue of the stock dividend.
2. Compute the book value per share of common stock:
   (a) On June 15.
   (b) On June 16 after acquiring Barry's shares.
   (c) On June 29 after sale of the treasury stock.
   (d) On July 15 after issue of the stock dividend.
   Show all computations of book value.
3. Explain why the per share book value changed or did not change after each transaction.

10-26. The management of the Danforth Steel Products Company, a corporation formed approximately ten years ago, is preparing a balance sheet for submission to its bank in support of a request for a large loan. The company's stock is closely held, and statements have not been prepared previously for presentation to creditors. The stockholders' equity accounts are as follows:

Common stock	$120,000
Preferred stock	97,000
Surplus	320,000

Analysis of the articles of incorporation and the balances of the owners' equity accounts reveal the following:

The common stock is no-par stock with a stated value of $100 per share. A total of 1,050 shares are outstanding, and the $120,000 balance in the account reflects the total investment of the stockholders for the stock. The articles of incorporation authorizes 2,000 shares to be issued.

The preferred stock is $100 par value, 6%, cumulative, and is two years in arrears on dividends. The $97,000 balance of the account reflects the total investment made by stockholders for the 1,000 shares presently outstanding. The articles of incorporation authorize 2,000 shares.

The "Surplus" account contains the following:

Net income from operations	$187,000
Proceeds from the sale of fixed assets donated by stockholders	12,000
Excess of proceeds over cost of treasury stock	3,700
Appraisal capital from revaluation of assets	117,300

The minutes of the board of directors' meetings also indicate a $40,000 restriction of "surplus" for plant expansion and a $50,000 restriction for the retirement of bonds payable. The minutes state that these restrictions are to be recorded in the accounts.

REQUIRED

1. Prepare entries to correct the company's accounts.
2. Prepare the stockholders' equity section of the company's balance sheet, using good form and current terminology. (A footnote must accompany the balance sheet explaining the appraisal capital, which, on 1/1/62, increased assets from a cost of $175,000 to a current market value of $292,300.)

10-27. The owners' equity section of the Haggard Craft Corporation was as follows on January 1, 1964:

Common stock (2,000 shares authorized, 1,500 shares outstanding, $100 par value)	$150,000
Premium on common stock	6,000
Reserve for plant expansion	30,000
Retained earnings	52,800

The following transactions were completed during 1964:

Jan. 2 A cash dividend of $2 per share was declared.
19 The dividend declared on January 2 was paid.
Feb. 6 The reserve for plant expansion was increased by $5,000.
7 The company acquired 100 shares of its common stock for $15,000 cash. Since the corporation is chartered in a state restricting the purchase of treasury stock to the extent of retained earnings, an appropriated reserve for the treasury stock was established for the cost of the stock.
23 The treasury stock was sold for $16,000 cash. The appropriated reserve was therefore discontinued.
July 2 A 10% stock dividend, payable on July 19, was declared. The market price of the stock was $165 per share.
19 The stock dividend was paid.
Nov. 23 A $2 per share cash dividend was declared.

Dec. 8 The cash dividend declared on November 23 was paid.
30 An extension of the building was completed at a cost of $35,000, which was paid in cash. The appropriated reserve for plant expansion was therefore discontinued.
31 The company realized net income of $13,500 during the year. (Record this profit by debiting "Assets" and crediting Retained Earnings.)

REQUIRED

1. Record the transactions in general journal form.
2. Prepare the owners' equity section of the corporation's balance sheet at the end of the year.
3. Compute the book value per share of common stock at the beginning of the year and at the end of the year.

Cases

10-28. Fred Wilson is a member of the board of directors and owns 200 shares of the common stock of the True-line Instrument Company. The most recent financial statement of the company appears below in condensed form.

Balance Sheet

December 31, 1964

ASSETS		EQUITIES	
Cash	$ 12,000	Accounts payable	$ 20,000
Accounts receivable	29,000	Mortgage payable (due 1965)	82,000
Merchandise inventory	136,500	Common stock (2,000 shares, par value $100)	200,000
Equipment (net)	79,400	Preferred stock (1,000 shares, 6%, non-cumulative)	100,000
Buildings (net)	195,000	Premium on preferred	7,000
Land	37,000	Unappropriated retained earnings	49,900
		Reserve for plant expansion	30,000
	$488,900		$488,900

At a meeting of the board of directors on December 12 the payment of the year-end cash dividend was discussed. The company's management has never failed since formation of the corporation in 1939 to pay the preferred dividends and an equal 6% to common stockholders. However, the current cash position is weak, and cash would have to be borrowed from the company's bank in order to pay the usual dividend. One of the board members argues that the company has an obligation to its stockholders to continue the usual dividend payments because the company has, by its past actions, led the stockholders to expect the dividends. He insists that the company pay the 6% dividend even though cash must be borrowed. Another member of the board feels that a stock dividend should be paid to both common and preferred shareholders, thus giving them a "dividend" without affecting the company's cash position. Still a third member of the board insists that the dividend be paid out of the reserve for plant expansion. He insists that if the reserve for plant expansion is used, the operating cash will not be affected.

Analyze the financial statements of the company and discuss the merits of each of the proposed courses of action. Would you propose still another course of action?

10-29. The Crestwood Oil Company balance sheet appears on page 321. The company was formed seven years ago for the purpose of acquiring oil leases, drilling for oil, and selling oil from its wells to refineries. During the first five years of its life the company was very successful, but during the past few years most of its drilling has proved unsuccessful and its leases unproductive. Unproductive leases are written off as losses when exploration proves them to be valueless.

The board of directors realizes that if the company is to continue operations, additional leases must be acquired and explored. A total of $1,000,000 is needed, and only through an additional issue of stock can this large sum of money be acquired. The company's president discussed the possibility of issuing additional common stock with several investment underwriters and was told that additional common stock of the company could not be issued for more than $50 per share. The existence of cumulative, participating preferred shares reduced the attractiveness of the common stock, depressing the market price to only $50 per share.

Another possibility under consideration is the sale of 50,000 shares of common at $50 per share, which would raise $2,500,000 for company use. Approximately half of this amount ($1,220,000) would be used to retire the preferred shares, and the remainder would be used to acquire new leases for exploration purposes.

CRESTWOOD OIL COMPANY

Balance Sheet

December 31, 1964

ASSETS		EQUITIES	
Cash	$ 270,000	Accounts payable	$ 130,000
Accounts receivable	400,000	Notes payable (due in 1965)	100,000
Crude oil inventory	180,000	Common stock ($100 par)	1,000,000
Equipment (net)	1,254,000	Premium on common	300,000
Lease rights	1,556,000	Preferred stock ($100 par, 6%, participating to 10%, cumulative, dividends two years in arrears, callable at $110 per share)	1,000,000
		Retained earnings	130,000
		Reserve for retirement of preferred stock	1,000,000
	$3,660,000		$3,660,000

Several of the stockholders are opposed to issuing any additional common stock unless at least $130 per share is received (the same amount they paid for their shares). They claim that additional stock issued at less than that amount would dilute the interest of their shares. Another group of stockholders insist that the present book value of common stock is well over $200 per share and that they would rather see the company liquidate than issue a large block of new shares at $50. This group employed a private petroleum engineer to value the company's leases and received a report that the equipment has a market value of $600,000 and the present lease rights a value of $1,000,000. All other assets have a market value equal to their balance sheet amounts.

What would you recommend that the company do?

sent fairly the company's financial position and the results of its operations, he attaches the following standard opinion to the financial statements:

> In my opinion the accompanying balance sheet, income statement, and statement of retained earnings present fairly the financial position of the XYZ company as of December 31, 1964, and the results of its operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

If the statements violate any generally accepted accounting principle, the opinion must include a description of the violation. The CPA's opinion is valuable to creditors, stockholders, and others who use financial reports. The opinion gives assurance that an independent accounting expert who is thoroughly familiar with all phases of accounting has examined the statements and found that they present fairly the company's financial information.

Questions

11-1. Discuss what is meant by "generally accepted accounting principles." How does a principle become "generally accepted"?

11-2. Is it possible to find a listing of all generally accepted accounting principles? If so, where would it be found? If not, state why.

11-3. Why is the consistent use of generally accepted accounting principles important to "external" groups, and how would you define an "external" group?

11-4. What is meant by "accounting theory"? Why is an understanding of it important in a study of accounting principles?

11-5. Define and give an example of (a) an accounting concept, (b) an accounting convention, and (c) an accounting procedure.

11-6. Name five basic accounting concepts or assumptions.

11-7. Name five accounting conventions.

11-8. Are the basic accounting concepts and conventions separately applied to an accounting problem or is there an interrelationship between them? Describe the interrelationship if you think it exists.

11-9. Define the "business entity" concept. Why is it important to segregate the accounting for a business from the personal assets, debts, and transactions of the owners?

11-10. Define the "going concern" concept and give an example of how it applies to financial reports.

11-11. What is the "cost" concept? Give an example of how this concept applies to financial statements.

11-12. Define the "stable dollar" concept as applied to accounting. Do you agree or disagree with this concept? If you disagree, state what you would propose in its place.

11-13. Define the "periodicity" concept. Discuss an accounting application of this concept.

11-14. What does conservatism mean as applied to accounting?

11-15. Define consistency as applied to financial reports. Does this mean that changes are forbidden?

11-16. What does full disclosure mean? Must the financial reports contain every item of information its users could possibly want?

11-17. How is a decision made concerning whether an item is material or immaterial? Is there a clear dividing line?

11-18. Do you feel that the generally accepted principles of accounting are vague and difficult to pin to a given situation? Would you prefer that every possible transaction have only one acceptable way of being handled? If so, would you consider accounting under such regulations to be a "profession" or a "clerical routine"? How would you recommend that the acceptable method be selected?

Exercises

11-19. In each of the following cases one or more generally accepted accounting concept or convention has been violated. Name the one(s) violated and state briefly what should have been done.

(a) The ending merchandise inventory is placed on the balance sheet at its present sales value and is used in that same amount to determine the cost of goods sold in the income statement.

(b) A letter is received from a customer inquiring whether or not a certain item is carried in stock and what the price is. The company had the item in stock and answered the letter to that

effect. At that time an entry was made debiting Accounts Receivable and crediting Sales.

(c) Depreciation is not recorded in those years when profits are low and is brought "up-to-date" when profits are high.

(d) Six wastebaskets with a ten-year life were bought for the office for $30. The accountant debited Miscellaneous Office Expense. The next day an office desk was bought for $360, and the same account was debited.

(e) A fire occurred on December 31, the last day of the accounting period, completely destroying two of the company's automobiles. The company left the automobiles on the balance sheet and deferred their write-off until the next day, which was January 1.

(f) Assets which had been bought in 1953 were fully depreciated in 1963. Since the assets were still useful, the company continued to depreciate them, debiting Depreciation Expense and crediting Retained Earnings.

11-20. The following entries were recorded by the Dixon Company during 1964:

Machinery	$7,000	
Cash		$7,000
Depreciation Expense—Machinery	1,400	
Accumulated Depreciation—Machinery		1,400
Bad Debts Expense	2,000	
Allowance for Uncollectible Accounts		2,000
Allowance for Uncollectible Accounts	1,500	
Accounts Receivable		1,500

REQUIRED

Discuss how the following accounting concepts and conventions relate to the above entries:

(a) Going concern concept
(b) Cost concept
(c) Periodicity and matching concept
(d) Conservatism
(e) Consistency
(f) Objective evidence
(g) Materiality

11-21. Wilson Darby owns 100% of the stock in the Darby Company, which he bought at par value for $5,000 several years ago. He requested a one-year loan from the bank for business purposes. The

bank asked for a recent financial statement of the company and Darby presented the balance sheet shown below. He had no formal training in accounting, and the statement was his best effort to prepare one.

DARBY COMPANY
Statement of Properties Owned
June 30, 1964

Business cash in the bank	$ 1,000	Owed to creditors	$ 5,500
Personal cash in the bank	500	Notes owed on office equipment	2,000
Merchandise inventory with selling price of	17,000	My equity	22,000
Receivable from customers	3,000		
Office equipment worth	6,000		
Personal automobile worth	2,000		
	$29,500		$29,500

The banker asked for further information when the balance sheet was submitted, and Darby supplied the following:

The merchandise inventory cost $11,000; office equipment cost $7,000.
The office equipment has three years left of an expected ten-year life.
Approximately $100 of the receivables will not be collectible.
The company owes $200 in taxes, due the following month.
The note payable on the office equipment is due January 1, 1966.

REQUIRED

1. Reconstruct the balance sheet according to generally accepted accounting principles suitable for external reporting purposes.
2. List and describe the accounting concepts which were violated by Darby when he prepared the statement.

11-22. The inexperienced bookkeeper of the Northwest Company, a company newly formed on January 1, 1964, accumulated the following information to be put into income statement form for presentation to the stockholders at their first annual meeting shortly after December 31, 1964:

Total orders received from customers	$74,000
Orders not yet shipped because the right merchandise was not on hand	21,000
Cost of merchandise received and paid for	51,000
Cost of merchandise received and not yet paid for	17,000
Merchandise on hand, December 31, 1964	36,500
Cost of office equipment bought on January 1, 1964 (with a ten-year life)	20,000
Salaries paid	9,000
Advertising paid	2,000
Salaries owed to employees but not yet paid	500
Cost of three-year insurance policy	600

Since the bookkeeper knew little about accounting, he drew up the income statement as follows:

Incomes		
Orders received		$95,000
Expenses:		
Merchandise purchased	$51,000	
Assets purchased	20,000	
Salaries	9,000	
Advertising	2,000	
Insurance	600	
Total expenses		82,600
Net profit		$12,400

REQUIRED

1. Reconstruct the income statement so that it is suitable for external reporting purposes and in accordance with generally accepted accounting principles.
2. Discuss the periodicity concept and how it was violated by the bookkeeper when he drew up the statement.

11-23. William Brady had $1,000 in 1959. The purchasing power of the $1,000 was at that time equal to groceries for his family for a year. He invested the $1,000 in business property, which he sold for $1,500 in 1964. In 1964 the purchasing power of the $1,500 he received was also equal to groceries for his family for one year.

REQUIRED

1. Did Brady make a profit on his investment in business property according to generally accepted accounting principles which would be used for external reporting purposes?

2. Did he have more in purchasing power in 1964 in terms of groceries than he had in 1959?
3. Why is the *number* of dollars used to measure profit according to generally accepted accounting principles instead of according to the *purchasing power* of the dollar?

Problems

11-24. The December 31, 1964, trial balance of the Waterhouse Company is shown below.

Cash	$ 2,000	
Accounts receivable	11,000	
Notes receivable	5,000	
Temporary investment in U.S. Bonds	2,200	
Inventory	24,700	
Office equipment	19,600	
Accumulated depreciation—office equipment		$ 3,600
Buildings	70,000	
Accumulated depreciation—buildings		25,000
Advances to officers	10,000	
Accounts payable		7,000
Notes payable		2,000
Taxes payable		1,850
Mortgages payable on the building (due 1972)		10,000
Common stock		80,000
Retained earnings		2,500
Sales		179,000
Cost of merchandise sold	107,500	
Sales salaries	24,950	
Administrative salaries	17,200	
Officers' bonuses	2,000	
Advertising	6,000	
Supplies	1,000	
Transportation-out	2,300	
Insurance expense	800	
Taxes expense	4,700	
	$310,950	$310,950

The Advances to Officers arose from a payment of $12,000 to the president, approved by the board of directors on November 16,

1963. The advance is to be foregiven in the amount of $2,000 each year the company makes a profit of over $10,000. Any unearned portion of the advance is to be repaid if the president should leave the company.

The U.S. Government Bonds have a present market value of $2,500.

There are 1,000 shares of no-par common stock authorized in the corporation's charter, but only 800 have been issued.

REQUIRED

Using the trial balance and the related data below the trial balance, prepare a balance sheet and income statement to submit to the stockholders and creditors of the company. Notes to accompany the financial statements should also be prepared if it is felt that they are necessary for full disclosure.

11-25. Assume that the value of a dollar, measured in terms of its purchasing power, has declined 2% each year since 1945, as follows:

Dec. 31, 1945	100%
Dec. 31, 1950	90
Dec. 31, 1955	80
Dec. 31, 1960	70
Dec. 31, 1965	60

(The decline means, in essence, that one dollar in 1965 will buy only 60% as much real goods as it would in 1945.) The following income statement as of December 31, 1965, was prepared for the Dodson Company, dealers in heavy machinery and construction equipment:

Sales (in 1965 dollars)		$200,000
Cost of goods sold (bought 12/31/64)		100,000
Gross profit		$100,000
Less Operating expenses:		
Depreciation on building (Bought 12/31/45)	$25,000	
Insurance expense (Premium was paid 1/1/63)	2,000	
Depreciation on office equipment (Bought 1/1/56)	10,000	
Salaries (in 1965 dollars)	45,000	
Advertising (in 1965 dollars)	8,000	
Supplies (Bought 12/31/64)	4,000	
Total expenses		94,000
		$ 6,000

REQUIRED

1. The above income statement is prepared correctly and follows the generally accepted accounting concept of a stable dollar. However, in order to emphasize the difference between accounting for the *number* of dollars and the *purchasing power* of dollars, convert the income statement so that all amounts represent 1965 dollars of equal purchasing power. (For example, the cost of goods sold stated in 1964 dollars would cost more if bought with 1965 dollars.) To determine the amount in 1965 dollars, multiply the $100,000 cost of goods sold by 62/60, or the fraction

$$\frac{\text{Year of acquisition index (62\%)}}{\text{Current dollar index (60\%)}}.$$

2. Write a brief description of the difference between the $6,000 profit measured in *number* of dollars and the result of operations arrived at in terms of "equal purchasing power dollars"; i.e., what is the meaning of "profit"? Is profit the *number* of dollars earned or the difference between purchasing power received less the dollars of purchasing power given up?

11-26. The Williamstown Company was formed on January 1, 1964. During the year careful records were maintained of the cash receipts and disbursements made by the company. The records were kept by Lester West, an untrained office worker who knew nothing of accounting or the preparation of reports. He prepared the following report from his records:

Receipts		
From issue of capital stock to owners	$40,000	
From sale of merchandise	120,000	
Borrowed from the bank on five-year note	30,000	
		$190,000
Disbursements		
Merchandise purchased	$110,000	
Salaries	40,000	
Advertising	5,000	
Office equipment (acquired Jan. 3)	15,000	
Company automobile (acquired Jan. 8)	4,000	
Supplies	1,000	
Insurance	800	
		175,800
Cash balance, December 31, 1964		$ 14,200

On December 31 there were uncollected receivables of $17,000; unpaid accounts payable of $3,000; and unpaid wages of $1,000.

There was $38,000 of merchandise on hand on December 31; the office equipment has a ten-year life; and the company automobile has a four-year life. The $800 of insurance represents a two-year policy bought on January 1, 1964.

REQUIRED

1. Prepare an income statement and a balance sheet for the company in accordance with generally accepted accounting principles.
2. Discuss briefly how the statement prepared by Lester West violated the going concern concept and the periodicity and matching concept.

11-27. Harold Kileen is president and owns 60% of the capital stock of the Westgate Employment Service, a company which was formed on January 1, 1964. The company has branch offices in several cities, and the remaining 40% of the company's stock is owned by a number of individuals throughout the area covered by the company's operations. Mr. Kileen prepared the following balance sheet on December 31, 1964, and the income statement for the year then ended:

Income Statement

For the Year Ended December 31, 1964

Fees collected		$98,500
Operating expenses:		
Salaries paid	$61,200	
Equipment purchased	19,200	
Supplies purchased	1,800	
Utilities paid	2,000	
Advertising paid	12,000	
Total expenses		96,200
Net income		$ 2,300

Balance Sheet

as of December 31, 1964

ASSETS		EQUITIES	
Cash on hand	$17,300	Capital stock	$15,000
		Retained earnings	2,300
			$17,300

One of the stockholders was a certified public accountant and upon receiving these statements knew that they were not prepared in accordance with generally accepted accounting principles. He went to see Kileen and, in their discussion, the following was ascertained:

(a) Fees of $3,200 were owed by customers who received employment assistance in 1964.
(b) Accounts payable for advertising of $1,600 and taxes payable of $3,300 were owed by the company on 1964 operations.
(c) The equipment was purchased on January 1, 1964, and has a ten-year life and no salvage value.
(d) One-half of the supplies were on hand on December 31, 1964.
(e) Salaries of $800 were unpaid on December 31, 1964.

REQUIRED

As a result of the discussion, Mr. Kileen requests you to recast the statements in accordance with generally accepted accounting principles for resubmission to the stockholders. Prepare a corrected balance sheet and income statement.

Cases

11-28. The Griswold Company, a manufacturer of paints and various kinds of paint products, closes its books each December 31. A competitor of the company who was in financial difficulty decided to discontinue business. On December 6, 1964, the Griswold Company's vice-president offered the competitor $100,000 for his entire stock of raw material and finished goods. Having little choice, the competitor accepted the offer. The materials and paints thus purchased would have cost $170,000 if purchased from the Griswold Company's regular sources of supply, and the vice president feels that they can be sold to the company's regular customers for $200,000. An entry was made on December 19, placing the inventory on the books at $170,000 and crediting a gain account.

Inventory	$170,000	
Cash		$100,000
Gain on Acquisition of Materials		70,000

When the materials and finished products were examined more carefully by the Griswold Company's engineers, the need was

found for a special additive to bring the quality of the paints up to that of the Griswold Company's standards. This additive cost $35,000, and on January 14 an entry was made increasing the cost of the inventory for the additive.

Inventory	$35,000	
Cash		$35,000

The inventory was then sold the following year at the prices which the vice president originally thought could be realized.

REQUIRED

1. What, if any, generally accepted accounting concept or convention was violated?
2. What effect did the purchase, added costs, and final sale, as recorded by the Griswold Company, have on profits during 1964 and 1965?
3. If you disagree with the procedure followed by the Griswold Company, how do you think the transactions should have been recorded?
4. Is there any relationship between this case and the matter of placing all assets on the balance sheet at market value?

11-29. Sidney Abbot was appointed manager of the southern branch of the Longview Company in January, 1964. He watched the company's cash position carefully, reasoning that if the cash account grew, the company was doing well. He was pleased with operations because the cash account grew steadily from $3,000 when he took office to $21,000 on December 31, 1964. He received the income statement (page 348) from the company's accountant early in January. Abbot was shocked to discover that his branch reported a loss of $10,200, while the company's cash position increased by $18,000. The accountant was called in to explain this apparent discrepancy. The accountant quickly realized that Mr. Abbot did not understand the basic accounting concepts.

REQUIRED

1. Explain why the determination of profit and the cash balance are not the same.
2. Discuss how the basic accounting concept of periodicity and matching would be violated if cash alone were used to measure profit.

3. Prepare a brief schedule reconciling the difference between the $10,200 loss and the $18,000 increase in cash if all incomes and expenses on the income statement except depreciation were for cash, and if accounts receivable decreased by $16,950 during the year.

LONGVIEW COMPANY–SOUTHERN BRANCH

Income Statement

For the Year Ended December 31, 1964

Sales		$192,500
Cost of goods sold		106,000
Gross profit		$ 86,500
Less expenses:		
Salaries	$69,200	
Advertising	9,700	
Supplies	1,150	
Taxes	500	
Insurance	700	
Delivery expenses	4,200	
Depreciation–office furniture	2,700	
Depreciation–building	8,550	
Total expenses		96,700
Net loss		$(10,200)

12

Determining and reporting periodic income

The periodic income is perhaps the most important single figure appearing in the financial statements of a company. Measuring income is the most difficult part of the accounting function, and most of the basic concepts and conventions discussed in the previous chapter have been developed in an attempt to facilitate the measurement of income. The income statement has assumed increased importance in recent years because it enables owners of a business to evaluate their investment, assists management in controlling operations and formulating plans for future operations, and indicates a company's ability to repay long-term debts at their maturity. Net income is also used in management-labor negotiations, by tax agencies, and by security analysts.

Business income is measured by matching revenues with expenses for a selected period of a company's life. Major problems arise in ascertaining when revenue has been earned and what expenses should be matched against that revenue. This chapter treats the over-all process of measuring and reporting income, while the following four chapters then treat in more detail specific problems encountered in the income determination process.

The natural business year

The process of matching revenues and expenses begins with the selection of the period to be used in measuring income. Although interim statements are frequently prepared for monthly, quarterly, and semiannual periods, the basic accounting period is one year. In the past, companies have tended to use a calendar year, but more recently the trend has been toward a natural business year. A natural busi-

ness year is a twelve-month period ending on the last day of a month at a time when business activity and inventory are at their lowest. Selection of a fiscal year ending at the low point in the company's activities permits the accounting department to devote more time to the closing process and minimizes the cost and effort in taking inventory. Department stores, for example, customarily close their accounting year on January 31, after the Christmas rush and January sales have depleted their winter merchandise but before summer merchandise has been purchased.

The company must use its selected yearly period consistently. If the company changes its accounting period, full disclosure of the change must be made for several years, or until a number of statements are available for comparative purposes. Monthly statements are also frequently prepared for internal management's use, and the problems of assigning revenue and expense to a period are basically the same whether a month or year is used as the period of measurement.

Revenue realization

Since revenues must be assigned to specific accounting periods, clearly defined methods are necessary for determining exactly when revenue is realized. Two distinct approaches to the realization of revenue are possible: the *cash* basis and the *accrual* basis. These two methods are contrasted below.

The cash basis

The cash basis approach considers revenue to be realized when cash is received, and under this method expenses are recorded only when cash is disbursed. The cash basis is simple in concept and can be applied on a consistent basis. *It is not considered an acceptable method of measuring income for external reporting purposes,* because it assumes that the economic progress of the business is determined primarily by the change in the cash balance.

To illustrate income measurement by the cash basis, assume that the Adkins Cleaning Company had the following transactions during the month of January:

1. Cleaning services rendered in January, all on open account, were $2,500.
2. Cash collections from customers in January were $2,100. Only $600 of this amount was from the current month's cleaning services. The other $1,500 was received from the prior month's services.

3. A premium of $1,800 on a one-year insurance policy was paid on January 1.
4. Employees were paid salaries of $1,200 in January, of which $100 had been earned in December of the previous year. In addition, by the end of January employees had earned $200 which had not been paid.

The income statement prepared on a cash basis appears in Exhibit 12–1.

EXHIBIT 12–1

THE ADKINS CLEANING CO.

Income Statement (Cash Basis)

For the Month Ended January 31, 1964

Cleaning services		$2,100
Operating expenses:		
Insurance	$1,800	
Salaries	1,200	
Total expenses		3,000
Net loss		($ 900)

The revenue which appears in the cash basis income statement is the amount of cash received during January but does not represent the income earned from cleaning services rendered during the month. Further, the expenses in the income statement represent cash disbursements during January but they do not reflect expenses applicable to that month. The cash basis statement reflects expenses of some prior months and expenses of some future months, and matches these expenses against revenues for which there is no direct correlation.

Income determined by the cash basis is subject to manipulation. The payment of expenses may be deferred until later periods in order to make the income statement of the current period appear more favorable.

The cash basis may in some cases be appropriate for non-profit organizations such as social clubs or charitable institutions, where the measurement of income is of little significance.

The accrual basis

The accrual basis of determining net income assumes that the rendering of a service or the sale of merchandise is the proper point in time to consider revenue as earned. Similarly, expenses are *costs consumed* or *expenses incurred* in the effort to earn revenue. The timing of cash receipts and cash payments is basically irrelevant to the income recognition process, although the timing may sometimes coincide, as in the case of a cash sale.

An income statement prepared on the accrual basis from the same data presented earlier for the Adkins Cleaning Company appears in Exhibit 12–2.

EXHIBIT 12–2

THE ADKINS CLEANING CO.

Income Statement

For the Month Ended January 31, 1964

Cleaning services rendered		$2,500
Operating expenses:		
Insurance expense	$ 150	
Salaries	1,300	
Total expenses		1,450
Net income		$1,050

The income statement prepared on the accrual basis reflects the amount of revenue actually earned by performing cleaning services during the month and reflects only the expenses applicable only to January. By matching revenues *earned* with expenses *incurred* during January, the accrual basis income statement gives an accurate evaluation of the month's operations.

The accounting principles and techniques discussed in all previous chapters of this text have been based on the accrual method of determining business income. The accrual method is the generally accepted basis, and only in unusual circumstances would the cash basis be acceptable. All further discussion in this and following chapters assumes the use of the accrual method.

Point of realization

Revenue is normally considered to be realized at the time a product is sold or a service rendered. However, the unusual nature of

some businesses necessitates the recognition of revenue on some other basis. The following sections discuss the recognition of revenue (1) at the time of sale, (2) on the basis of production, and (3) at the time installment sales are collected.

Completed sales basis

Companies which derive their revenue from the sale of a product normally recognize and record revenue at the time a sale is completed. A sale occurs when legal title to merchandise is transferred to the purchaser.

In some special cases, the point of sale is difficult to determine or impractical to apply. For example, legal title to merchandise shipped FOB destination does not pass to the buyer until the merchandise reaches the customer. The shipper would have no way of knowing when the merchandise is actually delivered and the sale completed. As a practical alternative, revenue is recognized in this case when the merchandise is delivered to the carrier.

Title to merchandise sold on a *conditional sale* basis is retained by the seller until the merchandise is fully paid for. Under the laws of most states, however, the seller's title is considered nominal only, and the purchaser has full rights to use, enjoy, and consume the goods. Thus revenue may be considered to have been realized at the time the merchandise is delivered, even though the seller may retain legal title until the sales price of the merchandise is received in full.

Sometimes merchandise is sold on an *approval sale*, wherein the purchaser takes the merchandise on a trial basis. If the customer is not satisfied with the merchandise, he may return it within a specified period of time for full credit. Revenue is recorded for an approval sale only when there is reasonable assurance that the customer will keep the merchandise.

Merchandise may be shipped on a *consignment* basis, wherein the consignee agrees to stock the merchandise for customers to buy, but the merchandise remains the property of the consignor. The consignee acts only as a commissioned agent; when a customer buys consignment merchandise, the consignee deducts his commission from the sales price and remits the remainder to the consignor. When a company ships merchandise on a consignment basis, no sale has occurred and thus no revenue should be recorded. The sale occurs when a customer buys the merchandise, and this fact is reported to the consignor. Monthly reports are usually submitted by the consignee for this purpose.

Revenue realization based on production

In certain circumstances, revenue may be considered realized prior to the time of sale. When the period of production covers several years and sale of the completed product is assured, a more realistic determination of net income may result if the recognition of revenue is based on production. One common application of this procedure is called the *percentage of completion* method of recognizing revenue. If, for example, a shipbuilding company accepts a contract to construct an ocean liner in a normal construction period of two years, the annual income of the company is distorted if the total revenue from the construction is deferred until the completion and transfer of the ship to the purchaser. If the contract sets a definite sales price on the ocean liner, the revenue may be considered realized periodically as construction progresses. While this method of recognizing revenue is an exception to the completed sale basis, it is acceptable because it provides a valid measurement of the periodic revenue producing activity of the company.

Suppose a construction company is to receive five million dollars for the construction of an office building. Approximately three years will be required to complete the building. At the end of the first year the building is 20% completed, and $800,000 of building costs have been incurred. Using the percentage completion method, the following entries are prepared during the first year of construction:

1963				
Dec.	12	Construction Costs	$ 800,000	
		Cash		$ 800,000
		To record construction costs.		
	31	Construction in Progress	$1,000,000	
		Construction Revenues Realized		$1,000,000
		To record 20% of the contract price, based on percentage completion.		

During the first year, the company recognized $1,000,000 of revenue to match against costs of $800,000. Its economic progress for the year is more accurately measured in this manner than if no revenue had been considered realized until completion of the contract.

Suppose, further, that additional costs of $2,500,000 are incurred during the second year and at the end of that year the building is 80% completed. The entries made during the second year are:

1964				
June	7	Construction Costs	$2,500,000	
		Cash		$2,500,000
		To record construction costs.		
Dec.	31	Construction in Progress	$3,000,000	
		Construction Revenues Realized		$3,000,000
		To record 60% of contract price (80% current stage of completion, less 20% recorded in the prior year).		

In the third and final year of construction assume that the additional construction costs total $900,000. The remainder of the contract price is then recorded. As a result of these entries, the balance in the Construction in Progress account is equal to the $5,000,000 contract price, and Construction in Progress represents a receivable from the purchaser of the building. The Construction in Progress account is credited when the $5,000,000 contract price is received.

1965				
Aug.	23	Construction Costs	$ 900,000	
		Cash		$ 900,000
		To record construction costs.		
Sept.	4	Construction in Progress	$1,000,000	
		Construction Revenue Realized		$1,000,000
		To record the balance of the contract price.		
Oct.	9	Cash	$5,000,000	
		Construction in Progress ..		$5,000,000
		To record receipt of the contract price from the purchaser.		

Exhibit 12–3 compares the results of each year's activity using the percentage completion method. (See page 356.)

The percentage completion method recognizes revenue periodically, even though production of a long-term project is not completed. If the completed sale method had been used, the total revenue of $5,000,000 would have been recognized in the third year.

A variation of the production method of recognizing revenue may be applied to the completion of products where sales of the units produced are assured at a stable price without additional sales effort.

EXHIBIT 12–3

Percentage Completion Method of Recognizing Revenue

	1st Year	2nd Year	3rd Year	Total
Costs incurred	$ 800,000	$2,500,000	$ 900,000	$4,200,000
Portion considered earned due to percentage completion:				
20% of $5,000,000	1,000,000			
60% of $5,000,000		3,000,000		
20% of $5,000,000			1,000,000	
Total				5,000,000
Income recognized	$ 200,000	$ 500,000	$ 100,000	$ 800,000

For example, sale of the entire production of gold or silver by a mining company to the federal government, at a fixed price, is sufficient to justify the recognition of revenue at the point of completed production. However, if additional sales effort is necessary for a company to sell its completed products, revenue recognition is improper until a sale is completed.

Revenue realization based on installment collections

Some companies which sell merchandise on long-term contracts recognize revenue by the *installment sales* method. By this method each dollar collected from a customer is considered to be partially a return of cost and partially gross profit. Since installment sales are frequently collected over a long period of time and collections are uncertain, those who use this method prefer to wait until an installment is received before recognizing any revenue in that installment.

To illustrate this method of revenue realization, suppose that merchandise which cost $360 is sold for $480. The total profit on the sale is $120, or 25% of the sales price. By the installment sales method 25% of each installment is considered revenue, but this revenue is not earned until the installment is received in cash. As the installments are collected, 25% of the amount collected is reported as realized revenue of that period.

To illustrate further, suppose that a $480 household appliance is sold to a customer on terms of "nothing down and twenty-four equal monthly installments of $20 each." The installment sales method

defers the *unrealized gross profit* on the sale and records the gross profit as realized only when installments are received. Sales and cost of sales may be recorded in the usual fashion except that they are clearly labeled as applicable to installment transactions.

July	18	Installment Receivables	$480	
		Installment Sales		$480
		To record installment sales.		
	18	Cost of Installment Sales	$360	
		Inventory		$360
		To record cost of installment sales.		

The Installment Sales account and Cost of Installment Sales account are closed at the end of the period, and the difference is credited to the Unrealized Gross Profit account.

July	18	Installment Sales	$480	
		Cost on Installment Sales		$360
		Unrealized Gross Profit		120
		To close the sales and cost of goods sold and record the gross profit as unrealized.		

An additional entry is made to transfer from Unrealized Gross Profit to Realized Gross Profit an amount equal to 25% of the collections during the year. If $120 is received during the first year from the collection of six installments, $30 (25% of $120) is transferred to Realized Gross Profit by the following adjusting entry:

Dec.	31	Unrealized Gross Profit	$30	
		Realized Gross Profit		$30
		To record realized gross profit for the year.		

The realized gross profit appears on the income statement as an addition to gross profit from regular sales. The unrealized gross profit is generally classified along with other deferred revenues in the liability section of the balance sheet. Some accountants classify unrealized gross profit as a part of owners' equity; however, it is suggested that this treatment is not consistent with the purpose of the installment method, since it, in effect, increases owners' equity prior to the receipt of the installments. If the entire unrealized gross profit is considered owners' equity, it is implied that the revenue is realized.

Estimating expenses

As stated previously, the accrual method is based on a systematic and objective matching of expenses incurred during a period with the revenue considered realized during the period. An expense is sometimes obviously related to the current period, but the exact amounts may not be known. In such cases the amounts must be estimated. The amount of the bad debts expense, for example, must be estimated at the time the expense is recorded.

Any expense relating to the current period must be included in the determination of income, if the amount can be estimated with a reasonable degree of accuracy. The practice of including an expense at an estimated amount is far superior to that of ignoring the expense completely. The accounting treatments of two estimated expenses are presented in the following sections.

Product guarantee expense

When merchandise is sold under a product guarantee agreement, an estimate must be made of the expense to be incurred because of the guarantee. Since some of the products sold during the current period will be repaired or replaced because of the guarantee, these future repairs or replacements are costs which must be matched with current sales.

A percentage of sales is frequently used to estimate the product guarantee expense. If a company's past experience indicates that the expense of repairing defective products is 1% of sales, and sales are $100,000 for the period, the entry is:

Dec.	31	Product Guarantee Expense	$1,000	
		Estimated Product Guarantee Liability		$1,000
		To record the estimated expense for the period under the product guarantee.		

In subsequent periods when repairs are actually made, the liability is reduced. If cash expenditures for repairs are $980 in the next period, the entry is:

Apr.	3	Estimated Product Guarantee Liability	$980	
		Cash		$980
		To record repairs on products sold in prior years.		

The Estimated Product Guarantee Liability is classified as a current liability on the balance sheet.

Premium expense

Many companies give their customers premiums in exchange for coupons, stamps, or boxtops. At the end of each accounting period the company must estimate the expense which will be incurred in the redemption of the coupons, stamps, or boxtops. The expense incurred as a result of giving the premiums must be recorded in the period in which the coupons are issued. Since all coupons are rarely returned for redemption the expense must therefore be estimated. The company must determine the number of coupons which have been given customers during the period and then estimate the percentage of these which customers will ultimately redeem. Assume, for example, that the Flakey Cereal Company gives a toy costing forty cents to any customer who sends in ten boxtops. During the year 4,000,000 boxes of cereal are sold, and it is expected that 10% of the boxtops will be redeemed. The following entry is necessary to record the estimated expense:

Dec.	31	Premium Expense	$16,000	
		Estimated Liability for Premiums		$16,000
		To record estimated liability for premiums (4,000,000 boxtops, each premium requiring 10 tops = 400,000 potential premiums × 10% expected to be redeemed = 40,000 toys @ 40 cents each = $16,000).		

When premiums are sent to customers, an entry is made debiting the Estimated Liability for Premiums account and crediting the Toy Inventory. Estimated Liability for Premiums is classified as a current liability on the balance sheet.

Reporting corrections and extraordinary transactions

The discussion thus far has been centered on the determination of net income as a result of ordinary transactions. The effects of extraordinary transactions and the correction of errors made in the computation of net income in prior years present a special problem. Corrections and extraordinary transactions may be excluded from the determination of net income for the period, or they may be included, depending on the concept of net income which the company adopts.

If corrections or extraordinary transactions are included in the determination of net income, the concept is called the *all-inclusive* concept of net income. If only current and routine transactions are included in the computation of net income, and if prior years' corrections and any extraordinary transactions of the current year are debited or credited directly to retained earnings, the concept is called the *current operating* concept of net income.

Assume, for example, that depreciation of the prior year was understated by $1,000 and that during the current year one of the company's buildings burned, resulting in a $5,000 loss. Since these transactions are material in amount, they may be recorded under either of the two concepts as follows:

All-Inclusive Concept (All transactions included in the computation of net income)			Current Operating Concept (Only current and normal transactions of the period included in the computation of net income)		
Correction of Prior Years' Depreciation Expense	$1,000		Retained Earnings	$1,000	
Accumulated Depreciation		$1,000	Accumulated Depreciation		$1,000
To correct prior years' depreciation.			To correct prior years' depreciation.		
Fire Loss—Buildings	$5,000		Retained Earnings	$5,000	
Buildings		$5,000	Buildings		$5,000
To record fire loss.			To record fire loss.		

If an all-inclusive income statement is prepared, the Correction of Prior Years' Depreciation account and the Fire Loss—Buildings account will both appear in the income statement as special nonoperating items, and they will be closed to the revenue and expense summary account. Neither of these items will appear in the income statement if the current operating concept is followed, because the debits were made directly to Retained Earnings. They will instead be reported in the statement of retained earnings.

The statement of retained earnings

A statement which reports all the amounts that have been debited or credited to Retained Earnings is necessary if full information is to be reported concerning the company's transactions during the

year. The statement of retained earnings supplements the income statement by providing information relative to all transactions which affect the retained earnings portion of owners' equity.

The form of the statement of retained earnings is quite flexible. It is essentially a reconciliation of the beginning and ending balances of the Retained Earnings account. Amounts credited to Retained Earnings during the year are added to the beginning balance and amounts debited to the account are deducted. The statement is illustrated in Exhibits 12–4 and 12–5.

All-inclusive and current operating statements illustrated

Suppose the balance of Retained Earnings of the B. B. Burr Company is $21,000 on January 1, 1964. During 1964 the company has sales of $100,000, cost of sales of $60,000, and normal operating expenses of $25,000. In addition, land is sold during the year at a $10,000 gain, a building is destroyed by fire at a loss of $16,000, and it is discovered that depreciation has been understated $3,000 in prior years. The company pays $5,000 in dividends during the year. The all-inclusive income statement and the related retained earnings statement are illustrated in Exhibit 12–4.

EXHIBIT 12–4

B. B. BURR COMPANY
All-Inclusive Income Statement
For the Year Ended December 31, 1964

Sales			$100,000
Cost of merchandise sold			60,000
Gross profit			$ 40,000
Operating expenses			25,000
Net operating profit			$ 15,000
Non-operating gains:			
Sale of land		$10,000	
Non-operating losses:			
Fire loss—building	$16,000		
Correction of prior years' depreciation expense	3,000	19,000	
Net non-operating losses			9,000
Net income to retained earnings			$ 6,000

B. B. BURR COMPANY
Statement of Retained Earnings
For the Year Ended December 31, 1964

Retained earnings, December 31, 1963	$ 21,000
Net income from the income statement	6,000
	$ 27,000
Dividends paid	5,000
Retained earnings, December 31, 1964	$ 22,000

Statements prepared from the same data but applying the current operating concept appear in Exhibit 12–5.

EXHIBIT 12–5

B. B. BURR COMPANY
Current Operating Income Statement
For the Year Ended December 31, 1964

Sales	$100,000
Cost of goods sold	60,000
Gross profit	$ 40,000
Operating expenses	25,000
Net operating income to retained earnings	$ 15,000

B. B. BURR COMPANY
Statement of Retained Earnings
For the Year Ended December 31, 1964

Retained earnings, December 31, 1963			$21,000
Additions:			
Net operating income	$15,000		
Gain on sale of land	10,000	$25,000	
Deductions:			
Dividends paid	$ 5,000		
Fire loss—buildings	16,000		
Correction of prior years' depreciation expense	3,000	24,000	
Net increase in retained earnings			1,000
Retained earnings, December 31, 1964			$22,000

The current operating and all-inclusive concepts have no effect upon the balance sheet. The ending balance of Retained Earnings is $22,000 in each case. The difference between the concepts lies in whether or not corrections and extraordinary transactions should be considered in the computation of "income" for the period. The all-inclusive concept of income is based on the assumption that a series of income statements, one for each period of the company's life, should reflect *all* items which affect the company's economic growth. With a complete set of the company's income statements prepared on an all-inclusive basis, a person could ascertain fully the periodic changes in the company's economic growth.

On the other hand, the current operating concept of net income is designed to point out at the bottom of the income statement the normal operating profit or loss realized during one particular year without including unusual, non-recurring, or correction items. Those who prefer current operating income statements feel that the current operating performance, or current "earning power" of the company, is more significant and should be given the prominent spot at the bottom of the income statement.

EXHIBIT 12–6*

B. B. BURR COMPANY

Combined Income and Retained Earnings Statement

For the Year Ended December 31, 1964

Sales			$100,000
Cost of merchandise sold			60,000
Gross profit			$ 40,000
Operating expenses			25,000
Net operating income			$ 15,000
Non-operating gains or losses:			
Gain on sale of land		$10,000	
Fire loss—building	$16,000		
Correction of prior years' depreciation expense	3,000	19,000	
Net non-operating losses			9,000
Net income after non-operating items			$ 6,000
Retained earnings, December 31, 1962			21,000
			$ 27,000
Dividends			5,000
Retained earnings, December 31, 1963			$ 22,000

* See discussion on page 364.

Combined income and retained earnings statement

A combined income statement and statement of retained earnings is sometimes prepared as a compromise between the two concepts of reporting net income. Such a statement contains all the information found in the income statement and in the statement of retained earnings. The non-recurring and correction items which are not associated with current operations are placed between the income statement portion and the retained earnings statement portion of the combined statement. See Exhibit 12–6 on page 363.

The inclusion of both the $15,000 net operating profit and the $6,000 all-inclusive profit may tend to confuse anyone reading the statement. However, full disclosure of all material financial information is provided, and the periodic economic growth of the company, as well as its current earning power, is reflected within the statement.

Questions

12-1. Why is a natural business year instead of a calendar year used by some companies as the period of income measurement?

12-2. Distinguish between the cash basis and the accrual basis of recognizing revenue. Is it necessary to have a clearly defined "period" for both of these bases?

12-3. In what way is the determination of net income using the cash basis subject to greater manipulation than the accrual basis?

12-4. When the accrual method is used, why is the "point of sale" generally taken as the point of time at which revenue is considered earned?

12-5. Describe a conditional sale and the determination of the point at which revenue is considered earned when a conditional sale is made.

12-6. What is an approval sale? Discuss the problems of determining when revenue from an approval sale is earned.

12-7. Describe a consignment. When should revenue be recognized under a consignment arrangement?

12-8. Describe the percentage completion method of recognizing revenue. Discuss the circumstances under which the percentage com-

pletion method provide a more realistic periodic income determination.

12-9. Describe the installment method of recognizing revenue. In what circumstances does it provide a more realistic periodic income determination?

12-10. Name several expenses which are frequently unknown in exact amount but which must be considered in the determination of periodic income.

12-11. What is a product guarantee expense? How can the amount of an expense that is related to the current year's sales be estimated?

12-12. Describe the accounting problems which arise because of premiums which a company gives to its customers for stamps, boxtops, or coupons.

12-13. Define the all-inclusive concept of income. Define the current operating concept of income, and describe the nature of the income statement which would be prepared under each of these two concepts.

12-14. Describe a statement of retained earnings. What is the purpose and content of the statement?

12-15. What is a combined income and retained earnings statement and what purpose does it serve?

12-16. The Latmer Company prepares its income statement each year, following the current operating concept of reporting net income. Assuming each item is material in amount, would the following items appear on their income statement?

(a) Fire loss of $5,000
(b) Bonus to the president of $4,000
(c) Gain on the sale of a factory building, $3,800
(d) Loss on the sale of marketable securities, $8,200
(e) Contribution of $1,000 to the community chest
(f) Correction of prior year's depreciation
(g) Dividends received on long-term investments

Exercises

12-17. The following are transactions completed by the Logan Company during the month of August, 1964:

(a) Purchased merchandise for cash, $24,000.
(b) Sold merchandise for cash, $23,000.
(c) Merchandise costing $8,000 was on hand at the end of the month.
(d) Collected $3,000 of accounts receivable from sales of the previous month.
(e) Paid salaries of $4,200; there were $300 of unpaid salaries at the end of the month.
(f) Purchased $270 of supplies for cash; of these, $70 were on hand at the end of the month.
(g) Paid advertising, $1,600.

REQUIRED

1. Prepare an income statement for the month of August, using the cash basis. Prepare a second income statement using the accrual basis.
2. State which of the above reflect the results of transactions according to generally accepted accounting principles.

12-18. The following information contains sales-related data for the Warson Furniture Company for the month of January, 1964.

(a) Sales delivered to local customers, $6,000.
(b) Sales to customers—shipped FOB destination by rail freight on January 31, 1964—$2,000.
(c) Credit sales of furniture on a conditional sales agreement were $7,000. The Warson Company retained conditional title and can repossess the merchandise if the customer does not pay.
(d) Approval sales of $1,500 were made on January 29. The customer has two weeks in which to return the furniture for full credit. In the past less than 5% of the furniture sold on these terms has been returned.
(e) Furniture with a sales value of $2,700 was shipped to a dealer on a consignment basis. On January 31 the dealer had sold $1,200 of this furniture.
(f) Orders from customers were received for $800 of furniture which was not in stock. The Warson Company had ordered the furniture from its suppliers on January 28 to fill their orders but had not received the furniture by January 31.

REQUIRED

1. Compute the total sales which should appear as realized revenue in the income statement of the company for the month of January, 1964, using generally accepted accounting principles.

2. State reasons for including or excluding each item from the January income statement.

12-19. The Franston Construction Company has one large contract for the construction of a modern highway, for which it will receive a total of $2,500,000 from the state upon completion. The costs, expenses, and percentage completion data for the three years in which construction was undertaken are given below.

1962: Construction costs were $310,000.
Administrative and selling costs were $50,000.
The highway was 20% completed.

1963: Additional construction costs were $1,200,000.
Additional administrative and selling costs were $48,000.
The highway was 80% completed.

1964: Additional construction costs were $280,000.
Additional administrative costs were $54,000.
The highway was completed, and the $2,500,000 was received from the state.

REQUIRED

1. Journalize the transactions for the three years using the percentage completion method.
2. Prepare income statements based on usage of the percentage completion method for each of the three years.

12-20. The Treet Candy Company gives a toy to each customer who mails ten candy wrappers back to the company. The toys cost eight cents each. Cash transactions during 1964 included the sale of 1,000,000 candy bars for 10¢ each and the purchase of 20,000 toys. A total of 30,000 wrappers had been returned by the end of the year and the toys sent to customers. The company estimates 10% of all wrappers will ultimately be returned.

REQUIRED

Prepare journal entries for the sale of the candy, the purchase of the toys, the redemption of the 30,000 wrappers, and the company's estimated expense at the end of the year. A perpetual inventory system is used for the toys.

12-21. The Carothers Appliance Company sells household appliances on an installment basis. The appliance costs $200 and sells for $288. The company's terms are nothing down and 24 monthly install-

ments of $12 each. During 1964 the company sold 100 of the appliances and collected a total of 1,000 individual installments during the year.

REQUIRED

Record in general journal form the sale of the appliances; the cost of merchandise sold, using a perpetual inventory method; the unrealized gross profit on the installments; the collections from customers; and the amount of gross profit realized during the year.

12-22. The Hartford Company made sales of $100,000 during 1964 with a cost of merchandise sold of $60,000 and selling expenses of $30,000. Its balance of retained earnings on January 1, 1964, was $12,000, and $4,000 of dividends were paid during the year. Also during the year the company sustained a fire loss of $8,000 when a building burned, realized a $3,200 gain on the sale of investments which it had held for several years, and discovered and corrected a $1,000 error for underdepreciation of fixed assets in prior years.

REQUIRED

1. Prepare an income statement and a statement of retained earnings for the year using the all-inclusive concept of reporting net income.
2. Prepare an income statement and a statement of retained earnings for the year using the current-operating concept of reporting net income.
3. Prepare a combined income and retained earnings statement for the year.

12-23. (a) The Jamestown Machine Company manufactures heavy machinery to customer specifications. A customer ordered a particularly complicated machine on August 20, 1964, with a total sales price of $149,650. The machine was to be delivered and installed by the Jamestown Company not later than February 16, 1965.

(a) On September 2, 1964, the Jamestown Machine Company bought special materials for the machine which cost $32,000.

(b) On December 4, 1964, labor costs of $96,000 had been incurred in constructing the machine.

(c) On December 16, 1964, the machine was crated and ready for shipment.

(d) On January 7, 1965, the machine was shipped FOB destination, with freight costs of $600.
(e) On January 21, 1965, the machine was installed, tested, and accepted by the customer.

The company incurred $6,000 of selling costs in securing the order and $3,000 cost in installing it.

REQUIRED 1. How much profit did the company make on the machine? 2. State how much, if any, of the profit should be recorded in (a) 1964, (b) 1965.

(b) The Atlantic Coast Corporation, building contractors, received an order for a ten-story brick building which would take two years to complete and which had a contract price of $2,000,000. On December 16, 1963, the company purchased materials for the job at a cost of $600,000, which is one-third of the total estimated cost of construction. Construction began January 9, 1964.

REQUIRED How much profit, if any, should be recognized in 1963?

(c) The Wilson Road Building Company has a contract for the construction of an expressway ten and one-half miles long, including bridges, which has a total sales price of $3,550,000. None of the roadway had been completed, but all the bridges were completed by December 31, 1964, at a cost of $1,400,000. The bridges are estimated to be 40% of the contract.

REQUIRED Journalize the entries for the costs and any revenue which you would recognize in 1964 and the related closing entries at the end of 1964.

Problems

12-24. The Farnsworth-Peters Company trial balance appears below. The company was formed on January 1, 1964, and the only entries recorded by the company were cash transactions.

Cash on hand	$ 2,200	
Office equipment	10,000	
Store equipment	15,000	
Notes payable (1968)		$ 5,000
Capital stock		26,000
Sales		81,900
Purchases	60,000	
Salaries	20,000	
Insurance	750	
Supplies	1,100	
Taxes	600	
Advertising	2,350	
Utilities	900	
	$112,900	$112,900

On December 31, 1964, the company officers called you in to help prepare financial statements which would be presented to the stockholders. The officers of the company did not understand accrual accounting and wanted you to convert the data to a form suitable for external reporting. You accumulated the following additional data:

Merchandise on hand, $12,000; supplies on hand, $300; one-half the taxes and one-third of the insurance were prepaid on December 31. Unpaid invoices included $2,100 for merchandise; $120 for utilities; $60 for supplies; and $150 for salaries. Both the office equipment and store equipment have a ten-year life.

REQUIRED

Prepare a balance sheet and an income statement acceptable for external reporting purposes to the company's creditors and stockholders.

12-25. The Adams Contracting Corporation engages in long-term construction contracts which take from one to four years to complete. At the end of 1964 the company had three contracts in process:

Contract	Total sales price of the completed contract	% completed at beginning of the year	% completed at the end of the year	Total construction costs incurred in prior years
A	$ 200,000	70%	100%	$130,000
B	1,000,000	20%	80%	170,000
C	500,000	—	40%	—

During 1964 construction costs were incurred as follows:

Contract A	$ 50,000
Contract B	500,000
Contract C	180,000

Contract A was completed during the year, and the full contract price was collected. Total selling and administrative expenses on all contracts were $68,000 during the year.

REQUIRED

1. Prepare journal entries for all transactions during 1964, using the percentage completion method.
2. Prepare an income statement using the percentage completion method.
3. Prepare an income statement if the completed sale method is used to recognize income. (All construction costs are deferred until the job is completed when this method is used. Only the $130,000 costs incurred on Contract A plus the costs incurred in 1964 would appear on the income statement as construction costs; costs of Contracts B and C would be deferred until the contracts are completed.)
4. State whether you feel the completed sale method reflects adequately the results of the year's transactions in this situation.

12-26. The Rogers Company began a guarantee policy on January 1, 1964, whereby their product is guaranteed against defects for one year. They also attached a tag to each unit which, when returned with certain requested information, entitled the purchaser to a special attachment for the product. The information on the tag is useful to the company for marketing and advertising purposes, and the attachment is given to insure the customer's furnishing the information. The following transactions were completed by the company during the year. The company had a beginning merchandise inventory of $10,000 and a beginning retained earnings balance of $17,800.

(a) Bought 1,000 units of merchandise at $120 each for cash.
(b) Sold 800 units at $200 each for cash.
(c) Paid cash for 600 of the special attachments at $2 each. (Use a special perpetual inventory account for the attachments.)
(d) Advertising expenses paid, $3,700.
(e) Supplies bought for cash and consumed, $1,500.
(f) Salaries paid, $24,000.
(g) Dividends paid to stockholders, $2,000.

(h) A fire in the warehouse burned 150 units of the company's product, which had cost $18,000 (credit purchases).
(i) The company estimated the total liability under the the product guarantee to be 2% of total sales during the year; actual repairs to December 31 on units sold during the year were $600.
(j) The company estimated 60% of all tags attached to the units would be returned; 200 tags had been returned by December 31, 1964, and the attachments had been sent to customers.

REQUIRED

1. Journalize the transactions for the year, assuming that the company uses the all-inclusive concept of net income and uses the periodical inventory method.
2. Prepare an income statement, assuming an ending inventory of $6,000. Prepare a statement of retained earnings, assuming that the all-inclusive concept of reporting net income is followed.

12-27. The Steward-Pierson Company began business on January 1, 1964. The company is engaged primarily in construction, but does sell building supplies and materials to customers. The company uses a perpetual inventory record for building supplies and materials, and completed the following transactions during 1964:

(a) Purchased building supplies and materials for cash, $130,000.
(b) Signed a contract for the construction of a large grain elevator, which will require several years to complete. The total construction price, which will be received upon completion of the elevator, is $1,600,000.
(c) Sold building supplies and materials which cost $42,000 for $55,000 cash.
(d) Shipped building supplies and materials on a consignment basis to a retail lumber company. The supplies and materials cost $14,000 and have a sales price of $22,000.
(e) Shipped building supplies and materials to another construction company on an approval sale basis. The company to which the shipment was made had not indicated whether or not it would keep the materials. These materials cost $10,000 and have a selling price of $13,000. The only materials sent to this company in the past were returned.
(f) Used $41,500 of the materials and supplies on the grain elevator (above).
(g) Paid $18,000 for selling and administrative expenses.
(h) Paid $103,500 of labor and other costs (exclusive of the materials and supplies) in the construction of the grain elevator.

(i) Sold a block of land which the company no longer needed for $15,000 cash. The land cost $10,000 when purchased several years earlier.
(j) The grain elevator was 10% completed by the end of the year.
(k) Paid $7,000 of dividends to stockholders.

REQUIRED

1. Journalize the above transactions if the company uses the all-inclusive concept of reporting net income.
2. Prepare the income statement and statement of retained earnings, using the all-inclusive concept of reporting net income. The beginning balance of retained earnings was $21,500.
3. Journalize complete closing entries for the year.

12-28. The Wilson Trading Company sells merchandise on an installment basis. The company sells two units, with costs, sales price, and installments as follows:

	Cost	Total sales price	Number of installments	Amount of each installment
Product A	$200	$300	30	$10
Product B	100	160	20	8

The company uses a perpetual inventory system and completed the following transactions during 1964:

(a) Bought 200 units of A for cash.
(b) Bought 500 units of B on account.
(c) Sold 160 units of A, to be collected in installments.
(d) Sold 400 units of B, to be collected in installments.
(e) Collected 1,280 installments from customers who bought Product A.
(f) Collected 3,000 installments from customers who bought Product B.
(g) Incurred $20,000 of administrative expenses and $8,000 of selling expenses, which were paid in cash.

The company is undecided as to whether revenue should be recognized on a completed sale basis or on an installment basis.

REQUIRED

1. Journalize the transactions in general journal form, assuming the completed sales basis is used to recognize revenue; compute the profit for the year.

2. Journalize the transactions, assuming an installment sales basis is used to recognize revenue; and compute the profit for the year.

Cases

12-29. The Harlen P. Davis Company began operations on July 16, 1963, as a manufacturer of custom-made carpets. Their salesmen took sample charts to retail carpet stores and secured orders for an almost unlimited number of colors and textures of carpets. The company then manufactured the carpets according to the customers' specifications. Being a new company and wishing to create customer goodwill, the company had a money-back-if-not-satisfied guarantee policy.

During 1963 the company received orders for carpets with a total sales price of $123,800. Carpets with a sales price of $93,250 and a manufacturing cost of $78,500 had been completed and shipped. Carpets with a sales price of $10,200 and a cost of $6,050 had been completed and were in the warehouse being packed for shipment; the balance of the customers' orders with a sales price of $20,350 and a manufacturing cost of $14,400, had been shipped within the past week on FOB destination terms.

Carpets with a sales price of $4,660 had been shipped to customers and returned under the guarantee agreement; they have no appreciable resale value.

The company's salesmen receive a commission of 2% on all sales which are not returned by customers.

REQUIRED

1. How would you recommend that the company recognize revenue for income statement purposes in conformity with generally accepted accounting principles?
2. State the amount of sales, cost of goods sold, loss due to the guarantee policy, and salesmen's commissions that should appear on the income statement.

12-30. Harvey Wyatt, an excellent tailor, formed and incorporated a small tailoring shop near a large university on January 1. He makes suits only on customer's order, using materials selected from samples he keeps in his shop. When a customer orders a suit,

Wyatt takes the measurements and then orders the required materials from manufacturers located in New England cities. He requires a deposit from the customer at the time a suit is ordered and uses the deposit to pay for the cloth. Approximately a month is required from the time a customer orders a suit until it is completed and delivered. The customer is then billed on thirty-day terms for the balance. Approximately one-fifth of Wyatt's time and office expenses are incurred in billing and collecting customers' accounts.

During January and February, Wyatt's records reflected the following:

	January	February
Deposits received	$ 800	$ 900
Cloth ordered and received	750	870
Cloth paid for	600	830
Customers' bills sent	1,200	1,400
Customers' collections on bills sent	300	950
Office expenses	450	500
Wyatt's salary	800	800
Cloth on hand at end of month	75	220

The $75 of cloth on hand at the end of January was for a suit on which an $80 deposit was received. The $220 of cloth on hand at the end of January was for two suits on which $200 had been deposited.

Describe how you would compute the monthly income for this business.

13

Monetary assets—cash, receivables, investments

Among the more significant assets appearing on the company's balance sheet are the *monetary assets*. Monetary assets comprise the company's cash or near-cash items. A near-cash item may be defined as an asset only one step removed from cash in the company's normal operations, with the final step reasonably assured within a short period of time. Thus cash, trade accounts receivable, short-term notes receivable, and investments with a ready market comprise the usual monetary assets. In the absence of special circumstances, all of these assets represent funds which are either in the form of cash or can be converted into cash without affecting the company's pool of productive assets.

Importance of monetary assets

The amount and composition of a company's monetary assets is a measure of its short-term solvency or ability to pay its debts in the near future. In addition, the extent of a company's monetary assets is an index of its flexibility, since a company may have insufficient monetary assets to take advantage of profitable business opportunities. On the other hand, the company may have idle monetary assets, which could be producing revenues if invested in productive properties.

A fine balance must be maintained between monetary assets, liabilities, and productive assets. Those who analyze financial statements compare the monetary assets with liabilities and with other assets to gain an impression of the company's immediate financial position and the relationship between its liabilities and assets.

If it is expected that losses will be incurred in converting a monetary asset into cash, the amount of the loss should be deducted in measuring the asset for balance sheet presentation. An allowance for uncollectible accounts, for example, is the means by which accounts receivable are stated at their collectible amounts. Similar provision should be made for notes, short-term investments, or other monetary assets.

Nature of cash

For accounting purposes cash is defined as those monies, instruments, or claims which are generally used and accepted as money at face value and which are available in their present form for the payment of general operating liabilities. Careful examination of this definition indicates three separate elements in the determination of what may be considered cash and reported as such on the balance sheet. The item must be—

(1) generally used as money.
(2) acceptable at face value.
(3) available for the payment of general liabilities.

In general, any item which a bank will accept at face value for deposit or which may be transferred to another party at face value may be considered cash; the usual cash items are coin and currency, customers' checks, travelers' checks, and money orders. The third test, that of availability for payment of general liabilities, however, depends upon the intent of management. Cash items set aside for a specific purpose, such as a fund established for the purpose of acquiring fixed assets, should not be reported in the balance sheet as general operating cash, since these funds are not available for the payment of general operating liabilities.

In addition to monies designated for specific purposes, the following should not be included with other general cash items in the balance sheet as cash: funds on deposit in a bank that has failed, and which therefore cannot be withdrawn immediately and in full; postage stamps; advances to employees; deposits such as those given to utilities or suppliers. If the company has two bank accounts, an overdraft in one should not be shown in the balance sheet as an offset against the balance in another. The overdraft is a current liability and should appear in the current liability section.

As mentioned earlier, cash reported in the balance sheet must be available for the payment of normal operating liabilities. Failure to

comply with this standard would be a violation of accounting principles, and the reader of a balance sheet could be misled in his analysis of the company's immediate financial position.

Accounts receivable

Accounts receivable represent an asset in the form of a claim collectible in the future. Trade accounts receivable represent claims which a company has against its customers for merchandise sold or services rendered. Other receivables arise from loans to officers and employees, sales of assets other than merchandise, damage claims against common carriers, advances to affiliated companies, and accruals such as interest on notes receivable.

Every company that extends credit to customers subjects itself to losses arising from uncollectible accounts. The estimated allowance for uncollectible accounts must be adjusted prior to the preparation of a balance sheet in order to reflect the accounts receivable at their collectible amount. Individual accounts may be written off as they are found to be uncollectible, although some companies review their accounts receivable periodically and write off a group of bad accounts with one entry.

All receivables which are considered uncollectible are written off with a debit to the Allowance for Uncollectible Accounts. This is true even though the accounts to be written off exceed the credit balance in the allowance account. Any debit balance resulting from an excess of uncollectible accounts is then taken into consideration when the allowance is adjusted at the end of the period.

Estimating uncollectible accounts and bad debts expense

The adjusting entry for the periodic bad debts expense also adjusts the allowance for uncollectible accounts. There are two basic approaches to estimating the amount for the adjusting entry. By one method the expense is directly determined by applying a percentage, based on the company's loss experience, to the sales of that year. By the second method the bad debts expense is determined indirectly by first estimating the amount that probably will be lost from failure to collect accounts receivable existing as of the balance sheet date and then adjusting the balance of the allowance for uncollectible accounts to that amount.

The first method, determining bad debts expense directly as a per-

centage of sales, tends to emphasize the matching of revenue and related expenses in the determination of periodic income. The second method, determining bad debts expense by adjusting the allowance for uncollectible accounts, tends to emphasize balance sheet valuation of receivables. Both methods as well as modifications of each are discussed in the following sections.

Percentage of total sales

The bad debts expense for an accounting period may be estimated by multiplying the sales for that period by an estimated loss percentage. The percentage is based upon the amount of losses from uncollectible accounts which the company has experienced in the past. Assume, for example, that sales and the uncollectible accounts resulting from those sales have been as follows:

Year	Total Sales	Accounts Written Off	Loss as a Percentage of Sales
1960	$100,000	$1,200	1.2%
1961	120,000	1,080	.9
1962	130,000	1,430	1.1
1963	125,000	1,125	.9

The average loss for the four-year period is approximately 1% of sales. When the bad debts expense is estimated for 1964, the 1% figure may be used with some assurance that the estimate is relatively accurate. If sales for 1964 are $150,000, the estimated bad debts expense would then be $1,500 (1% of $150,000). The adjusting entry on December 31, 1964, is as follows:

Dec.	31	Bad Debts Expense	$1,500	
		Allowance for Uncollectible Accounts		$1,500
		To record estimate bad debts expense for 1964.		

To insure that the proper relationship is maintained between accounts receivable and allowance for uncollectible accounts, the loss percentage should be constantly reviewed. If the same percentage is used for a number of years, and a higher percentage of accounts are collected in subsequent years, the balance in the allowance for uncollectible accounts will become excessive. Conversely, if the per-

centage of accounts collected becomes lower, the balance of the allowance for uncollectible accounts becomes inadequate to absorb the amounts written off.

Percentage of sales on account

If the relative amount of cash sales and credit sales varies from year to year, the bad debts loss should be computed as a percentage of credit sales only. Obviously, cash sales and credit sales must be separated before this procedure can be used.

Bad debts expense

The amount of the allowance for uncollectible accounts which appears in the balance sheet represents the amount of accounts receivable which a company expects to be unable to collect. The bad debts expense can be determined indirectly by first estimating the amount of uncollectible accounts receivable and then adjusting the allowance for uncollectible accounts to that amount. The amount of the present accounts receivable which will be uncollectible may be estimated by examination of the amounts written off in prior years, as follows:

Year	Accounts Receivable on December 31	Accounts Written Off	Percentage
1960	$23,000	$1,200	5.2
1961	22,000	1,080	4.9
1962	27,000	1,430	5.3
1963	24,000	1,125	4.7

Based on this experience in the write-off of uncollectible accounts, the company can reasonably anticipate that five per cent of the accounts receivable as of December 31, 1964, will be uncollectible. If the balance of accounts receivable on December 31, 1964, is $31,000, the desired balance of the allowance for uncollectible accounts is $1,550 (5% of $31,000). If the allowance for uncollectible accounts has a credit balance of $60 before the adjusting entry is recorded, the amount of bad debts expense for 1964 is $1,490, computed as follows:

Required balance in Allowance for Uncollectible Accounts (5% of $31,000)	$1,550
Balance before adjustment	60
Required adjustment	$1,490

The bad debts expense is recorded on December 31, 1964, by the following adjusting entry:

Dec.	31	Bad Debts Expense	$1,490	
		Allowance for Uncollectible Accounts		$1,490
		To record estimated bad debts expense for 1964.		

Had the accounts actually written off during 1964 exceeded the amount anticipated at the end of the preceding year, the allowance for uncollectible accounts would have had a *debit* balance before adjustment. Assuming the debit balance to have been $70, the bad debts expense recorded in the adjusting entry on December 31, 1964, would have been $1,620, computed as follows:

Required balance in Allowance for Uncollectible Accounts (5% of $31,000)	$1,550 Cr.
Balance before adjustment	70 Dr.
Required adjustment	$1,620

Note that any inaccuracy in estimating future losses is corrected automatically as an increase or decrease in the amount of the adjusting entry of the following year. The estimated rate of loss should be periodically reviewed, however, to avoid a continuous shifting of erroneous estimates to future periods.

Aging the accounts

While application of a single percentage to the total accounts receivable will in most cases provide a reliable estimate of the accounts that will prove uncollectible, greater accuracy can be obtained by aging the ending balance of accounts receivable and applying varying loss percentages to the totals of the different age groups.

Accounts receivable are aged by listing the individual accounts and their balances and extending the balances to columns representing appropriate time periods. An accounts receivable aging schedule is illustrated in Exhibit 13–1 on page 382.

The total amount in each age group is multiplied by a loss percentage applicable to that group. The loss percentage for each age bracket is determined in the same manner as that discussed previ-

Exhibit 13–1

Accounts Receivable Aging Schedule

Accounts	Total	Not yet due	One month past due	Two months past due	Three months past due	More than three months past due
Samuel Abrams	$ 200	$ 180	$ 20			
John Adams	50			$ 50		
Wm. Akindorf	160					$160
Robert Arbingast	90	90				
Marie Ayers	145		145			
Glenn Zrott	210	100			$ 110	
Total	$31,000	$19,430	$6,140	$2,930	$1,650	$850

ously for total accounts receivable, that is, by relating the accounts written off from each age group to the total receivables in that group. Using assumed loss percentages, the balance in the allowance for uncollectible accounts shown in the aging schedule above would be computed as follows:

	Balance of Age Group	Percentage of Loss Expected	Total Allowance Requirement
Not yet due	$19,430	1%	$ 194
One month past due	6,140	4%	246
Two months past due	2,930	10%	293
Three months past due	1,650	25%	412
Over three months past due	850	50%	425
Total	$31,000		$1,570

The amount of the adjusting entry for bad debt expense is the amount necessary to adjust the allowance for uncollectible accounts to the estimated requirement of $1,570. If the allowance for uncollectible accounts has a $60 *credit* balance before the adjusting entry is recorded, an adjustment for $1,510 is made; if the allowance for uncollectible accounts has a $50 *debit* balance, the adjustment is for $1,620.

Collection of accounts previously written off

The collection of an account which has been written off indicates that the account was probably written off prematurely. Consequently, the collection is recorded by first reinstating the account receivable with an entry reversing that made when the account was written off; the collection of the account is then recorded. If the $120 balance in Roger Swain's account has been written off and is subsequently collected, the recovery is recorded by the following entries:

Aug.	7	Accounts Receivable	$120	
		Allowance for Uncollectible Accounts ..		$120
		To reinstate the account of Roger Swain.		
	7	Cash	$120	
		Accounts receivable		$120
		To record the collection from Roger Swain.		

Credit information is frequently entered on each customer's ledger account, so that the accounts receivable subsidiary ledger serves as a

credit reference file. Since the notation that a balance has been written off has a derogatory effect on the customer's credit rating, it is important that the customer's account be reinstated in the subsidiary ledger if written off and later collected.

Balance sheet presentation of receivables

All receivables due within the next accounting period are classified as current assets in the balance sheet. Trade accounts receivable, that is, receivables which result from the sale of merchandise or services, are segregated from non-trade receivables. In addition, the source of each different type of receivable should be identified in the balance sheet if the amount is material.

The balance sheet value of accounts receivable is not the total of the legal claims recorded in the accounts receivable account; it is the estimated amount of cash that will be realized from the collection of the accounts. Consequently, the allowance for uncollectible accounts is deducted from accounts receivable in the balance sheet to reflect the net collectible value of the receivables. Exhibit 13–2 illustrates a presentation of various types of receivables in the balance sheet.

EXHIBIT 13–2

Partial Balance Sheet

Current Assets:			
Cash			$ 3,000
Temporary investments			20,000
Receivables:			
Notes receivable:			
Notes receivable—customers	$ 7,000		
Notes receivable—officers	10,000		
Total notes receivable		$17,000	
Accounts receivable:			
Accounts receivable—customers		24,000	
Advances to officers and employees		8,000	
Other non-trade accounts receivable		500	
Total receivables		$49,500	
Less allowance for uncollectible accounts		2,000	
Total receivables			47,500
Inventories			62,000
Prepaid expenses			4,000
Total current assets			$136,500

Notes receivable

Although most businesses sell merchandise or perform services for cash or on open account, a note is occasionally accepted from a customer if the amount owed is large or if the customer's account is past due. In addition, notes are sometimes received from the sale of fixed assets or as a result of loans or advances.

A note may be either interest-bearing or non-interest-bearing and must be payable upon demand or have a maturity date. The rate on interest-bearing notes must be stated on the note. Thus a particular interest-bearing note would be described as a $5,000, six-month, 6% note, dated January 1. Both the principal of $5,000 and interest of $30 would be due on July 1. On the other hand, a particular non-interest bearing note would be described as a $3,000, three-month, non-interest bearing note, dated January 17. This note would be due April 17, and only the $3,000 face value would be payable.

Notes receivable due in less than one year are generally classified as current assets. If collection of a note receivable appears doubtful, the allowance for uncollectible accounts provides for such an event. Thus the notes receivable which appear as current assets are stated at their expected collectible amounts.

Notes receivable discounted

Since notes receivable are negotiable instruments which may be transferred from one person to another, they are frequently sold or discounted to banks or other financial institutions. *Discounting* is a term applied to the transfer of a note receivable to another party; the amount paid for it is determined by (1) computing the amount of the note and interest which must be paid at maturity, and (2) discounting this maturity value back to the date of sale. Discount rates are comparable to interest rates and may range from 3 to 4 per cent up to 11 or 12 per cent.

A person discounting a note receivable usually is required to *endorse* it. Endorsement protects the person who accepts the note, because he can then hold the transferor responsible for payment if the original maker of the note defaults. Endorsement is accomplished by the simple act of placing a signature at the appropriate spot on the note or completing a separate endorsement form.

Endorsement of a discounted note thus creates a contingent liability; this contingency becomes a primary liability only if the

maker of the note fails to pay it upon maturity. The extent of a company's contingent liabilities must be reflected in the financial statements. The contingency may be reflected in either one of two ways: (1) through formal presentation in the body of the balance sheet or (2) through a footnote or explanatory comment at the bottom of the balance sheet.

Accounting for notes receivable discounted

For purposes of illustration, assume that a company receives a $1,000, six-month, 6% interest bearing note from a customer in payment of his account.

The entry for the receipt of the note is:

July	1	Notes Receivable	$1,000	
		Accounts Receivable		$1,000
		To record the receipt of a 6%, six-month note from James Walters.		

If the note is then discounted at the bank for $987, the entry is:

July	18	Cash	$987	
		Interest Expense	13	
		Notes Receivable Discounted		$1,000
		To record the discounting of a note.		

Had more than $1,000 cash been received, interest income would have been credited for the excess over the $1,000 face value of the note. Observe that the $1,000 is not credited to the notes receivable account; instead a *notes receivable discounted* account is credited. This account, which has a credit balance, is used to accumulate data relative to the contingent liability which the company must pay if the original maker of the note defaults. Since the liability for discounted notes is a contingent one, it is not shown in the balance sheet as a current liability. Current liabilities should include only those debts for which the company is primarily liable.

Assume that the company's notes receivable account has a balance of $12,000 (including the $1,000 note which was discounted and not removed from the notes receivable account). As mentioned previously, the balance sheet of the company may reflect the contingent liability either in the body of the statement or as a footnote. The contingent liability shown in the statement would appear as follows:

Current Assets		
.....		
.....		
Notes Receivable	$12,000	
Less Notes Receivable Discounted	1,000	
Net Notes Receivable		$11,000

If the contingent liability is to be reflected by footnote, only the net amount of notes receivable appears in the body of the statement and the extent of the contingency is shown in the footnote, as follows:

Current Assets:	
.....	
.....	
Notes Receivable (note I)	$11,000
.....	

Note I. The company is contingently liable in the amount of $1,000 for customers' notes receivable discounted.

If the original maker pays the note at maturity, a debit is made to Notes Receivable Discounted, and a credit is made to Notes Receivable, thus removing the contingent liability from the accounts:

Jan.	1	Notes Receivable Discounted	$1,000	
		Notes Receivable		$1,000
		To remove the contingent liability for the discounted note of James Walters, paid at maturity.		

Should the customer default at maturity, so that the contingent liability becomes a primary liability which the company pays, the following entries are necessary:

Jan.	1	Notes Receivable Discounted	$1,000	
		Notes Receivable		$1,000
		To remove the contingent liability for the discounted note of James Walters, paid at maturity.		
Jan.	1	Accounts Receivable	$1,030	
		Cash		$1,030
		To record the payment for the discounted note of James Walters, plus interest, which was dishonored at maturity.		

Observe that the full $1,030 for the note and interest are debited to Accounts Receivable when paid. The dishonored note and the related interest, now past maturity, must be collected from James Walters. If it cannot be collected, it must be written off as a bad debt.

Investments

The term *investments* is used to designate income-producing properties not used in the operations of a business. Funds are frequently invested in stocks or bonds of other companies and in bonds issued by federal or state governments. Occasionally investments are made in real estate and in trust funds to provide for the retirement of the company's long-term debt or its preferred stock.

Investments are recorded at their total cost, which should include taxes, brokerage fees, and other incidental costs of acquiring the investment. If the payment for an investment is made in the form of some asset other than cash, the investment should be recorded at the fair market value of the asset given up or the fair market value of the investment, whichever is more clearly ascertainable. The amount at which bonds and stocks are being sold on the open market is the best indication of fair market value; seldom does the principal of bonds or the par value of stocks represent their market value.

Investment in bonds

Bonds are similar to notes and have two significant characteristics: (1) a "principal" or a "face value," and (2) a contractual rate of interest. The principal is paid to the bondholder at its maturity date, while the interest is paid at periodic intervals from the time the bond is issued until it matures.

Offers to buy or sell bonds are usually expressed as a percentage of face value. The most commonly used face values are $10, $100, $500, and $1,000. Thus, if a bond with a face value of $1,000 is offered for sale at 98½, the purchaser pays the seller $985 for the face value, or principal, of the bond; if the quoted price is 100, he pays $1,000; and if the quoted price is 102, the seller pays $1,020. When the bond matures, the issuer of the bond must repay the bondholder $1,000, regardless of the amount paid by the bondholder at the time of acquisition.

Interest on bonds is expressed as an annual percentage of face value and is paid at regular intervals, either annually or semiannually. If the $1,000 bond described above pays interest at 6% in May and November, the bondholder receives $30 ($1,000 × .06 × ½)

on each May 1 and November 1 until the bond matures. Even if the investor purchases the bond on April 1, he receives $30 (interest for a six-months' period) on May 1. For this reason, when bonds are purchased between interest payment dates, the investor must pay the issuer or previous bondholder the agreed amount for the principal *plus* an amount equal to the interest which has accrued since the last interest payment date. Even though the accrued interest is not set out separately in the purchase price, it must nevertheless be computed and recorded separately on the books of the purchaser as interest receivable.

As an example, assume that an Arrow Company bond, which has a $1,000 face value and pays 6% interest semi-annually on February 1 and August 1, is purchased on April 1 at face value plus accrued interest. The investor will pay $1,000 for the bond plus $10 for the interest accrued between February 1 and April 1, or a total of $1,010. The investment is recorded by the following entry:

Apr.	1	Arrow Company Bonds	$1,000	
		Interest Receivable	10	
		Cash		$1,010
		To record the purchase of a bond, plus accrued interest.		

On August 1 the receipt of semi-annual interest of $30 is recorded as follows:

Aug.	1	Cash	$30	
		Interest Receivable		$10
		Bond Interest Income		20
		Received semi-annual interest on Arrow Company bonds.		

The $30 interest received thus consists of the recovery of the $10 "investment" in interest receivable at the date of acquisition and $20 of interest revenue earned since acquisition.

Investment in stocks

When an investor purchases the common or preferred stock of a corporation, he receives income from the investment in the form of dividends. Unlike interest on bonds, dividends do not accrue with the passage of time. A dividend becomes earned revenue of the investor only when the dividend is declared by the board of directors

of the company which issued the stock. This situation is often confused by the fact that some companies pay dividends with such regularity that the dividend is frequently referred to as a "$1.50 quarterly dividend" or a "$3 semi-annual dividend."

If an investor acquires corporate stock between the date on which a dividend is declared and the date of record, a portion of the total purchase price equal to the amount of the dividend is debited to a Dividends Receivable account. The remainder of the purchase price is the cost of the investment in the stock.

Offers to buy or sell corporate stocks are expressed in dollars and eighths of dollars per share, *including* any declared dividend that may be collected by the investor. Thu, if stock is offered at 108⅝, the purchaser pays a total of 108.625 dollars for the share and any declared but unpaid dividend. If a company purchases ten shares of Wilson Company common stock at 108⅝, on which a dividend of $4 per share has been declared, the entry to record the investment is as follows:

June	20	Wilson Company Stock	$1,046.25	
		Dividends Receivable	40.00	
		Cash		$1,086.25
		Purchased 10 shares of common stock at 108⅝, including a declared dividend of $4 per share.		

The receipt of the $40 dividend does not give rise to dividend income; the market price of 108⅝ paid for the shares included the $4 per share dividend, and the $40 is thus a recovery of the amount paid for the dividend when the stock was acquired. The receipt of the dividend is recorded as follows:

June	28	Cash	$40	
		Dividends Receivable		$40
		Collected dividend which had been declared prior to acquisition of Wilson Company stock.		

Subsequent dividends are credited to the *Dividend Income* account, as follows:

Sept.	23	Cash	$60	
		Dividend Income		$60
		Annual dividend from Wilson common stock.		

Balance sheet presentation of investments

Investments are sometimes made, especially by seasonal businesses, for the purpose of earning a return on funds which otherwise would be idle. Investments to be held for a short period of time are referred to as *temporary investments;* investments of a more permanent nature are referred to as *long-term investments.*

Temporary investments are those which are readily marketable and which the company expects to sell during the next accounting period. Because they are expected to be a source of cash during the next accounting period, they are classified as current assets in the balance sheet.

Long-term investments are those which management does not intend to sell during the next accounting period. Investments of this type are presented in the balance sheet immediately below the current assets and under the special caption of *Long-term Investments.*

The *intent* of management, and not the type of investment, is the key factor in determining the classification of investments in the balance sheet. An investment of 100 shares of Zale Company common stock, for example, may be classified as a temporary investment if management intends to sell it during the next year. The same stock would be treated as a long-term investment if the management expects to retain it for a longer period.

Exhibit 13–3 illustrates a balance sheet containing both temporary and long-term investments. (See page 392.)

Temporary investments

Temporary investments are by definition those which management intends to sell during the next accounting period. In addition to revenue which may have been earned as interest or dividends while the securities are owned, a gain or loss frequently occurs because the market value of the securities at the time of sale is more or less than the original cost.

No accounting problem results from increases in the market value of securities prior to their sale. It is a well-established principle that revenue is recognized only when there has been a completed transaction; consequently, gains on temporary investments resulting from an increase in market value are recognized only when the securities are sold.

There are two acceptable methods for determining the balance sheet value of temporary investments if a *decline* in market value

EXHIBIT 13–3

THE PLATT–HONN COMPANY
Partial Balance Sheet
December 31, 1964

Current assets:			
Cash		$ 3,000	
Investment in Zale Company common stock (valued at cost; market value, $10,600)		11,000	
Accounts receivable	$4,000		
Less allowance for uncollectible accounts	300	3,700	
Inventory		22,000	
Total current assets			$39,700
Long-term investments:			
Fund for retirement of long-term debt		$10,000	
Common stock of Willomack Co.		3,500	
Bonds of Snell-Mart Company		10,000	
Total investments			$23,500

has occurred by the close of an accounting period but before the temporary investments have been sold. One method is to retain the original cost of the investment in the accounts and record the entire loss when the securities are sold. The other method is to reduce the balance in the temporary investment account to market value, thereby recognizing a loss during the current accounting period and prior to the sale of the investment.

Temporary investments valued at lower of cost or market

The valuation of temporary investments at the lower of cost or current market is a conservative practice of long standing. If at the balance sheet date a decline in market value has occurred, and if there is no indication that the market value will recover by the time the securities are sold, a loss has occurred during the current period and should be recognized. The loss is recorded by an adjusting entry reducing the balance in the Investment account from cost to current market value; the offsetting debit is to a loss account entitled *Decline in Market Value of Investments.*

For example, if a company has a single investment in Zale Company common stock, which cost $11,000 and has a current market

value of $10,600 on December 31, 1964, the following adjusting entry is recorded:

Dec.	31	Decline in Market Value of Investments ..	$400	
		Zale Company Common Stock		$400
		To recognize the decline in the market value of temporary investments.		

As a result of this entry, the balance in the Zale Company Common Stock account is reduced to $10,600, and that amount appears in the December 31, 1964, balance sheet, as follows:

Current Assets:

.....

Zale Company Common Stock (at current market value; cost $11,000) $10,600

.....

The Decline in Market Value of Investments account is classified as a non-operating loss in the income statement.

If the investment portfolio of a company contains more than one temporary investment, the investments are usually reduced to current market value only if the total cost of all temporary investments exceeds their total market value. Thus the lower-of-cost-or-market method is usually not applied to individual temporary investments, but should be applied to total cost and total market value of all temporary investments combined.

Temporary investments at cost

The alternate procedure of valuing temporary investments at cost is based upon the assumption that market values of securities are unpredictable and that fluctuations in security prices are a normal occurrence. Furthermore, a decline in the market value of temporary securities at the balance sheet date may be more than offset by increases in value before the securities are sold. Consequently, temporary investments may remain in the accounts at cost without recognition of loss until the amount can be determined by a sale.

When securities remain in the accounts at cost and there is a substantial difference between the market value and cost, the fair market value is indicated parenthetically in the balance sheet. Exhibit 13–3 shown previously, illustrates this method of reporting temporary investments.

Long-term investments

Although long-term investments are not classified as current assets, they are discussed at this point because of their similarity to other types of monetary assets. Investments in long-term bonds require special consideration if management intends to hold the bonds until maturity.

If an investor desires a rate of return greater than the contractual rate specified on a bond, he will invest only if he can acquire the bond at less than face value. Conversely, if he is willing to accept less than the contractual rate, he will pay more than face value for the bonds. The cash received each year as interest on a long-term investment in bonds does not represent a true measure of revenue for the period if the bonds are purchased for more or less than face value.

Consider, for example, a 5% bond with a face value of $1,000 purchased for $960 on January 1, 1964, four years before its maturity. Each year for four years the investor receives $50 (5% of $1,000) as interest, and at the end of four years he receives $1,000 for the principal, or $40 more than the price paid for the bond. The $40 represents additional revenue earned during the four years the bond is owned. Proper allocation of revenue to accounting periods requires that the $40 be allocated over the four-year period rather than reported in total as revenue of the fourth year. To accomplish this, the difference between the cost and face value of the bond is amortized over the four years at a rate of $10 per year (¼ of $40). The entries to record the purchase of the bond on January 1, 1964, and the collection of interest on December 31, 1964, are as follows:

Jan.	1	Peterman Company Bond	$960	
		Cash		$960
		Purchased 5% bond with four-year remaining life.		
Dec.	31	Cash	$ 50	
		Peterman Company Bond	10	
		Bond Interest Earned		$ 60
		To record the annual interest and one year's amortization (¼ × $40).		

The effects of the entry to record the collection of bond interest are: (1) The amount recorded as bond interest *earned* during the year is greater than the amount of cash received, because it includes a part of the $40 of revenue that will be realized in cash when the

bonds mature; and (2) the balance in the Peterman Company Bond account is increased by $10. This entry is repeated as interest is collected for each of the four years. As a result, the Peterman Company Bond account will appear as follows at the end of the four-year period:

Peterman Company Bond

1/1/64	960		
12/31/64	10		
12/31/65	10		
12/31/66	10		
12/31/67	10		
	1,000		

The balance in the account on December 31, 1967, the maturity date, is the same as the face value of the bond, $1,000. The collection of the principal on that date is recorded by debiting cash and crediting the Peterman Company bond account for $1,000. Because the $40 was recorded as revenue during the four years through the annual amortization entry, no gain or loss is recognized from the collection of the principal at the maturity of the bond.

If the purchase price of a bond is greater than its face value, the excess of its cost over its face value must also be amortized. As a result of the amortization, the amount of interest *earned* during each year is less than the cash interest received. If four years before maturity the investor pays $1,060 for a 5% bond with a $1,000 face value, the entry to record the collection of the annual interest and to amortize the excess is as follows:

Feb.	4	Cash	$50	
		Peterman Company Bond		$15
		Bond Interest Earned		35
		To record the annual interest and one year's amortization (¼ or $60).		

This amortization, recorded in each of the four years, reduces the balance of the Peterman Company Bond account to an amount equal to the face value of the bond, and no gain or loss is recognized at maturity.

Sale of investments

The difference between the proceeds received from the sale of an investment and its book value is recorded as a gain or a loss on the

sale of investments. All taxes, brokerage fees, or other expenses incidental to the sale reduce the sales proceeds and are not recorded as separate expenses. Any interest included in the proceeds from the sale of an investment is recorded as interest income.

For example, suppose that a $6,000 investment in Holiday Company bonds is sold for $6,200, plus accrued interest of $180, and that the broker withholds $24 for the transfer tax and $15 for his fee. The net proceeds from the sale are $6,341, computed as follows:

Bond selling price	$6,200
Add: Accrued interest	180
	$6,380
Less: Taxes and brokerage	39
Net cash proceeds	$6,341

The entry for the sale is:

April	13	Cash	$6,341	
		Holiday Company Bonds		$6,000
		Interest Income		180
		Gain on sale of Investments		161
		To record the sale of bonds, plus accrued interest to the date of sale, less taxes and brokerage.		

If the net proceeds from the sale of an investment prove to be less than its book value, a *Loss on the Sale of Investments* account is used to record the loss. The gain and the loss on the sale of investments appear as non-operating items on the income statement.

Questions

13-1. Define monetary assets. Give several examples of this type of asset.

13-2. What are the criteria for considering an item as cash for balance sheet presentation?

13-3. What is a receivable? Name several common sources of receivables.

13-4. Describe the problem of income determination that arises because of the existence of receivables. How is the allowance for uncollectible accounts used in solving this problem?

13-5. Why is an estimate of bad debts expense based on a percentage of credit sales more accurate than a percentage based on total sales?

13-6. Describe how the bad debts expense for a period is determined when the allowance for uncollectible accounts is adjusted.

13-7. What is an accounts receivable "aging"? How is an aging schedule prepared?

13-8. How are collections of accounts previously written off recorded? Should the collection be recorded in the customer's account?

13-9. How does a note receivable differ from an account receivable? What is meant by the statement that a note is a negotiable instrument?

13-10. Describe what is meant by discounting a note receivable. How does this transaction create a contingent liability?

13-11. Describe two methods by which the contingent liability created by discounting a note receivable may be reflected in a balance sheet.

13-12. What is a bond? What does "face value" of a bond mean? Are market values of bonds always equal to face value?

13-13. When a bond is purchased between interest dates, describe how the interest is recorded when the bond is purchased, and describe the process when the interest is later received by the bondholder.

13-14. Distinguish between a temporary investment and a long-term investment. Could an investment in the stock of a company be either of these? If so, what factors determine how it shall be classified?

13-15. Temporary investments may be placed on the balance sheet at either cost or "cost or market, whichever is lower." What are the arguments in favor of and against each of these two acceptable methods?

13-16. Describe how any difference between the cost of a long-term investment in bonds and their face value is handled in the accounts over the life of the bond.

Exercises

13-17. The Cash account of the Mason Company had a balance of $8,561 on June 30. The following items were in the cash drawer and had been included in Cash:

(a) A customer's check for $70 which had not been deposited.
(b) A customer's check for $130 which had been deposited earlier and returned by the bank because the customer's account contained insufficient funds to cover the check.
(c) An i.o.u. from an employee for $10.
(d) Postage stamps, $6.
(e) A money order for $25.
(f) Receipts for advances to salesmen, $40.
(g) Coin and currency, $80.

In addition, the following items were included in the balance of the cash account:

(h) The balance in the company's general checking account at the First National Bank, $3,400.
(i) An overdraft in the company's checking account with the Second State Bank, $200.
(j) Cash in a special savings account set aside in escrow for the purchase of land, $5,000.

REQUIRED

1. Indicate for each item whether it is properly included in the Cash account.
2. For those items which should not be listed as Cash, indicate how they should be classified in the balance sheet.

13-18. The trial balance of the Slaughter Company contained the following accounts and balances on December 31, 1964:

Accounts receivable	$45,000	
Allowance for doubtful accounts (debit balance)	400	
Sales		$312,000
Sales returns and allowances	2,000	

REQUIRED

Prepare the journal entry to record the estimated bad debts expense on December 31 for each of the following independent cases:

(a) The expense is estimated to be 1% of net sales.
(b) The Allowance for Doubtful Accounts is maintained at 3% of accounts receivable.

(c) Aging the accounts indicates that $1,800 of the accounts receivable will probably not be collected.

13-19. On June 3, 1964, the Blonn Company made a credit sale of $540 to Jim A. Whitis. On December 31, 1964, the company estimated its bad debts expense to be 1% of credit sales of $340,000. On August 16, 1965, the account of Jim A. Whitis was considered uncollectible and was written off. On November 26, 1965, Jim Whitis paid his account.

REQUIRED

Record the sale, provision for bad debts, write-off, and subsequent collection.

13-20. On July 2, 1964, the Remington-Wells Company received a six-months, 6% interest bearing note with a face value of $1,000 from a customer in payment of his account. The note was discounted on July 7, and cash proceeds of $1,009 were received.

REQUIRED

1. Prepare entries for the receipt and the discounting of the note.
2. Prepare any entries necessary if the note is paid to the bank by the cusomer at maturity.
3. Prepare any entries necessary if the note is not paid by the customer at maturity, so that the Remington-Wells Company has to pay the note plus interest.

13-21. (a) The Palomar Company purchased 6% American Company bonds with a face value of $20,000 on January 1, 1964. The bonds were purchased at 97 plus accrued interest, which is paid annually each April 1. The intent of management is to sell the bonds at the peak of their seasonal production in September, 1964.

REQUIRED Record purchase of the investment, the receipt of interest on April 1, 1964, and the sale of the bonds on September 30, 1964, at 98 plus accrued interest, less $30 brokerage fees and $10 taxes.

(b) The Palomar Company purchased Fariday Company bonds with a face value of $50,000 on January 2, 1964, for $53,000. The bonds earn interest at 6%, payable each December 31, and mature on December 31, 1969.

REQUIRED Record the purchase, receipt of interest on December 31, 1964, and amortization of purchase premium at the end of 1964, if the bonds are to be held until maturity.

13-22. The Taylor Company completed the following transactions during 1964:

Jan. 2 Purchased 100 shares of Wilcox Company common stock as a temporary investment at 151⅛, plus brokers' fees of $12.50. A dividend of $2 per share had been declared by the Wilcox Company and is payable on January 15 to stockholders of January 8.

2 Purchased Ligett Company bonds with a face value of $10,000 at 103. These are 6% bonds, maturing on January 1, 1970, with interest payable each January 1. The present intent is to hold the bonds until they mature.

15 Received the dividend on the Wilcox Company stock.

Feb. 14 Purchased $5,000 face value, 6% Baggett Carpet Company bonds at 98½, plus brokers' fees of $9 and accrued interest of $37. The bonds are to be held as temporary investments. Interest is paid each December 31.

July 9 Received a dividend of $3 per share on the Wilcox Company stock.

Dec. 31 Recorded the accrued interest on the Ligett Company bonds and the related adjustment of the excess of cost over face value.

Dec. 31 Received the annual interest payment on the Baggett Carpet Company bonds.

REQUIRED

Record the transactions in journal form.

13-23. Wilbur Wadsworth purchased an existing business on January 1, 1964, paying $10,000 more for it than the fair market value of its net assets. This $10,000 was recorded as goodwill at the time of purchase. The old business had made only cash sales, but Wadsworth began a credit business immediately, convinced that by careful selection of credit customers he could build sales above those of the former business. Since the company had funds not immediately needed in operations, Wadsworth decided to buy $40,000 face value, 6%, ten-year bonds as an investment, to be sold if and when the funds were needed.

At the end of the first year his trial balance before adjusting entries was as follows:

Cash	$ 2,000	
Accounts receivable	13,800	
Investment in bonds	41,800	
Equipment	60,000	
Goodwill	10,000	
Capital stock		$100,000
Retained earnings		23,700
Sales		117,000
Cost of merchandise sold	83,000	
Salaries	27,000	
Rent	2,000	
Supplies expense	1,100	
	$240,700	$240,700

The company's bookkeeper asked Wadsworth what policy the company should use to compute bad debts and write off the goodwill, and whether the bonds are to be considered temporary or long-term investments. Wadsworth replied as follows:

> I don't see what difference it makes. I select my credit customers carefully and every one of them will pay. Even if they don't, there is no loss until they are deemed uncollectible. I paid for the goodwill and it should stay in the accounts until it is obviously worthless. Furthermore, the Lee Company bonds will be sold when the funds are needed, which may be next month, next year, or maybe not for the next ten years.

REQUIRED

Prepare a schedule showing the amount of net income which would be reported using the following combination of accounting policies:

(a) Goodwill is written off over a five-year period; bond premium is amortized over the life of the bonds; and bad debt expense is estimated to be 1% of sales.
(b) Goodwill is written off over a ten-year period; the bonds are considered temporary investments; and bad debts are estimated to be 5% of accounts receivable.
(c) Goodwill is not amortized; the bonds are considered long-term investments; and bad debts are estimated to be 3% of accounts receivable.
(d) Goodwill is written off immediately; bonds are considered temporary investments; and bad debts are considered to be 2% of accounts receivable.

Indicate which of the four combinations you consider unacceptable accounting that would consequently reflect an incorrect net income.

Problems

13-24. (a) The Fruhoff Company purchased Baker Company bonds with a face value of $10,000 on January 2, 1964, at 97 plus a broker's fee of $15. The bonds bear interest at 5%, payable each December 31, and mature on December 31, 1973. The bonds are long-term investments.

REQUIRED

1. Record the purchase of the bonds and the receipt of interest and amortization of discount on December 31, 1964.
2. Record the receipt on December 31, 1973, of the final interest payment and the receipt of the principal of the bonds.

(b) A temporary investment of $17,400 was made for 100 shares of stock of the Tambert Company on July 7, 1964. The board of directors of the Tambert Company had declared a $5 per share dividend on July 1, payable on July 20 to stockholders of record on July 8. Another $5 per share dividend was paid on November 7. The stock was sold for $17,100 on December 27.

REQUIRED Record the purchase, receipt of the dividends, and sale of the stock.

13-25. The trial balance of the Brakin Trading Company for 1964 appears on page 403, with information concerning several of the accounts given below.

(a) The temporary investments are valued at the lower of cost or market. Cost is $14,000.
(b) Accounts receivable include a $3,000 receivable arising from an advance to the president of the company.
(c) The inventory has a current replacement cost of $32,000.
(d) Office equipment and buildings are depreciated on a sum-of-the-years' digits method. (An acceptable method producing results dissimilar to the straight-line method.)
(e) The goodwill and trademarks have been in the accounts since 1942 without amortization, since the company feels that their value has not declined.

(f) The permanent investment consists of 100 shares of Liberty Company stock with a current market value of $52,000.

(g) The mortgage payable is due in 1972, and the note payable is due in sixty days.

Cash	$ 6,000	
Temporary investments	12,000	
Accounts receivable	11,000	
Notes receivable	5,000	
Accrued interest receivable	400	
Allowance for uncollectible accounts		$ 800
Inventory	31,000	
Prepaid insurance	200	
Permanent investments	39,000	
Office equipment	13,600	
Accumulated depreciation—office equipment		6,000
Buildings	28,000	
Accumulated depreciation—buildings		11,000
Land	4,000	
Goodwill	8,000	
Trademarks	1,000	
Accounts payable		21,000
Notes payable		2,000
Accrued wages payable		700
Mortgages payable		18,000
Common stock ($100 par)		80,000
Retained earnings		19,700
	$159,200	$159,200

REQUIRED

Prepare a balance sheet with parenthetical expressions or footnotes which disclose all information pertinent to the company's financial position according to generally accepted accounting principles.

13-26. Selected ledger accounts of the Johnson Company and their balances on December 31, 1964, appear on page 404 with an aging schedule of accounts receivable as of that date, and the transactions completed on December 31, 1964, and during 1965 are given below.

(a) The account of William V. Bell with a $310 balance is considered uncollectible and is to be written off. Prepare the entry to write off the bad account and adjust for estimated uncollectible accounts on December 31, 1964.

(b) Close the bad debts expense account to income summary.
(c) During 1965 credit sales were $60,000, and collections of receivables were $56,740.
(d) During 1965 a total of $1,870 of accounts receivable were considered uncollectible and were written off.
(e) The aging analysis at the end of 1965 is shown below. Prepare the entry for the estimated bad debts expense, using the same loss percentages as in 1964.

Not due	$14,000
1–31 days past due	5,000
31–60 days past due	2,500
60–120 days past due	1,500
Over 120 days past due	500

(f) Close the bad debts expense to the income summary.

Accounts Receivable	Estimated Uncollectible Accounts	Sales	Sales Returns and Allowances
22,420	524	86,000	1,500

		Amount
Not due:	2% considered ultimately uncollectible	$12,350
1–31 days past due:	5% considered ultimately uncollectible	5,420
31–60 days past due:	10% considered ultimately uncollectible	2,140
60–120 days past due:	20% considered ultimately uncollectible	1,800
Over 120:	80% estimated to be uncollectible (includes the account of William V. Bell)	710
	Total	$22,420

REQUIRED

1. Establish ledger accounts for Accounts Receivable, Estimated Uncollectible Accounts, and Bad Debts Expense.
2. Enter the balances given above. (Bad Debts Expense has no balance.)
3. Journalize all transactions and post all amounts affecting the three ledger accounts.

13-27. (A) On May 2, 1964, the Orton Wheel Company purchased 4% bonds of the United Corporation with a face value of $4,000 at a price of 103. These bonds will mature on May 1, 1976, and interest is payable each May 1 and November 1. On May 2, 1966, the Orton Wheel Company sold bonds with a face value of $3,000 at a price of 105.

REQUIRED

Prepare general journal entries for the following transactions, assuming that the intent of management up to the date of sale was to hold the bonds until maturity:

(a) Purchase of the bonds on May 2, 1964.
(b) Receipt of interest on November 1, 1964, and amortization of premium.
(c) Accrual of interest and amortization of bond premium on December 31, 1964.
(d) Receipt of interest on May 1, 1965.
(e) Sale of the bonds on May 2, 1965. (Assume entries for amortization of premium have been made up to the date of sale.)

(B) The Waterford Company bought 40 shares of Goodwin Company stock at 117⅜ on July 6, 1964. The Goodwin Company had declared a dividend of $5 per share on July 1, which was paid on July 25 to stockholders of record on July 10.

The Goodwin Company paid a $6 per share dividend on June 1, 1965, and paid a stock dividend of one share for each 10 shares held on November 1, 1965. The Waterford Company sold all the Goodwin Company shares on December 14, 1965, at 108⅝.

REQUIRED Record in general journal form the following transactions:

(a) Purchase of the stock on July 6, 1964.
(b) Receipt of the dividend on July 25, 1964.
(c) Receipt of the dividend on June 1, 1965.
(d) Receipt of the stock on November 1, 1965.
(e) Sale of the stock on December 14, 1965.

13-28. The Endibon Company completed the following transactions relative to its investments during 1964 and 1965:

1964

Jan. 2 Purchased bonds of the Xeto Company with a face value of $1,000 at 103 plus brokerage fee of $20.

These are 6% bonds, interest payable January 1 and July 1, due in ten years. The bonds are to be held as temporary investments.

3 Purchased 100 shares of Winn Company stock at 37½, plus brokerage fee of $12.00. The Winn Company had declared a $1 per share dividend on December 29, payable to stockholders on January 10. These are to be held as temporary investments.

10 Received the dividend from the Winn Company.

Mar. 2 Purchased Mallard Company bonds with a face value of $20,000 at 96 plus a brokerage fee of $80. The bonds bear interest at 6%, payable each March 1, and mature on March 1, 1968. The bonds are to be held as long-term investments.

July 1 Received the semi-annual interest on the Xeto Company bonds.

Dec. 31 Accrued interest on the bond investments and amortized the purchase premium and discounts on bonds for the year. (Amortize purchase premium or discount to the nearest month on long-term investments.)

1965

Jan. 1 Received interest on Xeto Company bonds.

Mar. 1 Sold the Xeto Company bonds at 104½, plus accrued interest, less a brokerage fee of $15.

2 Sold the Winn Company stock at 39 less brokerage fee of $12.

REQUIRED

Record the transactions in journal form.

Cases

13-29. The partnership of Mertz, Noble, and Oran shares profits and losses on a 30–30–40 basis, respectively. Oran has agreed to sell his capital at book value to Smith, provided past profits have been "reasonably accurate." A review of past records of the company has indicated the following:

The bad debt loss of the company has been estimated to be 1% of credit sales. The allowance for uncollectible accounts appears as follows since the partnership was formed:

Allowance for Bad Debts

1960			1959		
July 7	Write-off	380	Dec. 31	Provision	750
1961			1960		
Nov. 13	Write-off	500	Dec. 31	Provision	900
1962			1961		
Sept. 7	Write-off	700	Dec. 31	Provision	1200
1963			1962		
Aug. 24	Write-off	680	Dec. 31	Provision	1150
			1963		
			Dec. 31	Provision	1300

In addition, the partnership had made an investment in Preston Company bonds with a face value of $10,000 five years ago. The bonds cost $8,200 and had eighteen years of life remaining at the time of purchase. The discount had never been amortized because the partners had always intended to sell the bonds the following year, but for one reason or another had not done so.

The company had also made an investment in the stock of the Lemonn Company four years before, and it appears on the books at its original cost of $23,700. The stock has increased in market value steadily each year and is presently worth approximately $32,000.

The company's profits have averaged $40,000 during the past five years, and average total capital has been $200,000. Goodwill of $6,000 appears on the partnership books.

(a) As purchaser (or seller) of the partnership interest, would you feel that past profits have been "reasonably determined"? (b) If you were adjusting the assets preparatory to withdrawal of a partner, how much would the adjustment be? (c) If you believe profits have been incorrectly computed, how would you change the company's accounting policies?

13-30. The Bradford Fruit and Vegetable Company is engaged in a highly seasonal industry, and 80% of its activity falls in the summer months from June through September. The company has in the past invested $200,000 in temporary securities from October 1 to April 30. These earn 4% on an annual basis.

The company's market has been expanding, and additional plant and equipment is needed, which will probably cost $300,000. The company has several choices in raising the necessary funds.

(a) Stock can be issued for $300,000. Such an issue will double the number of shares now outstanding.

(b) $300,000 can be borrowed from a local bank on a five-year note. The bank will require at least a 6% annual interest rate.
(c) The temporary investments can be sold and the additional $100,000 borrowed at 6% on a two-year note. When funds are needed for seasonal operations, they can be borrowed for four months at 6% per year.

The company's management estimates that the additional plant and equipment will increase profits by $65,000 annually, exclusive of any interest or financing costs to raise the funds. Profits in prior years have averaged $60,000 annually. Any borrowed monies must be repaid primarily out of profits.

What effects would each of these alternate proposals have on owners' equity and net income, both in the next few years and in the long-range future of the company?

14

Inventory valuation and income determination

All of the merchandise which a company has available for sale during the accounting period comprises a "pool of merchandise costs." This pool of costs must be divided into two parts at the end of the accounting period. The ending inventory represents that part of the pool of costs associated with unsold units and is shown as an asset on the balance sheet; the remainder is associated with units sold and is shown as the cost of goods sold in the income statement.

The cost of merchandise available for sale is composed of the inventory on hand at the beginning of the accounting period and the cost of merchandise purchased. The income statement is arranged so that this pool of costs is accumulated and labeled as the total merchandise available for sale. The ending inventory is deducted from this pool of costs to determine the cost of merchandise sold.

	Sales		$100,000
	Cost of merchandise sold:		
Pool of merchandise costs	Beginning inventory	$13,000	
	Cost of merchandise purchased	72,000	
	Total merchandise available for sale	$85,000	
	Less Ending inventory	15,000	
	Cost of merchandise sold		70,000
	Gross profit		$ 30,000

Merchandise inventory defined

The merchandise inventory may be defined as that part of the total pool of merchandise costs which is associated with unsold units. The cost of the inventory on hand at the end of the period is a form

of deferred cost which is classified as an asset on the balance sheet and becomes a part of the cost of merchandise available for sale in the next accounting period. The manner by which the pool of merchandise costs is assigned to ending inventory and cost of merchandise sold affects the determination of income for the period. The method of assignment also affects the ending inventory amount that appears on the balance sheet. If the ending inventory is overstated or understated, the current assets and the net income for the period will be overstated or understated by a like amount.

Determination of unit cost

The amount of the ending inventory is determined by multiplying the units on hand by a unit cost. Alternative choices are available in the determination of the unit cost. If the merchandise available for sale during the period has been acquired at different unit costs, the cost assigned to the unsold units may be that of the first purchase, the last purchase, or the average of all purchases.

To illustrate the problems encountered in assigning a unit cost to the items in the ending inventory, suppose a company selling automobile tires had the following identical tires available for sale during January, acquired at different times and at different unit costs:

Beginning inventory	8 tires	@ $10.00	each =	$ 80.00
Purchases:				
January 2	10 tires	@ 12.00	each =	120.00
January 12	20 tires	@ 13.00	each =	260.00
January 26	15 tires	@ 14.00	each =	210.00
January 31	5 tires	@ 15.00	each =	75.00
Total available for sale				$745.00

On January 31 there are twenty tires in the ending inventory, determined by a physical count. Four methods by which costs may be assigned to these twenty tires are: (1) identifiable cost, (2) first-in-first-out, (3) last-in-first-out, and (4) average cost. The following illustrations of these methods are based on the data above.

Identifiable cost

The individual units of some types of merchandise can be specifically identified. Automobile tires, for example, are marked with a

serial number. Thus, continuing the preceding example, if twelve of the tires in the ending inventory were purchased on January 12 and eight were purchased on January 26, the amount of the ending inventory is determined as follows:

		Ending Inventory by Identifiable Cost Method	
Beginning inventory	8 @ $10.00	Sold	
Purchases:			
January 2	10 @ 12.00	Sold	
January 12	20 @ 13.00	12 @ $13.00 =	$156.00
		8 sold	
January 26	15 @ 14.00	8 @ 14.00 =	112.00
		7 sold	
January 31	5 @ 15.00	Sold	
Total ending inventory		20	$268.00

The cost of merchandise sold for the period is $477, computed as follows:

Total available for sale	$745.00
Less ending inventory	268.00
Cost of merchandise sold	$477.00

Not all companies sell merchandise that can be specifically identified with unit costs. Only those companies whose merchandise has identifiable markings would attempt to identify specific units with specific invoice prices. If identifiable unit costs cannot be determined or do not justify the clerical effort of unit identification, the inventory is determined by a *flow of costs*. The first-in-first-out, last-in-first-out, and average methods of inventory pricing are assumptions based on the flow of costs.

First-in-first-out

One assumption concerning the flow of costs is that the first units bought are the first units sold; consequently, the ending inventory is assigned the cost of the most recent purchases. This method is called first-in-first-out (FIFO). Continuing the example used previously, under the FIFO method the ending inventory is valued at the

cost of the last twenty tires purchased. The FIFO computation is illustrated as follows:

		Ending Inventory by First-in-First-out Method	
Beginning inventory	8 @ $10.00	Sold	
Purchases:			
January 2	10 @ 12.00	Sold	
January 12	20 @ 13.00	Sold	
January 26	15 @ 14.00	15 @ $14.00 =	$210.00
January 31	5 @ 15.00	5 @ 15.00 =	75.00
Total ending inventory		20	$285.00

The cost of merchandise sold is $460.00, computed as follows:

Total available for sale	$745.00
Less ending inventory	285.00
Cost of merchandise sold	$460.00

The FIFO inventory is an acceptable assumption as to the flow of costs, even though it may be possible to identify specifically the units in the ending inventory and trace the actual invoice cost of each unit. The FIFO method attaches an actual cost to the units in the ending inventory, although the costs are not the specific costs of the units in the inventory.

It is important that this method and those that follow be understood as a flow of costs and not an attempt to identify the flow of units. In a period of changing prices, as the example indicates, the FIFO method produces an inventory amount for balance sheet purposes that is a realistic approximation of the latest costs. However, the FIFO method assigns to the cost of merchandise sold the earliest costs in the cost pool.

Last-in-first-out

The last-in-first-out (LIFO) inventory method is the opposite of the FIFO in that it assigns the cost of the last units purchased to the cost of goods sold. Therefore, the ending inventory is assigned the costs of the oldest units in the cost pool. The cost of the inventory of the twenty units used in the preceding examples is determined as follows using the LIFO method:

		Ending Inventory by Last-in-First-out Method
Beginning inventory	8 @ $10.00	8 @ $10.00 = $ 80.00
Purchases:		
January 2	10 @ 12.00	10 @ 12.00 = 120.00
January 12	20 @ 13.00	2 @ 13.00 = 26.00 18 sold
January 26	15 @ 14.00	Sold
January 31	5 @ 15.00	Sold
Total ending inventory		20 $226.00

The cost of merchandise sold is $519, computed as follows:

Total available for sale	$745.00
Less ending inventory	226.00
Cost of merchandise sold	$519.00

Average cost

The average cost inventory method assigns to each unit the average cost of the units available for sale during the period. The average unit cost is determined by dividing the number of units available for sale into the total cost of the merchandise available for sale, as follows:

	Units	Total Cost
Beginning inventory	8	$ 80.00
Purchases:		
January 2	10	120.00
January 12	20	260.00
January 26	15	210.00
January 31	5	75.00
Total	58	$745.00

Average cost is $745.00 ÷ 58 units, or $12.84. The ending inventory is 20 units @ $12.84, or $256.80. The cost of merchandise sold is determined as follows:

Total available for sale	$745.00
Less ending inventory	256.80
Cost of merchandise sold	$488.20

Comparison of inventory methods

When prices are rising or falling, the four inventory valuation methods will produce different balance sheet inventory amounts and different costs of merchandise sold for each year within a business cycle. The ending inventories and costs of merchandise sold computed above, each from the same set of facts but using a different inventory valuation method, are compared in Exhibit 14–1.

EXHIBIT 14–1

Comparison of Inventory Methods

	Specific Identification	FIFO	LIFO	Average
Total available for sale	$745.00	$745.00	$745.00	$745.00
Less ending inventory	268.00	285.00	226.00	256.80
Cost of merchandise sold	$477.00	$460.00	$519.00	$488.20

Comparison of the costs of merchandise sold resulting from each method reveals that the FIFO method produced a significantly lower cost of merchandise sold figure than the LIFO method. This will be the case when prices are rising, as reflected by the tire dealer's purchases; the opposite is true when prices are falling.

The following important points must be considered in evaluating the four inventory costing methods:

1. Inventory valuation methods other than specific identification *assume a flow of costs* that may differ from the physical flow of units. Each of the four methods places an actual cost on the ending inventory and assigns an actual cost to the cost of goods sold. The methods differ in that the cost used may be the earliest, latest, average, or specific cost.

2. The method selected by a company to compute its ending inventory and cost of goods sold must be followed consistently in subsequent years. However, many companies apply different valuation methods in the determination of the cost of different inventory components.

3. The FIFO method assigns the most recent costs to the ending inventory and earlier costs to the cost of merchandise sold. The LIFO method, on the other hand, assigns the earliest costs to inventory and the most recent costs in the cost of merchandise sold.

FIFO and LIFO concepts of income determination

Two entirely different concepts of business income underly the FIFO and LIFO inventory methods. Suppose that a company buys an item of merchandise for $5, sells it for $8, and pays $6 for an identical unit of merchandise to replace the item sold. Is the gross profit on the sale $3 determined by the difference between the $8 selling price and the $5 cost of the original unit? Or is the gross profit $2, determined by the difference between the $8 selling price and the $6 cost of the replacement item? Since a business is assumed to be a going concern with maintenance of a minimum inventory a prerequisite to continuing in business, all items sold must be replaced and perhaps only $2 should be considered the gross profit.

These two concepts of income are reflected by the LIFO and FIFO inventory valuation methods, as illustrated in the following comparative partial income statements.

	LIFO		FIFO	
Sales		$8		$8
Cost of merchandise available for sale	$11		$11	
Ending inventory	5		6	
Cost of merchandise sold		6		5
Gross profit		$2		$3

Use of either the FIFO or the LIFO inventory method will produce identical results in the absence of changes in the price of purchased units. However, when prices fluctuate either upward or downward, the choice of an inventory method has a direct effect upon both the inventory in the balance sheet and the cost of merchandise sold in the income statement. The differences in the inventory and the net income will increase sharply when there are pronounced increases or declines in the price of merchandise.

Use of FIFO more nearly approximates the physical flow of units, and the primary argument of those who favor this method is that few companies sell their newest units first, and since the oldest units are sold first, the earliest costs should be matched against revenue. However, those who support the LIFO method maintain that the physical flow of units and the matching of costs with revenue are not necessarily the same things, and that matching the latest cost with revenue is as valid as matching the early cost.

The proponents of LIFO argue further that it provides a better measure of net income for external reporting purposes than does

FIFO. Use of a FIFO method in a period of rising prices matches the earlier (and lower) costs with revenue, but the resulting profit must be used in part at least to replace the units sold. A LIFO method, argue its advocates, would match later (and higher) costs with revenue, and a lesser portion of the resulting net income would be needed to replace the units sold. Thus the reported profit using a LIFO method more nearly reflects the profits immediately available to stockholders as dividends or to creditors in payment of loans.

Those who favor FIFO answer that net income should be measured by matching the physical flow of units with revenue to the fullest extent possible, and the resulting net income should be analyzed in light of the method used in its computation.

Retail method of determining inventory

The merchandise of retail stores normally consists of a large number of items, many with small unit costs. Application of any of the inventory methods discussed previously would require an undue amount of clerical work. The cost of the ending inventory for retail stores is frequently determined by the *retail inventory method.*

When the retail method is used, a record of the beginning inventory and the purchases during the period is maintained at both the actual cost and the retail value. From these records a cost ratio is computed by dividing the *cost* of merchandise available for sale by the *retail value* of the merchandise available for sale.

When the retail inventory method is used, the ending inventory must be determined at retail value. The retail value of the ending inventory is then reduced to cost by multiplying the retail value by the cost ratio. To illustrate the retail inventory method, assume the merchandise available for sale is composed of the following amounts:

	Cost	Retail Value
Beginning inventory	$ 94,000	$160,000
Purchases during the period	425,000	705,000
Merchandise available for sale	$519,000	$865,000

The cost ratio is 60% ($519,000 ÷ $865,000), or, expressed another way, cost is 60% of the retail value of the merchandise available for sale. If the ending inventory at retail price is $140,000, the inventory at cost would have been $84,000 ($140,000 × 60%).

The retail inventory method and interim financial statements

Taking a physical inventory is time-consuming and expensive. Consequently, it is impractical to take a physical inventory each time a monthly or other interim financial statement is prepared.

Information maintained for the retail inventory method may be used to estimate the cost of the ending inventory without the necessity of a physical count. If the retail value of all merchandise sold (the balance in the Sales account) is deducted from the retail value of all merchandise available for sale, the resulting amount is the retail value of the ending inventory. The estimated ending inventory at retail is then reduced to cost by multiplying it by the cost ratio. This is illustrated in the following example:

	Cost	Retail
Beginning inventory	$11,000	$16,000
Purchases	37,000	54,000
Transportation-in	1,000	
Merchandise available for sale	$49,000	$70,000
(Cost ratio $49,000 ÷ $70,000 = 70%)		
Less Net sales		40,000
Inventory at retail		$30,000
Inventory at cost (70% of $30,000)	$21,000	

Mark-ups and mark-downs

The original selling price of merchandise is sometimes "marked up" or "marked down" from the original sales price. The mark-ups and mark-downs do not affect the cost of merchandise but do affect the selling price. Mark-ups are added to the retail value of the merchandise available for sale before the cost ratio is computed, but mark-downs are *not* deducted. The primary reason for not considering mark-downs in computing the cost ratio is that a more conservative ratio is computed.

If the estimated cost of an ending inventory is being computed for the preparation of interim statements, both mark-downs and actual sales must be subtracted from the total retail value of the merchandise available for sale to determine the amount of the ending inventory at retail. The retail inventory procedure using mark-ups and mark-downs is illustrated as follows:

	Cost	Retail
Beginning inventory	$11,000	$18,000
Purchases	38,000	62,000
Mark-ups	—	4,483
Merchandise available for sale	$49,000	$84,483
(Cost ratio—58%)		
Less: Mark-downs		$ (6,200)
Sales		(54,283)
Ending inventory at retail		$24,000
Ending inventory at cost ($24,000 × 58%)	$13,920	

The inventory amounts determined by using the retail method should be checked for accuracy periodically with physical inventory counts. The units counted are priced at retail value, and the inventory pricing is thus relatively easy, since most retail stores mark each unit with its retail price. A check is thus available on shortages, pilferage, or theft since the physical inventory should compare closely with the calculated inventory.

Inventory damage and obsolescence losses

An inventory loss frequently occurs because of obsolescence or damage to merchandise. Such a loss results whenever the cost of the merchandise and any related selling expenses cannot be recovered when the merchandise is sold.

A basic accounting principle is that losses are recorded during the period in which they occur. The loss from damage or obsolescence is reflected by assigning damaged or obsolete merchandise an inventory value equal to its estimated selling price less estimated selling expenses. By including in the ending inventory an amount less than cost, the remainder of the cost is automatically allocated to cost of merchandise sold. The loss is thus recorded during the period in which it occurred.

Suppose that in January the Yaltison Book Store purchased a shipment of books at $4.00 each; the normal selling price is $7.00 each, and normal selling expenses average 40¢ per book. If the books are damaged or become obsolete and can be sold for only $2.00, they should be included in the inventory at $1.60 each ($2.00 sales price

less 40¢ sales expenses). As a result, the loss of $2.40 ($4.00 cost less $1.60 which can be recovered) is included in the cost of merchandise sold.

Lower of cost or market rule

Generally accepted accounting principles permit inventory to be recorded at the "lower of cost or market." Market means the cost to *replace* the merchandise, or the amount the merchandise would cost if bought currently from normal supply sources. The lower of cost or market rule should not be confused with LIFO, FIFO, average, and retail methods. These are all methods of computing inventory *cost*. Once cost has been determined, the comparison of the lower of cost or replacement cost can be undertaken.

To illustrate, suppose that a unit of merchandise in the ending inventory had been purchased for $16.00 and could be replaced on the balance sheet date for $14.00. Although inventory should never appear on a balance sheet at more than cost, it may be reduced below cost whenever some portion of its "revenue producing ability" has been lost. The item may thus be included in the inventory at $14 if the lower of cost or market rule is applied. When an amount less than cost is assigned to the ending inventory, the remainder of cost is automatically assigned to the cost of goods sold.

Both the American Institute of Certified Public Accountants and the American Accounting Association have indicated that limitations should be placed on the amounts used as "market" in the lower-of-cost or -market comparison. In general, market should not be (1) greater than estimated selling price less the normal costs to sell the item, or (2) lower than the net realizable value (estimated sales price less selling costs) less a normal profit margin.

A full discussion of these two limitations is beyond the scope of this text. Mention of them is included, however, to emphasize that use of replacement cost in the lower of cost or market valuation method is an attempt to measure any loss in revenue-producing potential of the unsold units in the inventory.

The lower of cost or market rule may be applied to each item in the inventory, to each type of merchandise, to the merchandise of each department, or to the total inventory. All four of these are acceptable methods of comparing cost and market, but the selected method should be applied consistently. The determination of the inventory value by each of these methods is illustrated as follows:

			Lower of cost or market, applied to:		
	Cost	Market	Each Type	Each Department	Total Inventory
Ladies' department					
Clothing	$ 4,260	$4,100	$4,100		
Accessories	1,400	900	900		
	$ 5,660	$5,000		$5,000	
Men's department					
Clothing	$ 3,600	$4,000	3,600		
Accessories	1,100	800	800		
	$ 4,700	$4,800		4,700	
Totals	$10,360	$9,800			$9,800
Inventory value			$9,400	$9,700	$9,800

Thus it is permissible to value the inventory at $9,400, or $9,700, or $9,800, since all three amounts are acceptable market values for a "lower of cost or market" inventory.

Balance sheet disclosure of the inventory method

Since there are several acceptable methods of valuing inventory, and since the various methods result in significantly different amounts of net income, the method used should be indicated in the balance sheet.

A parenthetical statement is ordinarily used to disclose the inventory method as illustrated in Exhibit 14–2.

EXHIBIT 14–2

FORESTALL COMPANY

Partial Balance Sheet, December 31, 1964

Current Assets:		
Cash	$16,000	
Notes receivable	1,000	
Accounts receivable	32,000	
Inventory (at lower of FIFO cost or market)	70,000	
Total current assets		$119,000

Subsidiary inventory records

A subsidiary ledger with an account for each item of merchandise is frequently maintained to provide a means of controlling the inventory. These records provide a safeguard against overstocking or depleting an item of merchandise, as well as a means of determining inventory shortages.

When perpetual inventory records are maintained, each inventory ledger account is increased by the cost of merchandise purchased and decreased by the cost of merchandise sold. The merchandise inventory account in the general ledger is the controlling account for the perpetual inventory subsidiary records. Journal entries are illustrated in Chapter 6 for recording purchases and sales of merchandise when the perpetual inventory method is used.

A perpetual inventory subsidiary account, based on the FIFO inventory method, is illustrated in Exhibit 14–3. Note the use of brackets when a sale or the balance is composed of units with different unit costs.

EXHIBIT 14–3

PERPETUAL INVENTORY CARD

Description of Item Transistor Radios, Model AL-3472

	Received			Sold			Balance		
Date	Units	Unit Cost	Amount	Units	Unit Cost	Amount	Units	Unit Cost	Amount
1964									
July 2	10	21.40	214.00				10	21.40	214.00
4				2	21.40	42.80	8	21.40	171.20
11				3	21.40	64.20	5	21.40	107.00
17	20	23.00	460.00				5	21.40	567.00
							20	23.00	
23				5	21.40	107.00			
				1	23.00	23.00	19	23.00	437.00

Physical inventory counts

A physical count of inventory should be taken at least once each year, even if perpetual inventory records are maintained. The physical count is necessary to ascertain whether the perpetual records are correct, to locate shortages, and to adjust the perpetual records and control account to the correct amounts. When periodic inventories are used, the inventory must be counted before the annual financial statements can be prepared.

Normally all the inventory is counted on the same day to insure completeness and accuracy. Frequently the business is closed while the inventory is taken, or the count is undertaken at night or on weekends. If sales are made during the time the count is being made, there is a strong likelihood of confusion or inaccuracies in the count. Methods of counting the inventory differ, but the most frequently used technique is to use count sheets or tags which record the description, location, and number of each item counted. Teams of two persons working together are more efficient in most cases, one counting and the other writing the information on the sheets or tags. As each type of merchandise is counted, a copy of the tag is left with the merchandise to prevent duplications in the count.

After the count has been completed, a cost is assigned to the units counted. At this point the LIFO, FIFO, average, or specific identification methods are employed.

If the company uses perpetual inventory records, adjustments must be made so that the perpetual inventory records and the Merchandise Inventory control account will reflect the actual count. The entry to reduce the perpetual inventory to the physical count is as follows:

June	30	Inventory Shortages or Overages	$1,000	
		Merchandise Inventory		$1,000
		To reduce perpetual inventory to the physical count and record the shrinkage.		

The physical count is lower than the perpetual inventory in most cases, since shortage and shrinkage are normal. If the physical count is greater than the amount indicated by the perpetual record, the reason can be only clerical or bookkeeping errors.

The Inventory Shortages or Overages account is closed to Revenue and Expense at the end of the period and in the income statement is added to or subtracted from the cost of merchandise sold.

Inventory errors

If an inventory is recorded at an erroneous amount on December 31, 1963, the net income for both 1963 and 1964 will be misstated. To illustrate, assume that a company has $100,000 of sales in each of the three years, 1963, 1964, and 1965. The company maintains a constant inventory of $20,000, with purchases of $50,000 each year. However, on December 31, 1963, the inventory was incorrectly recorded at $19,000 instead of $20,000. The following income statements indicate that this error caused an understatement of $1,000 in the gross profit in 1963, an overstatement of $1,000 in the gross profit of 1964, but had no effect in 1965.

	1963		1964		1965	
Sales		$100,000		$100,000		$100,000
Cost of goods sold:						
Beginning inventory	$20,000		$19,000*		$20,000	
Purchases	50,000		50,000		50,000	
	$70,000		$69,000		$70,000	
Less ending inventory	19,000*		20,000		20,000	
Cost of goods sold		51,000		49,000		50,000
Gross profit		$ 49,000		$ 51,000		$ 50,000

* Should have been $20,000.

If the error is discovered in 1964, a correcting entry should be made debiting Merchandise Inventory and crediting Retained Earnings when the company follows the current operating concept. An account Correction of Prior Year's Earnings is credited instead of Retained Earnings if the company follows the all-inclusive method of reporting net income. If the error is not discovered until 1965, no correcting entry is necessary. Although the incomes for 1963 and 1964 are incorrect, the errors have offset each other.

Lump-sum purchases

When a lump-sum price is paid for several items of different value, the cost may be allocated to the units on the basis of their relative market values. This is called a *joint cost,* since no part of it can be directly identified with any specific item and must be allocated. For example, if a $1,000 lump-sum price is paid for a shipment of merchandise which includes fifty units of A with a market value of $25

each, one hundred units of B with a market value of $5 each, and ten units of C with a market value of $75 each, the $1,000 cost is allocated as follows:

Unit	Number	Market Value Per Unit	Total Market Value	Ratio of Cost to Market ($1,000 ÷ $2,500)	Total Cost	Unit Cost
A	50	$25	$1,250	40%	$ 500	$10
B	100	5	500	40%	200	2
C	10	75	750	40%	300	30
			$2,500		$1,000	

Thus the entire $1,000 cost has been assigned, each unit receiving a portion of the cost commensurate with its sales value. Care must be exercised in an analysis of the profitability of the individual units, however, for this method also assigns to each unit a uniform gross profit. A unit of A selling for $25, with an assigned cost of $10, will realize a 60% gross margin; a unit of B or C will realize exactly the same percentage. The method is as much an allocation of profit to units as an allocation of costs.

Questions

14-1. Name the elements that comprise the "pool of merchandise" costs which is accumulated during an accounting period. Describe the disposition of this pool at the end of the period.

14-2. Discuss the problems encountered in the determination of the cost of the units left in the ending inventory when units have been bought at several different costs during the accounting period.

14-3. Describe the following inventory methods: (a) specific identification, (b) FIFO, (c) LIFO, (d) average cost.

14-4. Why are the LIFO and FIFO inventory methods "assumptions as to the flow of costs"?

14-5. Distinguish between the FIFO and LIFO concepts of business income.

14-6. Describe the retail method of computing the ending inventory when a physical count is taken and all units in the ending inventory are priced at retail.

14-7. How can the retail method be used to compute an ending inventory at cost when no physical count is taken?

14-8. What is a "mark-up"? A "mark-down"? How are mark-ups or mark-downs treated in a retail inventory computation?

14-9. Describe how an inventory obsolescence or damage loss becomes a part of the cost of goods sold if a physical inventory is taken and the obsolete or damaged units are included in the inventory at less than their cost.

14-10. What is the Lower of Cost or Market method of valuing inventory? What does market mean in this instance?

14-11. Name and describe three methods by which market may be determined when the lower of cost or market method is being used.

14-12. Describe the purpose and the content of a subsidiary inventory record.

14-13. Describe the process of taking a physical count of merchandise.

14-14. If an error is made in computing the ending inventory on December 31, 1963, so that it is overstated by $2,000, what is the effect on 1963 profits? On 1964 profits? On 1965 profits?

14-15. What method may be used to determine the cost of individual units when several units with different values are bought for a lump-sum amount?

Exercises

14-16. The Freeport Company had the following units available for sale during the month of July.

Beginning inventory	20 units @ $20 each
Purchases:	
July 3	50 units @ $21 each
July 14	100 units @ $22 each
July 26	30 units @ $23 each

On July 31 there were 40 units in the ending inventory.

REQUIRED

Compute the cost of the ending inventory and the cost of merchandise sold using:

(a) The specific identification method if 30 units were left from the July 14 purchase and 10 from the July 3 purchase.
(b) The FIFO method.
(c) The LIFO method.
(d) The average cost method.

14-17. The Jacksonville Department Store uses the retail method of computing its inventory. On January 1, the cost of the beginning inventory was $7,000 and the retail value was $11,000. During January the company purchased merchandise which cost $45,600 with a retail value of $67,000. A total of $2,000 was paid for transportation-in during the month.

REQUIRED

Compute the ending inventory at cost if a physical inventory was taken at retail value and totaled $14,000.

14-18. The Logston Company had a beginning inventory on January 1 containing 500 units which cost $2.50 each. During January purchases were made as follows:

Jan. 5	1,000 units @ $2.60 each
14	1,500 units @ $2.70 each
21	800 units @ $2.75 each
30	500 units @ $2.80 each

The company sold 3,500 units during the month for $5 each, and had selling and administrative expenses of $8,050.

REQUIRED

Prepare three income statements for January, 1964, using (a) FIFO, (b) LIFO, and (c) average costs. Show the beginning inventory, purchases, and ending inventory in each of the income statements.

14-19. The Baker-Snell Department Store accumulated the following data for the month of September:

	Cost	Sell
Beginning inventory	$ 3,000	$ 5,000
Purchases	29,000	52,000
Mark-ups		1,000
Mark-downs		500
Sales		51,500

REQUIRED

Compute the estimated inventory at both retail value and cost at the end of September, using the retail inventory method.

14-20. The Liberty Shoe Store uses the lower of cost or market inventory method. The inventory on August 31 is as follows:

	Cost	Market
Department 1		
Men's overshoes	$1,050	$ 940
Men's shoes	3,720	3,750
Boots	890	880
Department 2		
Ladies' shoes	4,780	4,760
Hosiery and accessories	2,130	2,180
Ladies' overshoes	1,910	1,900

REQUIRED

Compute the market figure to be used in the lower of cost or market inventory method, using market for: (a) each type of merchandise; (b) each department; (c) total inventory.

14-21. Prepare a perpetual inventory card as shown in Exhibit 10–3. Enter the following transactions relating to washing machines, No. 165-A, onto the card using the FIFO inventory method.

June 7	Purchased 100 units at $130 each
June 10	Sold 80 units
June 12	Purchased 200 units at $140 each
June 15	Sold 40 units
June 30	Sold 120 units

14-22. Prepare a perpetual inventory card as shown in Exhibit 10–3. Enter the transactions as listed in Exercise 10-5 onto the inventory card using the LIFO method.

14-23. The Smortiff Produce Company purchased for $100 a carload lot of potatoes for resale to customers. The potatoes were sorted into three grades, as follows:

Grade	Pounds	Retail price per pound
Choice	1,000	$0.05
Average	4,000	0.03½
Poor	2,000	0.02

REQUIRED

1. Compute the cost per pound of each grade of potatoes.
2. Compute the gross profit for the month if 400 lbs. of the choice, 2,500 lbs. of the average, and 1,500 lbs. of the poor potatoes were sold.

Problems

14-24. The purchases and sales data for the three products which the Tobar Company sells are given below for the month of January.

	Product A	Product B	Product C
Sales price per unit	$10.00	$20.00	$25.00
Beginning inventory	100 @ $6.00	100 @ $10.00	50 @ $12.00
Purchases:			
January 10	300 @ $6.50	200 @ $11.00	50 @ $13.00
January 19	100 @ $6.40	50 @ $12.00	100 @ $14.00
January 30	50 @ $6.80	50 @ $12.50	20 @ $13.50
Units in the ending inventory	140	70	60

REQUIRED

Assuming the selling and administrative expenses were $6,300, prepare two income statements for the company for the month, one using a LIFO inventory method and the other a FIFO inventory method. Show all computations.

14-25. A FIFO method is used to compute the cost of merchandise sold and the ending inventory of the Northern Sales Company. The following data apply to inventory transactions during April, 1964:

	Units	Unit cost
Beginning inventory	1,000	$2.30
Purchases:		
April 1	3,000	2.40
April 11	5,000	2.50
April 22	4,000	2.45
April 29	2,000	2.60

There were 3,000 units in the ending inventory, including 100 units purchased on April 22 which were obsolete and could be sold for only $1 each and 200 which had been damaged and could be sold for only $2 each. Selling costs are 30¢ per unit.

REQUIRED

1. Compute the cost of ending inventory and the cost of merchandise sold, showing all computations.
2. Prepare an income statement for the month, assuming the sales price of all units sold had been $4, and total selling and administrative costs were $16,400.
3. Describe how the obsolete and damaged merchandise affected the determination of income for the month.

14-26. The Lottman Department Store has three departments: Men's Wear, Ladies' Wear, and Children's Wear. The company does not take a monthly physical inventory but computes the estimated inventory at the end of each month separately by departments, using the retail inventory method. The departmental inventories are added together to arrive at the total inventory figure for income statement purposes. The data given below relate to each department for the month of January, 1964.

	Men's Wear		Ladies' Wear		Children's Wear	
	Cost	Retail	Cost	Retail	Cost	Retail
Beginning inventory	$ 5,000	$ 8,400	$ 7,000	$14,500	$ 2,000	$ 3,000
Purchases	29,400	48,000	21,500	42,000	15,600	22,000
Mark-ups		1,000		500		200
Purchases returns	800	1,400	200	400	100	200
Sales		45,000		40,000		21,000

The company's condensed trial balance on January 31, 1963, was as follows:

Cash	$ 5,000	
Inventory (January 1, 1964)	14,000	
Fixed assets	40,000	
Liabilities		$ 4,700
Capital stock		30,000
Retained earnings		26,400
Sales		106,000
Purchases	66,500	
Purchases returns		1,100
Advertising	5,000	
Sales salaries	30,000	
Office salaries	6,000	
Store rent	1,000	
Store supplies	700	
	$168,200	$168,200

REQUIRED

1. Compute the departmental estimated inventories at retail and at cost.
2. Prepare an income statement for the store as a whole as of January 31, 1964, using the total inventory at cost computed in Part (1).

14-27. The Jacksonville Appliance Company was formed on January 1, 1964. During the year the company purchased the following units:

January	1	1,000 units @ $200 each
March	14	2,000 units @ $210 each
May	23	500 units @ $220 each
September	7	1,500 units @ $230 each
November	12	1,000 units @ $240 each

The company's condensed trial balance on December 31, 1964 was:

Cash	$ 16,000	
Accounts receivable	122,000	
Fixed assets	390,000	
Liabilities		$ 75,000
Capital stock		644,000
Retained earnings		–0–
Sales		1,720,000

Purchases	1,315,000	
Sales salaries	300,000	
Office salaries	200,000	
Depreciation expense	50,000	
Supplies used	40,000	
Insurance expense	6,000	
	$2,439,000	$2,439,000

On December 31, 1964, there were 1,200 units in the ending inventory. Since the company is newly formed, a decision must be made concerning the inventory method which the company will use in this and following years.

REQUIRED

Compute the cost of the ending inventory and, using that inventory, prepare an income statement, assuming the company has selected the following inventory method:

(a) FIFO
(b) LIFO
(c) Average.

14-28. The Lester Boyles Company suffered a fire on September 16, 1964, and the company's entire inventory was destroyed. A physical inventory had not been taken since December 31, 1963, and at that time the inventory at cost was $37,000. The company has realized a consistent gross profit of 40% of sales for the past four years, and operations during 1964 to the time of the fire indicate that this gross profit rate has continued.

The company's accounting records, which were not destroyed in the fire, indicated that the cost of merchandise purchases was $180,000 and that merchandise returns were $2,500 from January 1 to September 16. Sales during 1964 until the date of the fire were $310,000.

The insurance adjuster agreed to the company's claim for reimbursement of the cost of the merchandise lost in the fire, but insisted that the cost be reduced by 2% for obsolescence and inventory shrinkage.

REQUIRED

1. Compute the cost of the inventory lost in the fire.
2. Record all transactions relative to the purchase, sale, and loss

of the inventory, including collection of the insurance claim, assuming that the company used a periodic inventory method. (Record the 2% shrinkage in a Fire Loss account.)

3. Prepare an income statement for the period 1/1/64 to 9/16/64, assuming selling and administrative expenses to be $102,000.

14-29. The Gleason Company employs a perpetual inventory system recording purchases and the cost of merchandise sold directly to the inventory account as each purchase or sale is made, using a LIFO inventory method. At the end of each month a physical count of merchandise is taken, and inventory shortages are recorded in a separate Inventory Shortages account.

The company had a beginning inventory of 50 units of Product L on January 1, which cost $100 each.

Jan. 2 Purchased 40 units for $110 each. (All purchases and sales are for cash.)
6 Sold 20 units for $200 each.
11 Purchased 30 units for $115 each.
17 Sold 40 units for $200 each.
23 Purchased 20 units for $120 each.
29 Sold 10 units for $200 each.
30 Paid $5,400 of selling and administrative expenses.
31 Counted the units on hand and found 68 units in the inventory. (Record the shortage in the "Sold" column of the perpetual inventory record.)

REQUIRED

1. Prepare a perpetual inventory card similar to Exhibit 10–3 for the transactions.
2. Record the transactions in general journal form.
3. Prepare an income statement for the month.

Cases

14-30. The Southern Products Company buys pecans from local farmers in lump sum purchases, grades them according to size and quality, packages them in one-pound cellophane bags, and sells the graded products to grocery and produce wholesalers. Almost every purchase of pecans from farmers contains some pecans in each of ten grades, but the purchase price is 2¢ per pound on the entire pur-

chase. During 1964 the sales and cost of sales of the various grades of pecans were as follows:

Grade	Pounds sold	Per lb. sales price	Sales	Cost of sales (2¢ per lb.)	Gross profit
1	1,000	$0.10	$10,000	$2,000	$8,000
2	1,200	.09	10,800	2,400	8,400
3	1,400	.08	11,200	2,800	8,400
4	1,600	.07	11,200	3,200	8,000
5	2,000	.06	12,000	4,000	8,000
6	1,600	.05	8,000	3,200	4,800
7	1,400	.04	5,600	2,800	2,800
8	1,300	.03	3,900	2,600	1,300
9	1,100	.01½	1,650	2,200	(550)
10	1,000	.01	1,000	2,000	(1,000)

The president of the company noticed that gross profit held constant at around $8,000 for the top five grades of pecans, but dropped sharply on the last five grades, and that a loss was incurred on the last two grades. The president is considering the adoption of a policy of not selling pecans in grades 9 and 10 and throwing them away, since money is lost on every pound sold. How would you advise the president?

14-31. The Yeargan Company is newly formed. Its first monthly income statement was prepared by its accountant on January 31, 1963, and appears in condensed form as follows:

Sales	$100,000
Cost of merchandise sold (700 units)	70,000
Gross profit	$ 30,000
Selling and administrative expenses	28,000
Net income before taxes	$ 2,000
Income taxes	1,000
Net income after taxes	$ 1,000

The significance of the amounts on the statement was discussed at the following executive conference, which was attended by the president, controller, and vice-president in charge of sales.

The president, upon inquiry, was informed that a FIFO method had been used. He was further informed that 1,000 units had been purchased; the first 700 units cost $100 each, and the 300 units in

the ending inventory cost $110 each. The president believed that a normal inventory must be maintained to stay in business and that if a LIFO inventory method had been used, a loss instead of a profit would have been reported. Furthermore, an income tax of 30% would have to be paid on the $2,000 reported before-tax net income, placing an additional drain on the company's cash at the same time that inventory replacement units are costing more.

What would you consider the income for the month?

15

Fixed assets and periodic depreciation expense

Fixed assets are assets with relatively long lives, used in the operation of a business, and not intended for resale. Fixed assets include such tangible assets as land, buildings, and equipment and such intangible assets as patents, trademarks, copyrights, and franchises.

The cost of a fixed asset with a limited useful life is allocated to those periods during which it has usefulness. Such assets include buildings, equipment, limited franchises, and patents. Assets such as land, trade names, and perpetual franchises, which have an unlimited useful life, may not be subject to depreciation or amortization.

Fixed assets as deferred costs

Accounting for fixed assets and the related periodic depreciation expense is based upon the concept of the accounting entity as a going concern with an unlimited life. Depreciation is the process of systematically spreading the cost of a fixed asset over its useful life so that the cost is properly matched with revenues. The going concern and the periodicity concepts are the basis for the depreciation process. Fixed assets are in a practical sense deferred costs, and the depreciation process is a means of apportioning this deferred cost to the appropriate accounting periods.

Primary emphasis in the depreciation process is placed on a systematic and fair apportionment of the cost of using the fixed assets. The balance sheet does not attempt to reflect the market value of fixed assets. The current market value of a fixed asset is not significant in the accounting process, since the assumption must be made that the business will continue indefinitely and that the asset will eventually be consumed in the normal operations of the business.

There are two important aspects involved in accounting for fixed assets: (1) determination of the costs which should be "capitalized" (assigned to the asset) and thus deferred to future accounting periods, and (2) determination of the amount to be allocated to each accounting period as depreciation expense.

Determining the cost of fixed assets

All costs incurred in acquiring an asset and preparing it for productive use are capitalized as the cost of the asset by debiting them to the asset account. These costs normally include the net invoice price, transportation, installation, and test runs. Any cost which must be incurred before the asset can be used for its intended purpose, such as the overhaul of equipment acquired in a used condition or demolition of an old building on land acquired for a building site, is considered to be a cost of the asset acquired. Cash discounts or other allowances serve to reduce the cost of the asset.

Suppose, for example, that a company buys a delivery truck with a list price of $3,000. The dealer grants a 10% reduction in the list price and an additional 2% cash discount because payment is made within thirty days. The company pays a sales tax of $81 to the state and an additional $100 to an automotive supply company for a heater. The cost of the truck is computed as follows:

List price	$3,000
Less 10% reduction	300
	$2,700
Less 2% discount	52
	$2,648
Sales taxes	81
Special heater	100
Cost of the truck	$2,829

The $2,829 cost is the balance in the asset account and is the basis for computing depreciation. Debiting the sales tax and heater to expense accounts would overstate expenses in the year the truck is acquired and would understate depreciation expense during each year of the truck's life.

Land

The cost of land includes the purchase price, plus broker's commissions, unpaid taxes assumed by the purchaser, and other similar

costs. The cost of the land is increased by the cost of demolishing old buildings and reduced by the proceeds from the sale of scrap. The costs of grading and leveling and constructing drainage facilities are also part of the cost of the land.

Land is normally not subject to depreciation, since its utility as a building site does not diminish; its cost is retained in the Land account until it is sold or otherwise disposed of. The cost of mineral deposits subject to depletion and land improvements subject to depreciation should be removed from the Land account and recorded in separate accounts, because their cost will be amortized over future periods.

Buildings

The cost of constructing a building includes excavation, materials, labor, supplies, and all other costs incidental to construction that are incurred before the building is placed in use. These incidental costs include, among other things, insurance, interest on borrowed construction funds, and real estate taxes on the building that are incurred during the construction period.

In addition to the normal costs incurred in purchasing a building, companies sometimes make payments to tenants for the premature termination of their leases. These costs are a part of the cost of the building.

Frequently both land and an existing building are purchased for a lump sum amount. If the building is to be used in the company's operations, the payment must be allocated between the land and the building, because only the cost applicable to the building is subject to depreciation. A lump sum cost is usually allocated on the basis of relative appraised values.

If, for example, a company pays $76,000 for land and a building, and the appraised values are $20,000 and $60,000 respectively, the cost is allocated to the land and buildings as follows:

	Appraised Value	Percent of Total Appraised Value	Allocated Cost
Land	$20,000	25%	$19,000
Building	60,000	75%	57,000
	$80,000	100%	$76,000

Machinery and equipment

In addition to the normal costs of acquiring machinery and equipment, such costs as special foundations or supports, wiring, inspec-

tion, and testing are capitalized by debiting the Machinery account or the Equipment account. Machinery and equipment are frequently relocated, and a second installation cost is incurred. Because no additional utility results from the reinstallation, these costs are debited to expense accounts and are not added to the cost of the machinery.

Separate fixed asset accounts

Separate general ledger accounts are maintained for each different *type* of fixed asset, such as land, buildings, equipment, patents, and franchises. Each of these accounts may contain many different assets. The Building account, for example, may contain the cost of several different buildings, and the Office Equipment account may contain the cost of such assets as adding machines, typewriters, and bookkeeping machines. The specific fixed asset accounts used by companies may differ; the grouping of assets and accounts is quite flexible. Some companies use separate accounts for salesmen's automobiles, delivery trucks, and heavy-duty trucks. Another company might include all of these in one Automotive Equipment account. The number of fixed asset classifications is determined by management's need for analysis of assets and by the number of each type of asset.

Nature of depreciation

Depreciation is the systematic allocation of the cost of an asset over its useful life. The committee on terminology of the American Institute of Certified Public Accountants has defined depreciation accounting as "a system of accounting which aims to distribute the cost or other basic value of tangible capital assets, less salvage (if any), over the estimated useful life of the unit (which may be a group of assets) in a systematic and rational manner. It is a process of allocation, not of valuation. Depreciation for the year is the portion of the total charge under such a system that is allocated to the year."[1]

The cost of a fixed asset to be assigned to an accounting period is difficult to measure. The life of the asset and the proceeds which may be received when it is ultimately disposed of cannot be known definitely in advance but must be estimated. Even in those rare cases where the *physical* life of an asset may be determined accurately, estimates of the *useful* life must nevertheless be made. Assets are fre-

[1] *Accounting Terminology Bulletin 1* (New York: American Institute of Certified Public Accountants, 1953), p. 25.

quently sold or scrapped before the end of their physical lives because they are superseded and become obsolete. A typewriter, for example, may have a ten-year physical life but be replaced each five years because the company officials want impressive new office equipment at all times.

The cost to be assigned to an accounting period may be determined in several ways. Acceptable methods include the (1) straight-line, (2) service hours, (3) units of output, (4) constant percentage of a declining balance, and (5) sum-of-the-years'-digits methods.

Straight-line depreciation

The straight-line method is applicable to those assets which make an equal contribution to operations during each year of their productive lives. This method allocates to each year an equal amount of the asset's depreciable cost.

The annual straight-line depreciation expense is computed by dividing the depreciable cost of the asset by the number of years in its productive life. Depreciable cost is the cost recorded in the asset account less the estimated net proceeds which are expected to be realized when the asset is sold, traded, or otherwise disposed of. The computation is expressed in the following formula:

$$\text{Annual depreciation} = \frac{\text{Cost} - \text{Estimated salvage}}{\text{Estimated years of life}}$$

If a company pays $10,200 for an asset which is expected to have a salvage value of $200 after five years of use, the annual depreciation expense is $2,000, computed as follows:

$$\frac{\$10{,}200 - \$200}{5} = \$2{,}000$$

The straight-line method has the advantage of simplicity, but it is not an appropriate depreciation method in those cases where the asset does not contribute uniformly to operations during each year of its useful life.

Service hours depreciation

If the use of an asset is not uniform during its life and if its life can be estimated in terms of service hours, a logical allocation of costs results from use of the service hours method. When this method is used, an hourly depreciation rate is computed by dividing the

depreciable cost of the asset by the estimated number of service hours in its life. The computation is expressed in the following formula:

$$\text{Depreciation cost per service hour} = \frac{\text{Cost} - \text{Estimated salvage}}{\text{Estimated number of service hours}}$$

If the asset described above, a machine with a depreciable cost of $10,000, is expected to have 50,000 service hours of productive life, the depreciation per service hour would be 20¢ ($10,000 ÷ 50,000 hours). Suppose further that during the first year of the machine's life it is used 12,000 hours. The depreciation expense for the year is $2,400 (12,000 × 20¢). If the machine is operated 8,000 hours during the second year, the depreciation expense is $1,600 (8,000 × 20¢). Exhibit 15–1 illustrates the computation of the annual depreciation expense for the entire life of the machine, using assumed amounts for the service hours operated each year.

EXHIBIT 15–1

Year	Hours Used	Estimated Cost Per Hour	Depreciation Expense
1	12,000	$0.20	$ 2,400
2	8,000	.20	1,600
3	11,000	.20	2,200
4	13,000	.20	2,600
5	6,000	.20	1,200
Total			$10,000

Estimation of an asset's total service hours may be subject to considerable error; consequently, this method of computing depreciation should be used only in those instances in which the asset's total service hours can be estimated with some reliable degree of accuracy.

Units of output depreciation

The units of output method of computing periodic depreciation is similar to the service hours method. The total life of the asset is estimated in terms of the total number of units it will produce, and a unit depreciation rate is computed by dividing the depreciable cost by the estimated total units of output.

If the machine described previously, with a net depreciable cost of $10,000, is expected to produce 20,000 units during its productive life, the depreciation expense per unit is $0.50. Exhibit 15–2 illustrates the computation of the annual depreciation expense for the entire life of the machine, using assumed amounts for the units produced each year.

EXHIBIT 15–2

Year	Units	Unit Cost	Depreciation Expense
1	3,000	$0.50	$ 1,500
2	5,000	.50	2,500
3	6,000	.50	3,000
4	4,000	.50	2,000
5	2,000	.50	1,000
Total			$10,000

Declining balance depreciation

Depreciation expense may be computed by applying a constant percentage to the undepreciated cost (cost less accumulated depreciation of prior years) of the asset. This method was accepted for determining depreciation for tax purposes by the Revenue Act of 1954 and has been adopted by many companies since that time.

The formula[2] to determine the percentage is:

$$\text{Declining balance depreciation rate} = 1 - \sqrt[n]{\frac{\text{salvage value}}{\text{cost}}}$$

where "n" is the number of years of useful life. Since salvage value must be used in the formula, a $1 salvage value is sometimes used when the asset has no salvage value. By applying this formula to the machine discussed previously with a $10,200 cost and a five-year life, a constant rate of 55% is determined. Exhibit 15–3 illustrates the application of the constant rate to the undepreciated balance each year. The asset is never fully depreciated when this method is used, but by the end of the asset's life the undepreciated balance approximates the estimated salvage.

[2] The derivation of this formula is beyond the scope of this text. It is included here to illustrate the means by which the percentage figure is computed.

EXHIBIT 15–3

Year	Undepreciated Balance at Beginning of Year		Constant Percentage	Depreciation Expense
1	Total cost	$10,200	55%	$ 5,610
2	($10,200 — $5,610)	4,590	55	2,525
3	(4,590 — 2,525)	2,065	55	1,136
4	(2,065 — 1,136)	929	55	511
5	(929 — 511)	418	55	218
Total				$10,000

For the fifth year the depreciation expense is $218. Fifty-five per cent of $418, the undepreciated balance at the beginning of that year, is $230; however, total depreciation of an asset can never exceed its depreciable cost and the expense is thus the remaining $218 of the $10,200 net cost. Note that the full $10,200 cost of the asset is used when this method is applied; no salvage value is deducted when the percentage is applied to undepreciated cost.

Accountants who advocate this method of computing depreciation argue that repairs and maintenance are greatest during the latter years of the life of the asset, and that depreciation computed by the constant percentage method tends to equalize the combined depreciation expense and maintenance expense for each year of the asset's life. These accountants argue further that in some cases the revenue-producing ability of the asset declines as the asset grows older. An apartment house, for example, commands higher rentals when it is new than in later years.

The general acceptance of this method did not occur until 1954 when it became acceptable for determining income for federal income tax purposes. The tax regulations allow the constant percentage to be no greater than twice the straight-line rate. In the above example the asset with a five-year life would have a 20% straight-line rate, so that for tax purposes a percentage of no greater than 40% could be used.

Sum-of-the-years'-digits depreciation

The sum-of-the-years'-digits method is similar to the declining balance method and results in larger depreciation charges in the early years of the life of the asset. The annual depreciation expense is determined by multiplying the depreciable cost by a fraction. The

numerator is the number of years in the remaining life of the asset from the beginning of that year, and the denominator is the total of the digits representing the years of the asset's life. Exhibit 15–4 illustrates the computation of the annual depreciation expense by the sum-of-the-years'-digits method.

EXHIBIT 15–4

Year	Fraction	Depreciable Cost	Depreciation Expense
1	5/15	$10,000	$ 3,333
2	4/15	10,000	2,667
3	3/15	10,000	2,000
4	2/15	10,000	1,333
5	1/15	10,000	667
Total of the years' digits 15			$10,000

The fraction is applied to the depreciable cost, that is, cost less estimated salvage value. Since the total of the fractions is 1, the total depreciation expense of all years is equal to the amount to which the fractions are applied.

The arguments in support of the sum-of-the-years'-digits method are similar to those for the method based on a constant percentage of a declining balance. The sum-of-the-years'-digits method has also been acceptable for income tax purposes since 1954.

Comparison of depreciation methods

Exhibit 15–5 compares the annual depreciation expense determined by each of the methods discussed in the preceding sections. Observe that the depreciation expense in any one year can vary substantially, depending on the method by which it is computed. However, the total depreciation expense for the five years is $10,000 (the depreciable cost) regardless of the method used. The choice of a depreciation method affects the amount of depreciation expense in any one year but not the total amount of depreciation charged against revenue over the entire life of the asset. Note, for example, the variance in depreciation expense of the first year as computed by the methods previously discussed.

EXHIBIT 15–5

COMPARISON OF VARIOUS DEPRECIATION METHODS

Year	Straight-line	Service Hours	Units of Production	Constant % of Declining Balance	Sum-of-the-Years'-Digits
1	$ 2,000	$ 2,400	$ 1,500	$ 5,610	$ 3,333
2	2,000	1,600	2,500	2,525	2,667
3	2,000	2,200	3,000	1,136	2,000
4	2,000	2,600	2,000	511	1,333
5	2,000	1,200	1,000	218	667
Total Depreciation	$10,000	$10,000	$10,000	$10,000	$10,000

At the end of the fifth year the balance in the asset account is still the $10,200 original cost, and the balance in the Accumulated Depreciation account is $10,000. When the asset is sold or otherwise disposed of, these two amounts are removed from the accounts. A gain or loss results when the asset is sold for more or less than the $200 net book value.

Group depreciation

The depreciation calculations thus far have assumed that each asset is depreciated independently of other assets and that the total depreciation expense for the period is the sum of all the individual depreciation calculations. If a company has a large number of assets, an excessive amount of clerical effort is required to accumulate the individual depreciation amounts.

To reduce this clerical effort some companies apply a depreciation method to all assets within a specific classification. If, for example, all the assets recorded in the Office Furniture and Fixtures account have estimated lives of from twelve to eighteen years, a rate based on an average life of fifteen years may be applied to the total cost of all office furniture and fixtures. Such a method is called *group depreciation.*

When this method is used and an asset is retired, its full cost is removed from the asset account and from its related accumulated depreciation account. No attempt is made to determine the actual depreciation taken on the specific asset retired. The asset may have

been used more or less than fifteen years, but regardless of its actual life it is assumed to be fully depreciated.

To illustrate the use of the group depreciation method, assume that the balance in the Machinery and Equipment account is $45,000, the balance in the Accumulated Depreciation—Machinery and Equipment account is $21,000, and the average life of the several machinery and equipment items is ten years. Using the straight-line method on a group basis, the amount of depreciation recorded annually would be $4,500 (1/10 of $45,000). If an asset with an original cost of $1,000 is scrapped and there are no proceeds from salvage, the entry to record the retirement is a debit to the Accumulated Depreciation—Machinery and Equipment account for $1,000 and a credit to the Machinery and Equipment asset account for $1,000.

If an asset which cost $2,000 is sold for $300, using group rates, the entry is:

Feb.	9	Cash	$ 300	
		Accumulated Depreciation—Machinery and Equipment	1,700	
		Machinery and Equipment		$2,000
		To record the sale of an asset.		

No gain or loss is recognized on the sale of an asset if the group method of depreciation is used. This method is based on the assumption that some assets will be overdepreciated and others will be underdepreciated, and gains and losses will be equalized over a period of time.

Depletion

The cost of natural resources such as mineral deposits, oil reserves, and timber are allocated against revenue as the resources are extracted and sold. The amount of the cost allocated to the units of the resource extracted is called *depletion expense* and is computed in a manner essentially similar to the units of production depreciation method.

To illustrate, assume that a company acquired for $200,000 an oil well estimated to contain a reserve of 100,000 barrels of oil. As each barrel of oil is extracted and sold, the $2 cost applicable to that barrel ($200,000 total cost ÷ 100,000) becomes an expense. Thus if 14,000 barrels are extracted and sold the first year, the entry to record depletion is as follows:

Dec.	31	Depletion Expense	$28,000	
		Accumulated Depletion		$28,000
		To record depletion for the year, 14,000 barrels at $2 each.		

Sale of fixed assets

If a depreciation method other than the group method is used, the asset cost and its accumulated depreciation must be removed from the accounting records when the asset is sold. The difference between the proceeds from the sale of the asset and its net book value is recorded in an account for the gain or loss on the sale of fixed assets.

When an asset is sold, depreciation expense must be recorded for that portion of the year prior to the date of sale. Otherwise operating expenses for that period are understated, and a gain on the sale is understated or a loss is overstated.

If a truck purchased on January 1, 1962, for $5,000 is estimated to have a life of five years and a salvage value of $500, the annual depreciation computed on a straight-line method is $900. If depreciation has been recorded annually on December 31, and the truck is sold on July 1, 1965 for $2,000, two entries are required on the date of sale. The first brings the depreciation up to date, as follows:

July	1	Depreciation Expense	$450	
		Accumulated Depreciation		$450
		To record depreciation on trucks from January 1 to July 1.		

After this entry is posted, the balance in the Accumulated Depreciation account is $3,150 (3½ years at $900 per year). The entry to record the sale would then be:

July	1	Cash	$2,000	
		Accumulated Depreciation	3,150	
		Trucks		$5,000
		Gain on Sale of Fixed Assets		150
		To record the sale of truck for more than book value.		

If the truck had been sold for $1,800, the $50 loss would have been debited to the Loss on the Sale of Fixed Assets account.

A gain or loss on the sale of fixed assets appears on the income statement as a non-operating gain or a non-operating loss when the

all-inclusive concept of reporting income is followed. Retained Earnings may be debited or credited directly if the company uses the current-operating concept of reporting net income.

Asset trades

When an asset is traded for a similar asset, either of two methods may be used to record the trade. The first method recognizes a gain or loss on the trade and is the preferable method. The second method does not recognize a gain or loss on the trade and is frequently called the *income tax method*, because it must be used for federal income tax purposes.

To illustrate, assume that an asset which cost $5,000, with an accumulated depreciation of $3,000, is traded for a new asset which could have been bought for $6,000. The old asset and $2,500 are given for the new asset. If the gain or loss on the trade is recognized, the entry is:

Oct.	19	Assets (new)	$6,000	
		Accumulated Depreciation	3,000	
		Assets (old)		$5,000
		Cash		2,500
		Gain on Trade of Fixed Assets		1,500
		To record the trade of an old asset for a new asset of like kind, with a $2,500 cash difference.		

If the income tax method is used and no gain or loss on the trade is recognized, the cost of the new asset is the book value of the old asset plus the cash paid. The entry to record the trade by this method is as follows:

Oct.	19	Asset (new)	$4,500	
		Accumulated Depreciation	3,000	
		Asset (old)		$5,000
		Cash		2,500
		To record the trade of an old asset for a new asset of like kind, with a $2,500 cash difference, using the income tax method.		

The $4,500 cost of the new asset is the sum of the $2,500 cash payment and the $2,000 book value of the asset traded. The tax method

can be used only when assets of *like kind* are traded. If an asset is traded for a dissimilar asset, the gain or loss must be recognized.

Fully depreciated assets

When an asset is fully depreciated *but remains in operation,* both the cost of the asset and the accumulated depreciation should remain on the books. Only when the asset is sold, traded, or otherwise disposed of should the cost and accumulated depreciation be removed from the books. Keeping an asset on the books, even though it is fully depreciated, maintains an accounting record of all assets which are being used.

Recording depreciation for partial periods

Although some companies record depreciation only to the nearest year, a more accurate determination of depreciation expense will result if depreciation is computed by months. Sometimes a policy is adopted by a company wherein all assets purchased during the first half of the month are depreciated as if they were owned a full month, and no depreciation is recorded for the month on assets purchased during the latter half of the month. This policy is also followed when assets are sold; a full month's depreciation is recorded for assets sold during the latter half of the month, and none is recorded for those sold during the first half.

When depreciation is computed to the nearest year, a full year's depreciation is recorded for assets acquired during the first half of the year, or for those sold during the last half. No depreciation is recorded for the year for assets acquired during the latter half or sold during the first half of the year. Yearly periods are generally too long to provide accuracy in computing depreciation, however, and should not be used except in special circumstances.

Since periodic depreciation is an estimate, little can be gained by computing depreciation to the nearest day.

Changes in the estimated life of assets

When it is discovered that an asset's life will be different from the original estimate, the periodic depreciation on that asset must be recomputed. There are two acceptable methods of reflecting the change in the estimated life of an asset.

Allocating undepreciated balance

Assume that a building that cost $100,000 was originally estimated to have a life of forty years and no salvage value. Depreciation on a straight-line basis was recorded at $2,500 per year. After twenty-five years, it became apparent that the building would have a fifty-year total life instead of the original forty. One method of reflecting the new estimate of the building's life is to allocate the remaining undepreciated cost over the remaining twenty-five years of life, as follows:

Original cost	$100,000
Depreciation taken (25 years @ $2,500)	62,500
Remaining undepreciated cost	$ 37,500
Annual depreciation for the 25 remaining years ($37,500 ÷ 25 years)	$ 1,500

At the end of the asset's life, its cost would have been allocated to the fifty years as follows:

Depreciation for first	25 years	@ $2,500 per year	=	$ 62,500
Depreciation for last	25 years	@ $1,500 per year	=	37,500
	50 years			$100,000

The advantage of this method is that total depreciation expense reported in the income statements for the fifty years is equal to the depreciable cost of the asset. The objectionable feature of this method is that the income statement of no one year reflects the proper amount of depreciation expense. Instead, the overstatement of depreciation expense during the first twenty-five years is offset by an understatement of depreciation expense in the last twenty-five years.

Correcting accumulated depreciation

A second method of correcting the erroneous estimate of the life of an asset is to adjust the balance in the Accumulated Depreciation account to its proper amount. Had the life of the building in the preceding example been estimated correctly at the time the building was acquired, depreciation expense would have been $2,000 per year ($100,000 ÷ 50). After twenty-five years the correct balance in the

Accumulated Depreciation account would have been $50,000. As a result of the erroneous estimate of the building's life, however, the balance actually accumulated in the Accumulated Depreciation account was $62,500.

The following entry is required to correct the erroneous balance of the Accumulated Depreciation account:

Jan.	7	Accumulated Depreciation—Buildings	$12,500	
		Adjustment for Errors in Prior Years' Depreciation (or Retained Earnings)		$12,500
		To correct an error in estimating the life of the building.		

The depreciation expense for the remaining twenty-five years of the building's life is then recorded at the correct amount of $2,000 per year. The effect of this method is as follows:

Depreciation for first 25 years @ $2,500 per year	$ 62,500
Correction of accumulated depreciation	(12,500)
Correct accumulated depreciation after 25 years	$ 50,000
Depreciation for last 25 years @ $2,000 per year	50,000
	$100,000

At the end of the fifty-year life of the building, the balance in the Accumulated Depreciation account is $100,000. Excessive depreciation during the early years of the life of the asset is debited to the Accumulated Depreciation account, and the correct depreciation expense appears in the income statements during the latter years of the asset's life. However, the method does have the disadvantage of reporting in the company's income statements over the entire life of the asset an amount of depreciation totaling more than the asset's cost.

Capital and revenue expenditures

A *capital expenditure* is debited to an asset account; a *revenue expenditure* is debited to an expense account.

Expenditures debited to fixed asset accounts are capital expenditures. They are debited to an asset account if as a result of the expenditure the asset becomes more productive or has a longer life

than that anticipated when the asset was acquired. Normal expenditures to *maintain* the productive capacity of an asset are revenue expenditures; that is, they are debited to expense accounts.

Typical of capital expenditures are the costs of replacing a wood shingle roof with a more substantial tile roof, adding a new wing to a building, and replacing the flat bed of a truck with a refrigerated body for transporting perishable products. In each case, the cost, less any salvage proceeds, is capitalized by debiting the appropriate asset account.

The estimated life of an asset used in determining the periodic depreciation expense is based on an assumed normal repair and maintenance policy which will maintain the asset for that estimated life. Expenditures for repairs or maintenance which were anticipated when the asset was acquired and assigned an estimated life are revenue expenditures and are debited to repair and maintenance expense accounts. Typical of these expenditures are the costs of painting a building, replacing machine parts that are subject to wear and tear, and replacing tires and batteries on automotive equipment.

Repairs of an unusual nature which were not anticipated in the normal repair policy are treated as capital expenditures if they extend the life of the asset beyond its original estimate. An abnormal repair is capitalized, however, by a debit to the Accumulated Depreciation account rather than the asset account, on the assumption that it "cancels" a part of the recorded depreciation and does not necessarily add to the original value of the asset.

Capital expenditures, regardless of whether they are debited to an asset account or to the related accumulated depreciation, require an adjustment in the amount of the annual depreciation expense during the remaining life of the asset.

Intangible assets

Intangible assets represent rights, privileges, and competitive advantages which a business enjoys. Ownership of an intangible asset is usually indicated by contracts, certificates, or other documentary evidence, although in some cases there may be no legal evidence of ownership. Intangible assets include: (1) rights and privileges granted by the government, such as patents, copyrights, licenses, and franchises; (2) rights and privileges granted by individuals, such as leases and leaseholds; (3) competitive advantages created by the company itself, such as secret formulas and secret processes; and (4) competi-

tive advantages resulting from customer relations or location, such as goodwill.

To be classified as an intangible asset for accounting purposes an item must be closely associated with the major revenue-producing activity of the business. Notes receivable and investments in stocks and bonds of other companies are intangible, revenue-producing assets, but they are not classified as intangible fixed assets in the balance sheet because they represent claims and equities more accurately classified as monetary assets.

Intangible assets recorded at cost

Accounting for intangible assets is basically similar to the method of accounting for tangible fixed assets. Intangible assets are recorded at cost, which includes the purchase price or development cost and any other costs incidental to their acquisition.

The value of an intangible asset may become much greater than its cost. For example, the value of a patent which protects the manufacture of a popular product may be infinitely greater than the cost of developing the patent. The intangible asset should remain on the books at cost, however, since cost measures the expense which must be apportioned to the periods in the useful life of the asset.

Amortization of the cost of intangible assets

The cost of an intangible asset with a limited life is allocated to accounting periods in the same manner as the cost of a tangible fixed asset. The portion of the cost allocated to each period is called amortization expense. The term amortization is more applicable to intangible assets than is depreciation, since depreciation includes physical wear and tear due to usage and the elements.

An intangible asset with an unlimited life or with no ascertainable limit on its life may be carried forward on the balance sheet at cost for an indefinite period. However, if there should be some indication that the life of the intangible asset is limited, or that it no longer has value to the company, the cost should be written off immediately or amortized over any remaining useful life. Sometimes intangible assets are amortized in the interest of conservatism, even though nothing has occurred to indicate a termination of the asset's value.

When intangible assets are amortized, the asset is credited directly, and an accumulated amortization account is not used. This procedure is employed primarily as a matter of expediency, since most companies have only a few intangible assets.

Goodwill

The term "goodwill" is related to the advantages which a business enjoys that enable it to earn profits greater than the average earned by comparable companies in the same industry. The advantages contributing to the existence of goodwill include a fortunate location, favorable customer relations, and superior management. If goodwill is developed over a period of years without a specific cost to the company, it should not appear on the financial statements.

Goodwill may be purchased as a part of the acquisition cost of an existing business. Assume, for example, that an existing business has the following condensed trial balance, and the book value of the fixed assets does not differ materially from their fair market value.

Fixed assets	$80,000	
Owners' equity		$80,000
	$80,000	$80,000

Assume further that a new corporation is formed for the purpose of purchasing and operating the existing business, and that cash of $90,000 is received by the new corporation from the issuance of its capital stock. If the new corporation pays $90,000 for the existing business, the purchase price represents a payment of $80,000 for the fixed assets and $10,000 because the business as an income-producing entity is worth more than the assets themselves. The $10,000 is the purchased cost of goodwill and is recorded as an asset. The trial balance of the new corporation is as follows:

Fixed assets	$80,000	
Goodwill	10,000	
Stockholders' equity		$90,000
	$90,000	$90,000

The asset value of goodwill continues as long as the company's earnings are in excess of a normal return, and goodwill may remain on the books at cost until there is some indication that its value has declined. However, because the life and continuing value of goodwill are indefinite, goodwill frequently is amortized over a relatively short period. Assume, for example, that a company paid $10,000 for goodwill and elects to amortize the cost over a five-year period. The annual adjusting entry to amortize the goodwill would be as follows:

Dec.	31	Amortization of Goodwill	$2,000	
		Goodwill		$2,000
		To record annual amortization of goodwill.		

The *Amortization of Goodwill* account is classified as a non-operating expense on an all-inclusive income statement or is debited to retained earnings if the current operating concept is applied.

Patents

A patent is granted by the United States Patent Office for a period of seventeen years and is not renewable. If the patent is purchased or developed by a company, only the actual purchase or development cost should be recorded on the books. If a patent infringement suit is brought against the company, the cost of successfully defending against the suit may be considered a part of the cost of the patent. This procedure is generally accepted because the validity of a patent is not absolutely assured until it has been defended. If the suit is lost, obviously the patent has no usefulness, and its cost should be written off immediately.

A patent must be amortized over those accounting periods in which it has revenue-producing utility. Determination of this period is often difficult. The maximum life is seventeen years, but in many cases the patent has a revenue-producing life of less than the legal period. The cost of the patent is amortized over its legal life or its useful life, whichever is shorter.

Assume, for example, that the Yalta Company bought a patent on January 1, 1959, for $10,000. At that time the useful life of the patent was estimated to be ten years. At the end of 1964 another company produced and patented a superior competitive product, which made the Yalta Company's patent obsolete. The purchase, original amortization over an estimated ten-year life, and the write-off resulting from obsolescence are recorded in the following entries:

1959				
Jan.	1	Patents	$10,000	
		Cash		$10,000
		To record the cost of a patent.		
Dec.	31	Patent Expense	$ 1,000	
		Patents		$ 1,000
		To amortize the patent cost based on a 10-year expected useful life.		

1964 Dec.	31	Loss Due to Obsolescence of Patents (or Retained Earnings)	$4,000	
		Patents		$4,000
		To write off the remaining cost of an obsolete patent.		

Copyrights

A copyright is an exclusive right to publish and sell a literary composition or other work of art for a period of twenty-eight years. A copyright may be renewed for one additional twenty-eight-year period. Very few books, songs, movies, or other copyrighted materials can be expected to have value for the maximum fifty-six years covered by a copyright and its renewal. Since most of the income from the sale of a copyrighted publication is usually earned in the early years of the copyright, a relatively short write-off should be used for copyright costs; most publishers write off copyright costs over the first few printings.

Since a greater proportion of the revenue is realized from the copyright in its early life, a declining balance method of amortization is appropriate. A larger portion of the cost should be matched with the greater revenues earned in the early years of the copyright's life.

Trademarks and trade names

Trademarks and trade names are sometimes valuable assets and are given legal protection to keep others from using similar trade names or brands. The costs incurred in registering a new trade mark or trade name are nominal and normally are treated as expenses. The cost of a purchased trademark or trade name, however, and the costs of successfully defending against an infringement suit may be material and, if so, should be capitalized in the *Trademarks and Trade Names* account. Since trade marks and trade names are protected in perpetuity, theoretically they should remain in the accounts at their original cost. As a practical matter, their cost is normally amortized over a very short period, primarily for reasons of conservatism.

Questions

15-1. Define depreciation. Define fixed assets and explain why they are a form of "deferred cost."

15-2. State which of the following would be considered a part of the cost of land:

(a) Real estate dealer's commission
(b) Back taxes paid on the land
(c) Cost of demolishing an old building located on the land when purchased
(d) President's travel expenses when negotiating for the purchase of the land
(e) Grading and leveling costs.

15-3. A company paid $42,000 for a tract of land and a building. The land had an appraised value of $10,000, and the building had an appraised value of $50,000. (a) How much of the $42,000 cost should be allocated to the land and how much to the building? (b) Would the determination of net income in the current and future years be affected by an error in making the allocation?

15-4. Which of the following would be considered the cost of a building:

(a) Cost of excavating
(b) A net loss suffered while the building is being constructed
(c) Cost of buying the unexpired portion of tenants' leases
(d) Cost of advertising the location of the new building
(e) Insurance on the building during construction.

15-5. Why are separate fixed assets and accumulated depreciation accounts used for different types of assets?

15-6. Describe the straight-line method of computing depreciation.

15-7. How is depreciation based on service hours computed? Is this method applicable to all assets? Name two assets which this method may properly be used to depreciate.

15-8. Distinguish between the units of output and the service hours methods of computing depreciation.

15-9. Describe how the declining balance method of depreciation is applied. Is the estimated salvage value subtracted before the percentage is applied to compute the periodic depreciation?

15-10. How is the periodic depreciation expense computed when the sum-of-the-year's-digits method is used?

15-11. Describe the group depreciation technique. Must a straight-line, declining balance or similar method be applied when group depreciation is computed?

15-12. Define and give the distinguishing features of (a) depreciation, (b) depletion, and (c) amortization.

15-13. An asset which cost \$1,000 and is 40% depreciated is sold for \$500. Give the entry for the sale. Would the entry differ if the asset had been sold for \$700?

15-14. An asset which cost \$5,000 and is 70% depreciated is traded with a \$2,000 cash payment for a similar asset with a value of \$4,000. Give the entry for the trade (1) recognizing a gain or loss on the trade and (2) using the tax method.

15-15. When an asset is partially depreciated and the original life is deemed to be longer or shorter than the original estimate, describe two methods by which the error may be corrected.

15-16. Distinguish between a capital expenditure and a revenue expenditure. Why is a careful distinction between the two necessary?

15-17. State whether the following would be considered a capital or a revenue expenditure:

(a) Replacing a wooden roof with tile roof with a 20-year guarantee
(b) Replacing the tires on a delivery truck
(c) Cost of a new coat of paint on a building
(d) Replacing an open truck body with a closed refrigerated body
(e) Replacing the motor of a machine with a new but identical motor
(f) Replacing a wooden shipping dock with a concrete shipping dock.

15-18. What is an intangible asset? Name several intangible assets and describe how these assets would appear on a balance sheet.

15-19. Define goodwill and discuss the problems inherent in its amortization.

15-20. Define a patent. What life should be given a patent for amortization purposes?

15-21. Define a copyright. What life should be used for its amortization? Is straight-line or accelerated amortization best suited to a copyright?

15-22. Why are trademarks and trade names valuable assets? What life should be used for their amortization?

Exercises

15-23. The Opal Company purchased a new truck on December 31, 1961, for $5,500. The truck had an estimated life of five years or 100,000 miles and an estimated salvage value of $500. The truck was driven 10,000 miles in 1962, 25,000 miles in 1963, and 15,000 miles in 1964.

REQUIRED

Compute the depreciation expense for 1962, 1963, and 1964, using the following methods:

(a) Straight-line
(b) Sum-of-the-years' digits
(c) Units of output
(d) Constant percentage of a declining balance. (Use a 40% rate.)

15-24. The Wippitt Company purchased a machine on January 1, 1960, for $36,000. At that time the machine had an estimated life of eight years and no salvage value. On January 1, 1963, the machine was rebuilt at a total cost of $5,400, of which $2,400 was ordinary repairs and the balance was considered a betterment, because the productivity was increased. The estimated life and the estimated salvage value did not change as a result of the betterment.

REQUIRED

Compute the depreciation for each of the eight years of the machine's life using the:

(a) straight-line method
(b) sum-of-the-years'-digits method.

15-25. A group depreciation rate is used by the Taylor Company. The balance of the Machinery account on January 1, 1963, is $42,000, and the balance of Accumulated Depreciation is $16,200. A ten-year life is used for depreciation purposes.

Jan.	17	Purchased a machine for $1,200 cash.
	23	Purchased a machine for $600 cash.
	31	Recorded depreciation for the month.
Feb.	1	Scrapped a machine which cost $900 and received no salvage proceeds.
	28	Recorded depreciation for the month.

Mar. 2 Sold a machine which cost $1,500 for $200 cash.
31 Recorded depreciation for the month.

REQUIRED

Record the transactions in general journal form.

15-26. The Trillick Company purchased a turret lathe on January 1, 1960, for $8,000. The machine was estimated at that time to have a ten-year life and an estimated salvage value of $200. The company records depreciation at the time of sale for assets sold or traded, and at the end of each fiscal year on December 31 for the remaining assets.

On April 1, 1964, the machine was traded for another lathe which had a market value of $9,700. The old machine and $6,000 cash were given for the new machine.

REQUIRED

1. Record the trade (a) recognizing a gain or loss on the trade and (b) using the tax method.
2. What would be the difference in the company's net income for the year 1964 resulting from the choice of the tax method compared with recognizing the gain or loss on the trade, if the new asset had a ten-year life and no salvage value? What would the difference be in 1965?

15-27. The Boyles Company purchased a building on January 1, 1944, for $70,000. The building was estimated to have a life of 35 years at that time and no salvage value. Depreciation is recorded at the end of the company's fiscal year each December 31.

On January 1, 1964, the total life of the building was estimated to be 50 years instead of the original 35 years.

REQUIRED

1. Record the depreciation entry for 1963, before the life was re-estimated.
2. Record the depreciation entry for 1964, after the life was re-estimated, if the undepreciated balance is spread over the remaining life.
3. Assuming that the company's accountant had elected to make a correcting entry for the error in estimating the original life,

prepare the correcting entry on January 1, 1964, and the depreciation entry on December 31, 1964.

15-28. The Listman Company purchased a truck on January 1, 1964. The dealer's list price was $3,061.22, and he allowed a 2% discount for the cash purchase. The Listman Company then paid $200 to a metal shop for welding special racks to the body of the truck and paid $40 for a 1964 truck license and $240 for a two-year liability insurance policy. The truck has an estimated life of five years and an estimated salvage value of $250.

REQUIRED

1. Record the payments for the truck, the special racks, the license, and the insurance.
2. Compute the depreciation which would be recorded on December 31 of each year of the truck's life if the company uses (a) straight-line depreciation and (b) if the company uses a constant percentage of a declining balance method at a 40% rate.

15-29. On January 1, 1964, the Matsalis Company acquired a patent at a cost of $34,170. A useful life of 17 years was assigned to the patent. On January 1, 1968, since the remaining useful life appeared to be only five more years, the amortization was changed so that the remaining cost would be amortized over the remaining life of the patent. On December 31, 1971, the patent was declared worthless and was written off.

REQUIRED

Prepare the entry for the purchase, the annual amortization on December 31, 1964, and December 31, 1968, and for the write-off on December 31, 1971.

15-30. A copyright was acquired on January 1, 1964, for a lump-sum cost of $12,320, for a novel written by a popular author. The publishing company estimated that the book will remain popular for five years and that the copyright should be written off as follows: 50% the first year, 30% the second year, 10% the third year, 6% the fourth year, and 4% the fifth year. On December 31, at the end of the third year, there appeared to be no future market for the book, and all remaining copyright costs were written off.

REQUIRED

Prepare entries for (a) the purchase of the copyright and (b) the write-off for each of the three years.

15-31. The Dayton Company acquired a patent on January 1, 1964, at a cost of $12,000. Although the patent had a 17-year legal life, a 10-year useful life was selected for amortization purposes. On July 17, 1966, the patent was superseded by a competitor's patent and was written off as worthless. (Amortization entries had been made for 1964 and 1965.)

REQUIRED

Prepare journal entries for the following transactions:

(a) Purchase of the patent on January 1, 1964.
(b) Amortization on December 31, 1964.
(c) Write-off of the patent on July 17, 1966.

15-32. The Crandell Company, a proprietorship owned by F. R. Crandell, sold a single product protected by a patent which Crandell had acquired. The company's trial balance was as follows on 12/31/64:

Cash	$ 1,000	
Accounts receivable	2,000	
Investment in 6% Tolle Company bonds	19,000	
Patent	24,000	
Office equipment	10,000	
Accumulated depreciation—equipment		$ 6,000
Accounts payable		3,000
F. R. Crandell—Capital		47,000
	$56,000	$56,000

J. R. Henderson acquired the business from Crandell on December 31, 1964, for a total price of $70,000. A new set of books was opened, taking the following into consideration:

(a) An allowance for uncollectible accounts of $300 was established.
(b) The Tolle Company bonds have a maturity value of $20,000 and will mature in ten years, on January 2, 1975. They are to be recorded at their present market value of $19,200, and the intent is to hold them until maturity.
(c) The patent appears to have a present value of $25,000, a remaining useful life of ten years, and is to be recorded at present value.

(d) The office equipment has a present value of $8,000 and is to be recorded at that amount. It has an estimated life of eight years and no salvage value.
(e) Goodwill is recorded for the excess purchase price and is to be amortized over a ten-year period.

After recording the purchase of the business, Henderson incorporated and issued $100 par value common stock to himself for his equity.

REQUIRED

1. Journalize the acquisition of the business on Henderson's books and the incorporation.
2. Prepare a balance sheet for the corporation, using appropriate notes to disclose all pertinent information about the financial condition of the business.

Problems

15-33. The Jackson Company and the Grant Company were formed on January 1, 1964. They are identical in every respect, except that the Jackson Company employs a LIFO inventory method for depreciation and a constant percentage of 20% on the declining balance of its equipment (twice the straight-line amount), while the Grant Company uses a FIFO inventory method and straight-line depreciation.

During 1964 both companies made purchases as follows:

February	1	100 units @ $21 each
April	13	200 units @ $22 each
June	21	200 units @ $23 each
August	7	100 units @ $24 each

The ending inventory for both companies was 120 units, and the office and store equipment had a ten-year life and no salvage value. The trial balances of the two companies on December 31, 1964, before the inventory or depreciation expense was recorded, were:

	Jackson Company		Grant Company	
Cash	$ 1,000		$ 1,000	
Accounts receivable	3,000		3,000	
Office equipment	7,000		7,000	
Store equipment	12,000		12,000	
Accounts payable		$ 2,100		$ 2,100
Capital stock		20,000		20,000
Sales		21,800		21,800
Purchases	13,500		13,500	
Salaries expense	5,000		5,000	
Supplies	1,000		1,000	
Utilities	800		800	
Property tax expense	400		400	
Insurance expense	200		200	
	$43,900	$43,900	$43,900	$43,900

REQUIRED

1. Prepare income statements for the two companies for 1964.
2. (a) Which of the two companies, in your opinion, is the more profitable? (b) Prepare a schedule explaining the difference in the net income or loss of the two companies.

15-34. A high-speed press was bought by the Frontier News Company on January 1, 1960. The press cost $53,000 and had an estimated life of ten years, or 20,000 hours, and a $3,000 salvage value. The press was used 1,800 hours in 1960, 2,100 hours in 1961, 2,300 hours in 1962, and 2,200 hours in 1963. On January 1, 1964, the old press was traded for a new one with a value of $62,000, and a cash difference of $20,000 was paid by the Frontier News Company. The new press has an estimated life of ten years or 20,000 hours and no salvage value. It was used 1,800 hours during 1964.

REQUIRED

1. Prepare the general journal entry for the annual depreciation expense for 1963, the entry for the trade on January 1, and the December 31, 1964, entry for depreciation expense on the new press if the company uses:
   (a) straight-line depreciation and records gains or losses on trades
   (b) straight-line depreciation and the tax method for trades

(c) service hours depreciation and records gains or losses on trades
(d) service hours depreciation and the tax method for trades.

2. Discuss the effect which the two methods of recording the trade have on income in 1964 and during the remaining life of the asset.

15-35. The Baker Company purchased electronic data processing equipment from The International Calculator Company on January 1, 1964, for $1,230,000 plus installation costs of $140,000. The Baker Company paid $370,000 in cash and signed a two-year 6% note payable for the balance. A calendar year is used for depreciation purposes, and interest on the note is paid each December 31.

During 1964 the company made sales of $2,940,630, with cost of merchandise sold of $1,660,400 and operating expenses of $664,900, exclusive of interest expense and depreciation on the data processor. The company pays 50% of its net income in federal income taxes and subtracts the federal income tax as the final item on the income statement to arrive at net income after taxes.

REQUIRED

Prepare an income statement for 1964 if the company uses:

1. Straight-line depreciation on the data processor, and it has an estimated life of five years and $100,000 salvage value.
2. Sum-of-the-years'-digits depreciation, using the five-year life and $100,000 salvage value.
3. Constant percentage of a declining balance depreciation. (Use 40%, since this method is limited to twice the straight-line depreciation, or 40%, for tax purposes.)

15-36. The E. A. Walker Company completed during 1964 the following transactions relating to office equipment. Depreciation is computed to the nearest month and recorded at the time an asset is sold or traded; otherwise, it is recorded on December 31.

Feb. 27 Purchased an electric calculator, cost $500, estimated life ten years, salvage value $20.
April 3 Purchased an executive desk, cost $340, estimated life twenty years, salvage value $40.
Aug. 9 Purchased a typewriter, cost $270, estimated life ten years, salvage value $30.
Sept. 24 Traded the executive desk and $200 for a larger desk with a value of $500. The new desk has an estimated ten-year life and $32.50 salvage value. Use the tax method to record the trade.

Nov. 23 Purchased a mimeograph machine, cost $317, estimated life fifteen years, salvage value $17.

29 Sold the electric calculator purchased on February 27 for $400 cash.

Dec. 21 Purchased two manual typewriters for $150 each, estimated life ten years, and salvage value $20 each.

REQUIRED

1. Record the transactions in general journal form, including depreciation entries at the time of a sale or trade and on December 31, 1964.
2. Prepare a schedule of individual assets owned on December 31, 1964, and the accumulated depreciation for each asset.

15-37. Record in general journal form the following transactions for the sale or trade of assets. The company computes depreciation to the nearest month and records depreciation expense at the time an asset is sold or traded; depreciation is computed annually on December 31 for remaining assets. Each part of the problem below is an independent case.

(a) A building bought on June 30, 1956, for $72,000 was sold on June 30, 1964, for $50,000. Straight-line depreciation had been used, and the building had an estimated life of 40 years and a $2,000 salvage value when purchased.

(b) Machinery bought on January 3, 1961, had cost $7,500 and was estimated at that time to have a life of five years and no salvage value. The sum-of-the-years'-digits depreciation method was used. On January 2, 1963, the machine was traded for a similar asset with a value of $12,000, and a $6,000 cash difference was paid. Use the tax method to record the trade.

(c) Office equipment costing $2,000 was bought on April 1, 1960. The office equipment at that time was estimated to have a life of ten years and a salvage value of $200. Straight-line depreciation was used, and the equipment was traded on June 10, 1964, for similar equipment with a value of $3,000. A cash difference of $1,200 was paid. Record a gain or loss on the trade.

(d) A truck costing $6,000 was purchased on January 1, 1961. A constant percentage of 40% on the declining balance was used to depreciate the asset. The truck was sold on January 4, 1964, for $1,000.

15-38. The Layton Company purchased a new building on January 1, 1959, for $105,000. The building had an estimated life of 50 years

and an estimated salvage value of $5,000. Depreciation is computed to the nearest month on a straight-line basis each December 31.

REQUIRED

Record the following transactions in general journal form:

Dec. 31, 1959	Recorded the annual depreciation expense.
July 1, 1960	Replaced the old roof with a permanent tile roof which cost $4,850. The new roof did not change the estimated life of the basic structure. The new roof was considered a betterment.
Dec. 31, 1960	Recorded the annual depreciation expense.
Nov. 31, 1961	Painted the building, at a cost of $700. The building will probably need repainting every four years.
Dec. 31, 1961	Recorded the annual depreciation expense.
Dec. 31, 1962	The life of the building is considered overstated. The original life should have been 40 years instead of 50. Make a correcting entry and also record the depreciation expense for 1961.
July 1, 1964	The building was sold for $85,000 cash.

15-39. The trial balance of the K. C. Paper Company for the year ended December 31, 1964, contained the following assets:

Patents	$14,000
Goodwill	70,000
Trade names	3,000

The company's management believes that the patent will have value to the company for approximately seven more years.

The goodwill was acquired several years ago when the K. C. Company purchased another business. None of the goodwill has been amortized, and the company's management now wishes to write off the goodwill over the next five years.

The trade names account contains the cost of a trade name purchased during 1964 from a company no longer in business. The company wishes to write off this entire amount as a loss, because there is no evidence that it has value.

REQUIRED

Record the above write-offs and adjustments in general journal form, assuming the company uses the all-inclusive concept of re-

porting net income. Indicate how the expense or loss accounts used to amortize these intangible assets would be classified in the income statement of the K. C. Paper Company.

Cases

15-40. The Ledmetter Manufacturing Company manufactures plastic products, and its catalogue contains some 2,000 different plastic items, ranging from electric outlet plugs to radio cabinets. A steel multiple-mold is used for casting each product, and these molds cost approximately $200 each. The molds normally last from five to ten years, but there is no assurance that the product manufactured by the mold will be carried in the company's catalogue for that period of time. When the product is discontinued, the mold is sold for scrap.

The company's accountant is not sure what depreciation method or what life to use in depreciating the molds. What would you recommend? What asset records would you suggest be maintained for the molds?

15-41. The Abott-Jones Corporation was formed on January 1, 1964, for the purpose of acquiring thirty new apartment houses. The apartment houses cost a total of $1,300,000 and are expected to have a life of 50 years. Rentals during the early years are expected to be higher than in later years, when the apartments become older and less attractive. Maintenance and repairs are also expected to be higher in the later years of the apartments' useful lives.

Mr. Abott, who owns 50% of the stock of the company, maintains that straight-line depreciation should be used for the apartment houses. He contends that if rental revenue is higher and repairs are lower in early years, profits are greater in those years and the income statement should reflect that fact. He can see little reason for using a depreciation method that produces a greater depreciation expense and thus reduces profits in the early years of the apartment building's life. He argues that sum-of-the-years'-digits and other accelerated depreciation methods defer profits to later years.

Mr. Jones, who owns the remaining 50% of the company's stock, argues that actual net income on the apartment house venture cannot be known exactly until the end of the life of the assets, and

net income should be computed evenly over the life of the venture. He contends that lower depreciation expenses in the later years of the asset's useful life should offset lower revenues and higher maintenance costs.

What would you recommend as a depreciation policy for the company?

16

Current and long-term liabilities

The creditors' equity in the total assets of a business is measured by the amount of liabilities or debts which the company owes. A creditor assumes an equity in the company's assets whenever there is created a legally enforceable debt which is to be satisfied by future disbursement or use of the company's resources.

Liabilities may be created by an almost unlimited variety of transactions. However, they generally arise (1) when funds are borrowed and notes payable, mortgages payable, or bonds payable are issued in exchange; (2) when liabilities are accrued for sales taxes, payroll taxes, and income taxes assessed by governmental units; (3) when goods or services are purchased on account; and (4) when unusual and non-recurring transactions give rise to estimated or contingent liabilities.

Characteristics of liabilities

The liabilities section of the balance sheet reflects the dollar amount of claims which all persons other than owners have against the assets of the company. In the absence of special circumstances, an individual creditor has a claim on total assets but does not have a claim on any specific asset. This type of claim is called an *unsecured liability.*

A *secured liability* is one wherein the creditor has a prior equity in a specific asset. A special legal contract is necessary to secure a liability by a specific asset. For example, if a company signs a mortgage note in payment of land and a building, the seller of the property may include in the mortgage contract a clause permitting him to retain an equity in the specific land and building, thereby retaining a claim on those assets prior to all other creditors. The mortgage

payable then becomes a secured liability, and the holder of the note can force the sale of those assets to satisfy his claim should the company be unable to pay the mortgage at its maturity date.

All secured liabilities should be fully reported and explained in the balance sheet. Since the number of secured liabilities is usually much smaller than the number of unsecured debts, each secured liability with its related asset is explained by a parenthetical statement in the liabilities section of the balance sheet or by a footnote. Although, in general, only long-term liabilities are secured, occasionally a note payable in less than one year is secured. Exhibit 16–1 illustrates the creditors' equity section of a corporate balance sheet. Note that parenthetical explanations are used to disclose the assets which are pledged as security for the note payable and the mortgage payable.

EXHIBIT 16–1

Partial Balance Sheet

September 30, 1964

EQUITIES

Current liabilities:		
Accounts payable	$16,000	
Notes payable (due December 31, 1964; secured by investments shown contra with a present value of $4,000).	5,000	
Federal income taxes payable	21,000	
Accrued payroll taxes payable	1,400	
Unearned revenues	700	
Total current liabilities		$44,100
Long-term liabilities:		
Mortgage payable (due January 1, 1974. Secured by land and buildings shown contra which have a present value of $73,000).		30,000
Total liabilities		$74,100

In case of bankruptcy, unsecured liabilities rank equally in all unpledged assets of the business. For instance, if a bankrupt company has unsecured liabilities of $16,000 and unpledged assets worth $8,000, each creditor will receive 50¢ on the dollar. If the assets related to a secured liability are insufficient to cover that liability in

full, any unpaid portion ranks as an unsecured debt. Owners receive assets in liquidation only after all creditors' claims, both secured and unsecured, have been satisfied.

Balance sheets are prepared on the assumption that the company is a going concern and will continue indefinitely. For that reason, liabilities are classified in the balance sheet as current or long-term, rather than as secured and unsecured. However, when any asset pledged as security for a liability is shown parenthetically or by footnote, as illustrated previously, some measure of the relative ranking of liabilities in case of bankruptcy is obtainable from the data on the balance sheet.

Payroll liabilities

A number of liabilities are incurred as a result of employee wages and required wage related expenses. The actual wages earned by employees do not reflect the full cost incurred as a result of employee services, since various governmental organizations levy a number of taxes on a company's payroll. In addition to an employee's salary, most companies must pay a *Federal Old Age Benefits* tax, a *Federal Unemployment Compensation* tax, and a *State Unemployment Compensation* tax. These taxes are computed as a percentage of wages paid and are remitted at different times to the various governmental agencies.

Federal old age benefits taxes

The Social Security Act of 1935, as amended, contains provisions whereby the federal government makes payments to retired employees, their dependents, or survivors. The government finances these payments from monies collected from workers and from their employers. The tax levied to collect the necessary funds for these payments is based on a fixed percentage of the employee's earnings, variously called FOAB (Federal Old Age Benefits), FICA (Federal Insurance Contributions Act), OAB (Old Age Benefits), and commonly known as the social security tax.

The percentage of tax assessed has changed frequently and is scheduled to increase by stages in the future years. The rate at the time of this writing is 3⅛% of all wages paid to employees, up to a maximum of $4,800 earned in any one calendar year by each employee. The employer must pay 3⅛% of the first $4,800 earned by each employee, and the employee, through payroll deductions, pays another 3⅛%. Thus the total FOAB tax paid is 6¼%, divided equally between employer and employee.

Federal unemployment compensation tax

Payments made by governmental agencies to unemployed workers are financed through unemployment compensation taxes. There are both state and federal unemployment compensation taxes, each of which is assessed as a percentage of payroll. Employees do not pay a part of this tax; employers finance it in full. At the time of this writing, the total of both the state and federal unemployment tax is 3.5% of the first $3,000 earned by each employee in each calendar year. Up to 2.7% of the 3.5% is for state unemployment compensation taxes; thus the net federal unemployment compensation tax is the remainder, or .8% (⅘ of 1%) of all wages up to the $3,000 earned by each employee each year.

State unemployment compensation taxes

The state unemployment compensation tax is paid by employers to the state in which the company does business and is used for unemployment compensation payments to persons who become unemployed. Up to 2.7% of the 3.5% total unemployment tax is paid to the state, as mentioned previously, but a company may receive an "experience rate" of less than 2.7% if its contributions over a period of years exceed government compensation payments to its unemployed workers.

The three payroll taxes assessed against most employers may be summarized as follows, using rates in effect at the time of this writing:

PAYROLL TAXES ASSESSED AGAINST EMPLOYERS

Tax	Rate
FOAB tax	3⅛% of the first $4,800 earned by each employee in each calendar year.
Federal Unemployment Compensation tax	.8% of the first $3,000 earned by each employee in each calendar year.
State Unemployment Compensation tax	Up to 2.7% of the first $3,000 earned by each employee in each calendar year, but may be less than 2.7% if the company earns an experience rate.

Taxes withheld from employees' earnings

The total salaries earned by employees is rarely paid to them in full, since income taxes, FOAB taxes, union dues, pension contributions, group hospitalization, and a large number of other deductions may be withheld from their earnings. Withholding of federal income tax and the employee's contribution for FOAB benefits is required by law. Other withholdings such as union dues, pension and hospitalization contributions, and savings bonds are voluntary, although they may be required by company policy.

The amount of the federal income tax withholding is computed from special tables prepared by the internal revenue service and depends upon the amount an employee earns and the number of dependents he has. Withholdings may range from zero to more than 20% of wages.

The withholdings from an employee's earnings for FOAB benefits is 3⅛% of the first $4,800 earned in any calendar year with each employer. If an employee earns more than $4,800 from one employer during a year, before changing employment, the second employer must withhold FOAB taxes without considering any earnings from the previous employer.

The required withholdings from employees' pay are summarized below. Other non-governmentally required withholdings, such as union dues, hospitalization etc. are so numerous that they preclude listing.

REQUIRED PAYROLL TAXES WITHHELD FROM EMPLOYEES' EARNINGS

Tax	Rate
FOAB tax	3⅛% of the first $4,800 earned by each employee in each calendar year, with each employer.
Federal income tax	Varies, depending upon the amount of the employee's earnings and the number of dependents.

Payment of payroll liabilities

The FOAB withheld from employees wages and the FOAB assessed against employers are remitted to the Director of Internal Revenue along with the income tax withholdings. If the total of these three exceeds $100 in any month, the payment must be made by the fifteenth day of the following month. If the total is less than

$100 in any month, payment may be deferred until the end of the quarter. A monthly payment may be made at any bank which is a member of the Federal Reserve System; quarterly payments are made directly to the district director of internal revenue. Regardless of the time of payment, however, a quarterly report must be filed with the district director of internal revenue within one month after the end of the quarter. This report must contain the names, total earnings, income tax withheld, and social security number of each employee.

The State Unemployment Compensation tax is paid quarterly in most states. Time of payment differs with the state, but in most cases is within one month after the quarter ends. Federal Unemployment Compensation taxes are paid annually within one month following the end of the year. Both the state and the federal agency require submission of an accompanying report listing all employees and their annual earnings.

SUMMARY OF PAYMENT OF PAYROLL TAXES

Tax	Payment
Taxes withheld from employees:	
Federal income tax withheld FOAB tax	By the 15th day of the month following, if the total exceeds $100; otherwise each quarter.
Taxes assessed against employers: FOAB tax	Reports filed quarterly, due one month following the end of the quarter.
State unemployment compensation tax	Usually quarterly; if so, payment and report due one month following the end of the quarter.
Federal unemployment compensation tax	Annually; payment and report due one month following the end of the year.

Required payroll records

Employers are required by federal law to maintain a record of the wages earned by each employee, as well as the hours worked, deductions from the employee's earnings, and any wages not subject to payroll taxes.

Compliance with federal requirements necessitates maintenance of an *individual earnings record.* This record is a form of subsidiary ledger, and each employee's account contains a cumulative total of his earnings for the year. The cumulative total assists the employer in determining the $3,000 and $4,800 maximum earnings when unemployment compensation and FICA taxes are no longer applicable. The total of the cumulative earnings in the individual employee records must balance with the total wages paid during the year.

Employers must also maintain copies of all payroll reports and tax forms submitted to taxing authorities. In addition, annual statements must be given each employee at the end of the year indicating his total earnings, the FICA tax withheld, and federal income tax withholdings. This information is necessary for preparation of the employee's personal income tax return.

Payroll liabilities illustrated

The following example is presented to illustrate the entries necessary to record the expenses and liabilities arising from payment of employee earnings. Assume that the total salaries earned by employees during the month of January is $5,000, the income taxes to be withheld equal 10% of payroll, FOAB tax withholdings are 3⅛%, and no employee has earned over $3,000 during the year. The entry to record the salary expense, withholdings, and payment to employees for one month is as follows:

Jan.	31	Salary Expense	$5,000.00	
		Federal Income Taxes Withheld Payable		$ 500.00
		FOAB Taxes Payable		156.25
		Cash		4,343.75
		Paid monthly payroll, after withholdings.		

Note that the full amount of the salary earned by employees is recorded as an expense; cash is credited for the portion paid to employees, and liability accounts are credited for the withholdings.

An entry must also be made to record the expense and the liability for the payroll taxes which are assessed against the employer. Assume that the employer is subject to FOAB taxes (3⅛%), Federal Unemployment Compensation taxes (.8%), and State Unemployment Compensation taxes (2.7%). The entry to record the employer's payroll tax expense and related liabilities is as follows:

Jan.	31	Payroll Tax Expense	$331.25	
		FOAB Taxes Payable		$156.25
		State Unemployment Compensation Taxes Payable		135.00
		Federal Unemployment Compensation Taxes Payable		40.00
		Recorded taxes on the $5,000 payroll paid in January.		

Note that the taxes which are assessed against the employer are recorded as expenses. Those withheld from employee earnings are not recorded as separate expenses, because the full amount of salaries is recorded as a debit to Salaries Expense. Note also that a separate liability account is used for each type of payroll tax, since these taxes are either paid to different governmental agencies or must be reported separately if paid to the same agency. The FOAB and income taxes withheld must be paid monthly, since the total exceeds $100. The entry for the payment of the taxes withheld is as follows:

Feb.	15	FOAB Taxes Payable	$312.50	
		Federal Income Taxes Withheld Payable	500.00	
		Cash		$812.50
		Paid FOAB and income tax withholdings for January.		

Contingent liabilities

A contingent liability is a debt that does not exist at the present time but which may develop as the result of some action outside the control of the company. A pending lawsuit against the company, for example, is a contingent liability. Until the suit is settled there is no liability, but a possible or contingent liability exists until a decision in the suit has been reached.

Contingent liabilities are created by additional tax assessments which are pending or in dispute, discounted notes receivable, guarantees which a company may have made on its products or its contracts, or for accommodation endorsements which the company may agree to place on notes of other parties. A company's financial statements will not reflect a correct picture of its financial position unless information relative to these contingent liabilities is provided.

The general rule regarding contingent liabilities is that they be recorded in the accounts only if there is a reasonable assurance of

the amount and a reasonable probability that a debit exists. There is no sharp or definite point at which a contingent liability becomes sufficiently probable to record. Contingent liabilities not reflected in the accounts are reported as a balance sheet footnote stating the nature of the contingent liability and the amounts involved insofar as it is possible to determine. The following footnote is typical:

> Note 1. A claim in the amount of $50,000 was filed against the company on November 23 as the result of an uninsured injury sustained in a collision involving one of the company's trucks. The final outcome of this damage suit cannot be ascertained at the present time.

Sales taxes payable

In all states, cities, or other governmental subdivisions where sales taxes are used as a means of raising revenue, businesses must collect the sales taxes and remit the collections to the appropriate tax gathering agency. The sales tax may be (1) recorded separately from the sale or (2) recorded originally in the sales account and later segregated by an adjusting entry. For example, an item with a $100 sales price and a 2% tax may be recorded in either of the following ways:

1. Sales tax segregated:

Sept.	5	Cash	$102.00	
		Sales		$100.00
		Sales Taxes Payable		2.00
		To record a cash sale and related sales taxes.		

2. Sales tax not segregated:

Sept.	5	Cash	$102.00	
		Sales		$102.00
		To record a taxable cash sale.		

If the second method is used, an entry is made periodically to remove the amount of the sales tax liability from the sales account. The portion representing sales is determined by dividing the balance of the Sales account by 1.02 in this case. If the balance of the Sales account at the end of the period is $4,437.00, the following computation is used to determine the amount of sales tax collected:

Sales = $4,437 ÷ 1.02 = $4,350
Sales tax = $4,437 − $4,350 = $87

An entry is then made as follows:

Sept.	30	Sales	$87.00	
		Sales Taxes Payable		$87.00
		To record the sales taxes for the period.		

State sales tax regulations, and the nature of the individual business will govern whether the sales tax is recorded separately or computed at the end of the period. If the tax is 2% of *all* sales, the business selling a large volume of low-priced items may find it more economical and efficient to record sales and taxes together, with a periodic computation of the tax. On the other hand, the process of recording each sales tax collection separately is usually the better procedure when some items are tax exempt or the number of sales is relatively small.

Bonds payable

Bonds payable are long-term notes normally issued by corporations. Many individual bonds comprise most bond issues, each representing a fractional share in a group contract. Bonds are corporate securities and are widely owned and frequently traded on the open market; they differ from capital stock in that they represent creditors' equities, or liabilities, rather than owners' equity.

Bonds provide a convenient means of securing large sums of money for operating purposes when an issue of additional capital stock is not deemed appropriate. If a company cannot or does not wish to borrow from a single creditor, an issue of bonds to the general public may be undertaken to raise the needed funds. A trustee, usually a bank or trust company, is appointed by the corporation to represent the bondholders. A *bond trust* indenture contract is prepared, describing all the rights which the bondholders will have and the nature and due date of the bonds. The trust indenture also conveys conditional title to the trustee for any assets which will be used as security for the bonds. The bonds are then sold to the public.

Bonds have a face value rather than a par value. Face value is usually in even denominations such as $10, $100, or $1,000. Interest is paid either annually or semiannually at a specified rate, such as 4%, 5%, or 6% of the face value of the bond. A bond may be de-

scribed, for example, as $100 face value, 6%, interest payable January 1 and July 1, due date January 1, 1973. Bond interest is always stated in annual rates; a $100 face value, 6% bond will earn $6 (6% of $100 face value) each year. If interest is payable January 1 and July 1, one-half of the annual interest, or $3, is paid on each interest date. The $100 face value of the bond is paid to the holder on its maturity date, which may range from five to fifty years from the date of issue.

Authority for an issue of bonds need not be specifically granted in the articles of incorporation. Bonds are a means by which funds are borrowed, and borrowing is considered a normal business operation. Only approval by the board of directors is required to authorize an issue of bonds.

The liability is recorded in a *Bonds Payable* account when the bonds are issued. The company has thus incurred a liability to pay the face value of the bonds at their maturity date, and has also incurred a liability to pay the contractual rate of interest each year during the life of the bonds.

An issue of 1,000 bonds with a face value of $100 each, sold at face value, is recorded as follows:

1964 Aug.	1	Cash	$100,000	
		Bond Payable		$100,000
		Sold 1,000 bonds, face value $100 each, 6%, annual interest paid each August 1, maturity date August 1, 1984.		

The first interest payment on August 1, 1965, is recorded as follows:

1965 Aug.	1	Bond Interest Expense	$5,000	
		Cash		$5,000
		Paid annual interest on $100,000 of 6% bonds payable.		

Bond premiums and discounts

The face value of a bond does not always measure its market value, just as the par value of a share of stock is not a measure of its market value. The company's credit standing and the rate of interest

which the bonds carry will determine the amount investors are willing to pay for the bonds. If a bond issue carries an interest rate of 5%, while the interest rate on bonds of a similar nature is 6%, investors will not be willing to pay the full face value for the bonds. If, on the other hand, similar investments return only 4½%, investors may pay more than face value for the 5% bonds.

The issuance price of bonds is stated in percentages of the face value. Issuance at 103 means 103% of the face value; issuance at 96 means 96% of the face value, and whatever the face value of the individual bonds, the issuance price is stated as 103, or 96, as the case may be. The interest, however, is computed as a percentage of the face value of the bonds, regardless of the issuance price.

Any difference between the face value and the proceeds from the issuance of bonds is recorded in a *Premium on Bonds Payable* or a *Discount on Bonds Payable* account. If the proceeds from issuance exceed the face value, the premium account is used; if the proceeds are less than face value, the discount account is used.

To illustrate, suppose that a company issues $1,000,000 of 6%, 10-year bonds at 103. The entry for the issuance is:

July	1	Cash	$1,030,000	
		Bonds Payable		$1,000,000
		Premium on Bonds Payable		30,000
		Issued 6%, 10-year bonds at 103.		

Had the same bonds been issued at 96, the entry would have been:

July	1	Cash	$960,000	
		Discount on Bonds Payable	40,000	
		Bonds Payable		$1,000,000
		Issued 6%, 10-year bonds at 96.		

Note that in each case the bonds payable account contains the face value of the bonds. This account reflects the legal liability to the bondholders upon maturity of the bonds.

Amortization of bond premiums and discounts

Any premium or discount recorded when bonds are issued represents an adjustment of the interest expense which the company incurs as a result of borrowing the funds. To illustrate, if a company issues $100,000 of 6%, ten-year bonds for $96,000 on December 31,

1964, the total expense incurred for the use of the $96,000 over the ten-year period may be computed as follows:

Total cash payments:	
Interest for 10 years ($6,000 annually)	$ 60,000
Face value at the end of 10 years	100,000
Total cash payments	$160,000
Total cash received when the bonds are issued	96,000
Total expense over 10-year period	$ 64,000
Annual expense	$ 6,400

The total expense of $64,000 during the ten-year life of the bonds is the result of $60,000 of interest, plus the $4,000 discount. A portion of the discount is written off each year as an adjustment to interest expense, thus amortizing the $4,000 discount on the ten-year bonds at $400 each year.

The issuance of the aforementioned bonds and the first interest payment, together with the annual adjustment of the discount, are recorded as follows:

1964				
Dec.	31	Cash	$96,000	
		Discount on Bonds Payable	4,000	
		Bonds Payable		$100,000
		Issued $100,000 face value of 6% bonds at 96, interest payable each December 31.		
1965				
Dec.	31	Bond Interest Expense	$ 6,000	
		Cash		$ 6,000
		Paid annual interest at 6% on $100,000 face value of bonds.		
1965				
Dec.	31	Bond Interest Expense	$ 400	
		Discount on Bonds		$ 400
		Amortized 1/10 of the discount on 10-year bonds.		

The entry amortizing $400 of the discount, which is 1/10 of the $4,000 total, is made at the end of each year of the ten-year life of the bonds. By 1974, when the bonds mature, the discount will be re-

duced to zero. Note that the $400 annual amortization of the discount is debited directly to Bond Interest Expense; consequently, the balance of the Bond Interest Expense account is $6,400 each year.

If ten-year bonds with a face value of $100,000 are issued at 103, resulting in a $3,000 premium, the entry for the annual amortization of the premium would be:

Dec.	31	Premium on Bonds Payable	$300	
		Bond Interest Expense		$300
		Amortized 1/10 of the premium on 10-year bonds.		

Note that the amortization of a premium reduces the amount of the annual bond interest expense because the bonds were issued for more than their maturity value.

Bond discounts and premiums in the balance sheet

The unamortized portion of a premium on bonds payable should be added to the face value of the bonds in the liabilities section of the balance sheet; discounts should be subtracted from the face value. Relating premiums and discounts directly to the face value reflects the adjusted "time value" of the bonds. Time-value is defined as the present value of a stream of future interest payments, plus the future payment of the face value.

The balance sheet presentation of the unamortized premium or discount is illustrated as follows:

Long-term debt:		
6% bonds payable (due December 31, 1973, unsecured)	$100,000	
Unamortized premiums	2,700	$102,700
4% bonds payable (due June 30, 1978, unsecured)	$100,000	
Unamortized discount	1,400	98,600

Some accountants object to this presentation of discounts and premiums, preferring instead to classify discounts as deferred charges on the asset side of the balance sheet and premiums as deferred credits on the liability side. However, treatment of bond premiums and discounts as direct additions to or subtractions from the face

value of the liability, as illustrated above, is a more valid measure of the liability on a going-concern basis and has gained considerable support as the preferable treatment.

Retirement of bonds

Since the full premium or discount is amortized by the retirement date of the bonds, the entry to retire a bond issue at maturity is a debit to Bonds Payable and a credit to Cash. This entry, which is the normal entry for the payment of any liability, is as follows:

May	12	Bonds Payable	$100,000	
		Cash		$100,000
		Retired bonds payable at maturity date.		

If bonds are retired prior to their maturity date, however, any unamortized premium or discount must be removed from the books in the retirement entry. Further, since the bonds are retired prior to maturity, the amount paid to bondholders will depend upon the current market price of the bonds and may result in a gain or loss.

Some companies, anticipating the possibility of retiring bonds before maturity, attach a *call price* to the bond contract. A call price is normally greater than face value and establishes the price to be paid by the company if bonds are called prior to maturity.

When bonds are retired prior to maturity, the face value of the amount of bonds retired is removed from the bonds payable account with a debit. The applicable unamortized premium or discount is written off, and a gain or loss on the retirement of bonds is recorded. To illustrate, assume that on January 1, 1963, a company issues $100,000 of bonds for $105,000. The bonds are due in ten years and contain a call price of $102. On January 1, 1967, four years later, bonds with a face value of $10,000 are retired at the 102 call price. The entry is:

Jan.	1	Bonds Payable	$10,000	
		Premium on Bonds Payable	300	
		Gain on Retirement of Bonds Payable		$ 100
		Cash		10,200
		Retired $10,000 of bonds payable at the 102 call price.		

The price paid for the bonds is 102, as established by the call price. The original $5,000 premium recorded at the time the bonds were issued has been amortized for four of the ten years, and only $3,000 remains unamortized when the bonds are called. Since 10% of the bonds are being retired, 1/10 of the $3,000 unamortized premium, or $300, relates to the retired bonds and must be written off. Thus a gain of $100 results from the retirement of the bonds. A *loss on retirement* would result if the price paid for the retired bonds had exceeded the face value adjusted for any related unamortized premium or discount.

The gain or loss on retirement of bonds is classified as a nonoperating income or loss and is usually shown at the bottom of an income statement with interest income, interest expense, and other financial incomes and expenses.

Bond sinking funds

Frequently the bond trust indenture directs that the company set aside a fund of assets for the retirement of bonds when they mature. This fund is called a *bond sinking fund* or a *bond retirement fund* and is frequently managed by a trustee, who acts on behalf of the bondholders. Periodic contributions of assets to this fund are required and are usually a fixed amount each year, but may be a percentage of annual profits. Any income from the assets contributed to the fund is usually reinvested in the fund. The annual contributions of assets plus the expected income should accumulate an amount sufficient to retire the bonds when they mature. Since the primary purpose of the fund is to pay the face value of the bonds upon maturity, it is not used for annual interest payments.

A *Bond Sinking Fund* account or a *Bond Retirement Fund* account is established in the general ledger to reflect the assets which the fund contains. This fund is classified as a long-term investment in the balance sheet. It is not listed as a current asset, because the funds are not available for normal operating purposes or for the payment of normal current liabilities. Most trust indentures legally bind the fund as security for the bond liability and, if so, a parenthetical note should appear in the balance sheet reflecting this fact.

To illustrate, assume that a company is to accumulate a $100,000 fund over a ten-year period to retire its ten-year bonds. Ten annual contributions of $8,000 each, plus earnings on the contributions, are considered sufficient to provide the needed assets for retirement of

the bonds. The first contribution made to the bond trustee who administers the sinking fund is recorded as follows:

Dec.	31	Bond Sinking Fund	$8,000	
		Cash		$8,000
		Made annual contribution to the bond sinking fund.		

At the end of the year the trustee of the fund reports any earnings on the $8,000 invested during the year. Since these earnings increase the fund, they must be recorded on the company's books as a debit to the Bond Sinking Fund and as a credit to Income From Bond Sinking Fund. Earnings of $500 for the first year are recorded:

Dec.	31	Bond Sinking Fund	$500	
		Income from Bond Sinking Fund		$500
		Recorded earnings for the year from the fund.		

The Income From Bond Sinking Fund account is classified in the income statement as a non-operating income.

Annual earnings from the fund increase as earnings and additional contributions increase the principal. Thus the fund builds more rapidly during later years. Careful estimates are made of expected earnings when the amount of the annual contributions is determined. If the fund earns more or less than anticipated, the periodic contributions are adjusted accordingly.

Suppose that at the end of ten years, the fund has a balance of $100,400. The trustee uses assets in the fund to retire the bonds and returns the $400 excess to the company. The following entry records the retirement of the bonds and the receipt of the $400 balance:

Dec.	31	Cash	$ 400	
		Bonds Payable	100,000	
		Bond Sinking Fund		$100,400
		Trustee retired bonds payable with face value of $100,000 and returned the excess in the fund.		

This entry removes both the liability for bonds payable and the bond sinking fund from the accounts. The $400 cash received by the company from the sinking fund trustee is not income to the company, since it represents only a return of the assets invested into the fund.

Questions

16-1. Distinguish between a secured and an unsecured liability and give an example of each.

16-2. Why is a balance sheet arranged to emphasize current and long-term liabilities rather than secured and unsecured?

16-3. What is a bond payable? How is the difference between face value and proceeds from a bond issue recorded?

16-4. Describe the accounting for a bond premium or discount so that it is an adjustment of the interest expense over the life of the bonds.

16-5. How are bond premiums or discounts reflected in the balance sheet?

16-6. Explain why the retirement of bonds can give rise to a gain account, which is closed through the income summary to retained earnings, while the retirement of capital stock cannot give rise to an increase in retained earnings.

16-7. What is a bond sinking fund? How is income from such a fund recorded?

16-8. Distinguish between a bond sinking fund and a reserve for the retirement of bonds.

16-9. Describe the federal old age benefits tax. What is the tax rate currently in effect? What is the maximum wage subject to this tax?

16-10. Describe how the amount of federal income tax withholdings from an employee is determined.

16-11. Describe the state and the federal unemployment taxes. What is the current federal unemployment tax rate? How is a company's state unemployment tax rate determined?

16-12. When must payment of the following taxes be made?
Federal old age benefits tax
Income tax withholdings
State unemployment compensation tax
Federal unemployment compensation tax

16-13. What is an individual earnings record? What purposes does this record serve?

16-14. Describe a contingent liability and give an example. How are these liabilities reported in the financial statements?

16-15. A sales tax may be originally recorded with sales and later segregated, or may be recorded separately in the original entry. What considerations make one method preferable to another in a given situation?

Exercises

16-16. (a) The Alleghenia Steel Company issued 6% bonds with a face value of $1,000,000 on January 2, 1964, at a price of 102. The bonds are dated January 1, 1964, have a 10-year life, with interest payable each July 1 and January 1.

REQUIRED

Record the issuance of the bonds, the payment of interest on July 1, 1964, and amortization of the premium for the half year. (b) The board of directors wish to establish a bond sinking fund for the retirement of the bonds upon maturity.

REQUIRED Record a contribution of $80,000 cash to the sinking fund on December 28, 1964. Also record $4,000 income earned by the fund on December 31, 1965.

16-17. The Exeter Company issued 6% bonds with a face value of $400,000 on December 31, 1964. Interest is payable each December 31, and the bonds mature twenty years after the date of issue. Total proceeds from the bond issue were $412,000.

The board of directors acquired bonds with a face value of $100,000 on January 1, 1968, and retired them. These bonds were acquired at a total cost of $103,000.

REQUIRED

Record in journal form the following:

(a) Issuance of the bonds on December 31, 1964.
(b) Payment of annual interest and amortization of the premium on December 31, 1965.
(c) Purchase and retirement of the bonds acquired on January 1, 1968.
(d) Payment of annual interest and amortization of the premium on December 31, 1968.

16-18. The Tri-State Corporation authorized the issue of $300,000 of 5%, twenty-year bonds on December 31, 1964. The trust agreement

with the bondholders stipulates that the First National Bank and Trust Company is to be appointed as trustee for the bondholders, that contributions of assets to a bond sinking fund are to be made annually, beginning December 31, 1965, in the amount of $13,000, that income from assets in the fund shall be reinvested, and that retained earnings of the company shall not be reduced by dividend payments below the present balance of $20,000 during the twenty-year life of the bonds.

REQUIRED

Prepare journal entries to record:

(a) The sale of the bonds for $290,000 on December 31, 1964.
(b) Restriction of $20,000 of retained earnings in a reserve for Bond Trust Indenture account.
(c) Payment of interest on December 31, 1965, and amortization of the discount.
(d) The first annual payment to the bond sinking fund on December 31, 1965.
(e) Payment of interest on December 31, 1966, and amortization of the discount.
(f) Earnings of $600 on the fund assets during 1966.
(g) The second annual contribution to the fund on December 31, 1966.
(h) Retirement of the bonds on December 31, 1984, with assets from the sinking fund. (Assume the fund has a balance exactly equal to the bonds payable.)
(i) Disposition of the reserve for bonds payable account after the bonds are retired.

16-19. The Wiley Company is subject to the following payroll tax rates:

FICA	3⅛%
State unemployment	2.7 %
Federal unemployment	.8 %

Employees are paid monthly on the last day of the month. During January, the wages and income tax withholdings were as follows (employees are also subject to FOAB tax withholdings):

Name	Gross Wages	Income Tax Withheld
Jones	$300	$40
Smith	500	50
Yates	700	60

REQUIRED

1. Record the entry for the payment of the payroll, with the related withholding tax liabilities.
2. Record the entry for the employer's payroll tax liability.

16-20. The Jefferson Company pays its employees monthly. In September the company had three employees who earned $400 each. The company's employees are subject to 3⅛% FOAB withholdings and income tax withholdings (assume 15%), the company is subject to 3⅛% FOAB, 2.7% state unemployment compensation tax, and .8% federal unemployment compensation taxes. The three employees have earned $2,000, $4,000, and $5,000, respectively, during the year.

REQUIRED

Prepare journal entries for the following:

(a) The salary expense, withholdings, and payment of the monthly payroll.
(b) The employer's payroll tax expense for the month.
(c) The payment of the state unemployment compensation tax for the quarter ended September 30 if the amount payable is $110.00.

16-21. One of the states in which the Brakeman Company does business levies a 3% general sales tax. The state sales tax regulations require that the sales tax be remitted to the state at the end of each month. The company debits cash and credits sales at the time a sale is made and at the end of the month computes the portion of the balance of the sales account which represents sales taxes payable. The sales account has a balance at the end of January of $109,695.

REQUIRED

Record an entry for the sales (debit cash), the adjusting entry at the end of the month for sales taxes payable, and the remittance of the sales taxes to the state.

Problems

16-22. Following are data applicable to several issues of bonds payable.

Issue	Number of Bonds Issued	Face Value of Each Bond	Issue Price	Date of Issue	Maturity Date	Bond Interest Rate	Interest Paid
1	1,000	$ 100	102	1/1/63	1/1/73	6 %	annual
2	10,000	10	97	1/1/63	1/1/68	5 %	semiannual
3	100	1,000	101	1/1/63	1/1/83	4 %	semiannual
4	10,000	50	98	1/1/63	1/1/71	4½%	annual
5	600	100	99	1/1/63	1/1/69	5 %	annual
6	12,000	10	103	1/1/63	1/1/81	6 %	semiannual

REQUIRED

Compute the following for each bond issue:

(a) The total proceeds from each issue.
(b) The amount of premium or discount on bonds payable resulting from each issue.
(c) The amount of cash to be paid each interest payment date.
(d) The amount of premium or discount to be amortized each year.
(e) The interest expense (cash paid plus discount, or less premium) during each year the bonds are outstanding.

16-23. The Belomy Corporation completed the following transactions relative to its bond issue:

1964

Jan. 1 Issued $100,000 face value of ten-year bonds payable for $102,300. These are 6% bonds, interest paid annually on January 1.

Dec. 31 Made all adjusting entries needed to accrue interest payable and amortize bond premium if the company's fiscal year ends each December 31.

31 Invested $10,000 to establish a bond sinking fund.

31 The board of directors voted to appropriate retained earnings in the amount of $10,000 to indicate on the balance sheet that profits must be set aside to provide funds for the retirement of the bonds.

1965

Jan. 1 *After* the interest had been paid on this date, $5,000 face value of the bonds were bought at 104 and permanently canceled.

1974

Jan. 1 The bond sinking fund has a balance of $95,000, and the reserve for retirement of bonds has a like amount. Entries were prepared to record the retirement of the bond issue, using the bond sinking fund assets and the disposition of the appropriated retained earnings.

REQUIRED

Journalize the transactions.

16-24. On January 1, 1957, the Goodman Rubber Processing Company issued at face value $100,000 of 6%, ten-year bonds. A bond sinking fund was established at that time for the retirement of the bonds and is administered by the company. The company maintains two accounts for fund assets: Bond Sinking Fund—Cash, and Bond Sinking Fund—Investments. All earnings from the fund are left in the fund accounts. The accounts had balances of $900 and $66,200, respectively, on January 1, 1964. The following transactions were completed during the years 1964–1966:

1964

July 1 Interest of $3,000 was received in cash from fund investments.

Dec. 31 Made annual $8,000 cash contribution to the fund from the company's general operating cash account.

31 Paid the annual bond interest from general operating cash.

1965

Jan. 2 Invested cash in the fund in the amount of $1,100 in stocks of other companies.

2 Used $10,070 of the fund's cash to purchase the company's own bonds with a face value of $10,000. These bonds were returned to the company and were retired.

July 1 Received interest of $3,000 from fund investments.

Dec. 1 Received dividend income of $1,200 from fund investments.

31 Made the annual $8,000 cash contribution to the fund.

31 Paid annual bond interest from the general cash account.

1966

Jan. 3 Purchased stock costing $12,000 as fund investments, using cash from the fund.

Dec. 27 Sold all investments in the fund for $90,300. Any excess cash in the fund is to be returned to the company's operating cash account; if any additional contribution is

needed to retire the bond issue, from the company's operating cash account.

Dec. 31 The bond interest for the year was paid.

31 The bonds were retired using cash from the sinking fund.

REQUIRED

1. Journalize the transactions which were completed relative to the bonds payable and the fund.
2. Establish ledger accounts for Bond Sinking Fund—Cash and Bond Sinking Fund—Investments, and post all amounts affecting these two accounts.

16-25. The following transactions relative to bonds payable, bond sinking fund, and appropriated retained earnings were completed by the Baxter Barge and Transportation Company.

1962

Dec. 31 Issue $200,000 of 6%, 10-year bonds, payable at 103.

1963

Dec. 31 Paid the annual interest on the bonds, and amortized a portion of the premium.

31 Transferred $16,000 cash to the bond trustee. These funds are to be administered by the trustee, all income from the fund to be accumulated in the fund for the retirement of the bonds.

31 Established an appropriated retained earnings reserve for the retirement of bonds payable. The board of directors approved a policy of maintaining at all times a balance in the reserve equal to the bond sinking fund.

1964

Dec. 31 Paid the annual interest on the bonds, with the related premium amortization. Another $16,000 contribution was made to the bond sinking fund.

31 The trustee reported earnings on the bond sinking fund of $800 during the year.

1965

Jan. 2 The trustee acquired $10,000 of the company's bonds at 102, using assets in the bond sinking fund for the retirement. The bonds were returned to the company and retired.

Dec. 31 Paid the interest on the remaining outstanding bonds and amortized the related premium.

31 Made a $16,000 contribution to the bond sinking fund.

The trustee reported earnings from the fund to be $1,200 for the year.

REQUIRED

1. Journalize the transactions.
2. Indicate how all accounts debited or credited in this problem, with the exception of cash, would appear in the company's financial statements (indicate whether the account appears in the balance sheet or the income statement, and in what classification of that statement the item would appear).

16-26. The following data appear on the payroll sheet of the Handell Corporation for the month of October. The company has a state unemployment compensation experience rating allowing them a 2% rate.

Name	Year-to-date Previous Earnings	October Earnings	FOAB Withholdings	Income Tax Withholdings	Net Pay	Expense Classification
James Arbett	$2,000.00	$300.00				
Fred Cross	3,100.00	450.00				
Wilma Lester	5,000.00	400.00				
Joan Tress	4,000.00	300.00				
Albert Vatter	1,200.00	200.00				
Ned Yett	6,000.00	500.00				
Robert Zell	3,500.00	400.00				

REQUIRED

1. Complete the payroll work sheet; total the necessary columns; prepare a journal entry to record the payment of the monthly payroll and the related withholdings. (Assume all employees have a 10% federal income tax withholding.) The salaries of Arbett, Tress, and Yett are selling expenses; all others are administrative expenses.
2. Prepare a journal entry for all payroll tax expenses of the employer for the month. Use current rates for FOAB taxes and federal unemployment compensation taxes.
3. Indicate when each withholding or employer tax must be paid.

16-27. The trial balance of the Bearden Glue Company contained the following accounts on December 31, 1964, after closing entries had been posted.

Cash	$ 27,800	
Accounts receivable	38,495	
Allowance for uncollectible accounts		$ 1,000
Inventory	66,000	
Bond sinking fund	50,000	
Permanent investments	8,000	
Equipment	60,000	
Accumulated depreciation—equipment		45,000
Buildings	140,000	
Accumulated depreciation—buildings		70,000
Land	80,000	
Accounts payable		27,000
Notes payable (due 1965)		10,000
Sales taxes payable		540
FOAB taxes payable		360
State unemployment compensation payable		75
Federal unemployment compensation payable		320
Income tax withholdings payable		1,000
Bonds payable (due 1969)		100,000
Discount on bonds payable	2,000	
Preferred stock (6%, $100 par, cumulative)		50,000
Common stock ($100 par)		100,000
Unappropriated retained earnings		17,000
Reserve for retirement of bonds payable		50,000
	$472,295	$472,295

REQUIRED

Prepare a balance sheet, properly classified, with all necessary notations and footnotes, if the following additional data apply to the company's financial position.

(a) The notes payable are secured by the permanent investments, which have a current market value of $11,000.

(b) The bonds payable are secured by the land and buildings, which have a current market value of $179,000, and also by the bond sinking fund.

(c) The cumulative preferred stock is two years in arrears on dividends.

(d) The company is presently involved in a law suit for personal injury suffered by a customer who was injured on the company's premises. The suit is for $30,000 and has not yet been called for trial. The company has no insurance to cover this type of loss.

16-28. The Modern Music Publishers Inc., has the employees listed below on its payroll. The number of hours worked during the week ended November 30 are indicated, as well as the hourly pay rate of each employee. Employees may, if they wish, have union dues and bond deductions withheld from their earnings. The company credits accounts for Union Dues Payable and Employee Bond Withholdings Payable for these amounts. Employees receive a 50% overtime premium for all hours worked over forty per week. (The rate for overtime hours is 50% greater than the base rate.)

Employees of the company are subject to FOAB (3⅛%) and income tax withholdings (assume 10%). The company is subject to FOAB (3⅛%), state unemployment (2.7%), and federal unemployment (.8%).

Employee	Classification	Prior Earnings Year-to-date	Hours Worked	Hourly Base Pay Rate	Union Dues	Bond Deductions
J. C. Adams	Selling	$1,200.00	40	$1.00	$1.50	
L. F. Baker	Selling	6,000.00	44	3.00	1.50	$5.00
M. R. Ditmeyer	Administrative	5,100.00	30	2.00		
F. A. Glaze	Administrative	5,200.00	42	2.50	1.50	5.00
T. M. Heinz	Selling	2,000.00	40	2.00		
W. M. Polligan	Administrative	1,800.00	40	1.00	1.50	
R. E. Smyth	Administrative	7,000.00	45	4.00	1.50	5.00
V. T. Zankee	Selling	4,800.00	35	2.00		

REQUIRED

1. Complete a payroll sheet, showing in addition to the data given above, the gross for each employee, his earnings, deductions, and net pay. Total the appropriate columns and prepare a journal entry to record the payment of the payroll and the related withholding liabilities.
2. Record the employer's payroll tax expense for the period.

Cases

16-29. The net income of the Whittle Woodworking and Cabinet Shop has averaged $10,000 during each of the past ten years (after 30% federal income taxes) and is expected to continue at this level for the foreseeable future. The company needs approximately $100,-

000 to replace worn equipment. (Replacing the equipment will have a negligible effect on profits.) The new assets will have a twenty-year life. The stockholders' equity section of their most recent balance sheet is as follows:

Common stock ($100 par)	$100,000
Premium on common	3,000
Contributed capital from treasury stock transactions	4,000
Retained earnings	21,000
Total stockholders' equity	$128,000

A stockholders' meeting is scheduled for next month, and the board of directors must make a decision as to whether $100,000 face value of ten-year 6% bonds should be issued, with net proceeds of $100,000, or 1,000 shares of common stock with net proceeds of $110,000. If stock is to be issued, stockholder approval will be necessary, and the directors want advice as to whether the stockholders' profits and per-share equities will be greater during the next ten years if stock is issued or if bonds are issued.

How do you feel the issue of bonds, as compared with common stock, will affect the stockholders' equity and the profits per share during the next ten years? Will there be any difference after ten years have passed and the bonds, if issued, are retired? Is there another possibility for raising the required $100,000?

16-30. Donald Drener, president of the Drener Investment Company, was approached by the president of the Hadimont Products Corporation, who was seeking $100,000 for a plant expansion project. The Hadimont Products Company balance sheet follows on page 497.

The profits of the Hadimont Company have averaged $10,000 per year, after 30% federal income taxes, and the president feels that these profits should increase to $15,000 per year after the plant enlargement, but before considering any additional interest on the borrowed funds or depreciation on the new plant facilities (new building will have a forty-year life). All existing facilities will continue in use for approximately ten more years, after which they must also be replaced. At that time, replacement will cost 50% more than the original cost of present assets. (No additional land will be needed.)

Drener is attempting to determine whether a loan of $100,000 by his company would be a sound investment, if 6%, ten-year bonds payable were issued to the Drener Investment Company for the loan. Drener knows that the bonds could be secured by the new plant extension but is not sure this would be a valuable security,

HADIMONT PRODUCTS COMPANY

Balance Sheet

December 31, 1964

ASSETS				EQUITIES		
Current assets:				Current liabilities:		
Cash		$21,000		Accounts payable	$17,000	
Accounts receivable (net)		14,000		Payroll taxes payable	2,100	
Inventory		65,400		Sales taxes payable	3,900	
Total current assets			$100,400	Total current liabilities		$ 23,000
Fixed assets:				Long-term liabilities:		
Machinery	$120,000			6% bonds payable, due Dec. 31, 1967, secured by land and buildings, contra	$70,000	
Less Accumulated depreciation	83,000	$37,000		Premium on bonds payable	1,200	
Buildings	$207,000			Total long-term liabilities		71,200
Less Accumulated depreciation	173,000	34,000		Stockholders' equity		
Land		20,000		Common stock ($100 par)	$50,000	
Total fixed assets			91,000	Retained earnings	17,200	
				Reserve for plant expansion	30,000	
				Total stockholders' equity		97,200
Total assets			$191,400	Total equity		$191,400

since the new extension would be worthless when the usefulness of the present plant expires ten years from now. For this reason the profits of the Hadimont Company must be viewed as the only real source of assets for payment of his investment, if made.

How do you view the Hadimont Company as a prospective investment possibility in this situation? Support your conclusion with computations, if possible, and state what other facts would enter into the decision.

17

Analysis and appraisal of business income and financial position

An analysis of financial statements can be no more accurate or precise than the accounting data used. Determination of the life or productivity of an asset for depreciation purposes, estimates of bad debt losses, and policy decisions, such as the selection of an inventory or depreciation method, inject an element of judgment into the determination of the amounts that appear in the financial statements. The analysis of financial statements can be no more absolute than the amounts being analyzed. Many students are disturbed by the lack of a definite conclusion from an analysis of financial statements. This is a natural result, for the financial statements themselves are tentative portrayals that lack absolute finality.

Evaluation of risk, profitability, and potential

The analysis of financial statements is normally undertaken to evaluate (1) risk, (2) profitability, and (3) future potential of the company. Because these three factors are mutually interdependent, they cannot be completely isolated and measured separately. Safety of a creditor's loan to the company, for example, depends upon both the current financial position of the company and the future prospects of the company, since a strong financial position today may be weakened by future operating losses. A prospective investor is interested not only in the current profit status but also the future potential of the company, and the future potential of the company may depend upon present financial strength.

The analyst must consider each of these factors individually and then combine them to form an over-all evaluation. For example, if a banker is considering a company's application for a large loan, he first attempts to form a judgment concerning the company's present financial position. Next he will judge the profitability of the company. Finally, he will bring to bear all his knowledge of economic, legal, and technological events that may affect the company's future. This latter information cannot be found in the financial statements; it is basically a matter of relating current events to the company and its operations. However, the potential of a company cannot be evaluated without a knowledge of its past financial history and current financial position.

Comparison as the basic approach to analysis and appraisal

The only effective means of analyzing financial statements and appraising operations is through comparison. A company's financial statements may be compared with previous years' statements if they are available, with data from similar companies, with industry averages, or with some other previously determined norm.

Annual reports to stockholders almost always contain comparative financial statements for the current year and for the preceding year and frequently contain summarized financial data reaching back as many as ten years. The purpose of this presentation is to provide data for comparative analysis. Industry-wide averages are available from trade associations and from national publications which present financial data classified by type and size of industry and geographical location.

Dynamic and static analysis

The two basic analytical procedures are (1) comparisons and relationships between amounts in the financial statements for the current and the prior year and (2) comparisons and relationships between two or more amounts in financial statements for the current year. The first type of analysis is called a *dynamic analysis* and reflects changes and trends taking place over a period of time. The second type of analysis is known as a *static analysis* and provides an insight into the immediate financial position and the results of current operations.

Dynamic or trend analysis

A dynamic analysis of a company's sales and profit-making ability is illustrated in the condensed comparative income statements in Exhibit 17–1.

EXHIBIT 17–1

Dynamic or Trend Analysis

	1959	1960	1961	1962	1963
Sales	$50,000	$54,000	$61,000	$68,000	$70,000
Cost of goods sold	30,000	33,000	38,000	44,000	45,000
Gross profit	$20,000	$21,000	$23,000	$24,000	$25,000
Expenses	17,000	18,500	20,000	20,800	21,900
Net profit	$ 3,000	$ 2,500	$ 3,000	$ 3,200	$ 3,100

The trends evident in these statements indicate that while sales have increased steadily, expenses have increased correspondingly and profits have thus remained almost constant. Consequently, the potential of the company for increased profits appears relatively dim. Insight into the past, present, and future of the company is thus gained by a trend analysis of the comparative statements for several years.

Static analysis

A static analysis of a company's current financial position may be illustrated by observing the relationships between amounts within a single financial statement. In the following illustration, the comparison of current assets with current liabilities and with fixed assets, as well as the comparison of current liabilities with owners' equity, is indicated by arrows. This type of analysis is static because it does not consider movement or trends.

The balance sheet in Exhibit 17–2 indicates that the funds invested in current assets, which represent current debt-paying potential, is approximately three times the amount required to pay the company's current liabilities; consequently, the current debt-paying ability of the company appears sound. The owners' equity in the state-

EXHIBIT 17–2

Condensed Balance Sheet Illustrating Static Analysis

Current Assets	$ 54,000	Current Liabilities		$ 18,000
Fixed Assets	51,000	Common Stock	$50,000	
		Retained Earnings	37,000	87,000
	$105,000			$105,000

ment is almost five times the creditors' equity, indicating the relative risk borne by owners and creditors. The statement also indicates that the company has approximately equal amounts of current and fixed assets, thus indicating the relative amounts of circulating and permanently committed funds. A static analysis is basically one of ascertaining relationships within a single set of financial statements.

Analysis of working capital

Working capital may be defined as the excess of total current assets over total current liabilities, or the amount of current assets available for operations after current liabilities have been covered. To illustrate, assume that a company has current assets and liabilities as shown in Exhibit 17–3.

EXHIBIT 17–3

Partial Balance Sheet

Current Assets		Current Liabilities	
Cash	$ 2,000	Accounts Payable	$12,000
Accounts Receivable	15,000	Notes Payable	4,000
Temporary Investments	8,000	Accrued Wages Payable	3,000
Inventory	25,000	Other Accrued Payables	1,000
	$50,000		$20,000

The company has total current assets of $50,000, which will be converted into cash or consumed in the normal course of business during the next operating cycle, normally assumed to be one year. The current liabilities of $20,000 represent amounts which must be paid during the next accounting period. Thus the company has $30,000 of net working capital ($50,000 less $20,000).

Analysis of the amount, nature, and adequacy of working capital is the means of evaluating the current financial position of a company. The following comparisons and ratios are the most significant:

Current ratio
Acid-test ratio
Turnover of net working capital
Turnover of inventory
Number of days' sales in accounts receivable

Current ratio

The current ratio is designed to measure the relationship of current assets to current liabilities. The ratio is computed by dividing current assets by current liabilities. Using assumed amounts, the current ratio is computed as follows:

$$\frac{\text{Current assets (\$50,000)}}{\text{Current liabilities (\$20,000)}} = 2.5 \text{ to } 1$$

There is no specific current ratio which indicates a satisfactory current position. A current ratio of less than 1 to 1 indicates a strong possibility that a company may not be able to pay its current liabilities as they become due. Even a 1 to 1 ratio is dangerous because of the possibility that receivables may not be collected or merchandise inventory may become obsolete. On the other hand, an extremely high current ratio indicates that non-productive current assets are excessive and that capital is not being employed in an optimum manner. A satisfactory current ratio falls within a range somewhere between the extremes. Trade publications frequently publish data on the upper, median, and lower ranges of current assets of companies in the industry.

The point at which a current ratio becomes inadequate or excessive depends on the nature of the business, the composition of the current assets, and the personal judgment of the analyst. A satisfactory current ratio for a stable business may be considered inadequate for a highly speculative business, or the current ratio of a business might be considered satisfactory by one credit grantor and unsatisfactory by another.

The composition of the current assets affects the significance of the current ratio. To illustrate, consider the following data relative to Marliene's and Terry's, two ladies' hat shops.

	Marliene's	Terry's
Cash	$ 400	$ 4,000
Accounts receivable	5,000	7,000
Inventory	10,600	5,000
Total current assets	$16,000	$16,000
Total current liabilities	$ 8,000	$ 8,000
Current ratio	2 to 1	2 to 1

Both companies have equal dollar amounts of current assets and current liabilities and thus have equal current ratios. However, there are two significant differences in their current financial position. Terry's has a considerably larger cash balance for meeting daily expenditures. On the other hand, Marliene's has a much larger inventory of ladies' hats, which are highly subject to obsolescence. Even though the amount of the current ratio and the amount of current assets and liabilities are identical, Terry's appears to have a much stronger working capital position.

Acid-test ratio

The acid-test ratio, sometimes called the *quick* ratio or *quick current* ratio, is designed to measure the *immediate* ability of a company to meet its current liabilities. The acid-test ratio measures the relationship between the amount of cash, receivables, and marketable securities, and the amount of the total current liabilities. Inventory and prepaid expenses included in current assets are omitted, because they are not immediate sources of cash. Since receivables and securities can usually be converted into cash with only a limited loss on their realization, they are added to the cash balance, and the sum is compared with total current liabilities. Using assumed amounts, the computation of the acid-test ratio is as follows:

$$\frac{\text{Cash (\$5,000)} + \text{Net receivables (\$7,000)} + \text{Temporary securities (\$8,000)}}{\text{Total current liabilities (\$20,000)}} = \frac{\$20,000}{\$20,000} = 1 \text{ to } 1.$$

Although there is no specific point at which an acid-test ratio may be considered excessive or deficient, a 1 to 1 ratio is generally considered a satisfactory indication of a company's immediate ability to meet its current debts.

Turnover of working capital

A high current ratio and a high quick ratio are desirable from the standpoint of debt-paying ability. However, a balance must be maintained between financial safety and efficient use of working capital. A company should not have more funds tied up in working capital than can be used efficiently in its profit-making ventures. Efficiency in the use of working capital is measured by the turnover of working capital. The turnover is computed by dividing net sales by the average net working capital employed during the period. Using assumed amounts, the computation of the working capital turnover is as follows:

$$\frac{\text{Net sales (\$100,000)}}{\text{Average working capital (\$25,000)}} = \text{Working capital turnover of 4 times during the year.}$$

An average of the monthly working capital figures is preferable if the amounts are available. Otherwise, the working capital at the beginning and end of the year are averaged.

The turnover of working capital is an indicator of the number of times cash was invested in inventory, inventory was sold, and the resulting receivables were collected. There is no specific measure of an acceptable working capital turnover, but a company's turnover may be compared with the industry-wide average as an indication of the efficiency of the company's use of working capital.

Turnover of inventory

The turnover of inventory measures the number of times inventory has been sold and replaced during the year. It is computed by dividing the cost of goods sold during the period by the average inventory. Using assumed amounts, the inventory turnover is computed as follows:

$$\frac{\text{Cost of goods sold (\$60,000)}}{\text{Average inventory (\$15,000)}} = \text{Inventory turnover of 4 times during the year.}$$

There is no established rule-of-thumb for judging an adequate inventory turnover. A relatively low inventory turnover is normal for a furniture store, and a relatively high turnover is normal for a grocery supermarket. An inventory turnover significantly lower than the average for the industry indicates the probability that a company is carrying an excessively large inventory and is subjecting itself to

losses from obsolescence. A significantly higher turnover may mean that the company's inventory is inadequate.

Number of days' sales in accounts receivable

The number of days' sales in accounts receivable, considered in conjunction with the company's credit terms, provides an indication of the collectibility of the receivables and the efficiency with which the collection policy is being administered. Using assumed amounts, the number of days' sales in accounts receivable is computed as follows:

$$\text{365 (days in a year)} \div \frac{\text{Net credit sales (\$50,000)}}{\text{Ending balance of accounts receivable (\$5,000)}}$$

$$365 \div 10 = 36\tfrac{1}{2} \text{ days' sales in accounts receivable.}$$

If the company sells on twenty-day terms and there are 36½ days' sales in accounts receivable, there is an indication that a portion of the receivables are past due. On the other hand, if the company sells on sixty-day terms and there are 36½ days in accounts receivable, there is greater likelihood that the receivables are sound and collectible.

Analysis of equity

The ratio of owners' equity to total debt is a means of measuring the relative risks borne by creditors and by owners. Using assumed amounts, the ratio of owners' equity to total debt is computed as follows:

$$\frac{\text{Total owners' equity (\$70,000)}}{\text{Total debt (\$20,000)}} = \text{3.5 to 1 owners' equity to total debt.}$$

From a creditor's viewpoint, the ratio should be high, because the stockholders are assuming the major portion of the risks. The stockholders' equity in the assets of the business disappears first in case of losses, and a higher owners' equity indicates a greater protection for the creditors. From a stockholder's viewpoint, a low ratio may be desirable. If earnings from borrowed funds are greater than the interest costs on those borrowed funds, the profit differential accrues to the owners.

Analysis of profitability

Methods of measuring a company's profitability are (1) net income as a rate of return on total assets, (2) net income as a rate of return on owners' equity, (3) earnings per share of common stock, (4) net income as a percentage of net sales, and (5) the number of times bond interest is earned. While all of these measures are necessary to evaluate fully the company's profitability, generally the owners and prospective investors are interested in net income as a rate of return on assets, owners' equity, and on a per-share basis; creditors are interested in net income in relation to the interest on long-term debt; managers are interested in net income as a per cent of sales.

Net income as a rate of return on total assets

Earnings may be measured by relating the net income to all the assets used to earn that income. The rate is computed by dividing net income by total assets.

$$\frac{\text{Net income (\$12,000)}}{\text{Total assets (\$200,000)}} = 6\% \text{ return on total assets}$$

If there is a significant change in the amount of assets during the year, the average assets should be used in the computation. The return on total assets is a measure of how well management has used the assets entrusted to it. This rate of return may be compared with the return realized by other companies within the same industry, the rate of return realized by the company in prior years, or the rate of return which is considered normal for the risks involved.

Net income as a rate of return on invested capital

Net income may also be measured as a rate of return on the owners' investment. The rate is computed by dividing the net income by the average owners' equity for the period.

$$\frac{\text{Net profit (\$12,000)}}{\text{Average owners' equity (\$100,000)}} = 12\% \text{ return on owners' investment}$$

An average of the monthly owners' equity figures should be used if the amounts are available; otherwise, the owners' equity at the beginning and end of the year are averaged. A large investment or

withdrawal of capital made near the end of the year should be excluded in the computation to prevent distortion of the rate.

The rate of return on owners' equity is especially significant to stockholders and prospective investors, because it provides a comparison of the rate of return earned by funds invested in the business with rates of return that might be earned by alternative uses of the funds.

Earnings per share of common stock

Perhaps the most publicized expression of profitability is the amount of earnings per share of common stock. The previous chapters on corporations discussed the characteristics of common and preferred capital stock. One basic difference between these two classes of capital stock is that preferred has a prior claim for a fixed amount of dividends, and all earnings in excess of the preferred dividends accrue to the common stock. The earnings per share of common stock are computed by dividing the net income less the preferred dividend requirement by the number of shares of common stock outstanding.

$$\frac{\text{Net income (\$12,000) less preferred dividend requirement (\$2,000)}}{\text{Number of common shares outstanding (2,000)}} = \$5 \text{ earnings per share}$$

Earnings per share is significant to the common stockholder, because it expresses the company's profitability in terms of earnings available for common stock dividends.

Net income as a per cent of sales

The net income realized during an accounting period is commonly measured as a percentage of net sales for the period.

$$\frac{\text{Net income (\$12,000)}}{\text{Net sales (\$400,000)}} = 3\%$$

When net income is expressed as a per cent of sales, the rate expresses the effect of changes in sales volume, expenses, and profitability. For example, if net income was 2½% of sales in the preceding year and is 3% during the current year, the trend is favorable.

The nature of the business must be considered when judging net income as a per cent of sales. A dealer in exclusive art objects would command a higher rate of income on sales than would a high volume

department store, because his total sales are lower in dollar amount while his investment in inventory may be just as great.

Number of times bond interest is earned

Bonds payable represents a form of long-term debt requiring periodic interest payments. Since the ability of a company to pay the fixed interest charges is determined primarily by its net income position, the bondholders are interested in the number of times the bond interest is earned.

Bond interest is deductible in computing the income tax liability; consequently, the amount of earnings available for bond interest is the net income before income taxes and bond interest expense. The number of times bond interest is earned is determined by the following computation:

$$\frac{\text{Net income (\$12,000) plus income taxes (\$3,000) plus bond interest (\$5,000)}}{\text{Bond interest (\$5,000)}}$$

$$= \text{bond interest earned four times.}$$

This ratio is a means of expressing the margin of safety in the company's ability to meet its bond interest expense. If the company cannot meet these fixed expenses, the bondholders or mortgagor may take over the assets of the company if they are pledged as security.

Use of comparative financial statements

All ratios become more meaningful when compared with similar ratios for prior years. The *trend* of the earnings per share on common stock, for example, is much more significant than the earnings per share for any one year. Earnings per share of $4.60 during 1964 might appear satisfactory when compared with the averages for the industry. Management, stockholders, and prospective investors would be very much concerned, however, if the trend in earnings per share had dropped from $5.90 in 1962 to $5.10 in 1963 to the $4.60 in 1964.

Comparative financial statements are prepared by most companies in order to (1) provide the information necessary to compute comparative ratios and (2) to indicate trends in sales, expenses, income, assets, and equities. Since the most important ratios have been discussed previously, the comparative statements shown below are discussed primarily from the standpoint of determining trends in profitability or financial strength.

Horizontal analysis of comparative statements

Each amount in the comparative statements for two or more years may be analyzed "horizontally"; that is, each account balance is compared with the same account balances for previous years. Comparative statements are frequently prepared with special columns inserted to indicate the amount of change from one year to another. The changes may be indicated in dollar amount or as a percentage.

The percentage of change is computed by dividing the dollar amount of change in an account by the dollar amount of the account in the earlier year. One limitation of this type of analysis is the inability to express as a percentage any change from a positive to a negative amount in succeeding years, such as a profit in 1963 to a loss in 1964, or any change from a zero balance in an account.

Exhibit 17–4 illustrates a comparative income statement arranged for horizontal analysis with changes indicated both in amount and percentage.

EXHIBIT 17–4

MAPLEWOOD COMPANY

Comparative Income Statements

For the Years Ended December 31, 1963 and 1964

			Increase or (Decrease)	
	1964	1963	Amount	Percent
Sales	$420,000	$400,000	$20,000	5 %
Sales returns	10,000	8,000	2,000	25 %
Net sales	$410,000	$392,000	$18,000	4.6%
Cost of merchandise sold	292,000	270,000	22,000	8.1%
Gross profit	$118,000	$122,000	($ 4,000)	(3.3%)
Selling expenses	$ 35,000	$ 30,000	$ 5,000	16.7%
Administrative expenses	63,000	60,000	3,000	5 %
Total expenses	$ 98,000	$ 90,000	$ 8,000	8.9%
Net income before taxes	$ 20,000	$ 32,000	($12,000)	(37.5%)

The amount and percentage changes for the Maplewood Company indicate that the trend in sales is favorable, since sales increased $20,000, or 5%, over the prior year. The trend of the cost of merchandise sold and expenses is unfavorable, since the cost of merchan-

dise sold increased $22,000, or 8.1%, and expenses increased $8,000, or 8.9%. As a result, the trend in profits is unfavorable, since profits decreased by $12,000, or 37.5%. A conclusion may be drawn that the increased sales volume is insufficient to offset the increased expenses and higher cost of merchandise sold.

Comparative balance sheets for the same company appear in Exhibit 17–5.

EXHIBIT 17–5

MAPLEWOOD COMPANY
Comparative Balance Sheets
December 31, 1963 and 1964

	1964	1963	Increase (Decrease) Amount	Increase (Decrease) Percent
Current assets:				
Cash	$ 13,000	$ 7,000	$ 6,000	85.7%
Accounts receivable (net)	45,000	40,000	5,000	12.5%
Inventory	90,000	81,000	9,000	11.1%
Prepaid expenses	10,000	11,000	(1,000)	(9.1%)
Total current assets	$158,000	$139,000	$19,000	13.7%
Fixed assets:				
Land	$ 19,000	$ 19,000	–0–	–0–
Buildings (net)	95,000	105,000	($10,000)	(9.5%)
Machinery and equipment (net)	56,000	61,000	(5,000)	(8.2%)
Total fixed assets	$170,000	$185,000	($15,000)	(8.1%)
Total assets	$328,000	$324,000	$ 4,000	1.2%
Liabilities:				
Accounts payable	$ 37,000	$ 54,000	($17,000)	(31.5%)
Accrued payables	14,000	13,000	1,000	7.7%
Total liabilities	$ 51,000	$ 67,000	($16,000)	(23.9%)
Owner's equity:				
Common stock	$200,000	$200,000	–0–	–0–
Retained earnings	77,000	57,000	$20,000	35.1%
Total owners' equity	$277,000	$257,000	$20,000	7.8%
Total equities	$328,000	$324,000	$ 4,000	1.2%

Analysis of the changes between 1963 and 1964 indicates that the composition of the assets has changed. Although there was little change in total assets, current assets increased by $19,000, or 13.7%, while fixed assets decreased by $15,000, or 8.1%. Total equities changed only slightly, but liabilities decreased by $16,000, or 23.9%, while owners' equity increased by $20,000, or 7.8%.

While percentage change in a particular account is significant, the per cent of change must be interpreted concurrently with the dollar amount of change. Cash in Exhibit 17–5 increased by $6,000, which was 85.7%. Inventory, on the other hand, increased by a greater amount, $9,000, which was only 11.1%.

Common-size statements

The determination of trends and the comparison of amounts are facilitated by use of percentage figures instead of dollar amounts. Frequently the amounts and accounts in financial statements are reduced to percentages, and these percentages are presented for comparison purposes. Such statements are called *common-size statements.*

Common-size income statements

Income statements are reduced to common-size statements by expressing each item as a percentage of net sales. Expressing each amount in the income statement as a percentage of net sales facilitates comparisons between amounts in the same statements and also

EXHIBIT 17–6

MAPLEWOOD COMPANY

Comparative Common-size Income Statements

For the Years Ended December 31, 1963 and 1964

	1964	1963
Sales	102.0%	102.0%
Sales returns	2.0	2.0
Net sales	100.0%	100.0%
Cost of merchandise sold	71.2	68.9
Gross profit	28.8%	31.1%
Selling expenses	8.5%	7.7%
Administrative expenses	15.4	15.3
Total expenses	23.9%	23.0%
Net income before taxes	4.9%	8.1%

between similar expenses in successive income statements. Through a comparison of changes in the percentage amount, the *relative* change becomes apparent. A relative change is frequently more significant than a change in dollar amount. The income statement of the Maplewood Company, previously shown in Exhibit 17–4, is reduced to a common-size income statement in Exhibit 17–6 (page 512).

EXHIBIT 17–7

MAPLEWOOD COMPANY

Comparative Common-size Balance Sheets

December 31, 1963 and 1964

	1964	1963
Current assets:		
Cash	4.0%	2.2%
Accounts receivable (net)	13.7	12.3
Inventory	27.4	25.0
Prepaid expenses	3.1	3.4
Total current assets	48.2%	42.9%
Fixed assets:		
Land	5.8%	5.9%
Buildings (net)	28.9	32.4
Machinery and equipment (net)	17.1	18.8
Total fixed assets	51.8%	57.1%
Total assets	100.0%	100.0%
Liabilities:		
Accounts payable	11.3%	16.7%
Accrued payables	4.2	4.0
Total liabilities	15.5%	20.7%
Owner's equity:		
Common stock	61.0%	61.7%
Retained earnings	23.5	17.6
Total owner's equity	84.5%	79.3%
Total liabilities and owner's equity	100.0%	100.0%

Common-size balance sheet

Balance sheets are reduced to common-size by expressing each item as a percentage of total assets. The balance sheet of the Maplewood

Company, previously shown in Exhibit 17–5, is reduced to a common-size balance sheet in Exhibit 17–7.

An illustrative case in financial statement analysis

The following case is presented to illustrate the analysis of financial statements. The Scholl Company was formed as a corporation in 1938 for the purpose of selling office furniture and supplies at the retail level. The company owns its own land, buildings, and sales fixtures. Its sales are on n/30 terms, and most sales are made on account. On January 16, 1964, the president of the Scholl Company approached a local bank with a request to borrow $5,000 for general operating purposes, on an unsecured note, payable one year later. He presented the comparative balance sheets, income statements, and statements of retained earnings, shown in Exhibit 17–8, to the bank's credit officer. Study these statements carefully before reading the analysis that follows.

EXHIBIT 17–8

THE SCHOLL COMPANY
Comparative Balance Sheets
December 31, 1963, and 1962

ASSETS

	1963		1962	
Current assets:				
Cash		$ 4,000		$ 2,000
Receivables (net)		8,000		6,000
Inventory		25,000		23,000
Prepaid expenses		2,000		2,000
Total current assets		$39,000		$33,000
Fixed assets:				
Land		$10,000		$10,000
Buildings	$40,000		$40,000	
Less accumulated depreciation	11,000	29,000	10,000	30,000
Sales fixtures	$15,000		$15,000	
Less accumulated depreciation	13,500	1,500	12,000	3,000
Total fixed assets		$40,500		$43,000
Total assets		$79,500		$76,000

LIABILITIES AND CAPITAL

Current liabilities:		
Accounts payable	$11,000	$ 7,000
Salaries and wages payable	700	1,000
Accrued property taxes payable	1,000	2,000
	$12,700	$10,000
Long-term liabilities:		
Mortgage payable on building	$21,000	$25,000
Total liabilities	$33,700	$35,000
Owners' equity:		
Common stock (3,000 shares outstanding)	$30,000	$30,000
Retained earnings	15,800	11,000
Total owner's equity	$45,800	$41,000
Total liabilities and owner's equity	$79,500	$76,000

THE SCHOLL COMPANY

Comparative Income Statements

Years Ended December 31, 1963, and 1962

	1963	1962
Net sales (all on terms of n/30)	$126,000	$120,000
Cost of merchandise sold	79,000	77,000
Gross profit	$ 47,000	$ 43,000
Less operating expenses:		
Salaries	$ 18,500	$ 17,500
Property taxes	4,100	4,000
Depreciation on building	1,000	1,000
Supplies	800	1,000
Depreciation on sales fixtures	1,500	1,500
Utilities	2,200	2,000
Advertising	5,100	7,000
Total operating expenses	$ 33,200	$ 34,000
Operating income	$ 13,800	$ 9,000
Interest on mortgage	2,400	2,400
Net income before taxes	$ 11,400	$ 6,600
Income taxes	3,500	1,800
Net income (To Retained Earnings)	$ 7,900	$ 4,800

THE SCHOLL COMPANY

Statements of Retained Earnings

Years Ended December 31, 1963, and 1962

	1963	1962
Retained earnings, January 1	$ 11,000	$ 9,200
Profit for the year	7,900	4,800
	$ 18,900	$ 14,000
Dividends	3,100	3,000
Retained earnings, December 31	$ 15,800	$ 11,000

Working capital

Working capital was $23,000 on December 31, 1962 ($33,000 current assets less $10,000 current liabilities), and increased to $26,300 on December 31, 1963 ($39,000 current assets less $12,700 current liabilities). However, the current ratio decreased from 3.3 to 1 at the end of 1962 to 3.1 to 1 at the end of 1963. The decrease in the current ratio was due to the fact that current liabilities increased in greater proportion than current assets.

The acid-test ratio decreased from 0.8 to 1 ($8,000 ÷ $10,000) at the end of 1962 to 0.7 to 1 ($8,400 ÷ $12,700) at the end of 1963. The decrease was due to the fact that quick assets decreased and current liabilities increased.

During 1963 the company turned its working capital 5.9 times

$$\frac{\text{Net sales (\$126,000)}}{\text{Average working capital (\$23,000 + \$26,300)} \div 2} = 5.9.$$

This appears to be a very efficient use of working capital. The receivables appear to be collectible, since there are only twenty-two days' sales in receivables and the company's credit terms are n/30.

$$365 \div \frac{\text{Net sales (\$126,000)}}{\text{Ending receivables (\$8,000)}} = 22$$

The inventory turned 3.3 times during 1963.

$$\frac{\text{Cost of merchandise sold (\$79,000)}}{\text{Average inventory (\$24,000)}} = 3.3.$$

The inventory turnover appears small, and comparison with industry averages may indicate the company is below average in moving its inventory. If the company is able to turn its inventory only 3.3 times

during the year, this indicates that the merchandise remains in the inventory an average of four months.

To summarize the working capital position, the current ratio is satisfactory, but the quick ratio appears weak, primarily because of the large inventory. However, investigation may prove that the heavy inventory is due to anticipation of increased sales which will produce funds for payment of the proposed loan.

Owners' equity

From a creditor's viewpoint, the owners' equity appears weak, since the ratio of the owners' equity-to-debt is 1.3 to 1

$$\frac{\text{Owners' equity (\$45,800)}}{\text{Debt (\$33,700)}} = 1.3$$

at the end of 1963. A higher ratio may be desirable for a short-term creditor, especially since the major part of the debt is long-term. The long-term debt, however, will be liquidated in the next four to five years, since $4,000 was paid in 1963 (mortgages payable decreased from $25,000 in 1962 to $21,000 in 1963), and the remaining balance was $21,000 on December 31, 1963.

Profitability

The Scholl Company's net income was 6.3% of total assets in 1962 and 9.9% in 1963.

$$\frac{\text{Net income (\$4,800)}}{\text{Total assets (\$76,000)}} = 6.3.$$

$$\frac{\text{Net income (\$7,900)}}{\text{Total assets (\$79,500)}} = 9.9.$$

This appears to be a satisfactory return on total assets employed in the business, and the trend is favorable.

Net income as a return on owners' equity is satisfactory. The net income was 18% of average owners' equity in 1963

$$\frac{\text{Net income (\$7,900)}}{\text{Average owner's equity (\$41,000 + \$45,800)} \div 2} = 18.$$

Net income was 4% of sales in 1962

$$\frac{\text{Net income (\$4,800)}}{\text{Net sales (\$120,000)}} = 4$$

and 6.3% of sales in 1963

$$\frac{\text{Net income (\$7,900)}}{\text{Net sales (126,000)}} = 6.3$$

indicating a favorable trend in net income.

The fixed mortgage interest of $2,400 was earned 3.7 times in 1962

$$\frac{\text{Net income (\$4,800)} + \text{income taxes (\$1,800)} + \text{interest (\$2,400)}}{\text{Interest (\$2,400)}} = 3.7$$

and 5.7 times in 1963.

$$\frac{\text{Net income (\$7,900) income taxes (\$3,500) interest (\$2,400)}}{\text{Interest (\$2,400)}} = 5.7$$

Thus profits appear sufficient to cover the fixed interest expense, even if a considerable decline in profits should occur.

Summary of the analysis

In conclusion, the bank officer would be able to obtain from the financial statements considerable information concerning the risk that would be involved in extending the $5,000 loan to the Scholl Company. A final decision on granting the loan cannot be made until such factors as the economic expectations for the business and the credit rating of the company are investigated, but a basis for evaluating the soundness of the company's financial position can be obtained from the financial statements. The working capital position and the profitability of the company should be sufficient to make the $5,000 loan a good risk for the bank. In the absence of special circumstances or unseen events, the expected cash inflow to the company should be sufficient to pay the loan; if not, the assets appear sufficient to cover the company's liabilities in case of a forced liquidation.

Questions

17-1. Describe the general purposes for which financial statements are analyzed. State specific purposes for which the following groups would analyze financial statements:

(a) Managers
(b) Owners
(c) Stockholders
(d) Prospective investors
(e) Organized labor groups

17-2. What is meant by the statement that "analysis of financial statements is undertaken to evaluate risk, profitability, and potential"?

17-3. Why is comparison of amounts the basic means of evaluating figures that appear in financial statements? With what data are amounts in a set of financial statements compared?

17-4. Define (a) a "dynamic" analysis and (b) a "static" analysis.

17-5. Why is the analysis of working capital one of the most important parts of financial statement analysis?

17-6. Describe how each of the following is computed and the significance or uses of each:

(a) Current ratio
(b) Acid-test ratio
(c) Turnover of net working capital
(d) Turnover of inventory
(e) Number of days' sales in accounts receivable

17-7. Why must the detail of the amounts making up working capital be considered when evaluating or analyzing a company's working capital position?

17-8. How is a ratio of owners' equity to total debt computed? What is its significance?

17-9. Describe how each of the following is computed and the significance of each:

(a) Net income as a rate of return on owners' equity
(b) Net income as a rate of return on total assets
(c) Earnings per share on common stock
(d) Net income as a percentage of net sales
(e) The number of times bond interest is earned

17-10. What is a "horizontal" analysis of comparative statements?

17-11. What is a "common-size" statement? What is used as the 100% base in (a) a common-size balance sheet and (b) a common-size income statement?

17-12. Does an analysis of financial statements provide a definite and fixed answer to the questions of risk, profitability, and potential? Defend your answer.

Exercises

17-13. The trial balance of the Rommel Company follows.

Cash	$ 1,000	
Receivables	2,000	
Inventory (no change since last year)	3,000	
Fixed assets	10,000	
Accounts payable		$ 1,000
Accrued taxes payable		2,000
Common stock ($50 par)		10,000
Sales (all on credit)		27,000
Cost of goods sold	18,000	
Selling expenses	6,000	
	$40,000	$40,000

REQUIRED

Using data from this trial balance, compute the following:

(a) Current ratio
(b) Acid-test ratio
(c) Number of days sales in accounts receivable
(d) Inventory turnover
(e) Earnings per share of common stock

17-14. The condensed balance sheet of the Donovan Company is as follows on December 31, 1964:

Cash	$ 30,000	Accounts payable	$ 60,000
Accounts receivable	30,000	Mortgage payable (6%)	100,000
Merchandise inventory	80,000	Common stock ($100 par)	120,000
Fixed assets (net)	180,000	Retained earnings	40,000
	$320,000		$320,000

The net income for the year 1964 was $14,000.

REQUIRED

Compute the following significant ratios to help indicate the soundness of the financial condition of this company. For each of the five indicate how it is computed and its significance.

(a) Current ratio
(b) Acid-test ratio
(c) Earnings per share
(d) Ratio of owners' equity to debt
(e) Net income as a return on invested capital

17-15. The following data were extracted from the financial statements of a company:

Current assets (beginning of the year)	$ 77,000
Current assets (end of the year)	63,000
"Monetary" assets (cash, receivables, investments)	31,500
Average finished goods inventory	50,000
Accounts receivable (included in monetary assets, above)	20,000
Current liabilities (beginning of year)	21,000
Current liabilities (end of year)	19,000
Sales (all on credit terms)	500,000
Cost of merchandise sold	300,000

REQUIRED

Using the above data, compute (a) the current ratio, (b) the acid-test ratio, (c) the turnover of net working capital, (d) the inventory turnover, (e) the number of days' sales in accounts receivable.

17-16. Given below are selected data from a company's financial statements.

	Company A	Company B
Cash	$ 3,000	$ 1,000
Accounts receivable	12,000	5,000
Inventory	6,500	15,000
Prepaid insurance	500	1,000
Accounts payable	2,000	5,800
Notes payable (due in 6 months)	8,000	1,800
Accrued wages payable	1,000	1,200

REQUIRED

From this information, compute (a) the current ratio and (b) the acid-test ratio of each of the two companies. Then compare the composition of the current assets and state which of the two companies in your opinion has the stronger current financial position.

17-17. The following data were drawn from a company's financial statements.

	Prior Year	Current Year
(a) Net income	$ 5,000*	$ 7,000*
(b) Accounts receivable	6,000	4,000
(c) Inventory	20,000	15,000
(d) Notes payable	–0–	10,000*
(e) Gain or loss on sale of assets	3,000	1,000*
(f) Investments	5,000	–0–
(g) Net loss	2,000	1,000

REQUIRED

Compute the amount of change and the percentage of change. All amounts starred (*) are credits. If a percentage change cannot be computed, indicate this fact.

17-18. Presented below are four unrelated problems. Compute for each part the requested data.

(a) The current ratio of a company is 2.3 to 1, and its acid-test ratio is 1 to 1. If the inventories and prepaid expenses amount to $520,000, what is the amount of current liabilities?
(b) A company has total current assets of $500,000 and total current liabilities of $250,000. The board of directors declares a cash dividend of $50,000. What is the current ratio after the declaration but before payment? What is its current ratio after payment of the dividend?
(c) A company has current assets of $100,000 and current liabilities of $40,000. The board of directors declares a $10,000 stock dividend. What is the current ratio immediately after the declaration? What is the current ratio after the stock dividend is issued?
(d) A company has current assets of $18,000 (of which $6,000 is inventory) and current liabilities of $9,000. What is the current ratio? What is the acid-test ratio? If the company borrows $5,000 cash from a bank on 90-day loan, what will its current ratio be? What will the acid-test ratio be?

Problems

17-19. The balance sheet and the income statement of the Fox Company are presented on page 528.

REQUIRED

1. Using these statements and assuming that net working capital and inventory have not changed since January 1, 1964, compute:

(a) the current ratio
(b) the acid-test ratio
(c) the turnover of net working capital
(d) the inventory turnover

(e) the number of days' sales in receivables
(f) the ratio of owners' equity-to-debt
(g) net income as a rate of return on total assets; net income as a rate of return on invested capital
(h) net income as a rate of return on invested capital
(i) earnings per share
(j) number of times bond interest is earned.

2. Comment briefly on whether or not you think the company is in sound financial position with an acceptable profitability. Also comment on any weaknesses which the ratios indicate to you.

FOX COMPANY
Balance Sheet
December 31, 1964

Cash	$ 10,000
Accounts receivable	40,000
Merchandise inventory	70,000
Prepaid expenses	1,000
Fixed assets	100,000
	$221,000
Accounts payable	$ 10,000
Wages payable	4,000
Payroll taxes payable	1,000
Bonds payable, 6% (due 1978)	50,000
Common stock ($100 par value)	120,000
Retained earnings	36,000
	$221,000

FOX COMPANY
Income Statement
Year Ended December 31, 1964

Sales		$400,000
Beginning inventory	$ 30,000	
Purchases	300,000	
	$300,000	
Ending inventory	40,000	
Cost of goods sold		290,000
Gross profit		$110,000
General and administrative expenses		80,000
Net income before taxes		$ 30,000
Federal income taxes		12,000
Net income after taxes		$ 18,000

17-20. Harold Phenny is considering the purchase of an investment in common stock and is attempting to relate the financial position of two corporations whose stock is under consideration. The balance sheets of the two companies are presented on page 524.

REQUIRED

1. Prepare common-size statements for the two companies to facilitate comparison.
2. Compute the current ratio, acid-test ratio, owners' equity-to-debt ratio, return on total assets, return on total investment,

and earnings per share for both companies. Net income of Company A was $4,000, and net income of Company B was $3,000.

3. Which would you consider the better investment if both stocks could be secured at book values?

COMPANY A

ASSETS			EQUITIES		
Cash	$ 1,800		Notes payable	$17,000	
Accounts receivable (net)	26,600		Accounts payable	16,800	
Inventory	34,400		Accrued taxes payable	6,600	
Total current assets		$62,800	Total current liabilities		$40,400
Land	$ 5,000		Common stock ($100 par)	$15,000	
Buildings (net)	9,000		Retained earnings	22,300	
Total fixed assets		14,900	Total owners' equity		37,300
Total assets		$77,700	Total equities		$77,700

COMPANY B

ASSETS			EQUITIES		
Cash	$ 3,000		Notes payable	$5,000	
Accounts receivable (net)	12,000		Accounts payable	4,000	
Inventory	15,000		Accrued taxes payable	4,000	
Total current assets		$30,000	Total current liabilities		$13,000
Furniture and fixtures (net)		6,000	Common stock ($100 par)	$10,000	
			Retained earnings	13,000	
			Total owners' equity		23,000
Total assets		$36,000	Total equity		$36,000

17-21. Presented on page 525 are statistics drawn from the annual reports of four companies.

REQUIRED

1. Using these data, compute for each company (a) the number of times bond interest is earned, (b) the return on total owners' in-

vestment, (c) the per share book value of common and preferred stock, and (d) the earnings per share of common stock. Preferred dividends have not been paid for the current year but have been paid for all prior years. The retained earnings include the current year's net income.

2. Assuming that the net income after taxes of each of the four companies will continue at the present level, rank the four companies in the order in which you would prefer to invest in their common stock, if stock could be acquired at book value. (Place the most desirable first.) Describe briefly how you arrived at the ranking.

	Company A	Company B	Company C	Company D
Net income for the year after taxes	$30,000	$30,000	$10,000	$150,000
Shares of preferred stock outstanding	1,000	5,000	100	10,000
Par value of preferred stock	$100	$10	$100	$50
Preferred stock dividend rate	6%	5%	6%	4%
Shares of common outstanding	2,000	10,000	1,000	3,000
Par value of common stock	$100	$10	$100	$100
6% bonds outstanding (face value)	$80,000	$100,000	$25,000	$750,000
Federal income taxes paid	$10,000	$12,000	$3,000	$60,000
Retained earnings	$73,000	$25,000	$12,000	$190,000

17-22. Shown on page 526 are comparative balance sheets of the Wayhouser Company for 1962, 1963, and 1964. Also presented are operating data for each of the three years.

REQUIRED

1. Compute the following for each of the three years:
   - Current ratio
   - Acid-test ratio
   - Owners' equity-to-debt ratio
   - Return on total owners' investment
   - Earnings per share of common stock
2. Discuss the financial condition of the company on December 31, 1964, and the trends evidenced by the comparative data and ratios.
3. Comment on the company's policy of reporting net income, especially as related to non-operating losses, and the effects such a policy has on computations of earnings per share and return on investment.

Comparative Balance Sheets

	1962	1963	1964
ASSETS			
Current assets:			
Cash	$ 1,200	$ 1,900	$ 400
Accounts receivable (net)	14,800	12,400	10,400
Inventory	14,800	16,200	19,800
Total current assets	$30,800	$30,500	$30,600
Fixed assets:			
Equipment (net)	$ 9,800	$12,000	$12,800
Buildings (net)	15,700	16,300	18,000
Land	5,000	5,000	5,000
Total fixed assets	$30,500	$33,300	$35,800
Total assets	$61,300	$63,800	$66,400
EQUITIES			
Current liabilities:			
Notes payable (due in six months)	$ 7,500	$ 3,000	$ 5,000
Accounts payable	6,300	11,200	13,400
Accrued salaries and taxes	1,200	1,600	2,900
Total current liabilities	$15,000	$15,800	$21,300
Long-term debt:			
Notes payable (due 1967)	—	—	$ 5,500
Total debt	$15,000	$15,800	$26,800
Owners' equity:			
Common stock ($100 par)	$30,000	$30,000	$30,000
Retained earnings	16,300	18,000	9,600
Total owners' equity	$46,300	$48,000	$39,600
Total equity	$61,300	$63,800	$66,400

Operating Data for the Year Ended:

	1962	1963	1964
Total sales	$100,000	$105,000	$93,000
Reported net income, after taxes	5,000	5,700	(2,400)
Dividends paid	3,000	3,000	3,000
Non-operating gains (or losses) not on the income statement (directly to retained earnings)	(1,500)	(1,000)	(3,000)

17-23. The trial balances of the Tribb Processing Company for 1964 and 1965 appear below.

Trial Balance

	1964		1965	
	Debit	Credit	Debit	Credit
Cash	$ 1,000		$ 2,000	
Accounts receivable (net)	3,000		5,000	
Inventory	14,000		18,800	
Bond sinking fund	20,000		25,000	
Equipment (net)	33,800		29,800	
Trucks (net)	18,500		13,500	
Accounts payable		$ 6,000		$ 5,000
Notes payable (due in 6 months)		3,000		1,000
Mortgages payable (1975)		50,000		50,000
Common stock		20,000		20,000
Retained earnings		5,400		11,300
Sales		210,000		220,000
Cost of merchandise sold	140,000		148,000	
Salaries	36,000		37,000	
Advertising	8,000		8,000	
Utilities	1,100		1,100	
Supplies	800		1,000	
Rent	6,000		6,000	
Depreciation on equipment	4,000		4,000	
Depreciation on trucks	5,000		5,000	
Interest expense	3,200		3,100	
	$294,400	$294,400	$307,300	$307,300

REQUIRED

1. Prepare comparative income statements and balance sheets, with both the amount of change and the percentage change indicated on both statements.
2. Comment on any favorable or unfavorable conditions indicated by the comparative statements.

17-24. The Zello Company is a large chain laundry and dry cleaning firm. Its trial balance was as follows at the end of its first year of operations in 1964:

THE ZELLO COMPANY

Trial Balance

December 31, 1964

Cash	$ 2,000	
Accounts receivable	1,300	
Prepaid insurance	800	
Office supplies on hand	500	
Equipment	18,700	
Delivery trucks	6,300	
Accounts payable		$ 1,400
Notes payable		2,200
Capital stock		20,000
Revenue from services		200,000
Salaries expenses	130,000	
Office expenses	29,000	
Other expenses	35,000	
	$223,600	$223,600

William Zello, president and principal stockholder, read an article in a monthly journal published by the Laundry and Dry Cleaning Trade Association. The article quoted the following as averages for all companies in the industry:

	Revenue and expenses, by operating areas, as a per cent of total revenue		
	Laundry	Dry Cleaning	Total
Revenue	40%	60%	100%
Plant expenses:			
Salaries—plant	20%	20%	40%
Supplies—plant	5	5	10
Heat and power	3	2	5
Total plant expenses	28%	27%	55%
Profit after plant expenses	12%	33%	45%
Office expenses:			
Salaries—office			20%
Supplies—office			5
Insurance, taxes, and licenses			3
Advertising			10
Total office expenses			38%
Net income after all expenses			7%

Zello was interested in comparing his business with the average company in his industry, but found that his framework of ledger accounts did not permit a thorough comparison. He instructed his bookkeeper to give him the necessary information for comparative purposes and, as a result, received the following data:

Revenue: $76,000 from laundry and $124,000 from cleaning.

Salaries expense included plant salaries of $90,000, of which $48,000 was laundry and $42,000 cleaning. Office salaries were $40,000.

Office expenses included plant supplies of $20,000 and office supplies of $9,000. The plant supplies were applicable in equal amounts to laundry and dry cleaning.

Other expenses included $11,000 of heat and power, $6,000 of insurance, taxes, and licenses, and $18,000 of advertising. The heat and power is applicable $6,000 to laundry and $5,000 to dry cleaning.

REQUIRED

1. Prepare a statement, using Zello Company amounts and percentages, and in the same form as the statement containing industry averages.
2. Analyze the Zello Company's financial data and compare them with the average in the industry. Ascertain in light of this comparison whether laundry and dry cleaning are each producing a reasonable profit after plant expenses; if not, determine which area indicates excessive expenses.

Cases

17-25. The Rainbow Company was formed in 1960. On January 6, 1965, its balance sheets for 1963 and 1964, with a related income statement, were presented to a loan officer of the First State Bank. The president of the Rainbow Company had submitted these statements in support of a loan request. The desired loan was for $15,000, to be repaid in two annual installments of $7,500 each on 12/31/65 and 12/31/66, plus 6% interest on the unpaid balance. The loan is needed to finance the increased receivables and inventory of the Rainbow Company which had resulted from expanded operations.

RAINBOW COMPANY

Comparative Balance Sheets

	12/31/63	12/31/64
Cash	$ 6,275	$ 450
Accounts receivable	9,000	19,000
Inventory	14,000	17,000
Prepaid insurance	2,250	1,350
Prepaid rent	1,000	1,250
Fixed assets	50,000	50,000
Accumulated depreciation	(21,600)	(27,000)
	$ 60,925	$ 62,050
Accounts payable	$ 6,000	$ 5,000
Note payable to bank (due in 6 months)	1,000	2,500
Accrued salaries payable	900	500
Accrued interest payable	25	50
Capital stock ($100 par)	45,000	45,000
Retained earnings	8,000	9,000
	$ 60,925	$ 62,050

RAINBOW COMPANY

Statement of Income and Retained Earnings

For the Year Ended December 31, 1964

Sales		$100,000
Cost of goods sold		70,000
Gross profit		30,000
Expenses:		
Salaries	$14,850	
Depreciation	5,400	
Rent	2,750	
Insurance	900	
Interest	100	24,000
Net income		$ 6,000
Retained earnings, 12/31/63		8,000
		$ 14,000
Less: dividends paid		5,000
Retained earnings, 12/31/64		$ 9,000

Profits in recent years have been as follows:

1960	$ –0–
1961	500
1962	3,000
1963	4,500

The only dividend was in 1963, when $5,000 was paid.

Analyze these statements, computing all significant ratios which you feel are appropriate. Do you think the loan to the Rainbow Company would be a good financial risk for the First State Bank (ignoring other factors not given in the case)?

17-26. Presented below are condensed balance sheets of Krabbe, Inc., as of December 31, 1963, and 1964, and income statements for each of the two years then ended. Also presented are data taken from trade publications representing the average in the industry. Percentages have been computed for certain key figures in the income statement.

Has the financial position and profitability of Krabbe, Inc., been strengthened or weakened during the past two years? Compute all significant ratios to substantiate your answer.

If you were owner and manager of Krabbe, Inc., would you consider the present financial position and profitability of your company better than the industry average? What weaknesses can you spot by comparing Krabbe, Inc. with the average? What might be done to strengthen these weak areas?

Comparative Balance Sheets

	Krabbe, Inc.		Industry Average
ASSETS	Dec. 31, 1963	Dec. 31, 1964	Dec. 31, 1964
Cash	$ 700	$ 1,200	$12,000
Accounts receivable (net)	10,800	13,600	7,000
Notes receivable	1,200	1,500	200
Inventory	8,900	13,500	8,500
Equipment (net)	22,000	19,800	8,725
Real estate (net)	42,800	42,000	20,000
Total assets	$86,400	$91,600	$56,425
EQUITIES			
Accounts payable	$10,000	$10,200	$ 5,000
Notes payable (6 months)	4,400	4,700	1,425
Mortgages payable (1975)		5,000	
Capital stock ($100 par)	70,000	70,000	40,000
Retained earnings	2,000	1,700	10,000
Total equities	$86,400	$91,600	$56,425

Comparative Income Statements

	Krabbe, Inc.				Industry Average	
	1963		1964		1964	
	Amount	Per Cent	Amount	Per Cent	Amount	Per Cent
Sales (net)	$90,000	100	$80,000	100	$100,000	100
Cost of sales:						
Inventory, Jan. 1	9,100		$ 8,900		$ 7,500	
Purchases (net)	67,300		60,600		81,000	
	$76,400		$69,500		$ 88,500	
Inventory, Dec. 31	8,900		13,500		8,500	
Cost of sales	$67,500	75	$56,000	70	$ 80,000	80
Gross profit	$22,500	25	$24,000	30	$ 20,000	20
Expenses:						
Purchasing department (detail omitted)	$ 1,800	2.0	$ 2,000	2.5	$ 1,500	1.5
Selling department:						
Salaries	$ 7,200	8.0	$ 8,000	10.0	$ 6,000	6.0
Advertising	1,800	2.0	2,000	2.5	2,200	2.2
Delivery	900	1.0	1,200	1.5	600	.6
Collections	450	.5	560	.7	300	.3
Bad debts	900	1.0	1,600	2.0	300	.3
Miscellaneous	450	.5	640	.8	100	.1
Total selling	$11,700	13.0	$14,000	17.5	$ 9,500	9.5
General and administrative (detail omitted)	5,400	6.0	6,400	8.0	3,000	3.0
Total expense	$18,900	21.0	$22,400	28.0	$ 14,000	14.0
Net operating profit	$ 3,600	4.0	$ 1,600	2.0	$ 6,000	6.0

Part IV

ACCUMULATION AND ANALYSIS OF FINANCIAL DATA FOR INTERNAL MANAGEMENT PURPOSES

This section is devoted to a discussion of accounting reports, processes, and analyses designed for the use of internal management. Generally accepted accounting principles need not be applied to the preparation of internal reports for managerial use only; the primary prerequisite of an accounting report to management is its usefulness in guiding the operations of the company.

Attention should be focused in this section on the internal needs for financial information, how these needs are satisfied by accounting reports, and the limitations of accounting data as a basis for business decisions.

18

The flow of funds

In accounting terminology a fund may be defined as a group of resources set apart for a designated purpose. Periodic reports should be prepared for management's use covering each significant fund which the company employs. The working capital fund, or pool of net current assets available for operations, is one of the most important funds and its analysis is the subject of this chapter. Periodic analysis of the company's working capital resources assists management in interpreting past operations and planning for the future, and is based upon determination of the sources and disbursements of working capital funds and the factors which caused the fund to increase or decrease during the period.

Analysis of working capital

Working capital, as defined previously, is the excess of current assets over current liabilities. Since current liabilities are normally paid with current assets, subtraction of total current liabilities from total current assets indicates the net funds employed in a "working" or "current" capacity. The working capital fund is thus composed of the cash, receivables, inventory, and other current assets available for operations after current liabilities have been covered:

Total current assets	$27,400
Less total current liabilities	10,300
Working capital	$17,100

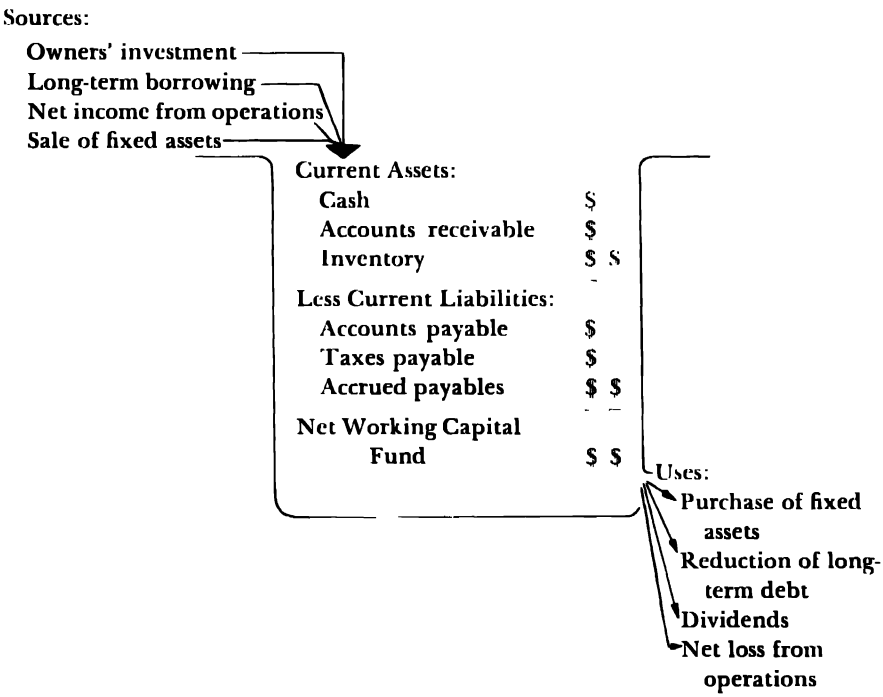
Working capital is provided by profits and consumed by losses. When a profit is earned, the inflow of cash or accounts receivable from revenues is greater than the outflow of merchandise and the cash used to pay expenses. Therefore, a net operating profit results in an inflow of working capital. An operating loss, on the other hand, consumes working capital, since the outflow of merchandise and cash

used to pay expenses exceeds the inflow of cash or receivables from revenues.

In addition to net income or loss, working capital is provided by the sale of fixed assets, by long-term borrowing, or by the investment of additional capital. The fund is decreased by the purchase of fixed assets, payment of long-term debts, or declaration of dividends. The flow of working capital is illustrated in Exhibit 18–1.

EXHIBIT 18–1

Flow of Working Capital



Both net income and net loss from operations are shown in the above diagram. However, a company will have either a net income or a net loss from operations during a given accounting period, but it cannot have both.

The statement of sources and applications of working capital funds

A *statement of sources and applications of working capital funds* is prepared to report changes in working capital and the detail of its

sources and applications. This statement is used primarily by management, although it is occasionally included in published reports to stockholders. There is a marked trend toward greater utilization of this statement by creditors, stockholders, and other external groups. The form and content of the statement are illustrated in Exhibit 18–2.

EXHIBIT 18–2

ALTON AND BALLOTTI CO.

Statement of Sources and Applications of Working Capital Funds

Year Ended December 31, 1964

Sources of funds:		
Net income from operations	$ 3,792	
Proceeds from sale of fixed assets	762	
Borrowed on five-year bank note	12,000	
Sale of common stock	20,000	
Total sources of funds		$36,554
Applications of funds:		
Expended for plant and equipment	$17,000	
Retirement of bonds payable	5,000	
Dividends declared	7,500	
Set aside in asset replacement fund	5,000	
Total funds applied		34,500
Net increase in working capital		$ 2,054

In Exhibit 18–2 the working capital fund has been increased by $2,054, and the sources and uses of funds during the period are indicated. However, this $2,054 net increase in working capital should be further analyzed to determine which current asset and liability accounts have changed. The increase may have been the result of decreases in current liabilities, increases in current assets, or an offsetting combination of both. A schedule of the changes in each current asset and current liability account should be prepared to accompany the statement of sources and applications of working capital funds. Such a schedule is shown in Exhibit 18–3. Note that the detailed changes in working capital items reconcile with the $2,054 increase shown in the accompanying statement.

EXHIBIT 18–3

ALTON AND BALLOTTI CO.
Schedule of Working Capital Changes
Year Ended December 31, 1964

	December 31,		Changes in Working Capital	
	1963	1964	Increase	Decrease
Current Assets:				
Cash	$ 1,200	$ 1,900	$ 700	
Receivables	12,900	12,100		$ 800
Allowance for bad debts	(654)	(800)		146
Inventory	15,700	21,000	5,300	
Total current assets	$29,146	$34,200		
Current Liabilities:				
Accounts payable	$10,700	$ 9,700	1,000	
Notes payable		4,000		4,000
Total current liabilities	$10,700	$13,700		
Working capital	$18,446	$20,500		
Increase in working capital				2,054
			$ 7,000	$ 7,000

Note that the $2,054 increase in working capital is entered in the decrease column, so that the totals of both increase and decrease columns will balance.

Preparing the statement from balance sheet changes

The preparation of a statement of sources and applications of working capital funds begins with an analysis of balance sheet changes. The changes in balance sheet accounts, other than working capital items, indicate either sources or applications of working capital funds. This may be noted in Exhibit 18–4, wherein all balance sheet changes are computed and the working capital and non-working capital account changes are separated.

Working capital has decreased by a total of $4,000, since the increase in accounts payable and the decrease in inventory more than offset the increase in cash and receivables. The net change in the

EXHIBIT 18–4

Analysis of Balance Sheet Changes

	Balance Sheet		Changes			
	Dec. 31, 1963	Dec. 31, 1964	Working Capital Accounts		Non-Working Capital Accounts	
			Debit	Credit	Debit	Credit
Cash	$ 1,000	$ 3,200	$2,200			
Receivables	2,000	3,800	1,800			
Inventory	10,000	8,000		$2,000		
Land	20,000	23,000			$3,000 (application)	
Buildings	50,000	50,000				
Total assets	$83,000	$87,000				
Accounts payable	$ 8,000	$14,000		6,000		
Bonds payable	20,000	18,000			2,000 (application)	
Common stock	50,000	50,000				
Retained earnings	5,000	6,000				$1,000 (source)
Total liabilities and capital	$83,000	$87,000				
Net decrease			4,000			4,000
			$8,000	$8,000	$5,000	$5,000

working capital accounts must equal the change in the non-working capital accounts, because the increases or decreases in working capital are either derived from or applied to non-working capital accounts. Thus both the individual changes in working capital accounts as well as the sources and applications of working capital are determined from an analysis of balance sheet amounts.

Assuming that the entire change in retained earnings was the result of the net income earned during the period, the statement prepared from this data would indicate a $1,000 source from net income, a $3,000 application for the purchase of land, a $2,000 application to the retirement of bonds payable, and a resulting decrease in working capital of $4,000.

Analysis of changes in non-working capital accounts

The net change in a non-working capital account may be the result of some decreases, offset by some increases. The causes of changes

in the balance of Retained Earnings, for example, can be ascertained only after an analysis of the transactions affecting the Retained Earnings account. The $1,000 net change in retained earnings in Exhibit 18–4 was assumed earlier to be from net income, but it could have been a net income (a source) of $5,000, offset in part by dividends of $4,000 (an application). Further, the $3,000 increase in the Land account in Exhibit 18–4 could have been the net result of the sale of one parcel of land and the purchase of another. In all cases, each source and each application should appear separately in the statement.

Assuming the Land account and the Retained Earnings account to contain the sources and applications mentioned above, the ledger accounts for 1964 would appear as follows:

LAND				RETAINED EARNINGS			
Beg. Bal.	$20,000					Beg. Bal.	$5,000
		Sale, at cost	$6,000	Dividends	$4,000		
						Net income	5,000
Purchase of land	9,000						

These data must then be reflected in the statement of sources and applications of working capital funds as follows:

Sources of working capital:		
Operations (net income)	$5,000	
Sale of land	6,000	
Total sources		$11,000
Applications of working capital:		
Purchase of land	$9,000	
Dividends	4,000	
Retirement of bonds payable	2,000	
Total applications		15,000
Net decrease in working capital		$ 4,000

Funds provided by operations

The funds provided by (or applied to) operations are not fully reflected by the net income (or loss) figure appearing on the income statement. Included in the computation of net income or loss are

costs such as depreciation and amortization of intangible assets which do not require an outlay of working capital funds. These expenses must be added to net income to ascertain the actual amount of funds provided by operations. Exhibit 18–5 is given as an illustration of an income statement wherein the net income figure does not reflect the true inflow of funds from operations.

EXHIBIT 18–5

ALTON AND BALLOTTI CO.

Income Statement

For Year Ending December 31, 1964

Revenues:		
Sales	$79,000	
Interest on investments	2,000	
Gain on sale of land	1,000	
Total incomes		$82,000
non-fund items		
Expenses and costs:		
Salaries	$45,000	
Advertising	6,000	
Loss on scrapped equipment	1,000	
Depreciation	9,000	
General expenses	12,000	
Interest on bonds payable	700	
Total expenses		73,700
		$ 8,300

Depreciation and losses on scrapped equipment shown in the income statement are non-fund expenses. Neither a reduction in current assets nor an increase in current liabilities resulted from recording the depreciation or loss on scrapped equipment. Working capital was therefore not affected when these expenses were recorded, as indicated by an analysis of the entries recording depreciation and loss on scrapped equipment.

Dec.	31	Depreciation Expense	$9,000	
		Accumulated Depreciation		$9,000
		To record annual depreciation.		

Dec.	31	Accumulated Depreciation	$5,000	
		Loss on Scrapped Equipment	1,000	
		Equipment		$6,000
		To record scrapping of equipment.		

Although depreciation and loss on scrapped equipment have reduced income, an outflow of funds is not involved, and these amounts must be added back to the reported income to ascertain the actual funds inflow due to operations.

At the same time, some of the incomes or gains in the income statement did not produce an actual inflow of working capital funds. The gain on the sale of fixed assets, for example, does not reflect the total source of funds from the sale of the asset. The total funds provided by the sale of the asset are measured by the proceeds received from the sale itself. The gain on the sale, as shown on the income statement, must be added to the net book value of the asset to determine the actual funds received when the asset was sold.

The following entry was made to record the sale:

July	7	Cash	$8,000	
		Gain on Sale of Land		$1,000
		Land		7,000
		To record sale of land.		

The Land account reflects a $7,000 decrease, while the $1,000 Gain on the Sale appears in the income statement. The full $8,000 of funds received from the sale of land should appear as a single source, and the $1,000 gain on the sale is subtracted from net income so that the source of the funds can be shown correctly as coming from the sale of assets. Thus the sources would appear as follows:

Sources of Working Capital:		
From operations:		
Reported net income	$ 8,300	
Add: Depreciation	9,000	
Loss on scrapped equipment	1,000	
	$18,300	
Less: Gain on Sale of Land	1,000	
Total funds provided by operations		$17,300
From Sale of Land		8,000

The funds work sheet

Preparation of the statement of sources and applications of working capital may be facilitated by use of a work sheet. The steps followed in completing the work sheet are:

1. Compute the working capital at the beginning and also at the end of the period. All current assets and current liabilities must be included in the computation. (The schedule of working capital items to accompany the formal statement may be prepared while completing this step.)

	December 31		Changes in Working capital	
	1963	1964	Increase	Decrease
Current assets:				
Cash	$ 3,000	$ 3,500	$ 500	
Accounts receivable	10,000	9,000	-	$1,000
Allowance for bad debts	(1,000)	(800)	200	
Inventory	18,000	21,000	3,000	
Prepaid insurance	700	600		100
Total current assets	$30,700	$33,300		
Current liabilities:				
Accounts payable	$12,000	$ 9,000	3 000	
Notes payable	3,000	5,000		2,000
Accrued liabilities	2,000	2,400		400
Total current liabilities	$17,000	$16,400		
Net working capital	$13,700	$16,900		
Increase in working capital				3,200
			$6,700	$6,700

2. On the first line of the work sheet opposite the heading "working capital" enter the beginning and ending balances of working capital as computed in step 1. Leaving several open lines, then enter all non-working capital accounts and their beginning and ending balances. All beginning balances are placed in the farthest left column and the ending balances in the farthest right column of the work sheet. The two center columns are used in the analysis of changes in the account balances during the period.

3. The change between the beginning and ending balances in each account on the work sheet is examined to ascertain whether a source or application of working capital is involved. As each source or ap-

plication is located, the account is debited or credited in the analysis columns, and the offsetting debit or credit is made to the "working capital" line.

4. The statement of sources and applications of working capital is prepared using the amounts appearing on the "working capital" lines in the analysis columns.

Exhibits 18–6 and 18–7 illustrate the form of the work sheet and the resulting statement. Note that several lines are needed for "working capital" in the worksheet, and that the amounts in these lines appear as the sources and applications in the completed statement. Note also that the change in each account balance has been fully analyzed in the work sheet; that is, the amounts in the two center columns account fully for the change from the beginning balance to the ending balance.

EXHIBIT 18–6

ABLE STATIONERY COMPANY

Work Sheet for Statement of Working Capital

Year Ended December 31, 1964

	Balance Dec. 31 1963	Analysis of Account changes		Balance Dec. 31 1964
Working capital	$13,700	(E) $ 2,000	(A) $ 2,000	$16,900
		(F) 6,000	(D) 1,000	
		(J) 11,600	(H) 5,400	
			(G) 8,000	
Land	4,000	(G) 8,000	(F) 5,000	7,000
Buildings	32,000	(A) 2,000		34,000
Accumulated depreciation—buildings	(9,000)		(B) 1,500	(10,500)
Patents	6,000		(C) 1,000	5,000
	$46,700			$52,400
Mortgages payable	$10,000	(D) 1,000		$ 9,000
Common Stock	30,000		(E) 2,000	32,000
Retained earnings	6,700	(B) 1,500	(F) 1,000	11,400
		(C) 1,000	(J) 11,600	
		(H) 5,400		
	$46,700			$52,400

EXHIBIT 18–7

ABLE STATIONERY COMPANY
Statement of the Sources and Applications of Working Capital Funds
Year Ended December 31, 1963

Sources of working capital funds:		
Operations:		
Reported net profit	$10,100	
Add: Depreciation	1,500	
Amortization of patents	1,000	
Less: Gain on sale of land	(1,000)	
Total provided by operations		$11,600
Issuance of common stock		2,000
Sale of land		6,000
Total funds provided		$19,600
Applications of working capital funds:		
Purchase of buildings	$ 2,000	
Retirement of bonds payable	1,000	
Dividends	5,400	
Purchase of land	8,000	
Total funds applied		16,400
Net increase in working capital funds		$ 3,200

The work sheet illustrated

The preceding work sheet is based upon amounts in the following balance sheets and income statement of the Able Stationery Company. Each step in the completion of the work sheet and preparation of the formal statement is explained below.

Step 1. Compute the working capital at the beginning and end of the period. The schedule of working capital items to accompany the statement is completed at this point.

Completion of this step indicates that the working capital was $13,700 at the beginning of the period and is $16,900 at the end of the period. The $3,200 increase can be used as a check figure to insure that all sources and applications are located.

Step 2. The working capital of $13,700 at the beginning of the period, and $16,900 at the end of the period are entered in the work sheet, together with all beginning and ending balances of non-working capital accounts.

EXHIBIT 18–8

ABLE STATIONERY COMPANY
Balance Sheets

	December 31	
	1963	1964
Cash	$ 3,000	$ 3,500
Accounts receivable	10,000	9,000
Allowance for uncollectible acounts	(1,000)	(800)
Inventory	18,000	21,000
Prepaid insurance	700	600
Land	4,000	7,000
Buildings	32,000	34,000
Accumulated depreciation, buildings	(9,000)	(10,500)
Patents	6,000	5,000
Total assets	$63,700	$68,800
Accounts payable	$12,000	$ 9,000
Notes payable	3,000	5,000
Accrued liabilities	2,000	2,400
Mortgages payable	10,000	9,000
Common stock	30,000	32,000
Retained earnings	6,700	11,400
Total liabilities and capital	$63,700	$68,800

ABLE STATIONERY COMPANY
Income Statement
For the Year Ended December 31, 1964

Sales		$140,000
Cost of merchandise sold		80,000
Gross profit		$ 60,000
Depreciation expense	$ 1,500	
Amortization of patents	1,000	
Salaries	30,000	
Advertising	12,400	
Supplies	4,000	
Total operating expenses		48,900
Operating income		$ 11,100
Non-operating gain:		
Gain on sale of land		1,000
Net income		$ 10,100

Step 3. The basic procedure in analyzing a change in an account balance is to reconstruct the journal entry or entries which caused the change. Then *substitute working capital* for any working capital account which appears in the entry.

Each amount appearing in the analysis column of the illustrative work sheet is explained below. The explanations are lettered to correspond with amounts on the work sheet.

A. The balance of the Buildings account increased $2,000. Analysis of the ledger account indicates that the entry recording this building expansion was:

Buildings	2,000	
Cash		2,000

Substituting working capital for Cash, the entry in the analysis columns of the work sheet is

Buildings	2,000	
Working capital		2,000

Had the addition to the building been acquired with a sixty-day note payable, the entry on the work sheet would be the same. A decrease in working capital is effected by either a decrease in cash or an increase in current liabilities.

B. The Accumulated Depreciation—Buildings account was increased by $1,500 as a result of the annual entry to record depreciation expense:

Depreciation expense	1,500	
Accumulated depreciation—buildings		1,500

While this entry neither provided nor consumed funds, the debit to depreciation expense affected the determination of net income, which was closed to retained earnings. Therefore, the entry on the work sheet is

Retained earnings	1,500	
Accumulated depreciation—buildings		1,500

C. The $1,000 decrease in patents was due to the entry amortizing patents as patents expense. The entry on the work sheet is therefore made to retained earnings in the same manner as the entry for depreciation expense.

D. The reduction of $1,000 in the mortgages payable account was the result of the following entry:

Mortgages payable	1,000	
Cash		1,000

The entry on the work sheet, substituting working capital for cash, is thus:

Mortgages payable	1,000	
Working capital		1,000

E. The entry producing a $2,000 increase in the capital stock account resulted from the increase of additional stock at par, recorded as follows:

Cash	2,000	
Common stock		2,000

Substituting working capital for cash, the entry on the work sheet is:

Working capital	2,000	
Common stock		2,000

F. and G. The $3,000 change in the land account is the result of two entries, one for the purchase of land for $8,000 and one wherein land costing $5,000 was sold for $6,000 cash. The actual recorded entries and the corresponding entries on the work sheet are:

Recorded Entries			*Entries on the Work Sheet*		
Land	8,000		Land	8,000	
Cash		8,000	Working capital		8,000
Cash	6,000		Working capital	6,000	
Gain on Sale of Land		1,000	Retained earnings		1,000
Land		5,000	Land		5,000

The $1,000 gain on the sale of land affected the determination of net income and thus must be entered on the work sheet as affecting retained earnings.

H. Dividends of $5,400 were paid during the year. The recorded entry and the corresponding entry on the work sheet are:

Recorded Entry			*Entry on Work Sheet*		
Retained earnings	5,400		Retained earnings	5,400	
Cash		5,400	Working capital		5,400

J. Net income is closed to retained earnings, and depreciation, patent amortization, and gain on the sale of land have been entered on the work sheet as adjustments to net income, through retained earnings. Thus the total funds provided by operations are:

Reported net income	$10,100	
Add: Depreciation	1,500	
Patent amortization	1,000	
Less: Gain on sale of land	(1,000)	
Total funds provided by operations		$11,600

The $11,600 is credited to retained earnings on the work sheet and is debited to working capital, since it represents a source of funds. This final amount completes the analysis of changes between the beginning and ending working capital.

Step 4. The final statement is prepared using the amounts in the working capital section of the work sheet. This statement was shown earlier in Exhibit 18–7.

Depreciation "funds" and their flow

The flow of funds discussed previously has indicated that depreciation, being a non-fund expense, must be added to reported net income to reflect the total funds provided by operations. The statement that "depreciation provides funds" is incorrect. Actual working capital funds, such as cash or receivables, arise only through the earning of revenues from the sale of a company's products or services. Depreciation does not "provide" funds—but neither does reported net income clearly reflect the funds inflow unless depreciation is added to it.

A distinction must be maintained between the concepts of depreciation as an expense in determining income, and the effects of depreciation in the flow of funds. Depreciation expense as it appears on the income statement is the periodic amortization of the cost of an asset, undertaken in such a manner that the cost of using the asset is spread over its useful life. Depreciation for income determination purposes is a process of cost amortization. However, the depreciation expense does not require an outlay of funds, since the funds were actually disbursed at the time the asset was purchased. Thus, over the depreciable life of an asset, profits are adjusted by the cost of the asset (through depreciation) to determine the total funds provided by operations. The dollars spent for the asset are thus "recaptured" through the realization of revenue.

The following simplified example illustrates the concept of "recapturing" an asset's cost through the earning of revenues. Assume that a company is organized and a single asset is purchased for $3,000 cash. The estimated life of the asset is three years. All revenues are received in cash, and all expenses of operating the business, exclusive of depreciation, are paid in cash. The company's balance sheet, after the original investment, appears as follows:

ASSETS		EQUITIES	
Asset	$3,000	Common stock	$3,000

Assume that at the end of the first year of operations the income statement appears as follows, with inflows and outflows indicated:

Revenues (cash in)		$8,000
Expenses:		
Advertising (cash out)	$1,000	
Repairs (cash out)	1,500	
Salaries (cash out)	3,000	
Depreciation	1,000	
Total expenses		6,500
Net income		$1,500

The cash inflow and outflow as reflected by the above statement indicate that $8,000 of cash was received and only $5,500 was disbursed. The difference of $2,500 represents an increase in working capital, although only $1,500 income appears on the income statement. The balance sheet then appears as follows:

ASSETS			CAPITAL	
Cash		$2,500	Common stock	$3,000
Asset	$3,000		Retained earnings	1,500
Less: Accumulated depreciation	1,000	2,000		
		$4,500		$4,500

Even in the event of the company's paying the full $1,500 of income in dividends, there would still be $1,000 of cash left in the business. This $1,000 represents the recapture of a portion of the original investment in fixed depreciable assets; during the estimated three-year life of the asset, the full $3,000 cost will be "recaptured."

Replacement of assets in times of rising prices

The funds which can be "recaptured," as described previously, obviously cannot exceed the asset's cost, since cost is the basis for depreciation. Inflation or other factors frequently increase the dollar cost of the asset when it must be replaced. When this occurs, funds in addition to the "recaptured" cost of the original asset must be used to purchase the replacement. The problem of providing these additional funds has been a particularly vexing one in the past several decades. The constantly rising cost of replacing assets necessitates the

procurement of additional borrowed or invested funds for asset replacement purposes.

Assume, for example, that the value of a dollar has declined from the 1935 level as follows:

	Value of a dollar in terms of 1935 price level
1935	$1.00
1940	.95
1945	.90
1950	.81
1955	.76
1960	.71
1965	.70

Assume further that a company purchased an asset which cost $100,000 in 1935 and depreciated this asset using a straight-line method over its thirty-year life. At the end of the life of the asset in 1965, all other things being equal, a total of $142,857 is required to replace it ($100,000 × 100/70). This is true because the dollar in 1965 will buy only 70% of what the dollar in 1935 bought. Thus the business has recaptured the $100,000 invested in the original asset but must still raise an additional $42,857 for its replacement.

Sinking funds for asset replacements

Although working capital is provided by net income, adjusted for the depreciation included in the computation of the income, there is no assurance that the "recaptured" funds will be available in cash or other liquid form when the depreciating assets are replaced. The "recaptured" funds may have been used to retire long-term debt or to purchase other assets.

Some companies establish special sinking funds to insure that monies will be available for the ultimate replacement of assets. Cash or other assets are invested in these replacement funds regularly, and the monies are usually invested in securities or other income-producing properties until needed for asset replacement purposes. If the contributions to the fund equal the depreciation expense, this segregation of funds insures that at least the number of dollars originally paid for the asset will be available and in liquid form for replacement purposes.

The asset replacement fund is classified on the balance sheet under the caption of *Investments*. Any earnings which the fund realized increase the principal of the fund and are classified as a non-operating income on the income statement. Entries to record the annual contribution to the asset replacement fund and its annual earnings are as follows:

Dec.	31	Asset Replacement Fund	$10,000	
		Cash		$10,000
		To record the annual contribution to the asset replacement fund.		
	31	Asset Replacement Fund	$ 600	
		Income from Asset Replacement Fund		$ 600
		To record income from the asset replacement fund for the year.		

Not all companies establish these sinking funds for asset replacement, choosing instead to use the "recaptured" funds as a means of financing increased receivables or inventory. Whether the "recaptured" funds are placed in a special investment fund or used in the normal operations of the business is a managerial decision. Regardless of how the funds are used, management must remain aware of the nature of funds flow and the problems of replacing assets during an inflationary period.

Questions

18-1. What does the term "fund" mean? Name several accounting "funds."

18-2. State whether the following changes in account balances during the year would be considered changes in working capital or sources or applications of working capital:

(a) Increase in accumulated depreciation of buildings
(b) Decrease in buildings
(c) Increase in mortgage payable
(d) Addition to reserve for bond sinking fund
(e) Reported net profit for the year
(f) Patent amortization expense
(g) Increase in prepaid insurance

(h) Decrease in allowance for bad debts
(i) Decrease in preferred stock
(j) Decrease in inventory
(k) Increase in patents.

18-3. State the effect on working capital funds of (a) borrowing $1,000 from a bank on a six-months note payable; (b) declaring and issuing a stock dividend; (c) collection of accounts receivable; (d) writing off prepaid insurance to expense.

18-4. Describe or name the essential elements of a statement of sources and applications of working capital funds. What information may be drawn from this statement that could not be found on the conventional income statement or balance sheet?

18-5. In the preparation of a statement of sources and applications of working capital funds, is all the information normally needed found by taking the difference between balance sheets at two different dates, or is it necessary to analyze some accounts?

18-6. Why is the total change in working capital funds always equal to the sum of the changes in all non-working capital accounts?

18-7. Are funds applied when cash dividends are declared or when they are paid? Explain.

18-8. A company's management undertook an agreement with a construction company whereby the construction company would build a new office building and receive capital stock in payment instead of cash. Were funds provided and applied in this case? Why or why not?

18-9. Why are non-fund income statement items added or subtracted to reported profit when the statement of sources and applications of working capital funds is prepared.

18-10. Why is it incomplete reporting, in certain instances, to compute the difference in account balances from one date to the next and enter the difference directly as a source or application of funds?

18-11. Explain why depreciation is added back to reported profits to determine the total funds provided by operations.

18-12. The management of a company periodically divides the depreciation expense into the funds used for the purchase of fixed assets. What would the resulting figure indicate?

18-13. During times of constantly rising prices, will the funds recaptured through depreciation be adequate to replace an asset when it is fully depreciated? If not, where must additional funds for replacement be found?

Exercises

18-14. The *total* funds applied and provided in the following two companies are exactly the same. However, the operating policies of the two companies are entirely different.

	COMPANY S		COMPANY T	
Funds provided:				
By operations	$10,000		$10,000	
Issue of long-term notes	40,000			
Sale of capital stock			40,000	
		$50,000		$50,000
Funds applied:				
Purchase of additional plant	$10,000		$35,000	
Payment of dividends	30,000	40,000	5,000	40,000
Increase in working capital		$10,000		$10,000

	Increase	Decrease	Increase	Decrease
Current assets:				
Cash		$ 5,000	$10,000	
Receivables	$35,000		10,000	
Inventories	55,000		15,000	
Current liabilities:				
Accounts payable		25,000		$ 5,000
Notes payable		50,000		20,000
	$90,000	$80,000	$35,000	$25,000
Increase in working capital		10,000		10,000
	$90,000	$90,000	$35,000	$35,000

REQUIRED

Evaluate and compare the policies of the two companies and state which one you feel has made its financial position stronger during the year.

18-15. The following information was taken from the balance sheets of the Collins Construction Co. for the years ended December 31, 1963, and 1964.

	December 31,	
	1963	1964
Cash	$ 2,500	$ 3,000
Accounts receivable	10,500	6,800
Allowance for uncollectible accounts	(1,000)	(800)
Inventory	23,000	25,600
Prepaid insurance	700	500
Notes payable	(5,000)	(2,500)
Accounts payable	(12,000)	(13,000)
Estimated federal income taxes payable	(6,000)	(6,500)

REQUIRED

Prepare a schedule showing the change in working capital items for the year.

18-16. The income statement of the Forwardier Company appears below.

Sales		$100,000
Cost of goods sold		60,000
Gross profit		$ 40,000
Operating expenses:		
Salaries	$22,000	
Depreciation	6,000	
Advertising	4,000	
Patent amortization	1,000	
Office supplies	3,000	
Utilities	2,000	
Bad debt write-offs	4,000	
Taxes expense	1,500	43,500
Net operating loss		($ 3,500)
Interest income (accrued)		600
Net loss for the year		($ 2,900)

REQUIRED

Using data from this statement prepare a schedule showing the funds provided or applied by operations.

18-17. The Retained Earnings account for the Bollow Company appears on page 555.

RETAINED EARNINGS

Dividends declared (unpaid on Dec. 31 of this year)	$5,500	Beginning balance, Jan. 1	$15,000
Goodwill written off	3,000	Net income for the year	7,000
Loss on sale of land	1,000	Refund of prior year's taxes	1,200

REQUIRED

List the items contained in this account which would appear separately as either sources or applications on the statement of sources and applications of working capital funds.

18-18. J. K. Lodd invested $10,000 in a concession stand at the beach. All purchases of food materials are for cash, and all sales are for cash. The $10,000 is invested in kitchen facilities and a wooden building, which have a life of ten years. Lodd has not withdrawn any assets from the business at the end of four years.

REQUIRED

Assuming all accounting is correctly undertaken and all cash transactions have been correctly recorded, what is the profit or loss for the first four years Lodd has had the concession, if his cash balance was $500 when he began business and is now $6,500.

18-19. (a) The Xylier Company began business in 1944, and invested $100,000 in fixed assets, with a depreciable life of twenty years. At that time the dollar was worth 100%. The company uses straight line depreciation. In 1964, when the assets had to be replaced, a dollar had 60% of the purchasing power of a dollar in 1944.

REQUIRED

Compute the number of dollars which the company must use to replace machinery exactly like it had before (assuming all other conditions remain the same).

(b) During the twenty years which the company used those assets, it had made $40,000 of profits, of which $20,000 were paid in federal income taxes, and $10,000 in dividends.

REQUIRED Could the company replace its machinery to stay in business without issuing additional stock or borrowing money? Support your answer with computations.

18-20. The trial balances of the Tramm Company as of December 31, 1963 and 1964 are given below, as is the income statement for the year ended December 31, 1964.

	Trial Balance			
	Dec. 31, 1963		Dec. 31, 1964	
Cash	$ 100		$ 600	
Inventory	300		900	
Land	1,000		1,400	
Buildings	2,000		2,000	
Accumulated Depreciation—Buildings		$ 500		$ 800
Accounts payable		100		1,100
Capital stock		2,000		2,000
Retained earnings		800		1,000
	$3,400	$3,400	$4,900	$4,900

Income Statement
For the Year Ended
Dec. 31, 1964

Sales		$1,500
Selling expenses	$1,000	
Depreciation	300	
Total expenses		1,300
Net income		$ 200

REQUIRED

Prepare a statement of sources and applications of working capital funds with an accompanying statement of changes in working capital items.

Problems

18-21. The balance sheets of the Karron Wholesale Company appeared as follows on December 31, 1963, and 1964:

	December 31,	
	1963	1964
Cash	$ 2,000	$ 4,300
Accounts receivable	9,200	8,100
Allowance for uncollectible accounts	(600)	(500)
Inventory	17,050	19,400
Prepaid taxes	750	900
Equipment	14,900	17,000
Accumulated depreciation, equipment	(6,200)	(8,100)
Trucks	9,250	9,250
Accumulated depreciation, trucks	(3,700)	(5,950)
Franchise costs	3,000	2,500
	$45,650	$46,900
Accounts payable	$ 4,500	$ 7,200
Accrued salaries	600	750
Notes payable	7,000	5,000
Mortgages payable	10,000	7,000
Capital stock	10,000	12,000
Retained earnings	13,550	14,950
	$45,650	$46,900

The income statement for the year reported a profit of $9,000. Dividends of $7,600 were paid during the year. In addition, capital stock of $2,000 was issued on July 17. Changes in the fixed asset accounts resulted from the purchase of fixed assets, and changes in the accumulated depreciation accounts resulted from current depreciation expenses.

REQUIRED

Prepare a work sheet and a formal statement of the sources and applications of working capital funds for the year ended December 31, 1964.

18-22. The Clark Company's comparative balance sheets as of December 31, 1963 and 1964 appear on page 557.

An analysis of the income statement for the year ended December 31, 1964, indicated a profit of $3,000 and included depreciation expenses of $2,150. Analysis of the Retained Earnings account indicated a profit of $3,000, amortization of organization costs of

	December 31,	
	1963	1964
Cash	$ 2,000	$ 1,700
Accounts receivable	12,000	14,000
Notes receivable	6,000	3,000
Allowance for uncollectible accounts	(500)	(900)
Inventory	29,000	31,000
Prepaid rent	1,000	1,200
Land	5,600	7,900
Buildings	31,200	42,500
Accumulated depreciation, buildings	(7,400)	(9,850)
Organization costs	2,000	1,000
	$80,900	$91,550
Accounts payable	$ 4,800	$ 5,060
Notes payable	3,050	5,500
Salaries payable	1,800	2,100
Mortgages payable, 1970	20,000	28,000
Common stock	50,000	50,000
Retained earnings	1,250	890
	$80,900	$91,550

$1,000, and posting of dividends in the amount of $2,360. A new mortgage of $10,000 had been secured on the new building, and a payment of $2,000 had been made on the old mortgage.

REQUIRED

1. Prepare a work sheet to determine the sources and the applications of working capital funds.
2. Prepare the statement of the sources and applications.

18-23. The Scott Carton Company purchased a building on January 1, 1951, for $100,000. The building is expected to have a 25-year life and no salvage value. Between 1951 and 1963 the company had made a total of $35,000 of profits and had paid $8,000 of this in federal income taxes. A total of $1,000 had been paid in dividends during each year of this period.

At the end of 1964, the company reported a profit of $14,000, the largest profit in its history. The income taxes on this profit were estimated to be $5,000. Several stockholders were disturbed be-

cause the company's dividends were not raised, since only the usual $1,000 of dividends were to be paid in the current year.

The purchasing power of a dollar had declined from a value of 100% in 1951 to 80% of that value in 1964. The unusually high profits during the year 1961 could not be expected to continue into future years, and in fact, the profit history of the company before 1964 was more indicative of future expectations.

REQUIRED

Write a short report to the stockholders stating why dividends should not be raised during the current year to prevent further investment or borrowing when the building must be replaced. Include computations and amounts in your report.

18-24. The following data are given for the Malibough Company. Dividends of $1,000 were paid during the year. Common stock was issued for cash and land was bought with cash. A work sheet is not required unless you need one for your own purposes.

	Balance Sheets	
	Dec. 31, 1963	Dec. 31, 1964
Cash	$ 1,000	$ 100
Accounts receivable	2,000	4,500
Land	10,000	21,500
Equipment	20,000	20,000
Accumulated depreciation, equipment	8,000 (cr.)	9,000 (cr.)
Accounts payable	3,000 (cr.)	1,000 (cr.)
Common stock	15,000 (cr.)	20,000 (cr.)
Retained earnings	7,000 (cr.)	6,000 (cr.)
Sales—cash		9,600 (cr.)
Sales—credit		15,000 (cr.)
Purchases		11,500
Salaries		3,000
Rent		2,000
Depreciation expense		1,000

REQUIRED

Prepare (a) an income statement and (b) a statement of the sources and applications of working capital funds for the year ended December 31, 1964.

18-25. The management of the Kroner Can Company was disturbed to learn at the close of business December 31, 1964, that their cash balance was much lower than at any time previously although the business had been more profitable than at any time in their history. There were no beginning or ending inventories, and only $600 of dividends were paid during the year.

	Balance sheets as of	
	Dec. 31, 1963	Dec. 31, 1964
Cash	$ 5,000	$ 200
Accounts receivable	4,000	10,000
Notes receivable from customers (60-day)	19,000	27,000
Land	8,000	8,000
Buildings	13,000	20,000
Accumulated depreciation, buildings	(4,000)	(6,000)
	$45,000	$59,200
Accounts payable	$ 5,400	$ 3,200
Common stock	30,000	30,000
Retained earnings	9,600	26,000
	$45,000	$59,200

Income Statement

Year Ended December 31, 1964

Cash sales		$150,000	
Credit sales		200,000	
Total sales			$350,000
Cost of goods sold			280,000
Gross profit			$ 70,000
Expenses:			
Depreciation	$ 2,000		
Salaries	40,000		
Rent	3,000		
Taxes	2,000		
Advertising	6,000		
Total expenses			53,000
Net income			$ 17,000

REQUIRED

1. From the data, analyze their funds flow and prepare a statement of the source and applications of working capital.
2. Describe briefly why the cash balance is lower than for the previous year.

18-26. Willey Timkins bought a small neighborhood theatre called the Uptown Theatre. During the year 1964 he completed the following transactions:

(a) Invested $1,000 cash and a building valued at $50,000, issuing capital stock to himself.
(b) Realized $15,000 in admissions, all in cash.
(c) Paid $12,000 for salaries.
(d) Purchased supplies for the concession stand for $6,000.
(e) Realized $9,000 from concession stand sales.
(f) Paid utility bills of $5,000.
(g) Recorded the property tax of $1,000 but did not pay it, since the tax was not due until the next year.
(h) Bought a new projecting machine for $500.
(i) Recorded the concession supplies on hand at the year's end, $500.
(j) Recorded depreciation on the building, which had a 20-year life and no salvage value.

At the end of the year Timkins saw that his cash balance was $1,500. Since he had only invested $1,000 in cash, he reasoned that he was making a profit.

REQUIRED

1. Prepare a balance sheet and income statement for the Uptown Theatre.
2. Analyze the change in the cash balance and write a short description of the factors causing the change.

Cases

18-27. The Tiaband Company's trial balances for the years ended December 31, 1964 and 1965 appear below, with data relative to transactions affecting non-working capital accounts.

	December 31	
	1964	1965
Cash	$ 40,000	$ 14,000
Accounts receivable	7,000	10,000
Notes receivable	6,000	8,000
Inventory	16,000	22,000
Land	50,000	50,000
Buildings	50,000	90,000
Equipment	8,000	5,000
	$177,000	$199,000
Accounts payable	5,000	$ 6,000
Notes payable	35,000	4,000
Accrued wages and salaries	1,800	2,000
Accrued taxes	4,800	5,000
Accumulated depreciation—buildings	10,000	12,000
Accumulated depreciation—equipment	2,000	2,250
Bonds payable	—0—	40,000
Capital stock	80,000	100,000
Retained earnings	38,400	27,750
	$177,000	$199,000

Net income for the year was $9,350. Equipment which cost $3,000, and against which a reserve for depreciation of $750 had been provided, was sold for $1,600, the loss being debited to a loss ac-

Statement of Funds Inflow and Outflow

For the Year Ended December 31, 1965

Funds inflow:		
Sale of equipment	$ 3,000	
From depreciation	2,250	
From issue of bonds	40,000	
From issue of stock	20,000	
Total		$65,250
Funds outflow:		
Purchase of buildings	$40,000	
Decrease in retained earnings from operations	10,650	
Total		50,650
Net increase in funds		$14,600

count. The remaining changes in accumulated depreciation represent the current year's depreciation provisions. The increase in capital stock was caused by a stock dividend.

A statement of funds flow had never been prepared for the company's management, and the president requested that such a statement be prepared. The company's accountant analyzed all non-working capital account changes and prepared the statement on page 562.

The president of the company was disturbed. He wanted to know how a statement showing a $14,600 increase in funds could be prepared when he knew that the company's cash was at least $25,000 less than last year. How would you answer him? Would you have prepared a statement differing from the one the company's accountant prepared? If so, how would you change the statement?

18-28. The seven members of the board of directors of the Pillan Grain Company met on January 22, 1964. One of the items on the agenda for the meeting was the declaration of the annual dividend to stockholders. The stock of the company was widely held, and there were approximately 1,000 stockholders, none of whom held more than 5% of the stock. The company had been in existence for 35 years and had made profits every year except 1934 and 1935. Its principal business was buying grain, storing the grain in a large grain elevator, and selling the grain to mills and feed manufacturers. The grain elevator had been built in 1927.

There were 10,000 shares of stock outstanding, and the dividend record of the company had been very good. Dividends had been paid regularly every year since its formation, in the following amounts:

1927 to 1934	$1 per share
1935 to 1938	.20 per share
1939 to 1951	$1 per share
1952 to 1962	$2 per share
1963	$5 per share

The large dividend in 1963 was declared because of the persuasive arguing of Mr. William Striker who had been elected a director in 1963 for the first time. He feels strongly that the same dividend should be declared this year, and bases his arguments on the fact that the company has a responsibility to return the major portion of its profits to the stockholders each year.

Mr. Robert Roper was elected to the board for the first time this year. He countered Striker's argument by maintaining that the major responsibility of the board of directors is to keep the company alive and healthy, and that if the profits are needed for other purposes, dividends must be reduced. He pointed out that the remaining life of the grain elevator was approximately ten years, and the cost of replacing it would be approximately $850,000. Mr. Striker replied that the current year's profits were sufficient, that the company had a fairly large cash balance with which to pay the dividend, and that the stockholders would expect another dividend of $5 per share since that amount was paid in the prior year. Roper answered that while the cash position is sound now, it is declining and the company would be in jeopardy if it should decline further. The company's 1962 and 1963 financial statements are as follows:

THE PILLAN GRAIN COMPANY

Balance Sheet

December 31,

	1962		1963	
ASSETS				
Current assets				
Cash	$ 85,000		$ 65,000	
Accounts receivable	71,000		82,000	
Grain inventory	360,000		375,000	
Total current assets		$516,000		$522,000
Fixed assets				
Equipment	$120,000		$130,000	
Less: accumulated depreciation	53,000		65,000	
Net	$ 67,000		$ 65,000	
Grain elevator	$290,000		$290,000	
Less: accumulated depreciation	202,000		210,000	
Net	$ 88,000		$ 80,000	
Total fixed assets		$155,000		$145,000
Total assets		$671,000		$667,000

LIABILITIES AND CAPITAL				
Current liabilities				
Accounts payable	$ 23,000		$ 13,000	
Federal income taxes payable	21,000		20,000	
Total current liabilities		$ 44,000		$ 33,000
Long-term liabilities				
5-year installment note payable		75,000		60,000
Total liabilities		$119,000		$ 93,000
Capital				
Capital stock (10,000 shares)	$400,000		$400,000	
Retained earnings	152,000		174,000	
Total capital		$552,000		$574,000
Total liabilities and capital		$671,000		$667,000

THE PILLAN GRAIN COMPANY

Income Statement

For the Year Ended December 31, 1963

Revenue from sales		$530,000
Cost of goods sold		260,000
Gross profit		$270,000
Expenses and costs:		
Salaries	$140,000	
Advertising	6,000	
Interest on notes	2,500	
Depreciation—equipment	12,000	
Depreciation—building	8,000	
Taxes	20,000	
Supplies	9,500	
Total expenses		198,000
Net income for the year		$ 72,000

What position would you take on the $5 per share dividend? Do you feel the company's long-run and short-run cash positions are sound? What action, if any, would you consider at the present time concerning the replacement of the grain elevator?

19

The nature of accounting controls

One individual through personal supervision may be able to control the entire operation of a small business. However, as the company expands, employing more people and performing a greater number of operations, over-all personal supervision becomes increasingly difficult, if not impossible. At some point in the development of all but the smallest businesses the responsibility for certain phases of the company's operations must be assigned to other individuals.

The operations of larger companies are subdivided into areas of responsibility. One individual, such as the vice-president in charge of sales, vice-president in charge of production, treasurer, or controller, is selected to supervise each area. These divisions are usually further subdivided, and a foreman, department head, or section chief is chosen to oversee each smaller area.

The nature of control

When responsibility is assigned to an individual, certain controls are necessary to insure that he is performing his duties in an acceptable and efficient manner. Control is exercised through the establishment of a formal organization with definite lines of authority, accounting reports for each division of responsibility, arrangement of duties and the flow of business papers, systems of internal check, and the establishment of company policies, procedures, and plans.

Accounting is one of the major tools used by management in controlling operations. Individual performance of those persons who have been assigned supervisory duties cannot be measured without the accumulation of financial data related to their activities. Nonsupervisory personnel cannot be controlled without formal work

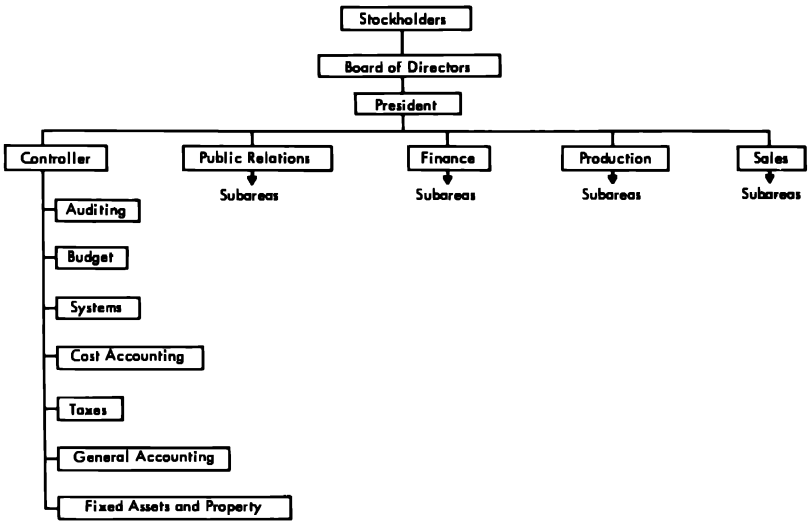
systems, arrangement of duties, and a prescribed flow of business papers. These control measures are also an integral part of the system of gathering and reporting financial data.

Control through organization

When a business is organized into areas of responsibility, a business organization exists and is frequently reduced to a formal organization chart such as the one shown in Exhibit 19–1. Although each of the major divisions will normally have many subdivisions, only those under the controller appear in detail in the illustration.

EXHIBIT 19–1

Partial Organization Chart of the Southeastern Products Company



One of the first prerequisites for control in a formal organization is that responsibilities must be fixed. A clear understanding of individual responsibilities is necessary for a meaningful measurement of how well those responsibilities are being fulfilled.

Responsibility accounting is a process of measuring separately each supervisory activity. Budgets and plans for future operations are first established for each area of responsibility, and actual operating data are then accumulated and matched with the budget or plan. The president can evaluate the operations of the controller, and the controller, in turn, can evaluate his subordinates by means of responsi-

bility accounting reports which match actual expenses with planned expenses. Inefficiencies, weaknesses, the incurrence of excessive costs, and poorly directed operations can thus be located.

Suppose, for example, that a budget of $100,000 is set for the controller's operations for the month of August, 1963. The controller, working with each of his department heads, then formulates expense plans for each subdivision. Actual expenses incurred in each department during the month are later accumulated in the accounting process, and inefficiencies or excessive expenses are quickly located.

Control through the flow of work

Employees who are not in a supervisory capacity are controlled by the arrangement of their duties and the flow of their work. An employee's work is automatically checked if it can be verified by another employee in the normal course of work and without duplication of effort.

Such arrangement of duties and prescribed work flow are a part of the *system of internal control.* Internal control may be defined as the plan of organization and all the related methods and procedures adopted within the company to safeguard its assets, produce accurate accounting data, promote efficient operations, and encourage adherence to management policies.

That part of the internal control framework that pertains to the arrangement of duties and flow of work is called *internal check.* Internal checks insure the safeguarding of assets and simplify the detection of errors, fraud, or embezzlement.

A sound system of internal check cannot be achieved without separation of three basic functions: (1) record keeping, (2) physical custody of assets, and (3) authority to move assets or incur liabilities. If authority for more than one of these three functions is placed in the hands of any individual, the actions of that individual are not properly controlled.

Internal check illustrated—cash receipts and disbursements

Cash is the most liquid asset of a business and therefore must be controlled carefully to prevent theft and embezzlement. To illustrate the segregation of duties and flow of work necessary to achieve control over cash, the following system used by a department store is described. Note that record keeping, physical custody, and authority for movement are carefully separated.

Cash receipts

When cash is received for cash sales, it is immediately rung up on a cash register. The cash register has a locked-in tape, which is a record of all cash received. Separation of record keeping and physical custody of cash begins at this point, for the sales person, who has access to cash, is not given access to the tape. At the end of each day the cash in the register is transferred to an employee who deposits it in the bank. This employee likewise does not have access to the tape. The locked-in tape is removed by still another employee and becomes the basis of the daily cash sales entry. Each day the cash over and short is reconciled as the difference between the cash deposit and the total of the locked-in tape. Small cash overages and shortages are to be expected, but large shortages or continued small shortages indicate possible manipulation of cash. To prevent loss of control over cash, it is most important that the person who has access to cash not have access to the records. If these functions were performed by the same individual, cash could be extracted, the records altered, and the disappearance of cash would never be discovered.

Cash payments

An authorized signature converts a blank check to the equivalent of cash. Therefore, the persons authorized to sign checks should not be given access to the accounting records. The payment which is to be made with the check should be authorized by one person (authority for movement of an asset), the check should be recorded by another person (record keeping), and it should be signed by another (physical custody). Thus, control over cash payments is achieved, and no individual can extract cash without detection. Note that duties are not duplicated and that the arrangement of duties and flow of work automatically provide control over cash and insure accuracy in the records.

Control over checks

A stronger control over cash is achieved when all cash receipts are deposited daily and all payments are made by check. This procedure permits a comparison of daily cash receipts with the deposits appearing on the bank records. All checks written can also be compared with the figures which are subtracted by the bank from the company's account. Checks should be prenumbered to insure that each check is recorded.

Exhibit 19–6 illustrates a check register which is used to account for all checks written. The check register is a journal of original entry and replaces the cash disbursements journal. Note that checks are recorded in numerical sequence in the check register and that voided checks are recorded, although no dollar amount appears in the money columns. A voided check must be clearly marked *void* to prevent its later use. Tearing off the signature portion of a check is one method of insuring that a voided check is not used later.

Petty cash

Almost every company finds it necessary to make many small cash payments quickly and without prior notice. Immediate cash payment is necessary, for example, when office supplies are purchased, when a collect telegram is received, or when freight charges must be paid upon receipt of merchandise. Since preparation of a check is often a lengthy process, a means of making small payments quickly is necessary.

A *petty cash fund* is established for the purpose of making small cash payments. A limit such as $5 or $10 is placed on the size of the payment which can be made from this fund, and anything over this amount must be paid by check. When a petty cash fund is established, a specific amount of cash is placed in the fund, and one designated person makes all payments from the fund. The amount of the fund ranges from $25 to $1,000, depending upon the company's needs.

As cash is expended from the fund, the person in charge of the fund prepares a *petty cash voucher* which contains information relative to the amount spent, what it was spent for, and any other pertinent information about the payment. Exhibit 19–2 illustrates a petty cash voucher, which is prenumbered and requires the signature of the person who receives the payment. Completed petty cash vouchers are placed with the remaining cash in the petty cash box.

The remaining cash, plus the completed petty cash vouchers representing payments from the fund, must equal the original amount of the fund. When additional cash is needed in the fund, the completed petty cash vouchers in the petty cash box are removed, and a single check is written on the general bank account to replenish the fund by the amount of the paid vouchers. The expenses that were incurred when the petty cash was expended are then recorded.

The fund is an *imprest* fund, which means that cash has been "advanced" to the petty fund cashier, who will be reimbursed when the money in the fund is expended. The following entries illustrate

EXHIBIT 19–2

PETTY CASH VOUCHER No. 351

Sidmon Company

Date May 17, 1964

Paid to Jamison Office Supply Co. Amount $ 2.79

For Pencils

Received by: S. A. Welch (Signature)

Approved by: Wm. P. Bacon (Signature)

how the petty cash fund operates. General journal entries are used in the illustration, although the entries would actually be entered in the check register or other cash disbursements journal.

Jan.	14	Petty Cash Fund	$100	
		Cash in Bank		$100
		To record the establishment of a petty cash fund by withdrawing $100 from the bank. The fund is to be placed under the responsibility of the general office manager.		
Jan.	28	Advertising Expense	$ 12	
		Office Supplies Expense	31	
		Miscellaneous Selling Expenses	8	
		Miscellaneous General Expenses	7	
		Telephone and Telegraph	15	
		Freight-in	6	
		Cash in Bank		$ 79
		To record the disbursements from the the fund and to replenish the fund by the amount of the paid vouchers.		

Note that the petty cash fund is debited only when it is established; the entry for reimbursement did not affect the amount of the fund.

Petty cash vouchers should be marked *PAID* when they have been reimbursed, to prevent their reuse. The Petty Cash Fund account in the general ledger, which was established when the fund was originated, is classified as a cash item when the balance sheet is prepared.

Care must be taken to replenish the fund on each balance sheet date. Otherwise, the general ledger account will not reflect the true amount of cash in the fund, and expenses arising from petty cash payments which are unreimbursed will not appear on the income statement.

Reconciling the bank balance

All banks maintain detailed records for each of their depositors. These records show each deposit made to the customer's account and all checks written against the company's account which have reached the bank. Each month the bank sends a *bank statement* to each depositor. The bank statement, illustrated in Exhibit 19–4, is a detailed record of all deposits and checks which have cleared the depositor's account.

If a company deposits its cash receipts daily and disburses only by check (except for petty cash disbursement), the bank statement should contain the same figures as the company's cash receipts journal and check register. Daily cash receipts in the company's records will appear as deposits on the bank statement; checks recorded in the company's check register will appear as withdrawals on the bank statement. The bank statement is thus a second record of a company's cash transactions.

The cash balance on the bank statement and that on the company's books will seldom agree exactly. This discrepancy is due to the lag between (1) the date a check is issued and the date it clears the company's bank account, or (2) the date cash is received and recorded and the date the deposit reaches the bank. The time lag on deposits is normally not more than one day, but it may be several weeks for checks. Differences between a company's cash records and the bank's records may also result from clerical errors on the part of either the company or the bank.

The cash balance on the bank statement and that recorded on the company's books should be reconciled each month. This reconciliation is made to insure that each cash transaction appearing on the bank statement is recorded currently on the books. If unauthorized checks are drawn, or if cash is extracted before deposit, the bank reconciliation should reveal the discrepancy. The monthly reconciliation of the bank account should not be performed by an employee who has access to cash, signs checks, or records cash transactions. The reconciliation is a proof of cash transactions as recorded on the company's books, and it should be assigned to an employee who has no other duties connected with cash transactions.

The following steps are necessary in reconciling the cash balance on the bank statement with that appearing on the company's records:

1. Trace daily cash receipts on the company's records to the deposits appearing on the bank statement. The deposits on the company's books which have not yet reached the bank are "deposits in transit" and should be added on the reconciliation work sheet to the balance of cash which the bank statement shows.
2. Compare the cleared checks returned by the bank and deducted on the bank statement and returned with the record of checks in the Cash Disbursements Journal. Any checks that have been issued by the company but have not yet cleared the bank represent "outstanding checks" and must be subtracted from the bank balance on the reconciliation work sheet.
3. The above two steps should account for all deposits and checks. Any other items appearing on either the company's records or the bank's records must be investigated to determine whether the bank or book balance should be adjusted. For example, the bank may have recorded a service charge against the company's cash balance. Since this charge does not appear on the company's records, it must be subtracted from the cash balance on the books. As a further illustration, the bank may have collected a note receivable owed the company by one of its customers and deposited the proceeds directly to the company's account. If the company has not yet recorded the collection of the note, the cash must be added on the reconciliation work sheet to the cash balance on the company's books. The form of a bank reconciliation work sheet is shown below in Exhibit 19–3.

EXHIBIT 19–3

Bank Reconciliation Work Sheet, July 31, 1964

Balance per books, July 31, 1963	$	Balance per bank, July 31, 1963	$
Add: Note collections by the bank which have not been recorded on the books	(+)	Add: Deposits in transit which have not yet reached the bank	(+)
Less: Expenses and costs charged by the bank and deducted from the bank balance but not entered on books	(−)	Less: Checks written which have not yet cleared the bank	(−)
Book errors	(+) (−)	Bank errors	(+) (−)
Corrected cash balance	$	Corrected cash balance	$

Exhibit 19–4

Illustration of Bank Reconciliation Procedures

Exhibit 19–4 illustrates the relationship of the company records and the related bank statement used in the reconciliation process. The two ending cash balances, $2,498 as shown on the bank statement, and $2,288 as shown in the general ledger account, are adjusted by adding to or subtracting from each until the corrected cash amount is determined. The bank reconciliation shown below was prepared from these documents. Each of the checks outstanding, deposits in transit, book errors, and unrecorded service charges can be determined by tracing the amounts in Exhibit 19–4 between the book figures and the amounts on the bank statement.

Balance per books, Jan. 31, 1964	$2,288		Balance per bank, Jan. 31, 1964	$2,498
Add: Error in recording deposit of Jan. 2. Actual deposit was $200; recorded in books as $190.	10		Add: Deposits in transit: Deposit of Jan. 31	120
	$2,298			$2,618
Less: Unrecorded service charge	5		Less: Checks outstanding:	
		Number	Amount	
		746	$100	
		749	65	
		750	90	
		755	70	325
Corrected balance	$2,293		Corrected balance	$2,293

Entries on the company's books should be prepared for each item that adjusts the *balance per books* in the reconciliation work sheet. If the balance on the books is incorrect and adjustments must be made in the reconciliation, the books must be adjusted to reflect the correct cash balance. The above reconciliation necessitates two entries:

Jan.	31	Cash in Bank	$10	
		Sales		$10
		To correct deposit of Jan. 2; recorded as $190, but was actually $200.		
Jan.	31	Miscellaneous Expenses	$ 5	
		Cash		$ 5
		To record bank service charge for January.		

Control over the payment of liabilities

The authority to approve a disbursement is a major responsibility and is usually vested in only a few responsible officers of the com-

pany who receive and review all documents, invoices, and papers relating to a disbursement.

The documents surrounding the purchase of merchandise may be used to illustrate the accumulation of paperwork prerequisite to issuing a check. *A purchase requisition* is prepared by designated persons to inform the purchasing department that merchandise is needed. When the purchasing department receives the requisition, a *purchase order* is prepared and forwarded to the supplier. When the goods arrive, the receiving department inspects and counts the merchandise and prepares a *receiving report.* Finally, the supplier submits his invoice, which shows the amount owed him for the merchandise. Signed copies of all four documents, which have been prepared independently, are accumulated in the accounting department and sent to the officer who will authorize payment. He reviews the papers to ascertain that the merchandise was needed (purchase requisition), that it was actually ordered (purchase order), that it was received in good condition (receiving report), and that the amount owed is correct (invoice). If all documents are in order, payment is approved. The check is then prepared, entered in the records, and signed. The official who approves the disbursement should not also sign the check.

responsible for any past this point or Chapt 19

The voucher system

The Voucher System is a term applied to an orderly flow of documents similar to that just described but containing an additional control arising from the preparation of a formal document called a *voucher.* The system operates in the following manner:

1. When all copies of purchase requisitions, purchase orders, receiving reports, invoices, and other papers supporting a disbursement have been accumulated in the accounting department, the *voucher* is prepared, containing full information concerning the disbursement. A copy of a voucher is illustrated in Exhibit 19–6.
2. The voucher and all related documents are sent to the person who will approve payment. His signature on the voucher is authority for payment. All documents supporting the payment are stamped or perforated at this point to prevent their reuse with another voucher.
3. The authorized voucher is returned to the accounting department and recorded in a voucher register. Vouchers are prenumbered and must be listed in numerical order in the voucher register. Exhibit 19–7 illustrates a voucher register.
4. The approved voucher is then filed according to due date in an

unpaid voucher file containing all authorized but unpaid vouchers.

5. Vouchers are removed from the unpaid voucher file on their payment date. Checks are prenumbered; and as they are prepared, they are recorded in a check register, together with the number of the supporting voucher. Thus every check is supported by a voucher, and a complete cross reference between checks and vouchers is maintained in the check register. Exhibit 19–8 is an illustration of a check register.
6. The checks and vouchers are forwarded to the officer whose signature is authorized to appear on the checks, where they are signed and mailed. Each voucher is stamped *paid* and returned to the accounting department, where the check number is recorded in the voucher register to indicate that payment has been made. In the illustration of the voucher register in Exhibit 19–7, note that some of the vouchers have been paid and some have not. The unpaid vouchers, which have no check numbers beside the voucher numbers, are still retained in the unpaid voucher file; paid vouchers are placed in numerical sequence in a paid voucher file. The entire voucher system is illustrated in the flow chart in Exhibit 19–5. Note particularly the separation of the three functions necessary for sound internal control.

Use of subsidiary ledgers as control devices

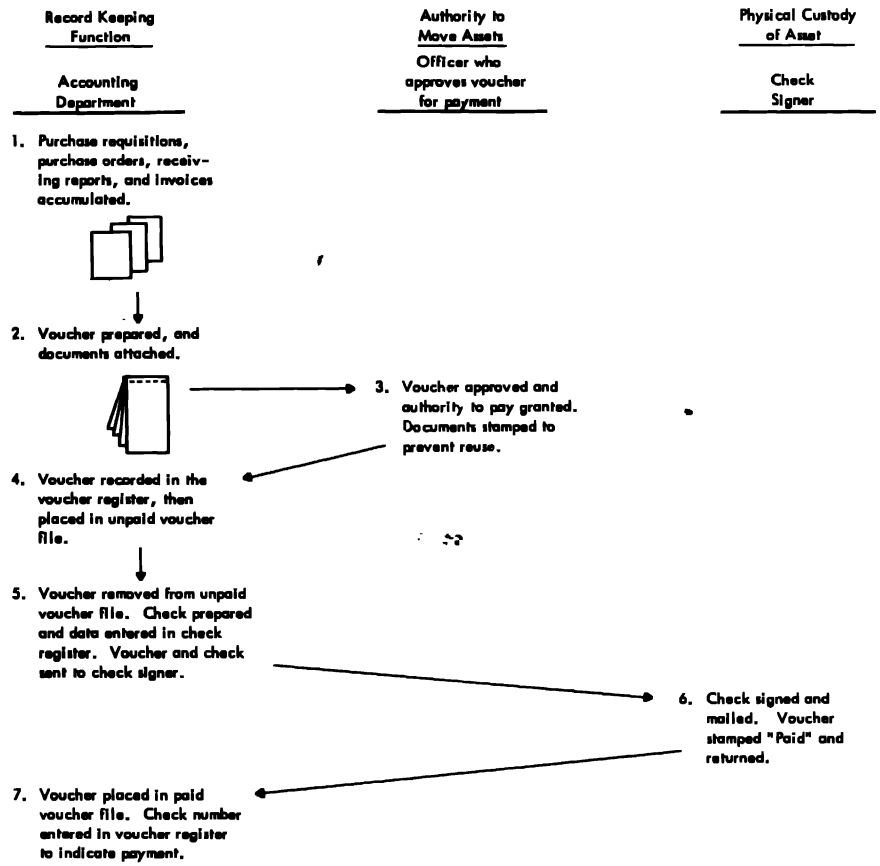
Subsidiary or detail ledgers are used as a means of controlling both assets and liabilities. The voucher previously described is an example of a subsidiary record. The individual unpaid vouchers remaining in the unpaid voucher file must balance with the accounts payable control account in the general ledger at the end of each month, after voucher register totals and check register totals have been posted.

In order to provide maximum control, the detail or subsidiary ledger should be maintained by someone other than those persons having physical control of properties or those who prepare or post entries to control accounts. Separation of the control and the subsidiary ledger is a form of automatic check to ascertain that the detail ledger is being maintained accurately. The detail ledger, in turn, is used to control and account for the specific assets or properties.

The accounts receivable ledger may be used to illustrate how control can be provided by the use of subsidiary ledgers. When a credit sale is made, two copies of the sales slip are prepared. One copy is sent to the person maintaining the customers' detailed ledger for use in posting to customers' accounts. The other copy is forwarded

EXHIBIT 19–5

The Voucher System Illustrated



to the person who prepares entries to the control account in the general ledger. At the end of each month the total of all the customers' accounts is compared with the total in the control account. Any differences must be reconciled. If the subsidiary total and the control balance agree, there is assurance that all credit sales were posted to *some* customer's account. There is no assurance that the proper customer's account was posted, however. The customers are relied upon to inform the company if a credit sale was posted to the wrong account. All customer complaints are directed to someone other than the person who maintains the subsidiary ledgers, thus affording an independent check on the accuracy of posting credit sales.

Exhibit 19–6

Voucher

ACME PULP COMPANY
Ft. Wayne, Indiana

No. 7563

Payee: Pure Chemical Company
6302 Whitis Avenue
Chicago, Illinois

Date	Details	Amount
April 29, 1964	600 lbs. chemical 34X-2 Invoice 4921, dated April 18	$723.00

Accounting Distribution:

Debit	Purchases	$723.00	Date prepared	April 30, 1964
			Date of payment	May 10, 1964
			Documents assembled by	B&P
			Documents received by	J.R.S.
			Approved for payment	A.M. Whitely
Total credit to vouchers payable		$723.00	Recorded by	J.R.S.

Note that this voucher has been approved for payment but will not be paid until May 10, 1964. The voucher has been entered in the voucher shown in Exhibit 19–7 and would remain in the unpaid voucher file until the payment date.

Exhibit 19–7

Voucher Register

Date		Payee	Voucher Number	Check Number	Voucher ~~Accounts~~ Payable Dr.	Purchases Dr.	Store Supplies Dr.	Delivery Expense Dr.	Sundry Debits		
									Account	Post Ref.	Amount
1964											
April	17	Tracey Supply Co.	7538	3240	175.00			175.00			
	18	Hauling Steel Co.	7539		100.00				Bldg. Repairs	4132	100.00
	19	Wilson-Toole, Inc.	7540	3243	200.00	200.00					
	19	Office Supply House, Inc.	7541	3244	97.00		97.00				
	20	Abbott and Fitch	7542	3248	500.00	500.00					
	20	Drakes-Landow Company	7543		50.00	50.00					
	21	McFarland Supply	7544		82.00				Adv. Expense	5160	82.00
	22	Hovart Chain Products	7545	3230	1,400.00	1,400.00					
	22	Outland Company	7546	3260	600.00				Office Equip.	2310	600.00
	23	Patts Metal Company	7547	3219	510.00	510.00					
	23	Armco Products	7548		192.00		192.00				
	24	Midstates Oil Company	7549		41.00			41.00			
	24	Lerno Company	7550	3238	750.00	750.00					
	25	Trainer Insurance Company	7551	3251	120.00				Prepaid Ins.	1728	120.00
	25	Ralph Newman	7552		422.00	422.00					
	30	Pure Chemical Company	7563		723.00	723.00					
	30	Totals			19,520.00	13,140.00	650.00	329.00			5,401.00

EXHIBIT 19–8

Check Register

Date		Payee	Check Number	Voucher Number	Accounts Payable Cr.	Purchase Discount Cr.	Cash in Bank
1964							
April	19	Indiana Abrasives Co.	3241	7430	1,000.00		1,000.00
	20	Travis Publications	3242	7520	900.00	18.00	882.00
	20	Wilson-Toole, Inc.	3243	7540	200.00	4.00	196.00
	20	Office Supply House, Inc.	3244	7541	97.00		97.00
	21	J. A. Biggers	3245	7556	850.00	17.00	833.00
	21	Evans Company	3246	7560	36.00		36.00
	24	Southern Supply Company	3247	7522	51.00		51.00
	24	Abbott and Fitch	3248	7542	500.00	15.00	485.00
	24	Wm. J. Hoffman	3249	7497	150.00	3.00	147.00
	30	Totals			18,200.00	263.00	17,937.00
					(1742)	(4361)	(1010)

Control and subsidiary ledger accounts are valuable control measures when duties of employees are separated properly. However, if the same person is permitted to maintain the customers' ledger, prepare and post entries to the general ledger control accounts, and receive monies from customers in payment of their accounts, control over receivables is nonexistent. Cash can be extracted without authorization and both the control and subsidiary accounts adjusted so that the disappearance is never discovered.

Control over fixed assets

Many companies have more dollars invested in fixed assets than in any other type of property. Fixed asset control is achieved by (1) establishing a control account and subsidiary ledger for each class of asset, (2) establishing fixed responsibility for use of the assets, (3) segregating the granting of authority to move the asset and the physical custody of the asset, and (4) periodically examining the fixed assets and accounting for their existence. A subsidiary ledger for fixed assets is shown in Exhibit 19–9.

EXHIBIT 19–9

Fixed Asset Subsidiary Ledger Card

DELTA MANUFACTURING COMPANY

Fixed Asset Ledger

Description	Drill Press	Asset number	375
Location	Machine Department	General ledger classification	Machinery
Manufacturer's Serial Number	8427-A-325	Cost	$8,100
Purchased from	Waco Machinery Co.		
Date purchased	July 1, 1958		

Person responsible for the asset: Foreman, Machine Department

Depreciation information:

Estimated life	10 years
Estimated salvage value	$100
Depreciation method	Straight-line
Monthly depreciation	$66.67
Annual depreciation	$800.00

Final disposition: _____

Depreciation Record

Date	Depreciation Expense	Balance of Accumulated Depreciation	Undepreciated Balance
1958	$400	$ 400	$7,700
1959	800	1,200	6,900
1960	800	2,000	6,100
1961	800	2,800	5,300
1962	800	3,600	4,500
1963	800	4,400	3,700

The fixed asset ledger card should be prepared at the time the asset is purchased. All pertinent data is entered on the card, including information about how depreciation is to be computed and the department responsible for the asset. If responsibility for the physical custody of the asset is later transferred to another department, that information should be noted on the card. Responsibility for assets must be fixed, and the assets must not be transferred without proper authority. If the detailed asset records are maintained by the person who has physical custody of the assets or access to the general ledger control account, adequate control is difficult to maintain. Periodically the detailed fixed asset cards should be used to "inventory" the fixed assets and ascertain that each asset still exists and is in the possession of the person responsible for it.

The internal audit function

A company's control system is a complex framework, including the formulation of detailed plans and budgets, preparation of reports by responsibility areas, independent preparation of bank reconciliations, flow-of-work arrangement, the use of voucher and other subsidiary ledger systems, and such mechanical devices as cash registers with locked-in tapes.

In many companies management maintains a staff of internal auditors whose function is to review the control system to see that it is adequate and effective.

The internal audit staff is most frequently under the responsibility of the controller, who is the company's top accounting executive. Internal auditors periodically review the arrangement of duties, flow of work, adequacy and content of the company's documents, and the accuracy of financial data, making recommendations as to how any weaknesses and inefficiencies can be eliminated. The internal auditor is not an "efficiency expert" attempting to find more efficient ways of performing a job. He is an expert in controls, and it is his duty to establish and maintain a strong system of control throughout the business.

Questions

19-1. Define controls as applied to business and describe how these controls are applied.

19-2. Discuss in general terms the role of accounting in the process of business control and give several examples of how accounting may be used as a control mechanism.

19-3. What part does the organization of a business have in the control process? Is a formal organization more likely in a large or a small business?

19-4. What is responsibility accounting? How does it work? Is "responsibility accounting" a different form of accounting from that which you have studied in previous chapters, or is the performance of control functions an application of the accounting process?

19-5. Define a "system of internal control." What are the three basic functions which must be separated to provide good internal control?

19-6. Explain why the following are or are not good internal control systems:

(a) The accountant of the Zorill Company is in charge of all accounting records and documents. He also signs checks and reconciles the bank account monthly.

(b) The foremen are in charge of the assets and materials used in a company's manufacturing operations. They are authorized to buy new assets and report what they bought to the accounting department, where payment for the asset is made. They are also authorized to sell or scrap assets, which they also report to the accounting office.

(c) The officer in charge of purchasing is authorized to place orders for any items which come to him on signed purchase requisitions. He sends a copy of the purchase order which he processes to the accounting department, and does not have authority to sign a purchase requisition himself. He can, however, cancel any purchase order that he sends at any time he chooses. He insists that he be allowed to cancel orders so that he can take advantage of better prices if there is a price change.

19-7. Describe how an imprest petty cash fund works and why it is established.

19-8. Describe the process of reconciling a bank account. Explain (a) why a bank account should be reconciled, (b) what is meant by an outstanding check, and (c) a deposit in transit.

19-9. Why is control over the payment of liabilities necessary? Describe some of the documents used in the control over liabilities.

19-10. Describe in detail how the voucher system works.

19-11. What purpose is served by entering check numbers in the voucher register and voucher numbers in the check register when a voucher is paid?

19-12. How can a subsidiary ledger and control account be used as a control device?

19-13. Describe the process of maintaining control over fixed assets.

19-14. Discuss the function of the internal auditor. Is he an "efficiency expert"?

19-15. The Albright Company uses an imprest petty cash fund. On December 31, when the books were being closed, the $100 fund had $74 cash in it, and unreimbursed expenditure vouchers of $26. The petty cashier did not want to reimburse the fund because he did not need additional money in the fund at that time. The accountant wanted to reimburse the fund. Why might the accountant want to reimburse the fund? If the $26 spent had all been for selling expenses, what entry would be made upon reimbursement of the fund?

19-16. On December 31, 1963, the bank statement showed a balance of cash of $800. If there were $600 of checks outstanding and a deposit of $300 in transit, what is the correct cash balance?

19-17. An invoice dated July 16 with terms of 2/10, n/30 was received and approved on July 17, and a voucher was prepared on July 18. Under what date would the voucher be filed in the tickler file? If it could not be paid on the due date because of a lack of cash, who should approve the deferral of payment? If a return was made so that less than the amount of the voucher is actually owed, who should approve a reduction in the amount of the voucher?

Exercises

19-18. The Crane Company established a $100 imprest petty cash fund on January 1. The petty cashier submitted the following paid vouchers for reimbursement on January 31:

Office supplies	$26.00
Selling supplies	11.50
Advertising	5.00
Miscellaneous selling expenses	9.40
Miscellaneous general expenses	16.00
Freight-out	8.20

REQUIRED

Prepare the entry in general journal form to establish the petty cash fund and to reimburse it on January 31.

19-19. The Wisconsin Company reconciles its bank account monthly. On January 31, the bank statement showed a balance of $7,996, and the books showed a balance of $7,591. A comparison of the detail of the bank statement and the books revealed that a deposit of $800 had not yet reached the bank, and checks number 6013 for $720, 6142 for $105, and 6151 for $490 had not yet cleared the bank. In addition, the bank had made a $10 service charge which had not been entered on the books, and check number 6011 which cleared the bank was recorded as $400 on the books but was actually for $500. This check was a salary check.

REQUIRED

1. Prepare a bank reconciliation.
2. Prepare in general journal form any entries necessary to correct the books.

19-20. The Brigham Development Company uses a voucher system which includes a voucher register and a check register with the headings as shown in Exhibits 19–7 and 19–8.

Aug. 3 Purchased merchandise from the Lackey-Bone Company, an invoice price of $1,000, terms 2/10, n/30.
4 Purchased store supplies from the Johnston Company, $400, terms n/30.
5 Bought gas and oil for the delivery truck from the Snead Company for $60, which was paid immediately.
10 Paid the Warren Company invoice of August 3, less discount.
12 Purchased merchandise from the Lackey-Boone Company, $3,000, terms 3/10, n/60.
14 Received an invoice from the KLRN radio station for advertising, $140, due September 1.
15 Purchased a typewriter from the Acme Supply Company for $250, terms n/30.
28 Paid the KLRN radio station invoice of August 14.

REQUIRED

1. Enter the transactions into the registers, beginning voucher numbers with 5016 and check numbers with 4219.

2. Total the two registers and post the totals of the Accounts Payable columns from both journals to an Accounts Payable T-account.
3. Prepare a list of unpaid vouchers to prove the balance of the T-account control with the individual unpaid vouchers.

19-21. The Woolsey Company maintains a subsidiary ledger card for each fixed asset similar to the form shown in Exhibit 19–9.

July 9, 1963 Purchased an electric typewriter for the sales department, manufacturer's serial number 740-31A-2, from the Office Supply Company for $430. The asset will have a ten-year life and a salvage value of $30.

17 Purchased an executive desk for the accounting department, serial number 321463, from the Wales Desk Company, for $620. The desk will have a ten-year life and a salvage value of $20.

29 Purchased an electric calculator for the billing department, serial number AY346-13, from the Monroe Company, for $500. It will have a twelve-year life and a salvage value of $20.

REQUIRED

1. Record the transactions in general journal form.
2. Post all the transactions that affect office equipment to the Office Equipment control account and also to the subsidiary ledger cards. Begin the asset numbers with 376. The company uses a straight-line depreciation method.

Problems

19-22. The Smiroff Company is considering establishing a petty cash fund for the use of its plant manager. The manager estimates that $100 will be sufficient. On March 13, 1963, a check for $100 was drawn to establish the petty cash fund. On March 21 the plant manager brought the following paid petty cash vouchers to the treasurer for reimbursement.

The plant manager explained that there was only a ten dollar bill in the petty cash box, and he did not know what had happened to the other 30 cents. He requested that the fund be raised to $200,

since the present $100 fund would have to be reimbursed too frequently. One check was drawn to raise the balance of the fund to $200 and to reimburse the fund for the expenditures.

Petty cash voucher number	Description of the item paid for	Amount
1	Basketball for the company team	$14.00
2	Lunch for visiting company officer	2.50
3	Flowers for an ill employee	5.00
4	Repairs to the time clock	7.40
5	Telegram	3.20
6	Special type of pencils for his office	6.50
7	Gas and oil for the company automobile	12.60
8	"Supper money" for employees working overtime	8.50
9	Repairs to office desk	30.00

REQUIRED

Record the original entry to establish the fund and the entry to reimburse and increase the fund.

19-23. The bank statement of the Baker Company is shown below, together with the cash receipts book, check register, and Cash account. By tracing all checks written and recorded in the check register to those clearing the bank, the outstanding checks can be located. Deposits in transit can be found by tracing cash receipts in the books to the deposits on the bank statement. Other reconciling items such as errors in the books or bank service charges can also be located by the above procedures.

Cash

July	1	5,140	July	31	2,105
	31	2,490			
Balance		5,525			

FIRST NATIONAL BANK — Baker Company, 6108 South Street

CHECKS CLEARED		DEPOSITS	DATE	BALANCE
			July 1 '63	$5,140
$ 50			July 4 '63	5,090
100		$800	July 6 '63	5,790
20		420	July 9 '63	6,190
940			July 11 '63	5,250
10	(service charge)	510	July 17 '63	5,750
60	120	190	July 20 '63	5,760
		220	July 28 '63	5,980
200			July 31 '63	5,780

Check Register

Date	Payee	Check No.	Accounts Payable	Purchase Discounts	Cash (Cr)
July 1	Smith and Company	7015	$ 20		$ 20
2	Able Stationers	7016	50		50
3	Triple X Company	7017	40		40
4	Wilson Company	7018	310		310
5	ABC Company	7019	100		100
10	Sam P. Wortham	7020	1,000	$60	940
14	Gardner Jones	7021	75		75
17	Lindley Company	7022	125	5	120
18	Contrable Company	7023	60		60
21	Lester Abbot	7024	300		300
30	Trable Company	7025	90		90
	Totals		$2,170	$65	$2,105

Cash Receipts Journal

Date	Payee	Sales	Accounts Receivable	Cash (Dr)
July 5	Cash sales	$ 800		$ 800
8	Robert P. Marple		$ 420	420
17	Wilson Company		510	510
19	Cash sales	190		190
27	Cash sales	220		220
31	Samuel Barker		350	350
	Totals	$1,210	$1,280	$2,490

REQUIRED

Prepare a bank reconciliation from these data and, in general journal form, any entries necessary to correct the books. Check #7024 was actually for $200 and was the last check which cleared the bank during the month. The check was for equipment repairs.

19-24. The W. W. Demont Company has just discovered that one of their most trusted employees has been embezzling money from the company. The system of internal control was very weak, and the employee had been given authority to sign checks and also to reconcile

the bank statement with the books. He had been writing unauthorized checks payable to himself and reporting incorrectly that the bank statement reconciled. You have been called in to determine the amount of the employee's embezzlement. You find that the cash per bank figure is $7,692 and the cash per books figure is $10,432. Outstanding checks are:

No. 1152	$700
1153	612
1154	50
1160	119
1172	73
1180	210

One deposit for $2,792 is in transit. The bank had charged the company with a $20 service charge for printing checks and this had not been entered on the books. The bank had also collected a $500 note for the company and deposited this to the company's account, but the company had not yet recorded the collection. In addition, check #1156 payable to the Young Company for office supplies had been erroneously recorded on the books as a $60 check when it was actually a $6 check and had cleared the bank as such.

REQUIRED

1. Determine the extent of the cash shortage by using a bank reconciliation work sheet. The reconciliation will not balance, and the difference will be the shortage.
2. Assuming the shortage is not recoverable, prepare all necessary general journal entries to adjust and correct the books.
3. What recommendation would you make that would prevent such shortages in the future?

19-25. The Brackenridge Company has instituted a system of responsibility accounting wherein costs and expenses are broken down by the areas of responsibility in the organization chart. Each officer of the company who is responsible for incurring costs has an approved expense budget, which is divided between those over which the individual can exercise control and those over which he has no control.

Expense	Approved Budget			
	Sales Manager	Office Manager	Public Relations Manager	Personnel Manager
Controllable:				
Salaries	$20,000	$ 9,000	$6,000	$4,000
Supplies	1,000	2,500	500	200
Telephone	200	100	400	100
Advertising	3,000	—	50	—
Furniture and fixture repairs	300	400	100	150
Miscellaneous expenses	100	50	50	50
	$24,600	$12,050	$7,100	$4,500
Non-controllable:				
Depreciation	$ 2,000	$ 1,000	$ 400	$ 300
Insurance	500	200	100	50
	$ 2,500	$ 1,200	$ 500	$ 350
Total	$27,100	$13,250	$7,600	$4,850

The accounting process was designed to accumulate actual costs by individual areas of responsibility, and during the period the following actual expenses were incurred:

	Sales Manager	Office Manager	Public Relations Manager	Personnel Manager
Salaries	$20,100	$9,050	$6,500	$4,100
Supplies	1,050	2,400	600	160
Telephone	190	100	700	80
Advertising	3,400	—	100	—
Furniture and fixture repairs	280	395	80	130
Miscellaneous expenses	90	45	250	40
Depreciation	2,100	1,050	400	400
Insurance	480	210	100	50

REQUIRED

1. Prepare a schedule showing how each of the four managers' actual expenses compared with the predetermined expenses.

You need not recopy the actual and the budgeted amounts, but the over or (under) amounts should be shown for each individual expense.

2. Which of the four managers would you consider as having operated within the plan most successfully? Which one is to be criticized the most?
3. What additional information would you request before commending or criticizing the individuals in part (2) above?

19-26. The Yale Company uses a voucher register and check register with headings similar to those in the illustrations in this chapter. They also have a $200 petty cash fund maintained by the office manager. On January 1, the following vouchers are unpaid, all incurred for the purchase of merchandise.

Voucher Number	Payee	Amount
6005	ABC Company	$1,200
6016	Tanner Company	300
6017	Jack Trimble	705
Total unpaid vouchers		$2,205

The following transactions were completed during January:

Jan. 2 Purchased merchandise from the Noble Company for $600, terms 2/10, n/30.

3 Purchased office supplies from the Jackson Company for $220. Payment is to be made immediately.

5 Paid voucher number 6005 less a 2% discount.

7 Wrote a check to a special payroll bank account to pay semimonthly salaries of $6,000.

8 Purchased store supplies from the Yarbrough Company for $190, terms n/30.

9 Paid voucher number 6016.

12 Reimbursed the petty cash fund. Paid petty cash vouchers were for:

Delivery expenses	$30
Store supplies	10
Purchases	20
Office supplies	12

(Use a single voucher for the reimbursement.)

12 Paid the Noble Company for voucher 6018.

18 Purchased merchandise from the Noble Company for $1,600, terms 2/10, n/30.

24 Repaired the delivery truck. The invoice from the Taylor Company for $60 was paid immediately.

30 Purchased merchandise from the McFarland Company for $290, terms 3/20, n/60.

31 Wrote a check to the special payroll bank account to pay semimonthly salaries of $5,800.

REQUIRED

1. Enter the unpaid vouchers in the voucher register and draw double-ruled lines beneath them, because they were posted at the end of the prior month. Enter the total of the unpaid vouchers in an *Accounts Payable* general ledger T-account.
2. Record the transactions for the month of January. The first voucher number in January is 6018, and the first check number is 4813.
3. Total the vouchers payable columns of the voucher register and check register and post the totals to the accounts payable control account.
4. Prepare a schedule of unpaid vouchers, proving the total of the general ledger control account.

19-27. The bank reconciliation of the Trimble Company prepared by the company's accountant at the end of the prior month, March 31, is shown below. The company's check register, cash receipts journal, and the bank statement for April also appear below.

TRIMBLE COMPANY

Bank Reconciliation

March 31

Balance per bank statement		$425.80
Add: Deposits in transit		263.00
		$688.80
Less: Outstanding checks		
#31	$84.17	
#32	15.00	99.17
		$589.63

Check Register

April	Ck. No.	Payee	Bank Cr. V/P Dr.
1	33	Adel Co.	$ 45.65
4	34	Bake Co.	91.42
6	35	Cris Co.	23.98
8	36	Dead Co.	61.06
10	37	Excel Co.	30.45
16	38	Foil Co.	56.67
20	39	Gore Co.	16.12
24	40	Hare Co.	84.54
26	41	Iris Co.	76.67
27	42	Jack Co.	67.76
28	43	Kohn Co.	15.00
30	44	Lyon Co.	37.92
			$607.24
			(Posted)

Cash Receipts

April	Bank Dr. A/R Cr.
5	$ 136,72
10	192.45
15	286.13
20	112.11
25	172.80
30	147.55
	$1,047.76
	(Posted)

Cash in Bank

589.63	607.24
1,047.76	

Bank Statement
April

April	Checks		Deposits		Balance
1		Balance			$ 425.80
5	$91.42		$263.00		
6	23.98		136.72		
10	84.17				
12	45.65		192.45		
13			198.00	CM	
15	61.06				
18	30.45		286.13		
20	56.67				
22	1.83	DM	112.11		
25	16.12				
26	84.54		172.80		
27	76.67				
28	41.50	NSF			
30	67.76				1,105.19

CM A note receivable was collected by the bank in our behalf—$200.00, less a $2.00 collection fee. ($198 CM on the bank statement)

DM Bank service charge.

NSF Bob Brogan's check returned because of lack of funds. (Brogan is a customer.)

REQUIRED

From these documents prepare a bank reconciliation for April and any necessary journal entries to correct the cash account on the Trimble Company's books.

Cases

19-28. The Manor Electric Company has a large number of fixed assets which are used in its manufacturing operations and which are classified as Electrical Equipment. Many of these are small electronic testing equipment items that are relatively expensive. Several of these have disappeared recently, and no one knows who used them last or what they were last used for. Several employees have informed the president that the missing assets could have

been scrapped, since they remember seeing assets scrapped without any paper work being prepared. The president of the company has instructed that a complete physical inventory of all fixed assets be taken and complete data on each asset accumulated. The inventory is now finished.

By searching through old invoices, the cost of every asset was determined and depreciation has been calculated to the present date on each item. The books show a balance in the Equipment ledger account of $73,492, and the book figure of accumulated depreciation is $14,722. The physical inventory shows fixed assets on hand of $71,465, and the correctly computed depreciation is $13,528.

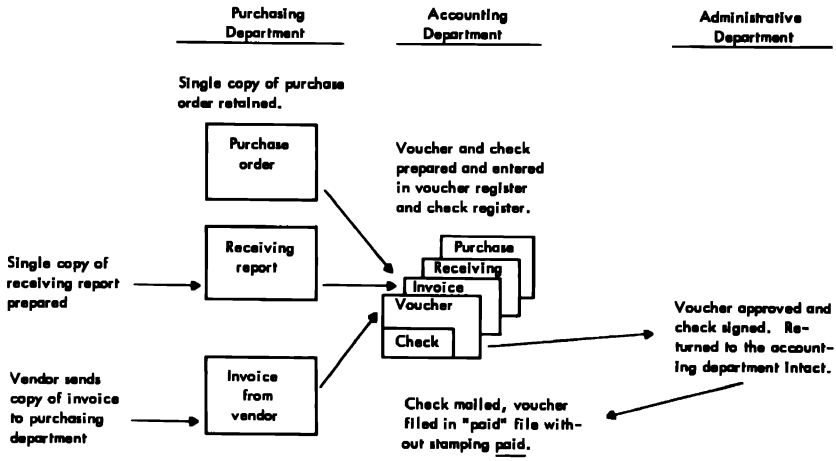
How would you recommend that the facts disclosed by the physical inventory be recorded? What procedure should be instituted so that the company will know (1) what assets should be on hand, (2) who is responsible for a missing asset, and (3) whether scrapped assets are properly recorded?

19-29. The Dalton Manufacturing Company was formed by James Dalton in 1938, and the cash and vouchers payable system was installed at that time. Very few changes in the company's procedures have been instituted since 1938, and as a result the system is not designed for the company's present scope of operations. Approximately a million dollars is received and disbursed each year, and the company's average bank balance is $40,000. There are six persons in the accounting department, two in the purchasing department, and four in the administrative department.

When a foreman or department head needs an item, he tells the purchasing department manager in person or over the telephone. The purchasing department manager places an order for the needed item, sending one of the two copies of the purchase order to the supplier and keeping the other copy in his files. When the merchandise is received, the receiving dock personnel count and inspect it and send a single copy report of its acceptance to the manager of the purchasing department. The purchasing department manager also receives the invoice from the supplier. When the invoice and receiving report have both been received, the retained copy of the purchase order is attached by the purchasing department manager and these three documents are sent to the accounting department for payment.

When the accounting department receives the three documents a voucher is prepared. The voucher is then entered in the voucher register with a debit to Materials and a credit to Accounts Payable.

When the date of payment arrives, a check is prepared by the accounting department, and the check, with the voucher and the three related documents, is sent to the administrative vice-president for approval of the voucher and signing of the check. All the documents are returned exactly as received to the accounting department. The check is then entered in the check register and mailed to the supplier. Monthly bank reconciliations are also prepared in the accounting department.



Mr. Dalton has been very disturbed by the increasing amounts paid by the company for raw materials. Costs of raw material have increased as a percentage of the cost of goods sold as follows:

Year	Material costs as a % of cost of goods sold
1959	32%
1960	33%
1961	32%
1962	36%
1963	45%

Mr. Dalton has reviewed the manufacturing process and concluded that the proportions of raw material used have not changed in the past five years. He has also reviewed the changes in market prices of the materials which the company uses and concluded that the increase in the company's costs from 32% to 45% in three years is higher than the price changes. He has become increasingly aware of the weaknesses in internal control in his organization and wants

to strengthen them, especially since there may be some possibility of fictitious purchases of material.

REQUIRED

1. Diagnose the system of internal control and determine if it is possible for someone in the company to institute a fictitious material purchase.
2. State how the system of internal control over purchases can be strengthened without the necessity of hiring new employees and by a rearrangement of the work flow.
3. Is the control over cash payments satisfactory? Is it possible that cash could be illegally extracted and the materials account increased in the accounting department? What recommendations would you make for better cash control?

20

Cost–volume–profit relationships

The management of every business is interested in increasing the company's volume of sales, but increased sales will almost invariably result in increased expenses. Therefore, the increased volume of sales cannot be treated as an isolated matter but must be considered in the light of the resulting changes in costs and expenses.

The analysis of variations in sales volume, the resulting change in expenses, and their combined effect on income is called a *cost-volume-profit analysis*. The management of a company must be aware of the cost structure of the company and the relationship of revenues, costs, and volume changes as a prerequisite to future planning.

To illustrate, suppose that a company has been selling for $1.00 each a total of 1,000 units per month of a product that costs $.93 per unit to produce. The company's condensed monthly income statement appears as follows:

Sales (1,000 @ $1.00)	$1,000
Costs and expenses (1,000 @ $.93)	930
Net income	$ 70

The company is considering a reduction in its sales price to $.95 per unit with the expectation that sales will increase to 2,000 units per month. An evaluation of the proposed price reduction must include the effects which the increase in sales volume will have on expenses. Even though the number of units sold is increased, profits will be reduced by lowering the sales price to $.95 if there is no per unit change in expenses. The income statement after the price change will appear as follows:

Sales (2,000 @ $.95)	$1,900
Costs and expenses (2,000 @ $.93)	1,860
Net income	$ 40

However, the reduction in sales price and the corresponding increase in volume of sales may result in increased profits if per unit expenses can also be reduced. If expenses drop to $.90 per unit as a result of increased volume, the net income will increase as illustrated in the following income statement:

Sales (2,000 @ $.95)	$1,900
Costs and expenses (2,000 @ $.90)	1,800
Net income	$ 100

In almost every case, any change in the volume of activity will have a direct bearing on expenses.

This chapter is devoted to an analysis of the relationship between changes in volume and costs and the corresponding effect on profits. An understanding of this relationship is important in planning business operations.

Fixed, variable, and semivariable costs

An analysis of the relationship of expenses to volume change begins with a determination of the cost behavior of each separate element of expense. So that the effect of volume changes can be measured accurately, *fixed* expenses must be segregated from those which are *variable*. A fixed expense is one which remains constant in total amount at all levels of volume. A variable expense is one which fluctuates in total amount with changes in volume, shifting upward or downward as volume increases or decreases. Some cost and expense items are neither completely fixed nor completely variable and are called *semivariable* costs.

Fixed costs

Fixed costs are related to the passage of time and not to the number of units sold. Thus they are fixed in amount each accounting period and are not affected by the volume of sales. Rent expense will usually be fixed in amount, regardless of volume; depreciation expense, if computed on a straight-line basis, is a product of the pas-

sage of time and is considered a fixed expense; property taxes, officers' salaries, and insurance expenses are also fixed.

Variable costs

Variable costs are those which will fluctuate in close relation to the level of sales activity. A variable cost increases in total amount as volume increases and decreases in total amount as volume declines. A retail store's supplies expense for such items as wrapping paper, twine, and shopping bags will increase as the volume of sales increases and will decline to zero if sales cease entirely. Sales commissions and the cost of the merchandise sold are other examples of completely variable costs.

Semivariable costs

A semivariable cost is one that moves with volume, but not in direct proportion to volume change. These costs are also known as semifixed costs, for they often include both fixed and variable elements. The salaries expense of sales clerks is an example of a semivariable cost. If volume increases, additional sales clerks are hired, but the number employed will probably not vary in direct proportion to the change in volume. If the sales volume declines, the number of sales clerks will be reduced, but a minimum number must be retained unless operations cease entirely. Thus a part of the salary expense is fixed and part varies with volume. Heat, light, fuel, telephone and telegraph, office salaries, and delivery expense are other examples of semivariable costs.

Analysis of semivariable costs

The company's over-all cost structure cannot be determined unless all expenses are categorized as either fixed or variable costs and each semivariable cost is broken down into its fixed and variable elements. After separating the semivariable items into their fixed and variable portions, the company's total fixed costs and total variable costs can be ascertained.

Following is an illustration of salaries expense and telephone and telegraph expense in terms of their fixed and variable components:

Sales clerks' salaries:	Fixed	—$3,000
	Variable	—10% of sales
Telephone and telegraph:	Fixed	—$500
	Variable	—3% of sales

The fixed and variable elements of any semivariable cost are computed by determining the reaction of that cost to changes in sales volume. For example, suppose that salaries expense is $70,000 in December, when total sales are $300,000; in January, when sales are only $200,000, salaries expense is $50,000. Salaries expense has varied by $20,000, while sales have varied $100,000. The variable portion of the expense is thus 20% of sales ($20,000 ÷ $100,000), which means that the expense will increase 20 cents for every dollar increase in sales.

Although there are several methods of analyzing semivariable costs, only two methods are presented in this text: (1) the scattergraph method and (2) the high-low point method.

The scattergraph method

The scattergraph method of breaking down the fixed and variable elements of a semivariable expense is begun by plotting on a graph the amount of the expense at various volume levels. (Ten or twelve levels are needed in most cases.) A "free hand" line is then drawn through these points so that as many points are above the line as below and so that it represents the general slope of the expense-volume relationship.

Application of the scattergraph method is illustrated in Exhibits 20–1 and 20–2 in the use of a twelve-month history of the utilities expenses incurred by the Egghardt Company.

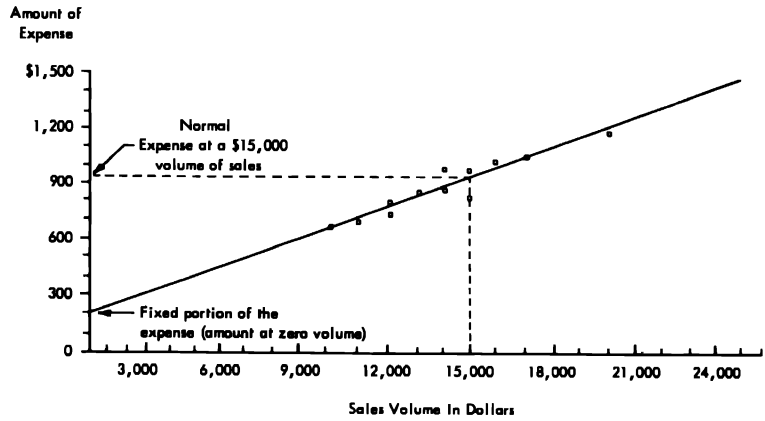
EXHIBIT 20–1

12-Month History of the Utilities Expense

Month	Utilities Expense	Volume of Sales
Jan.	$ 970	$15,000
Feb.	780	12,000
March	900	14,000
April	810	12,000
May	720	10,000
June	730	11,000
July	990	14,000
Aug.	870	13,000
Sept.	820	15,000
Oct.	1,020	16,000
Nov.	1,030	17,000
Dec.	1,170	20,000

EXHIBIT 20–2

Scattergraph Method



The fixed element of the utility expense is the amount at zero sales volume, or $200. The variable portion then can be determined from the free hand line by reading the sales volume and the amount of expense from any two points on the line. Assuming that the two points selected are zero sales volume and a $15,000 sales volume, the expense would be $200 at zero and $950 at the $15,000 volume point. The variable element of the expense may then be computed between these two points as follows:

When sales are $15,000		the utilities expense is	$950
When sales are zero		the utilities expense is	200
Difference	$15,000	Difference	$750

The difference in the expense ($750) is then divided by the difference in the sales ($15,000): $\$750 \div \$15{,}000 = 5\%$. Therefore, the variable element of the expense is 5% of sales at all sales volumes. This analysis indicates that utilities is a semivariable expense, as follows:

Fixed element	$200
Variable element	5% of sales

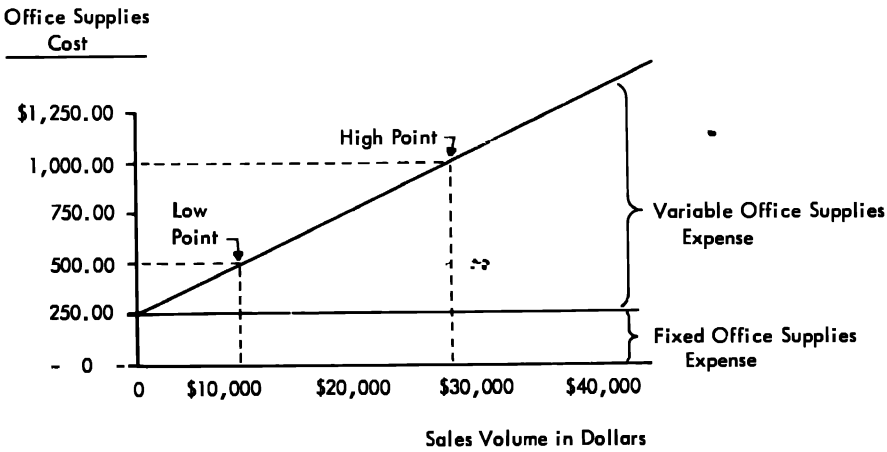
The high-low points method

The first step in using the high-low points method of breaking down an expense into its fixed and variable components is to com-

pute as accurately as possible the amount of expense at a *representative low level* of sales and the amount of the expense at a *representative high level* of sales. This method is more accurate than the use of a free hand trend line drawn from a scattergraph, provided the two points are carefully selected.[1]

Suppose that the office supplies expense was determined to be $500 when sales were at a low of $10,000 and $1,000 when sales were at a peak of $30,000. These two points are plotted on a graph and a trend line drawn between them, as illustrated in Exhibit 20–3.

EXHIBIT 20–3



The fixed portion of the office supplies expense is the amount that would be incurred at a zero sales level, or $250.

The variable portion of the office supplies expense must be stated in terms of its relationship to sales and is computed between the two selected points. The sales volume varies $20,000 (from $10,000 to $30,000), and the expense varies $500 (from $500 to $1,000). Thus the variation in the office supplies expense is 2½ per cent of the variation in sales volume ($500 ÷ $20,000). The total cost behavior of the expense is shown as follows:

Fixed office supplies expense	$250.00
Variable office supplies expense	2½% of sales

[1] A more accurate method is the least-squares calculation, which is beyond the scope of this book.

When the high-low points method is used, the fixed and variable elements of an expense can be computed without the use of a graph. The steps in this computation are described below:

1. Subtract the smaller expense figure from the larger. The difference is the total expense variation between the two points:

Total expense at high point	$1,000.00
Total expense at low point	500.00
Total expense variation	$ 500.00

2. Subtract the lower sales volume figure from the higher. The difference is the sales volume range between the two points:

High sales volume	$30,000
Low sales volume	10,000
Sales volume range	$20,000

3. Divide the total expense variation ($500) as figured in Step 1 by the sales volume range ($20,000) as figured in Step 2:

$$\$500 \div \$20{,}000 = 2\frac{1}{2}\% \text{ of sales}$$

The variable amount of the expense at a sales level of $10,000 = $250 ($10,000 × 2½%); the variable amount of the expense at a sales level of $30,000 = $750 ($30,000 × 2½%).

4. Subtract the variable portion as determined in Step 3 from the total expense at the same level of sales to arrive at the fixed portion of the expense:

At a sales level of $10,000: $500 total expense less $250 variable portion = $250 fixed.

or

At a sales level of $30,000: $1,000 total expense less $750 variable portion = $250 fixed.

Since the sales volume does not affect the fixed portion of an expense, the $250 fixed portion must be the same at a sales volume of $10,000, $30,000, or any other level.

Determining the company's over-all cost structure

The over-all cost structure of the company is determined by accumulating the total of all fixed costs and figuring the variable costs

in terms of a total percentage of sales. Each expense appearing on the company's income statement is analyzed as completely fixed, completely variable, or semivariable; the semivariable expenses are then broken down into their fixed or variable components. This process is illustrated in Exhibit 20–4. After separating the semivariable items the company's total fixed costs and total variable costs can be ascertained.

EXHIBIT 20–4

Analysis of a Company's Over-all Cost Structure

Income Statement			Fixed	Variable (As a % of Sales)
Sales		$100,000		
Cost of goods sold		60,000		60% of sales
		$ 40,000		
Operating expenses:				
Depreciation	$ 3,000		$ 3,000	
Salesmen's commissions	1,000			1% of sales
Rent	5,000		5,000	
Telephone & telegraph	3,500		500	3% of sales
Sales salaries	13,000		3,000	10% of sales
Delivery expense	1,700		700	1% of sales
Insurance	600		600	
Heat and light	4,000		2,000	2% of sales
Total operating expenses		31,800		
Net income		$ 8,200		
		Total fixed costs	$14,800	
		Variable costs		77% of sales

This analysis indicates that the company's fixed costs are $14,800 and that variable costs will total 77% of sales. The effects of changes in sales prices and the corresponding changes in sales volume, expenses, and net income can then be determined. If, for example, sales increased by $5,000, variable costs would increase by 77% of $5,000, or $3,850. Since fixed costs will not change, the company's net profit would increase by $1,150 as a result of the increase in sales.

Increases in sales		$5,000
Less: Increase in variable cost	$3,850	
Increased in fixed costs	–0–	3,850
Increase in profit		$1,150

Break-even analysis

A company will "break even" when revenue from sales is exactly equal to expenses. An estimate of the volume of sales necessary to break even is useful in managerial planning. A knowledge of where the break-even point lies and the relationship of costs and profits to volume change is needed when establishing the company's pricing policy, projecting the effects of changes in operations, and ascertaining the increase in sales necessary to justify plant expansion or the incurrence of additional fixed costs.

Break-even analysis must be based upon the company's total cost structure, since profits are realized when sales exceed both the variable and fixed costs, and losses result when both variable costs and fixed costs exceed sales. The computation of the break-even volume of sales is:

$$\text{Sales} - \text{Variable costs} - \text{Fixed costs} = \text{Zero profit}$$

If a company has $10,00 of fixed costs and variable costs equal 40% of sales, the break-even point will be:

$$\begin{aligned} \text{Sales} - 40\%\ \text{of sales} - \$10{,}000 &= 0 \\ 60\%\ \text{sales} - 10{,}000 &= 0 \\ 60\%\ \text{sales} &= 10{,}000 \\ \text{Sales} &= \frac{10{,}000}{.60} \\ \text{Sales} &= \$16{,}667 \end{aligned}$$

The company's break-even point lies at a sales volume of $16,667, which can be proved by preparing an income statement using $16,667 of sales, variable costs equal to 40% of sales, and fixed costs of $10,000:

Sales		$16,667
Variable costs (40% of $16,667)	$ 6,667	
Fixed costs	10,000	
Total costs		16,667
Profit or loss		–0–

Thus sales in excess of $16,667 will produce a profit; but if sales fall below $16,667, the company will incur losses.

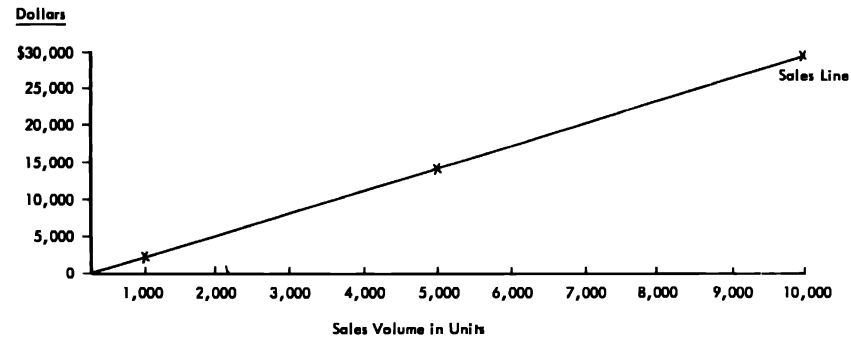
The break-even chart

A break-even chart is frequently prepared to illustrate in graphic form the company's break-even point and the relationship of the company's costs, volume, and profit. The break-even chart may be constructed by stating volume in terms of dollars of sales or in terms of the number of units sold. Volume in terms of units is illustrated in the following example:

If a company sells its units for $3.00 each, sales would be $3,000 at a volume of 1,000 units, $15,000 at a sales volume of 5,000 units, and $30,000 at a sales volume of 10,000 units. The sales line is a straight line extending from zero upward to the right, as shown in Exhibit 20–5.

EXHIBIT 20–5

Sales Line on a Break-even Chart



The company's fixed and variable costs are entered on the chart after the sales line is drawn. If the company's cost structure contains fixed costs of $7,000 and variable costs equal to 50% of sales, total costs at a sales volume of 1,000 units would be:

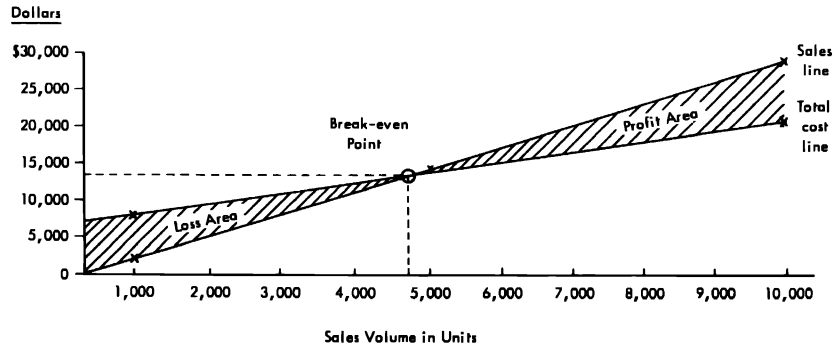
$$\begin{aligned}\text{Costs at volume of 1,000 units} &= \$7{,}000 \text{ fixed} + \text{variable costs of } 50\% \text{ of sales} \\ &= \$7{,}000 + (50\% \text{ of } \$3{,}000) \\ &= \$7{,}000 + \$1{,}500 \\ &= \$8{,}500\end{aligned}$$

$$\begin{aligned}\text{Costs at volume of 10,000 units} &= \$7{,}000 \text{ fixed} + \text{variable costs of } 50\% \text{ of sales}\\ &= \$7{,}000 + (50\% \text{ of } \$30{,}000)\\ &= \$7{,}000 + \$15{,}000\\ &= \$22{,}000\end{aligned}$$

Costs can be computed at any level of sales volume, but only two points are necessary to plot the total cost line on the break-even chart. Using the two cost points computed above and the sales line as illustrated in the preceding chart, the volume at which total costs and total sales are exactly equal becomes evident.

EXHIBIT 20–6

Break-even Chart



The break-even point is located on the break-even chart where the sales line and total cost lines coincide. The break-even point in Exhibit 20–6 is at a sales volume of $14,000 and can be computed mathematically using the formula given previously:

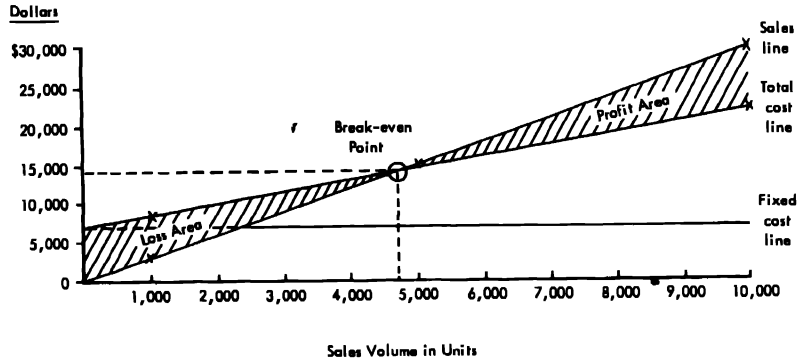
$$\begin{aligned}\text{Sales volume} - \text{variable costs} - \text{fixed costs} &= \text{zero profit}\\ \text{Sales} - 50\% \text{ of sales} - \$7{,}000 &= 0\\ \text{Sales} - .5 \text{ sales} - \$7{,}000 &= 0\\ .5 \text{ sales} - \$7{,}000 &= 0\\ .5 \text{ sales} &= \$7{,}000\\ \text{Sales} &= \frac{\$7{,}000}{.5}\\ \text{Sales} &= \$14{,}000\end{aligned}$$

The break-even chart frequently includes a separate line to indicate the fixed costs. The fixed cost line is shown separately in the

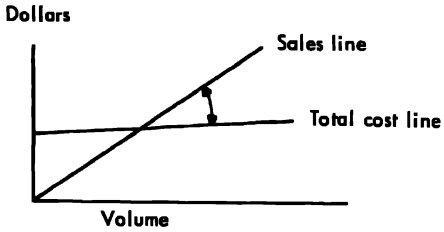
chart in order to emphasize the fixed costs which will be incurred at all levels of operations, and also to indicate the relationship between fixed costs, variable costs, and various volume levels. The completed break-even chart appears in Exhibit 20–7.

EXHIBIT 20–7

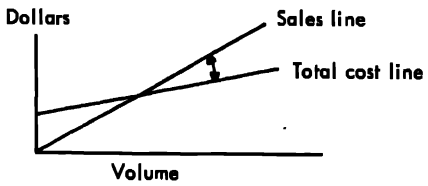
Break-even Chart



The angle between the total cost line and the sales line indicates the profit or loss potential as sales volume increases or decreases from the break-even point. If the angle is wide, there is a strong profit or loss potential.



If the angle is narrow, there is a relatively small potential change in profit resulting from changes in sales volume.



Note that where the angle is wide, the majority of the company's costs are fixed, and variable costs are a small proportion of the total cost. Where the angle is narrow, the majority of the company's costs are variable, and increases in sales are offset in large part by increases in variable costs.

The margin of safety

A company's margin of safety figure is the amount of present sales in excess of the break-even point. The margin of safety is computed as follows: Actual sales — break-even sales = margin of safety. If a company has break-even sales of $40,000 and is presently operating at $60,000 sales volume, its margin of safety is:

Margin of safety = $60,000 − $40,000 = $20,000 of sales.

Sales could decrease $20,000, or 33⅓% $\left(\frac{\text{\$20,000 margin of safety}}{\text{\$60,000 present sales}} = 33\frac{1}{3}\%\right)$ before the company will begin to incur losses.

Underlying assumptions in break-even analysis

Break-even analysis assumes that sales prices will remain constant. This assumption must be made if sales are shown on the break-even chart as a straight line. Very few companies sell only a single product, and price changes on one or more products are not uncommon. Thus, while the assumption of a stable price is not entirely valid, it does not destroy the usefulness of the break-even chart as a close approximation of the company's cost-volume-profit relationship.

The analysis of break-even points is also based on the assumption that the "sales-mix" will remain constant. The term *sales-mix* may be defined as the proportion of the total sales dollars produced by each of the company's several products. Many companies have several products with a high profit margin and several with a low profit margin. If the sales of high profit units increase or decrease, the break-even point will shift even though total dollar sales remain constant. However, changes in sales-mix are usually not material and do not greatly affect the usefulness of the chart.

A break-even analysis can be no more accurate than the analysis of the company's fixed and variable expenses. If only rough approximations are made of the fixed and variable elements of a semivariable cost, the break-even analysis should be considered in light of the accuracy of the computations that enter into the analysis. Many analysts speak of a break-even "area" instead of a point.

Fixed and variable costs in financial statements

Income statements are sometimes prepared for management's use with the fixed and variable operating expenses separated. When statements are prepared in this manner, the variable and semivariable expenses are subtracted from gross profit first. The resulting figure represents the over-all "contribution toward covering the fixed operating costs." This type of statement is illustrated in Exhibit 20–8. Note that the contribution margin is set out clearly in the statement in order to measure the company's over-all ability to cover its fixed costs during this particular accounting period. The net income is the same as would be reported in a conventional income statement, but more insight into the company's operations can be gained from a separation of fixed and variable operating expenses.

EXHIBIT 20–8

PICTAC COMPANY

Income Statement
Year Ended December 31, 1964

Sales		$361,000
Cost of goods sold		164,000
Gross margin		$197,000
Variable and semivariable operating expenses:		
Supplies	$10,000	
Clerical salaries	80,000	
Telephone and telegraph	6,000	
Salesmen's commissions	13,000	
Bad debt losses	4,000	
Travel and entertainment	6,000	
Payroll taxes	2,000	
Total variable and semivariable costs		121,000
CONTRIBUTION MARGIN TOWARD FIXED COSTS		$ 76,000
Fixed operating expenses:		
Depreciation	$14,000	
Taxes	2,000	
Insurance	3,000	
Officers' salaries	60,000	
Total fixed costs		79,000
Net loss		($ 3,000)

Setting apart the fixed and variable operating expenses in the income statement has many advantages. This type of income statement reflects the company's fixed operating expenses and how much margin must be realized after variable and semivariable operating expenses are covered in order for the company to be profitable. Showing the contribution margin in the statement provides the same information about the company's operations as that to be found in a break-even analysis. The gross margin, fixed expenses, and variable and semivariable expenses are reflected in the statement, and the company's margin of safety and the degree to which it has covered its fixed costs can be ascertained.

The general ledger accounts used by a company to record expenses are not affected when the income statement is prepared from the contribution margin approach. The only difference between a contribution margin income statement and a conventional income statement lies in the arrangement of the operating expense accounts. Semivariable expenses may be considered either fixed or variable when the statement is prepared, depending upon which is their predominant element.

Analysis of contribution margin

Statements showing the contribution margin are useful in measuring the company's over-all profit position. Suppose, for example, that the following condensed income statement is being analyzed:

Sales 10,000 units @ $5	$50,000
Variable and semivariable costs	30,000
Contribution margin toward fixed costs	$20,000
Fixed costs	25,000
Net loss	($ 5,000)

Separating the fixed and variable expenses provides data for computing the additional contribution margin needed to cover fixed costs and the increase in sales necessary to reach the break-even point. Since the contribution margin must be $5,000 greater to break even, sales must be increased by $12,500 to reach the break-even point. The $12,500 increase is computed as follows:

Additional contribution margin needed	$ 5,000
Contribution margin as per cent of sales ($20,000 ÷ 50,000) =	40%
Sales necessary to provide the additional contribution margin ($5,000 ÷ 40%) =	$12,500

The additional $12,500 of sales represents 25% of the present volume, a significant increase which may be difficult to achieve. The contribution margin approach has thus provided information for a measurement of the company's current profit position and its future profit potential.

Further analysis can be undertaken to determine the amount of additional sales needed for the company to earn a fair rate of return on invested capital. If a $5,000 profit is considered a fair return, the contribution margin must be increased by $10,000 to convert the present $5,000 loss to a $5,000 profit. Sales must therefore be increased by $25,000 to realize the $10,000 additional contribution margin ($10,000 ÷ 40% = $25,000).

An increasing number of companies are utilizing the contribution margin income statement for internal management use, for this statement provides data for analysis of the company's profit position not found in the conventional statement.

Questions

20-1. What is meant by a cost-volume-profit analysis? Why is an analysis of one of these factors dependent upon the reaction of the other two?

20-2. The Kalo-Willby Company sells 4,000 units per month at a price of $2 per unit, with unit costs of $1.80. The company is contemplating an increase in the sales price to $2.50, which will reduce the number sold to 3,000 units and increase the unit cost to $2.00. Would you recommend this change in sales price reducing the number of units sold and increasing the unit cost?

20-3. Define and state the distinguishing characteristics of a variable cost, a fixed cost, and a semivariable cost.

20-4. How is a semivariable cost stated when the fixed and variable portions have been analyzed and segregated? Why is there a fixed element and a variable element in a semivariable cost?

20-5. What is a scattergraph? How is it used to determine the fixed and variable portions of a semivariable expense?

20-6. The accountant who is analyzing the expenses of the Bourough Company is preparing a scattergraph, using only three points. Would you have confidence in the results of such an analysis?

20-7. Describe the high-low method of computing the fixed and variable portion of a semivariable expense. How are the high and the low points determined?

20-8. The office salaries of a company are as follows:
High point: sales of $100,000, salaries of $2,000
Low point: sales of $20,000, salaries of $1,000.
What is the variability of the variable portion of the expense as a per cent of sales? What is the fixed portion of the expense?

20-9. How is the over-all cost structure of the company determined?

20-10. What is a break-even chart? Of what value is it?

20-11. The ABC Company has fixed costs of $20,000 and variable costs equal to 80% of sales. What is its break-even point in sales volume?

20-12. What is the margin of safety? Of what value is this figure?

20-13. The break-even analysis is not absolutely accurate. What factors tend to make it a close approximation instead of an absolutely accurate analysis?

20-14. What is a "contribution margin income statement"? How does it differ from a conventional income statement?

20-15. If a company is planning to use income statements that show the contribution margin, is it necessary to record expenses differently from the way in which they would be recorded for a conventional income statement? Explain.

20-16. Explain how the break-even point can be roughly approximated from an income statement that shows the contribution margin.

Exercises

20-17. The Yorborg Company incurred an $800 expense for telephone and telegraph at a sales volume of $100,000 and an expense of $1,200 when sales were $200,000. The company also incurred an office supplies expense of $1,500 at the $100,000 sales level and $2,000 at the $200,000 sales level.

REQUIRED

Compute the fixed portion and the variability of each of these two expenses.

20-18. The Brofitt Company sells a single product for $70 each. The company's cost structure is $30,000 of fixed costs and variable costs equal to 40% of sales.

REQUIRED

1. Compute the break-even point.
2. Prepare a break-even chart.

20-19. The sales and the sales salaries of The Robert-Snap Company were as follows during 1964:

	Sales	Sales Salaries
January	20,000	$3,750
February	21,000	4,000
March	18,000	3,450
April	16,000	3,050
May	15,000	2,800
June	17,000	3,250
July	19,000	3,550
August	20,000	3,800
September	21,000	3,950
October	22,000	4,200
November	20,000	3,850
December	18,000	3,350

REQUIRED

Using the scattergraph method, prepare the scattergraph and determine the fixed and the variable sales salaries for the company.

20-20. The Engert-Bearing Company sells its one product for $20 per unit. It has fixed costs of $84,000 and variable costs of 30% of sales. The company is contemplating spending $20,000 for additional sales fixtures, and depreciation on these fixtures will increase the fixed costs by $2,000 per year but will decrease variable costs by 2% of sales because fewer store supplies will be used.

REQUIRED

1. Compute the break-even point before the fixtures are purchased.
2. Compute the break-even point after the fixtures are purchased.

3. State briefly what has happened to the company's break-even point as a result of the purchase of the fixtures.

20-21. The Grattman Company sells two products, A and B. The following data have been estimated for the coming year:

	Product	
	A	B
Unit sales price	$5.00	$7.00
Variable costs	$1.00	$1.50
Fixed costs ($60,000 total allocated on 1:2 ratio)	2.00	4.00
Net profit per unit	$2.00	$1.50

REQUIRED

1. How many units of each product are expected to be sold?
2. Prepare an income statement which shows the contribution margin based on these estimated figures and the number of units computed in part 1 of this requirement.

Problems

20-22. Assume the following data:

	Product A	Product B
Number of units sold	10,000	5,000
Sales price	$5	$10
Fixed costs	10,000	20,000
Variable costs	50% of sales	30% of sales

The market is relatively stable, and increases in the unit sales of one product result in decreases of the same number in the unit sales of the other. Management is not sure just which of the two products to push in its sales effort.

REQUIRED

1. If the company pushed sales of A so that their unit sales increased by 20%, with a corresponding unit decrease in sales of

B, what would be the effect on profits? Prepare a proforma income statement to support your answer.

2. Prepare a proforma income statement if sales of B were pushed so that unit sales of B increased by 2,000 units but caused an equal unit decrease in sales of A.
3. Which product would you, as president, tell your salesmen to emphasize?

20-23. The financial statements of the Hallibor Company contained the following information concerning the current year's operations:

Sales (6,000 units)		$200,000
Less Cost of goods sold		60,000
Gross profit		$140,000
Salaries	$40,000	
Delivery expenses	30,000	
General and administrative expenses	50,000	
Other selling expenses	9,000	129,000
Net profit		$ 11,000

The company has no beginning or ending inventories, and the cost of merchandise sold may be considered as completely variable with sales. Assume that the salaries, delivery expenses, and other selling expenses are completely variable, and the general and administrative expenses are fixed. The expectations for the coming year have been estimated by management as follows:

(a) Salaries will increase 5% due to raises.
(b) Delivery expenses will increase 10% due to increases in the cost of delivery supplies.
(c) The amount of other selling expenses per unit will not change.

Unit sales and selling prices will react in the following pattern:

If selling price per unit is:	Number of units sold will be:
$31	7,000
32	6,800
33	6,500
34	6,300
35	5,500
36	5,000
37	4,000

REQUIRED

1. Compute the variable expenses per unit after the expected changes, and the total fixed expenses.
2. Which sales price should be selected for next year to realize the maximum profit?

20-24. The Talbart Company has the following cost structure:

Fixed cost	$175,000
Variable costs	$130 per unit

Their sales price is $300 per unit, and their sales have been 1,600 units per year during the past several years. The company received an offer from a large distributor not presently buying from them to purchase 1,000 units at a sales price equal to one-half the Talbart Company's normal price, or $150 per unit. This distributor had guaranteed to market the units in an area where the Talbart Company was not selling, thus having no effect on the regular sales to the Talbart Company's customers. However, the Talbart Company would incur a $10 per unit extra shipping cost to get the units to the distributor. The president of the company does not want to accept the offer, saying it cannot possibly be profitable.

REQUIRED

1. Ignoring any legal ramifications and assuming the Talbart Company has the capacity to produce these additional units, should this offer be accepted? Solve this problem by preparing two contribution margin income statements, one if the Talbart Company does not accept the offer and sells only the 1,600 units to its regular customers, and the other statement if the Talbart Company accepts the offer.
2. Why is the profit different under each of these two cases?

20-25. The Swenson Company is a wholesale distributor of pianos. Their sales price is $400 per unit. Analysis of operating expenses and budgets for the coming year reveals the following:

Purchase price of each piano, $220.

Advertising budget for the year is fixed at $4,000.

Salesmen are guaranteed fixed annual salaries totaling $7,000 and receive in addition a $24 commission on each piano sold.

Office salaries are fixed at $6,000.

Costs of operating the delivery trucks have been analyzed as:
Fixed costs including depreciation, taxes, and insurance will be $2,000;
Variable costs of delivering each piano will be $4.
Rent will be $3,000.
Fixed office supplies costs will be $800, and variable office supplies will be $0.40 per piano sold.

REQUIRED

1. Compute the total fixed costs, and the total variable costs as a per cent of sales.
2. Compute the break-even point.
3. Construct a break-even chart.
4. What would be the profit or loss if the Swenson Company sold 100 pianos? If 200 pianos are sold?

20-26. The following costs and expenses were determined for the Quick-Fire Battery Company at a representative high volume and a representative low volume of activity. Each unit sells for $5.

	Sales volume of $200,000	Sales volume of $500,000
Cost of goods sold	120,000	300,000
Administrative salaries	20,000	20,000
Office supplies	1,000	1,900
Insurance	500	500
Delivery expenses	4,000	5,200
Selling supplies	2,000	3,500
Property taxes	1,800	1,800
Utilities	1,300	2,500
Heat and light	1,900	2,500
Sales salaries	30,000	51,000
Office salaries	12,000	18,000

REQUIRED

1. Compute the fixed portion of each expense and the variability of each expense as a per cent of sales.
2. Total the amounts computed in part (1) to determine the total fixed and variable cost structure of the company.
3. Compute the company's break-even point.
4. Prepare a break-even chart.

20-27. The Williamson Barker Company has the following cost structure, exclusive of the cost of goods sold, advertising, and market research.

Operating fixed costs	$120,000
Operating variable costs	$1 per unit

The advertising expense and market research costs of this company are determined by managerial decision, and the amounts fluctuate without any relationship to the units sold or the dollar amount of sales. The cost of goods sold fluctuates with the market price of available merchandise and has no direct relationship to sales, either in units or dollar amounts.

The company's management is trying to decide among several alternate choices of units to sell in the coming year. The company can sell only one of these units, because if two or more were sold, the advertising and market research costs would have to be increased beyond the profitability stage. The following proposals are being considered:

(1) Buy a unit for $3.60, sell it for $6.00, and expend $30,000 on advertising and $10,000 on market research. Sales of 180,000 units can be expected.
(2) Buy a different unit for $4.00, sell it for $6.00, and expend $15,000 on advertising and a like amount on market research. Sales of 250,000 of these units would be expected.
(3) Buy still a different unit for $6.00, sell it for $10.00, and expend $50,000 on advertising and $20,000 on market research. Only 100,000 of these units could be sold.

REQUIRED

Prepare three contribution margin income statements to determine which alternative would produce the greatest profit. Treat advertising and market research as fixed costs in the statement.

Cases

20-28. Harold Watts was appointed controller of the Tinsdale Sales and Promotion Company on July 1. His first task was to review the company's cost structure, and as a result he developed the following from the company's past financial records:

	Monthly average in 1964	Monthly average in 1962
Units sold	1,000	800
Sales price	$20	$25
Fixed costs	$10,000	$10,000
Variable costs ($8 per unit)	$8,000	$6,400

The sales price of the company's product was decreased in 1964 from the old price of $25 to the current price of $20 in an attempt to increase profits. An estimate of 1,150 units per month was forecast when the price was reduced. The company's officers had been disappointed when the price decrease had reduced profits instead of increasing them. A return to the old price of $25 had not been effected because the officers felt a price increase might cause a loss of customer goodwill.

Mr. Watts discussed the company's pricing policy with the sales manager and was informed that if the price were lowered still further, to $18 per unit, a total of 1,200 units could be sold; if the sales price was lowered to $16, a total of 1,800 units could be sold. These estimates were deemed accurate, since the company now had some experience in the effect of price reductions on the number of units to be sold. In view of the results of the recent price reduction, the sales manager had been discouraged in his attempt to persuade the company's officers to lower prices still further.

What would you advise? What considerations other than financial data would you want before making a final recommendation?

20-29. The board of directors of the Norton Badfin Company employed a new president on January 1, 1964. The company had never made more than a moderate profit at any time in its history, and the stockholders have been unhappy with their returns and feel that a greater profit should be realized by the company. As a result of this feeling, the board employed the new president and instructed him to do everything possible to increase the company's profits, which have averaged about $10,000 per year in the past.

The company is a medium-sized firm engaged in the sale of a single product. No attempt has been made to analyze its cost structure, and pricing decisions and other major managerial policies have been decided mostly by guesswork in the past. The new president immediately asked the company's accountant for two income statements that were representative of high and low activity.

THE NORTON BADFIN COMPANY

Respresentative Income Statements

	1961 (High activity)		1963 (Low activity)	
Sales (at $5 per unit)	$500,000		$300,000	
Cost of goods sold ($3 per unit)	300,000		180,000	
Gross profit		$200,000		$120,000
Expenses:				
Office salaries	$ 60,000		$ 50,000	
Sales salaries	80,000		72,000	
Supplies	5,000		3,000	
Advertising	17,000		18,000	
Insurance	1,000		1,000	
Depreciation	5,500		5,500	
Property taxes	3,000		3,000	
Telephone and telegraph	800		600	
Heat and light	1,600		1,000	
Total expenses		173,900		154,100
Net profit (or loss)		$ 26,100		($ 34,100)

Upon receipt of these financial statements the president called in the sales manager to discuss the price of the company's product. The sales manager said he was reluctant to lower the price because the company was hardly making a decent profit on the present price. The sales manager did agree that if a comparable unit which cost $2.70 was bought, sales prices could be reduced to $4.50 per unit. Sales would then probably be 120,000 units per year, provided advertising was increased to $20,000. If advertising was increased without a change in price or product no additional units would be sold.

The president then asked whether two products, one low priced and the other high priced, might not be a good idea. The sales manager replied that the market for the units was somewhat fixed, and sales of a low priced unit would reduce sales of the high priced unit.

The company's controller was brought into the discussion at this point, and he stated that other than the cost of goods sold there would be no change in the company's cost structure due to selling two products instead of one. The sales manager estimated the two proposed products would sell as follows, assuming total advertising costs of $20,000:

	Sales price	Units expected to be sold	Cost of each unit
Low priced unit	$4.00	70,000	$2.40
High priced unit	$5.00	50,000	$3.00

The president must make a decision on pricing from these facts and estimates. Would you advise him to:

(a) Keep prices as they now are?
(b) Lower the price and sell only the one product?
(c) Sell two products?

21

Measuring the profitability of operating segments

The operations of all large enterprises may be subdivided into separate "segments." Segments is a broad term, used here to indicate any of the fractional parts into which the operations of an enterprise may be divided. Examples of segments include (1) different departments, (2) separate products, (3) various sales territories, or (4) different distribution channels.

Measurement of the profitability of any department, product, territory, or other fractional part of a business cannot be undertaken without assigning revenues and expenses to each area being analyzed. Determination of the portion of the company's operating expenses which relate to each segment frequently requires extensive analysis.

Basic approach to a segment analysis

An analysis of the fractional parts of a business is usually completed by preparation of an income statement for each segment. Little difficulty is encountered in distributing revenues to segments, but the allocations and apportionments necessary to assign expenses create a number of complex problems. The accuracy of the net income or loss computed for each fractional part of the business can be no more accurate than the assignment of revenues and expenses.

Exhibit 21–1 illustrates a segment analysis by products, which provides a basis for ascertaining the most profitable and the least profitable products.

The analysis of products reveals that Product D realized the greatest number of dollar sales but produced the smallest net income. The most profitable product per dollar of sales is C, and this fact could not have been determined without assigning revenues and ex-

EXHIBIT 21–1

Segment Analysis By Products

	PRODUCT			
	A	B	C	D
Sales	$5,000	$8,000	$3,000	$10,000
Cost of merchandise sold	3,000	4,000	1,000	6,000
Gross profit	$2,000	$4,000	$2,000	$ 4,000
Operating expenses:				
Salaries	$300	$1,600	$400	$2,000
Supplies	100	300	100	600
Rent	25	200	50	100
Taxes	50	200	100	300
Utilities	100	300	200	600
Total operating expenses	575	2,600	850	3,600
Net income	$1,425	$1,400	$1,150	$ 400

penses to each product. Determination of revenue produced by each segment is accomplished by an analysis of each sales invoice; the apportionment of expenses is a more complex problem and is given the primary attention in this chapter.

Types of segments subject to analysis

The nature of the operations of a business determines the different types of analysis which may be undertaken, but the following segments are analyzed periodically in most of the better managed companies:

1. Territories—such as districts, states, or salesmen's territories.
2. Commodities—such as individual products or groups of products.
3. Departments—such as retail departments in a department store.
4. Channels of distribution—such as wholesale, retail, and jobber outlets.
5. Class of customers—such as those making small purchases and those making large purchases.
6. Method of sale—such as through salesmen, phone orders, or mail.
7. Terms of sale—such as cash, credit, or installment.

Certain segments, such as sales territories, retail departments, and product lines should be analyzed regularly, for shifts in the profit-

ability of territories, departments, or products require immediate attention. On the other hand, analysis of channels of distribution or the profitability of the various terms of sale need be made only once each year. Other segments need be analyzed only when a weakness in operations appears evident.

Analysis of segments is normally performed in work sheet fashion, and the journals and ledgers may accumulate revenues and expenses in the usual manner. The analyses illustrated in this chapter are primarily special studies of revenues and expenses undertaken for the purpose of locating operating areas which need managerial attention.

Direct and indirect expenses

Frequently operating expenses may be traceable directly to the operating segments which gave rise to the expense. However, many operating expenses may be only indirectly associated with the segments being analyzed. Operating expenses are thus treated as either *direct* or *indirect* expenses in analyses of the fractional parts of the business.

Direct expenses

A direct operating expense is incurred because of and is directly traceable to a specific segment. In an analysis of the relative profitability of the departments of a retail store, the salaries of the sales clerks are direct expenses of the departments in which they work, and the payroll records will indicate the salaries incurred in each department. Likewise, the salary of a salesman who sells only one product is a direct cost traceable to that product. A direct expense is one which probably could be eliminated entirely if that particular segment of the business were discontinued.

Indirect expenses

An indirect operating expense is one that is not directly traceable to a particular segment and probably could not be fully eliminated if any one segment of the enterprise were discontinued. In a profit analysis of the departments of a retail store, the depreciation expense on the store building is an indirect operating expense, for the total building depreciation would not be reduced or discontinued if any one department were eliminated. In an analysis of profitability by

products, the sales manager's salary is also an indirect operating expense, since it is not traceable to specific products and probably would not be altered if any one product were eliminated.

Type of analysis determines which expenses are direct

A direct expense in one type of segment analysis may prove to be an indirect expense for a different type of analysis. An expense must be directly traceable before it can be treated as direct. The shoe boxes and wrapping supplies used in the shoe department of a retail store would be a direct cost if departmental profitability were analyzed. The expense incurred for these same boxes and wrapping supplies would be indirect if the various brands of shoes were analyzed for profitability. The boxes and supplies are directly traceable to the department, but they are not traceable to separate lines of shoes. The nature and type of analysis being undertaken will determine whether the expense can be treated as direct or indirect.

Proration of indirect expenses

Since indirect expenses are not directly traceable to segments, they must be allocated or prorated using an appropriate basis. Several bases of allocation are available for each indirect expense; the base selected should be the one which measures most accurately the benefit received by each segment as a result of having incurred the operating expense.

To illustrate the necessity of prorating indirect expenses, suppose a company were measuring the profitability of each of its sales territories. How would the salary of the sales manager be prorated to various territories? Some basis that measures the effort expended by the sales manager in each territory must be used to prorate his salary. The number of salesmen in each territory who are supervised by the sales manager is a satisfactory basis and would probably result in an accurate proration. Considerable judgment and care are necessary to select the proration method which produces the most reliable results. The bases which are most appropriate for selected types of analysis are presented in later sections of this chapter.

Mechanics of allocating indirect expenses

The mechanics of allocating indirect operating expenses to segments are comparatively simple. The basic technique is as follows:

Step 1. Select an appropriate basis for allocation.

Step 2. Determine the number of units in the allocation base for each segment.

Step 3. Divide the total operating expense which is being apportioned by the total of all the base units. The result is a *cost per base unit.*

Step 4. Multiply the number of base units in each segment by the cost per unit to ascertain the operating expense applicable to each segment.

Step 5. Total all the amounts as apportioned to insure that they total the full amount of the operating expense.

To illustrate, suppose that a retail department store is analyzing each department for profitability. The telephone expense for the entire store is $950, and the five departments have telephones as follows:

Department	Number of Telephones
A	6
B	5
C	3
D	1
E	4
Total	19

Step 1. The base is to be the number of telephones in each department. This appears to be an equitable basis for allocating the store's telephone expense.

Step 2. The number of telephones in each department has been given previously. There is a total of 19 telephones for the entire store.

Step 3. The telephone expense, $950, divided by 19 phones, gives a *cost per phone* of $50.

Step 4. The amount of the expense apportioned to each department would be:

Dept. A	6 phones @ $50 =	$300
B	5 phones @ $50 =	250
C	3 phones @ $50 =	150
D	1 phone @ $50 =	50
E	4 phones @ $50 =	200
	Total	$950

Step 5. Adding all the amounts computed as applicable to the different departments proves that the total of $950 has been allocated.

Use of "expense centers"

More accurate results may be obtained by allocating indirect operating expenses through *expense centers*. An expense center is a center of activity within the organization which produces no revenue but to which many operating expenses can be traced, either directly or indirectly. After all of the expenses applicable to the center are accumulated, the total is prorated to the revenue-producing segments of the enterprise.

The purchasing department in a department store is an illustration of an expense center. In a profitability analysis of the store's selling departments, all the expenses of operating the purchasing department would be accumulated, and the total would then be reallocated to each sales department. An appropriate proration base for the purchasing department's expenses would be the total of purchases made for each sales department. The credit department is another example of a functional area which may be used as an expense center for allocation purposes. All the expenses of operating the credit department, including direct and indirect expenses, may be accumulated and then allocated to selling departments based on the amount of credit sales made by each department.

Indirect expenses must be allocated to both revenue producing centers and expense centers. Depreciation on a store building, for example, must be allocated to the purchasing department and the credit department as well as to the revenue-producing departments, since they occupy space in the building.

The first allocation of expenses to departments and to expense centers is called a *primary* allocation. The reallocation of the total costs of an expense center to revenue-producing segments is called a *secondary* allocation.

The expense allocation process is completed by the following four steps:

Step 1. Distribute the direct expenses to revenue-producing segments and expense centers.

Step 2. Distribute the indirect expenses to revenue-producing segments and expense centers, using an equitable allocation base.

Step 3. Total the expenses in each of the expense centers and reallocate these totals to revenue-producing segments.

Step 4. Total the expenses assigned or allocated to revenue-producing segments.

This process may be illustrated as follows:

	Revenue Producing Segment		*Purchasing Department*
	A	*B*	
Step 1. Distribute direct expenses	→ $	→ $	→ $
Step 2. Allocate indirect expenses (primary allocation)	→ $	→ $	→ $
Step 3. Total expense center expenses, and reallocate back to revenue-producing segments (secondary allocation)	$	← $	← $
Step 4. Total expenses assigned to revenue-producing segments	$	$	

Basis used for primary allocations

The base used to allocate the company's operating expenses to segments or to expense centers depends upon the type of segment analysis being made. However, to illustrate the nature of allocation bases, the following are presented as appropriate bases in most cases:

EXHIBIT 21–2

Frequently Used Bases for Primary Allocation of Indirect Expenses

EXPENSE	ALLOCATION BASIS
Depreciation on equipment	Value of equipment
Taxes on equipment	Value of equipment
Insurance on store equipment	Value of equipment
Officers' salaries	Time spent on each
Depreciation on store building (or store rent)	Square feet occupied
Taxes and insurance on building	Square feet occupied
Taxes and insurance on inventory	Value of the inventory
Telephone expense	Number of telephones
Heat	Cubic feet occupied
Light	Number of light outlets
Supplies	Dollar sales
Miscellaneous expenses	Dollar sales

Retail departmental analysis illustrated

A retail store analysis by departments is presented below as an illustration of a segment analysis. The company has three sales de-

partments, shoes, notions, and men's clothing. Two expense accumulation centers are used, the Credit Department and the Delivery Department.

The first step is to analyze the sales, cost of merchandise sold, and the resulting gross profit by departments. Then the operating expenses are analyzed, bases are chosen, and primary allocations of indirect expenses are made to both sales and expense centers. Next, the secondary allocation of the total costs of the expense centers are made to the sales departments. Finally, income statements are prepared for each sales department. These statements are submitted to the company's executives for study and comparison.

Sales and cost of mechandise sold

All sales, purchases, transportation-in, and the beginning and ending inventories must be broken down by departments to determine departmental gross profits. The information necessary to total cash sales by departments is accumulated at the time of sale with separate cash registers in each department, or with several keys on each register to departmentalize sales as they are entered in the register. Similar information for credit sales by departments is accumulated at the time of sale by placing the departmental name or code on each credit sales slip.

Purchases and transportation-in may be analyzed by departments when the purchase invoices or freight bills are received. Since each department sells different merchandise, the purchase invoices can be separated by departments without difficulty. The departmental name or code may be entered on each purchase or freight invoice, and if a freight bill covers items for several departments, an allocation to departments may be made on the face of the invoice based on the weight of the articles. Inventory records may be maintained separately for each department, and physical inventory counts are taken by departments. The statement of departmental gross profit illustrated in Exhibit 21–3 is based upon a separation of revenues and merchandise costs by departments.

The analysis of departmental gross profits is prepared much more frequently than an expense analysis. Most department stores prepare a gross profit analysis monthly, since decreases in departmental gross profit either in dollar amount or as a percentage of sales may indicate poor merchandising by the departmental manager. Expense analyses are more frequently prepared quarterly or annually.

EXHIBIT 21–3

SALLMAN–TOLL DEPARTMENT STORE

Departmental Sales and Gross Profit Analysis
Month of December, 1964

	Departments							
	Shoes		Notions		Men's Clothing		Total	
Sales		$31,000		$15,000		$41,000		$87,000
Cost of merchandise sold:								
Beginning inventory	$ 6,000		$ 4,000		$ 8,000		$18,000	
Purchases	21,000		8,000		31,000		60,000	
Freight-in	500		850		1,200		2,550	
	$27,500		$12,850		$40,200		$80,550	
Ending inventory	8,000		3,000		10,000		21,000	
Cost of goods sold		19,500		9,850		30,200		59,550
Gross profit		$11,500		$ 5,150		$10,800		$27,450

Exhibit 21–4

SALLMAN–TOLL DEPARTMENT STORE
Analysis of Operating Expenses by Departments
Month of December, 1964

Expense	Basis of Allocation	Sales Departments			Expense Centers		
		Shoes	Notions	Men's Clothing	Credit Dept.	Delivery Dept.	Total
Direct:							
Salaries	Direct	$3,000	$1,980	$ 5,000	$1,515	$ 705	$12,200
Advertising	Direct	1,000	500	2,000			3,500
Repairs to furniture and fixtures	Direct	300	200	600	600	400	2,100
Total direct expenses		$4,300	$2,680	$ 7,600			
Indirect:							
Insurance on store fixtures	Value of assets	$ 200	$ 100	$ 300	100	100	800
General store supplies	Sales	400	200	500			1,100
Telephone and telegraph	No. of telephones	70	50	90	50	40	300
Property taxes	Value of assets	60	30	90	35	35	250
Rent on store building	Square feet	400	200	700	300	400	2,000
Electricity	Electric outlets	250	200	350	40	60	900
Expense centers:							
Delivery department	No. of deliveries	700	240	800		$1,740	
Credit department	Credit sales	940	400	1,300	$2,640		
Total indirect costs		$3,020	$1,420	$ 4,130			
Total direct and indirect expenses		$7,320	$4,100	$11,730			$23,150

Operating expenses

Segregation of the direct from the indirect expenses is important when operating expenses are analyzed by segments. The gross margin after direct expenses and the net income are both important in measuring the profitability of each department.

Note that in the expense distribution worksheet, illustrated in Exhibit 21–4, the direct expenses are subtotaled for each sales department. This subtotal is needed for preparation of the final departmental income statement.

The secondary allocation of expense center totals back to the revenue-producing departments appears at the bottom of the work sheet. The total of the Delivery Department's expenses in Exhibit 21–4 is allocated to the various sales departments, followed by the allocation of the total of the Credit Department expenses. Upon completion of the work sheet, the total of expenses assigned or allocated to the three sales departments equals the total of all operating expenses, and income statements for each department can be prepared.

Analysis of departmental statements

After the analysis of gross profit and operating expenses by departments, the income statements are prepared, as illustrated in condensed form in Exhibit 21–5.

EXHIBIT 21–5

SALLMAN–TOLL DEPARTMENT STORE

Departmental Income Statement

Month Ended December 31, 1964

	Department			
	Shoes	Notions	Men's Clothing	Total
Sales	$31,000	$15,000	$41,000	$87,000
Cost of merchandise sold	19,500	9,850	30,200	59,550
Gross margin	$11,500	$ 5,150	$10,800	$27,450
Direct expenses	4,300	2,680	7,600	14,580
Margin after direct costs	$ 7,200	$ 2,470	$ 3,200	$12,870
Indirect and allocated expenses	4,400	1,420	4,130	9,950
Net income (loss)	$ 2,800	$ 1,050	$ (930)	$ 2,920

The departmental gross profit is a significant figure and indicates the departmental manager's ability to purchase and sell merchandise at the desired rate of mark-up. A department's gross profit as a percentage of that department's sales is carefully watched by management; for if the percentage drops significantly, poor merchandising in that department may be indicated.

The margin after the direct costs is also a significant figure, indicating the department's earnings after direct and traceable costs are covered. The margin after direct costs is similar to the contribution margin discussed in the previous chapter. If a department does not realize sufficient margin to cover its direct costs, the elimination of that department should be considered.

The net profit made by each department after both direct and indirect expenses are deducted indicates that department's contribution to the company's net income. Care must be exercised in determining the significance of a departmental net loss after allocated indirect expenses, because any margin after direct costs helps cover the company's indirect or fixed costs. Discontinuance of a department will in most cases result in an elimination of that department's direct costs, but the company's total indirect costs may not change appreciably. Furthermore, discontinuance of one department may result in decreases in the sales of other departments, since customers may stop buying from the company if a full line of merchandise is not available.

Analysis of operating expenses by territories

Analysis of the profitability of sales territories helps locate unprofitable areas and provides data useful in directing the company's sales efforts. When operating expenses are analyzed by territories such as cities, salesmen's areas, or other geographical divisions, an extensive use of expense centers is necessary. Expense centers are frequently established to include such functions as packing and shipping, billing, credit extension, collecting and accounts receivable, and general administration. Direct and indirect operating expenses are assigned or prorated to territories and expense centers, and the totals of expense centers are reallocated to territories in exactly the same manner as in the description of a departmental analysis, with the exception that a greater number of expense centers is necessary to effect an equitable distribution of indirect expenses.

Exhibit 21–6 illustrates an analysis of operating expenses by terri-

EXHIBIT 21–6

SMYTH DISTRIBUTING COMPANY

Territorial Analysis of Operating Expenses

Month Ended December 31, 1964

Expense	Basis of Allocation	Territories			Expense Centers				
		North	South	Central	Order filling and shipping	Credit and collection	Warehousing	General administrative expense	Total
Direct									
Transportation-out	Direct	200	100	400					700
Salaries	Direct	1,200	600	1,200	700	600	500	1,000	5,800
Advertising	Direct	100	100	300					500
Total direct expenses		1,500	800	1,900					
Indirect									
Insurance	Value of equipment	50	75	50	100	150	700	400	1,525
Taxes	Value of assets	10	15	10	20	30	140	80	305
Rent on building	Square footage				120	120	400	180	820
Heat	Square footage				40	40	100	60	240
Cost centers									
Order filling and shipping	Number of orders	240	300	440	980				
Credit and collection	Number of invoices	280	270	390		940			
Warehousing	Cubic volume shipped	500	400	940			1,840		
General administrative	Same ratio as direct salaries	688	344	688				1,720	
Total indirect expense		1,768	1,404	2,518					
Total operating expenses		3,268	2,204	4,418					9,890

tories. The analyses of sales, cost of merchandise sold, and gross profits by territories are not included in the illustration, because these revenues and costs can be analyzed directly from sales invoices. The income statement by territories is shown following the analysis of expenses.

SMYTH DISTRIBUTING COMPANY

Income Statement by Territories

Month Ended December 31, 1964

	Territories			
	North	South	Central	Total
Sales	$22,000	$15,000	$16,000	$53,000
Cost of merchandise sold	15,500	10,500	11,000	37,000
Gross margin	$ 6,500	$ 4,500	$ 5,000	$16,000
Direct operating expenses (from expense analysis)	1,500	800	1,900	4,200
Margin after direct expenses	$ 5,000	$ 3,700	$ 3,100	$11,800
Indirect and allocated expenses (from expense analysis)	1,768	1,404	2,518	5,690
Net income	$ 3,232	$ 2,296	$ 582	$ 6,110

Note that the expense centers in Exhibit 21–6 are numerous and that the basis for distributing the totals of these centers back to territories provides an equitable allocation of indirect operating expenses. The margin after direct expenses and the net income after all expenses assist management in locating territories which need attention.

Basis for allocating expense centers to territories

The basis used to allocate expense centers to territories may differ from company to company, but the bases in Exhibit 21–7 are widely used. Note that these are bases for secondary allocations and are used only after total expenses have been accumulated for each expense center. Primary allocation bases were illustrated in Exhibit 21–2, and the primary allocation is completed before the secondary allocations are performed.

EXHIBIT 21–7

Expense Center	Basis
Storage of finished goods	Cost of goods sold by territories
Accounts receivable	Number of customers
Order assembly	Number of orders
Billing customers	Invoice lines
Packing and shipping	Number of units shipped
Delivery	Truck miles (or analysis of freight bills if by common carrier)
Sales solicitation	Number of calls made

Analysis of operating expenses by other segments

An analysis of operating expenses by types of customers, channels of distribution, or other segments is undertaken in the same manner as the departmental and territorial analyses illustrated. While different bases of allocation may be used, the technique is identical. The process of selecting expense centers and completing primary and secondary allocations provides an analysis technique which assists management in measuring and comparing an almost unlimited arrangement of the fractional parts of an enterprise. Unprofitable segments may be eliminated, and management's efforts may be directed toward the more profitable areas.

An analysis of operating expenses is sometimes undertaken to locate means of reducing the amount of operating expenses, but more frequently the analysis is directed toward securing greater results from present expenses. Directing the company's efforts into more productive channels frequently increases net income more than a search for means of reducing expenses.

Discontinuing a product, department, territory, or other segment

The decision to discontinue an "unprofitable" segment must be based upon a comparison of the revenue that will be lost and the expenses that can be eliminated. If revenue from sale of a product does not cover the direct costs, management is alerted to the possibility that total profits may be increased if the product is dropped. If, for example, discontinuing a product will cause a $6,000 decrease in sales and a decrease of $8,000 in expenses, profits will increase by $2,000 as a result of dropping the product.

Reduction in expenses	$8,000
Loss of sales	6,000
Increase in profits	$2,000

Determination of the loss of sales or the decrease in expenses is a difficult undertaking, and estimates must be made of the expected decrease in such expenses as insurance on merchandise, office supplies, telephone and telegraph, heating, and lighting. An estimate of the loss of sales is even more difficult, for although sales of the discontinued product or department will be lost, the sales of other products or departments may increase or decrease. A grocery store with a fresh meats department may increase its sales of frozen and canned meats if the fresh meats department is dropped, or, on the other hand, the sales of all other departments may decrease because customers stop coming to the store.

The analysis of costs and expenses as discussed in this chapter provides a means by which management is able to isolate segments that need attention. Management may, as a result of these analyses, decide to give a lagging or apparently unprofitable area more effort or to discontinue the segment altogether. The final decision regarding the discontinuance of a segment requires extensive analysis, and a more complete discussion of this problem appears in a subsequent chapter.

Questions

21-1. Define the meaning of the term "segment" of a business. Name some of the ways a business may be "segmented" for analysis and measurement purposes.

21-2. Describe the basic approach to the segmenting of a business for profit measurement.

21-3. Define a direct expense and an indirect expense and distinguish between the two.

21-4. Is an expense always direct, or is it possible for the same expense to be direct in one type of analysis and indirect in another? Explain your answer.

21-5. How are indirect expenses assigned to segments? Is there only one basis which can be used to make this assignment in a given situ-

ation, or will there be several available bases? If so, how should the basis be selected?

21-6. The Billings Department Store is analyzing its operating expenses by departments. State whether the following are direct or indirect expenses of the departments:

(a) The departmental manager's salary
(b) Property taxes on the store building
(c) Costs of advertising the departments' products
(d) Fire insurance on the store building
(e) Salary costs of clerks who work in the department
(f) The president's salary
(g) Office supplies used in the central accounting office
(h) Depreciation on departmental fixtures and showcases.

21-7. The Attkinson Company is allocating its store rent to its four departments on the basis of the floor space used by each department. The total rent to be allocated is $5,000, and the floor space is as follows: Department A, 1,000 square feet; Department B, 4,000 square feet; Department C, 3,000 square feet; and Department D, 2,000 square feet. Describe the process and make the computations for the allocation.

21-8. The Jones-Beckman Company is allocating its operating expenses by departments. State what basis you would use to make the proration of the following expenses:

(a) Store building rent
(b) Cost of electricity for lighting the store
(c) Insurance on the inventory
(d) Office supplies used in the central office
(e) Telephone expense
(f) Bad debts expense.

21-9. What is an "expense center"? What role do expense centers have in expense apportionment to segments?

21-10. Distinguish between a "primary" allocation and a "secondary" allocation.

21-11. How may sales and cost of goods sold be analyzed by product, department, territory, or other segments? Is the analysis of sales and cost of goods sold as difficult as the analysis of operating expenses?

21-12. If a product, territory, or other segment is covering the direct costs but is not fully covering both direct and indirect costs, should it be automatically discontinued? Why or why not?

21-13. Why are expense centers used more extensively in an analysis of territories or products than for departments?

21-14. What basis would you use to allocate the following expense centers to products? To territories?

(a) Cost of warehousing finished goods
(b) Billing customers
(c) Assembling merchandise ordered to get it ready for shipment
(d) Credit and collection
(e) Shipping dock costs

Exercises

21-15. The Howard Smith Company is analyzing operating expenses by products. The sales manager's salary of $10,000 and the shipping manager's salary of $8,800 are to be allocated, using the bases given below.

	Product			
	A	B	C	D
Sales manager's time spent on each product	20%	30%	40%	10%
Number of units sold	800	2,000	5,000	1,000
Number of shipments made	200	600	1,000	400

REQUIRED

Which base or bases would you select for the allocation? State why and make the calculations.

21-16. The management of the Allread Company, a department store, feels that space on the second floor is worth only half as much as space on the ground floor. Their belief is based on the fact that more people pass through the ground floor, and, therefore, the departments on that floor have more opportunity to make sales. The space occupied by the departments is as follows:

Department	Ground floor	Second floor
A	10,000 sq. ft.	
B	15,000	
C	5,000	
D		25,000 sq. ft.
E		5,000

REQUIRED

If the total building rent is $21,000 for the year, how much of the rental cost should be allocated to the departments?

21-17. The president of the Peterman Company requested the sales department to analyze sales and cost of goods sold for each of the company's four territories for the year. He also requested the accounting department to analyze costs by territories. As a result of these requests he received the following information:

Territory	Sales	Cost of goods sold	Direct expenses	Indirect and allocated expenses
Southwest	$20,000	$ 9,000	$ 4,000	$ 8,000
Northwest	30,000	12,000	5,000	8,000
Southeast	10,000	6,000	4,500	2,000
Northeast	25,000	13,000	4,500	3,000
Total	$85,000	$40,000	$18,000	$21,000

REQUIRED

1. Prepare an income statement for each of these territories showing the profit after direct expenses and the profit after all expenses.
2. Which territories would you, as president, give close attention? State why you would select those departments for closer study.

21-18. The Kroper Company has two sales departments, A and B, and two expense centers, C and D. Direct expenses were A, $5,000; B, $4,000; C, $2,000; D, $1,450. Indirect expenses of $14,000 are to be allocated 30% to A, 30% to B, 20% to C, 20% to D.

Expense center C is the purchasing department and issues twice as many purchase orders for A as for B. Expense center D is the delivery department and delivered 3,000 packages for A and 5,500 for B.

REQUIRED

Prepare an expense distribution work sheet for the company.

21-19. The sales manager and the president of the Trondike Company disagree about the large number of small orders which the com-

pany receives. The sales manager believes all orders are profitable, no matter how small, but the president is inclined to believe some of the smaller orders are unprofitable.

The Trondike Company's income statement by size of order was prepared after an expense analysis and appeared as follows:

	Less than $25 each	Between $25 and $100 each	Between $100 and $200 each	Over $200 each
Sales	$8,000	$25,000	$40,000	$8,000
Cost of goods sold	4,000	12,500	20,000	4,000
Gross margin	$4,000	$12,500	$20,000	$4,000
Expenses:				
Direct:				
Filling orders	$1,100	$1,200	$1,300	$200
Sending invoices	900	1,000	800	100
Recording collections	900	1,200	1,000	50
Loss on uncollectible accounts	600	300	200	—
Transportation out	800	1,100	1,800	400
Indirect:				
Other sales department expenses	500	2,000	2,800	300
General and administrative expenses	400	2,100	3,050	700
Total expenses	5,200	8,900	10,950	1,750
Net profit (loss)	($1,200)	$ 3,600	$ 9,050	$2,250

REQUIRED

1. Why would the costs of filling orders, sending invoices, recording collections, and loss on uncollectible accounts be much higher in proportion to sales for the orders under $25 each than for orders over $25 each? Explain.
2. Describe the procedure and the probable bases used to allocate the expenses to the various classifications of order sizes.
3. What policy might management make as a result of this segment analysis in regard to order size that might increase the company's profitability?

21-20. The Barker Company is considering eliminating one of its two departments. Its departmental income statement is on page 645.

If department B is eliminated, the sales of department A will increase 10% and the cost of sales will increase 10% also. All the direct costs of B will be eliminated and other costs, presently al-

located to department B, will be reduced as follows: utilities, $100; insurance, $300; property taxes, $300.

	Department A	Department B
Sales	$100,000	$60,000
Cost of goods sold	60,000	40,000
Gross profit	$ 40,000	$20,000
Direct expenses:		
Salaries	$ 10,000	$ 9,000
Supplies	100	200
Advertising	1,000	500
Indirect expenses:		
Administrative salaries	9,000	9,000
Utilities	500	600
Rent on building	2,500	1,600
Property taxes on inventory	500	400
Insurance	600	700
Total expenses	$ 24,200	$22,000
Net profit (loss)	$ 15,800	($ 2,000)

REQUIRED

Prepare a schedule showing in detail the change in revenue, costs, and profit if department B is eliminated. Describe briefly why all expenses allocated to department B were not eliminated and whether you would discontinue department B.

Problems

21-21. The following data were accumulated by the Goode Department Store:

	Sales	Cost of goods sold
Dry goods department	$21,000	$11,000
Notions department	18,000	9,000
Household appliance department	35,000	21,000

Direct expenses:

	Salaries	Supplies	Advertising
Dry goods department	$3,000	$500	$1,000
Notions department	2,000	200	800
Household appliance department	4,000	600	1,600
Purchasing department	2,000	200	—
Credit department	1,000	200	—

Indirect expenses were: Depreciation on building, $10,000; insurance on building, $500; telephone and telegraph, $1,200; and electricity, $800.

Statistics available for allocation purposes are:

	Dry goods	Notions	Household appliances	Purchasing	Credit
Square footage occupied	12,000	10,000	15,000	7,000	6,000
Number of telephones	3	2	4	2	1
Electric outlets	4	2	5	3	2
Purchase orders	50	81	70		
Credit sales	$10,100	$5,000	$11,500		

REQUIRED

Prepare (a) an expense distribution work sheet and (b) income statements by departments for the Goode Department Store from the above data for the year ended December 31, 1964.

21-22. The Jackson Desk Company sells office desks in three states. The company has six salesmen, and the accounting office has accumulated the following information about each salesman for the year 1964:

	Jones	Smith	White	Peters	Adams	Knowl
Sales made	$38,000	$27,000	$51,000	$57,000	$53,000	$45,000
Salary	7,000	7,000	7,000	7,000	7,000	7,000
Travel costs	1,000	2,000	1,200	600	1,300	500
Freight-out	900	300	800	400	200	900
Commissions	500	—	1,000	1,500	1,400	700
Cost of goods sold	20,000	15,000	25,000	30,000	28,000	22,000
Number of customers	15	8	10	12	14	11

The following costs could not be traced directly to salesmen, and are to be allocated using the given basis: General sales office costs of $9,000 equally to salesmen; general office costs of $14,000 on the basis of the number of customers served; warehouse expenses of $7,000 on the basis of cost of goods sold.

REQUIRED

1. Prepare an income statement showing separately the results of each salesman's efforts.
2. The company pays salesmen a commission based on the number of sales made above a minimum number. Do you think the commissions paid reflect the productivity of the salesmen? Why or why not?

21-23. The Ralston Company manufactures hardware, garden tools, and utensils. The company's management is not sure which of these produce lines is its most profitable, and the following data were accumulated for 1964.

Sales: hardware, $90,000; tools, $41,000; utensils, $62,000.
Cost of goods sold: hardware, $50,000; tools, $20,500; utensils, $31,400.

Expenses:	Warehouse	$ 8,000
	Order processing	12,000
	Salesmen's commissions	37,500
	Collection expense	5,000
	Advertising	10,000
	Transportation	7,500
	Packing and shipping	3,500
	Administrative	4,000
		$87,500

(a) The warehouse contains 100,000 square feet, of which 62,500 are used for hardware, 20,000 for tools, and 17,500 for utensils.
(b) The company processed 3,000 orders for hardware, 1,000 for tools, and 2,000 for utensils.
(c) Sales commissions were paid as follows: hardware $15,000, tools $10,000, utensils $12,500.
(d) Individual collections during the year were made as follows: 1,000 on sales of hardware, 800 on tools, and 700 on utensils.
(e) The company spent $1,500 on general advertising, which benefits all product lines equally, and $8,500 on specific products. The specific advertising was 30% for hardware, 50% on tools, and 20% on utensils.

(f) Transportation costs were paid as follows: hardware $3,000, tools $2,000, utensils $2,500.
(g) Shipments made during the year were 600 on hardware, 800 on tools, and 350 on utensils.
(h) General and administrative expenses are allocated on the basis of 40% to hardware, 30% to tools, and 30% to utensils. These percentages are the result of time estimates made by administrative employees.

REQUIRED

Prepare an income statement showing the profitability of each product. Based upon the results of your statement, discuss briefly which product line appears to be most profitable, whether or not you would eliminate a product line, and which line you would emphasize in the sales effort.

21-24. The Williamsburg Department Store prepared the following analysis of its departments for the year 1964:

	Ready-to-wear	Hardware	Notions	Household goods	Total
Sales	$60,000	$39,000	$15,000	$80,000	$194,000
Cost of goods sold	35,000	21,000	7,000	45,000	108,000
Gross profit	$25,000	$18,000	$ 8,000	$35,000	$ 86,000
Direct expenses:					
Sales salaries	$14,000	$ 8,000	$6,000	$13,000	$ 41,000
Advertising	500	400	100	1,000	2,000
Supplies	200	100	100	400	800
Indirect expenses:					
Depreciation on building	5,000	4,000	2,000	8,000	19,000
Telephone and telegraph	300	200	50	400	950
Electricity	400	100	100	300	900
Administrative salaries	6,000	3,000	2,500	5,000	16,500
Insurance	150	50	50	200	450
Property taxes	250	150	100	200	700
Total expenses	$26,800	$16,000	$11,000	$28,500	$ 82,300
Net profit (loss)	($ 1,800)	$ 2,000	($ 3,000)	$ 6,500	$ 3,700

The administrative officers are considering the elimination of the ready-to-wear and the notions departments and ask you to prepare

a study on the resulting effects on profit. You have estimated the following results if the two departments are eliminated:

(a) Sales and cost of goods sold of the hardware department will drop 10%, but sales and cost of goods sold of the household goods department will increase by 5%.
(b) All direct expenses will remain the same for the remaining departments but will disappear entirely for the two eliminated departments.
(c) The total telephone and telegraph expense will decrease by $200.
(d) The total electricity expense will decrease by 10%.
(e) Total insurance expense will decrease by $100.

REQUIRED

1. Prepare an analysis listing in detail the changes in revenue, the changes in expenses for the store as a whole, and the overall effects on the net profit of the store.
2. State whether you think the two departments should be eliminated, and why you have so decided. Do you feel the above analysis, as submitted to the company's management, reflects clearly all data needed for such decisions?

21-25. The Gale Company is considering a quantity discount system whereby customers are allowed quantity discounts for larger purchases. The company wants to set the discount rate by size of orders so that it will encourage customers to buy in the larger quantities, which are more profitable. A study was undertaken of the company's costs by size of order, and the following condensed expense distribution work sheet for the year 1964 was prepared:

	Orders for one unit	Orders for two units	Orders for three units	Orders for four units
Sales	$10,000	$100,000	$120,000	$40,000
Cost of goods sold	5,000	50,000	60,000	20,000
Gross profit	$ 5,000	$ 50,000	$ 60,000	$20,000
Direct expenses	$ 2,000	$ 10,000	$ 8,000	$ 2,000
Indirect expenses	3,000	30,000	36,000	12,000
Total expenses	$ 5,000	$ 40,000	$ 44,000	$14,000
Net profit	$ –0–	$ 10,000	$ 16,000	$ 6,000

The company's product sells for $50 per unit before any discount is allowed for quantity purchases. The direct expenses were $10

for each order, regardless of the size of the order. The indirect expenses were 30% of sales.

REQUIRED

1. Compute the profit earned on each order for each of the four order sizes.
2. Suppose the company set a policy of 2% off of the sales price of $50 for orders of two units, 5% off for orders of three units, and 10% off for orders of four units. If the cost of goods sold remained at 50% of selling price, before discounts, direct expenses remained at $10 per order, and indirect expenses remained at 30% of sales before discounts, prepare an income statement by size of order if sales were the same in total number of units but were received as follows:

Number of orders for one unit	100
Number of orders for two units	1000
Number of orders for three units	800
Number of orders for four units	225

3. Would you recommend that the discount policy be adopted? Why or why not?

21-26. The advertising manager of the Nelson Company requested information about which of the company's two products to emphasize in his advertising program during the coming year. As a result of his request, the controller was asked to prepare an analysis of the profitability of the two products. The controller requested his staff to accumulate the necessary information for the analysis, which was presented as shown on page 650.

REQUIRED

1. Prepare the expense distribution sheet for the company, using a work sheet for the two products, A and B, and three expense centers for the general sales office, order handling, and general office.
2. If 10,000 units of A were sold during the period and each unit produced $8 of gross margin, and 20,000 units of B were sold and produced $5 gross margin each, which product made the greatest total amount of profit?
3. Which of the two units produced the greatest *per unit* profit?
4. If the company can undertake only $15,000 additional advertising, which must be expended on either product A or product B,

but not on both, and if this advertising will sell an additional 5,000 units of the product selected, which would you choose to advertise?

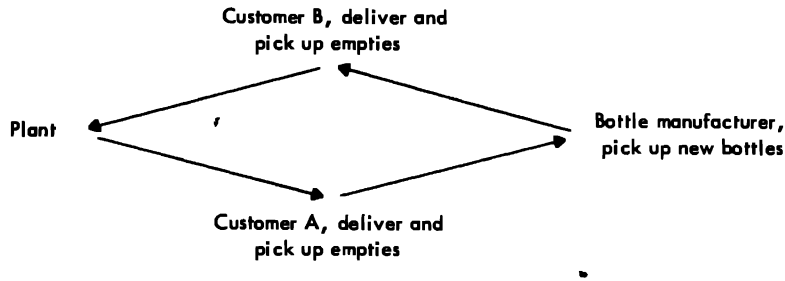
Expense	Amount	Allocation
Salesmen's salaries	$18,000	Direct: $10,000 to A and $8,000 to B
Advertising	3,000	Direct: $2,000 to A and $1,000 to B
Insurance on inventory	700	Direct: $300 to A and $400 to B
Freight-out	2,100	Direct: $900 to A and $1,200 to B
Telephone and telegraph	800	Number of telephones: General sales department, 6; Order handling, 2; General office, 8
Building depreciation and insurance	4,500	Space occupied: General sales department, 6,000 ft.; Order handling, 4,000 ft.; General office, 8,000 ft.
Supplies	1,200	Direct: General sales department, $400; Order handling, $300; General office, $500
Administrative salaries	39,000	Direct: General sales department, $11,000; Order handling, $8,000; General office, $20,000
General sales department		Time spent: 60% product A; 40% product B
Order handling		Number of orders: 10,000 product A; 8,800 product B
General office		Time spent: 40% product A, 60% product B

Cases

21-27. The Matador Bottling Company sells and delivers its bottled products to retail outlets within a two-hundred mile radius of its bottling plant. On the return trip from a delivery the company's trucks pick up empty containers, new containers from several bottle manufacturers in the area, and raw materials from a number of suppliers. The company's trucks do not run a scheduled route and are sent wherever needed to deliver and return with raw materials. The scheduling of truck trips is under the direction of the assistant to the president.

All the costs of operating the truck fleet are recorded as delivery expenses, and consequently there is very little transportation-in cost on raw materials and bottles. The sales manager feels that this is not an equitable method of accounting, since he is thus charged with a cost over which he has no direct control.

A typical truck run is as follows:



The sales manager is attempting to locate unprofitable customers and feels that the cost of delivering to some customers is greater than the profit made on sales to them.

How could trucking costs be allocated to find unprofitable customers? How would trucking costs be divided between selling and transportation-in?

21-28. The White and Williamson Company, which is located in Buffalo, New York, has not realized a profit for the past several years. Their controller has talked several times with the sales manager and the president about the company's unprofitable sales territories. The president was skeptical of the controller's opinion that a few territories are causing the losses, and the sales manager was outspoken in saying the controller was absolutely wrong. The company sells a full line of overcoats, sweaters, and jackets.

The controller asked his staff to prepare an analysis of operating revenues and expenses by territories. The resulting analysis is illustrated on page 653.

The controller presented this analysis to the president and the sales manager in support of his position that the far western and southern territories were causing the losses. The president studied the analysis and remarked that the bases for distributing some of the expenses were not equitable, and thus the profit analysis was incorrect. He stated that the administrative time was naturally greater for the western and southern territories, because the administration was trying to build up sales there.

	Basis	Far West	Mid-west	South	Atlantic Coast	New England	Total
Sales	Analysis of sales invoices	$35,000	$40,000	$18,000	$40,000	$54,000	$187,000
Cost of goods sold	Analysis of cost on each sales invoice	17,000	21,000	10,000	20,000	28,000	96,000
Gross profit		$18,000	$19,000	$ 8,000	$20,000	$26,000	$ 91,000
Salesmen's salaries	Analysis of payroll	$ 7,000	$ 6,000	$ 6,000	$ 7,000	$ 7,000	$ 33,000
Salesmen's travel	Analysis of expense reimbursements	5,000	2,000	3,000	1,500	2,000	13,500
Salesmen's entertainment	Analysis of expense reimbursements	700	700	200	900	800	3,300
Freight out	Analysis of freight invoices	1,600	800	900	500	600	4,400
Advertising	Analysis of radio and newspaper advertising	700	500	300	1,100	1,200	3,800
Other selling costs	Number of salesmen's calls	750	500	520	550	580	2,900
Administrative salaries	Time spent	3,000	1,000	3,000	1,000	1,000	9,000
Office supplies	Number of customers	400	500	200	1,500	1,300	3,900
Building depreciation, taxes, and insurance	Total sales	1,750	4,000	900	4,500	5,500	16,650
Other administrative costs	Equally to each territory	300	300	300	300	300	1,500
Total expenses		$21,200	$16,300	$15,320	$18,850	$20,280	$ 91,950
Net profit (loss)		($ 3,200)	$ 2,700	($ 7,320)	$ 1,150	$ 5,720	($ 950)

The final result of the discussion was that the president, sales manager, and controller agreed that any territory would be eliminated if it did not produce more revenue than the actual direct costs of operating in the territory.

Discuss the bases used in the controller's study and their applicability to the situation, and state what territories, if any, you would recommend discontinuing.

22

The nature of budgetary planning

Business budgeting is a process of carefully and systematically planning future activities. In some companies plans for the future exist only in the minds of one or two top executives, but in more progressively managed companies formal budgets are prepared and approved by executive management in advance of actual operations. Reports are then prepared at regular intervals which compare the results of operations with the predetermined budget.

A budget is the means by which management's plans are reduced to amounts. By means of departmental breakdown the budgetary scheduling is communicated to each operating supervisor who is affected. When correctly applied, the budgetary system can be a means of motivating employees to more efficient operations or to improved individual performance.

The business budget has three fundamental purposes: (1) planning future operations, (2) coordinating all the company's activities, and (3) controlling the actions of operating employees. Detailed budgets of sales, expenses, production, inventories, and cash are usually necessary to satisfy these purposes.

Budgetary planning and budgetary control distinguished

Planning is the process of establishing future objectives and formulating means of meeting those objectives. Control, on the other hand, is the means by which management ascertains that the various parts of the business perform efficiently and progress toward the predetermined plans. Budgetary control is the process by which management keeps itself informed of the effectiveness and efficiencies of each part of the company's operations.

A good budgetary system provides both planning and control. Planning is effected by determining in advance the expected sales volume, the expected cost of merchandise to be purchased or produced, the number of employees needed, and the expenses to be incurred. The master budget and the various subbudgets express these plans. Control, on the other hand, is exercised through budget performance reports prepared for each subdivision of the company reflecting the budget, the actual results of operations, and any differences. Management is then able to investigate major differences to determine why predetermined plans have not been met.

The budget officer

The operation of a company's budget program is normally assigned to a *budget officer*. He is usually a member of executive management, with a strong background in accounting. While actual preparation of the budget should be undertaken by all the executives and operating supervisors who will use the budget as their guide to future operations, the budget officer is responsible for seeing that the budget is prepared and that it is sufficiently comprehensive and detailed to serve its purposes.

The budget officer is responsible for reviewing expenses, sales, inventory amounts, and all other transactions to ascertain that each department or executive operates within the budgeted plan. He is also responsible for the accuracy and the adequacy of budget reports. Usually the budget officer councils with the individual responsible for significant differences between actual and budgeted amounts to ascertain the cause of the variance. However, the budget officer should have no authority to change the company's budget. He is normally given authority only to see that the budgetary plan is working, to locate weak operating areas, and to report pertinent budgetary information to management personnel who have executive authority.

The budget period

The budget should cover a period sufficiently short to permit the location of areas needing attention before excessive loss or waste has occurred. Monthly budget reports on sales and expenses are for this reason very useful. On the other hand, annual budgets, prepared sufficiently in advance to permit long-range planning and systematic growth, have many advantages; indeed some companies budget the purchase of fixed assets as far as five or ten years in advance. Most businesses prepare annual budgets, covering the same period as their

accounting year, with a breakdown by months or quarters. The monthly breakdown is prepared to take into account all known seasonal or short-term fluctuations expected during the twelve months of the budget year. In addition to monthly budget reports, a cumulative budget report covering the year-to-date is usually prepared.

The budgetary process

The success of the budget system depends upon the careful execution of definite preliminary steps.

Preliminary Steps

1. Determine the extent to which future planning is necessary and the extent of control and coordination necessary for each operating area. For budgetary purposes the company's operations must be divided into individual areas of responsibility, and each area must be carefully coordinated, planned, and controlled.
2. Determine who should receive budget reports and what information the reports should contain. Sufficient data must be reported to enable executives to measure how well the company's plans are being met.
3. Establish the form of the budget reports. The results of actual operations must be accumulated in the accounting process to facilitate comparison with budgeted amounts.

After preliminary steps have been completed, the budget is prepared. Determination of budgetary amounts is difficult; amounts from the prior year are only a beginning point, and contemplated changes in company plans, general economic conditions, and other factors must be considered.

Steps in Constructing the Budget

4. Project the expected sales during the budget period both in units and in dollars. The *sales budget* is the foundation upon which the remaining steps in the budgetary process are built.
5. Determine the desired inventory amounts and project the production level or purchases necessary to maintain these desired quantities and yet provide for the anticipated sales.
6. Prepare a *purchases budget* by projecting the timing and the cost of the units to be purchased.
7. Prepare *selling expense and administrative expense budgets* for the expenses estimated at the projected sales level.
8. Based on estimated collections from cash or credit sales and the payment of expenses, prepare a *cash budget*. This budget indicates when additional funds must be borrowed or invested and when any borrowed funds can be repaid.

9. Establish a *fixed asset budget* indicating the assets needed for long-term expansion, growth, or changes in operations.
10. Bring together the forecasts indicated above into a "master budget," or over-all plan. This step can be accomplished by preparing pro-forma (projected) income statements and balance sheets.

After the budget has been constructed, each subbudget and the master budget should be approved by executive management. Copies of the appropriate budgets should be given to operating supervisors, who will then know exactly what is expected of them.

Budget performance reports are prepared at frequent intervals and include the budgeted amounts, actual revenues and expenses, and any difference. The budget report of the Falton Company, illustrated in Exhibit 22–1, is designed to measure the activities of the sales department. Note that the report, covering one month's activities, includes budgeted and actual sales in both units and dollars and the budgeted and actual expenses of the department.

EXHIBIT 22–1

FALTON COMPANY
Sales Department Budget Report
Month of September, 1964

	Budget		Actual		Under (Over) Budget	
	Units	Amount	Units	Amount	Units	Amount
Sales						
Product X	1,000	$200,000	940	$194,000	60	$6,000
Y	500	50,000	550	51,000	(50)	(1,000)
Z	100	10,000	110	11,000	(10)	(1,000)
		$260,000		$256,000		$4,000
Expenses (of Sales Department only)						
Salesmen's salaries		$ 30,000		$ 30,000		–0–
Salesmen's commissions		12,000		11,500		$ 500
Advertising		15,000		14,000		1,000
Supplies and postage		3,000		3,100		(100)
Travel and entertainment		9,000		9,300		(300)
Telephone and telegraph		6,500		6,100		400
Total		$ 75,500		$ 74,000		$1,500

Since the sales department is responsible both for making sales and for keeping its own expenses within the budget limit, the report should provide a measure of how well the plans of the company have been met by that department.

The sales budget

The sales budget is the foundation for all other subbudgets and must be prepared first. A forecast of sales in both dollars and units of product provides the basis for budgeting selling expenses, purchases, inventory levels, personnel requirements, and cash needs. Many factors must be considered when the sales budget is established, including sales trends, limitations on the supply of merchandise or the capacity of the manufacturing plant, growth and expansion of the company's market, competing products, the expected amount of advertising, and the general level of the economy. Since most of

EXHIBIT 22–2

CALLAWAY COMPANY
Sales Budget
First Quarter, 1964

	January		February		March	
	Units	Dollars	Units	Dollars	Units	Dollars
Regular						
North	150	$ 1,500	160	$ 1,400	170	$ 1,600
South	150	1,400	180	1,600	180	1,600
Central	200	2,700	210	2,900	230	3,000
	500	$ 5,600	550	$ 5,900	580	$ 6,200
Choice						
North	1,700	$ 5,000	1,600	$ 5,500	1,600	$ 5,500
South	2,300	7,000	2,400	7,500	2,600	8,000
Central	1,600	6,800	1,800	6,700	1,700	6,000
	5,600	$18,800	5,800	$19,700	5,900	$19,500
Supreme						
North	900	$ 3,000	1,000	$ 3,200	1,000	$ 3,200
South	1,000	3,500	1,000	3,500	1,100	3,700
Central	600	2,200	600	2,200	600	2,300
	2,500	$ 8,700	2,600	$ 8,900	2,700	$ 9,200
Total		$33,100		$34,500		$34,900

these unknown factors must be estimated, the larger companies frequently maintain a specially trained staff to measure them.

Sales should be budgeted by individual products, by sales territories, and by different marketing processes, such as wholesale, jobber, and retail, thereby permitting measurement of the performance of individuals who are responsible for different sales areas.

To illustrate the preparation of a sales budget, suppose that the Callaway Company produces three products, Regular, Choice, and Supreme. All products are packed in similar cartons and are sold through wholesale outlets in three territories, North, South, and Central. The sales budget, illustrated in Exhibit 22–2, reflects the planned sales for the first three months of 1963 in both units and dollars and by separate products and territories.

Inventory and purchases budget

The budget of purchases is prepared after the sales budget has been completed. Since sales forecasts reflect the products to be sold each month, the purchase of those products can be budgeted with little difficulty. However, fluctuations in inventory levels affect the purchases budget. Consequently, the number of units purchased in any one month may differ from the number to be sold. The purchases schedule must be arranged so that the inventory is sufficient at all times for the projected sales but at the same time is not excessive. Interest, insurance, and storage costs on any excess inventory reduce the company's potential profit.

On the other hand, purchases must be made in the most economical quantities. Many companies give discounts for large quantity purchases, and these "quantity discounts" must be considered when inventory levels and purchases are being planned. Costs of carrying an increased inventory during periods of low sales activity must be matched with the savings realized by purchasing in large quantities.

When the purchases budget is prepared, each product must be projected separately. The inventory of each product at the beginning of the budget period and the units of that product expected to be sold are inserted in the purchases budget. If the Callaway Company, whose sales budget was shown in Exhibit 22–2, has a beginning inventory of 530 regular units, the following data are placed on the purchases budget before either purchases or ending inventories are computed:

Purchases Budget (in units)

Product	(1) Desired Inventory at End of Month	+	(2) Sales for Month (From Sales Budget)	=	(3) Total Needed During Month	−	(1) Inventory at Beginning of Month	=	(5) Purchases
Regular:									
January			500				530		
February			550						
March			580						

At this point the desired number of units in the inventory at the end of each month must be known. Management should adopt an inventory policy in this regard to prevent overstocking and at the same time maintain adequate stocks. If lower prices are offered by suppliers for quantity purchases, management must decide between buying in quantity or maintaining a low inventory. Frequently a compromise must be reached between these two alternatives. Suppose, to complete the illustration, that a decision is reached by the management of the Callaway Company to maintain an inventory at the end of each month equal to next month's budgeted sales. Thus the ending inventory on January 31 must be equal to the projected sales of February, which appear in the sales budget at 550 units. With this information the January purchases can be computed as follows:

Desired inventory at the end of the month	550	
Sales during the month	500	
Total needed		1,050
Less units in the inventory at the beginning of the month		530
Purchases during the month		520

The beginning inventory for the second month would then be 550 units, and monthly purchases would be computed by applying the same procedure. The completed purchases budget, illustrated in Exhibit 22–3, follows this approach. The beginning inventories of the choice and supreme products are assumed to be 6,000 units and 2,000 units respectively, and the plan of the company is to have an ending inventory equal to the expected sales of the following month.

EXHIBIT 22–3

CALLAWAY COMPANY
Purchases Budget (in units)
First Quarter, 1964

Products	Desired Inventory at End of Month	Sales for Month (From Sales Budget)	Total Needed During Month	Inventory at Beginning of Month	Purchases
Regular					
January	550	500	1,050	530	520
February	580	550	1,130	550	580
March	650	580	1,230	580	650
Choice					
January	5,800	5,600	11,400	6,000	5,400
February	5,900	5,800	11,700	5,800	5,900
March	6,100	5,900	12,000	5,900	6,100
Supreme					
January	2,600	2,500	5,100	2,000	3,100
February	2,700	2,600	5,300	2,600	2,700
March	3,000	2,700	5,700	2,700	3,000

After the purchases budget is completed in terms of units, the units are converted into dollars. The projection of purchasing prices must take into consideration anticipated price changes and general price trends. Assume units can be bought as follows for January and February:

Regular	2.00
Choice	2.20
Supreme	2.40

Assume further that a 10% price increase is expected the first of March. The purchases budget would then be completed as shown in Exhibit 22–4.

Projecting expenses

Projecting selling expenses and administrative expenses entails a study of each individual expense and its reaction to volume changes. The amount of fixed expenses will remain constant, but variable and semivariable expenses must be computed at the expected sales vol-

EXHIBIT 22–4

CALLAWAY COMPANY
Schedule of Purchases
For the First Quarter, 1964

	Units to Be Purchased	Purchase Price	Total Purchases
January:			
Regular	520	$2.00	$ 1,040
Choice	5,400	2.20	11.880
Supreme	3,100	2.40	7,440
			$20,360
February:			
Regular	580	2.00	$ 1,160
Choice	5,900	2.20	12,980
Supreme	2,700	2.40	6,480
			$20,620
March:			
Regular	650	2.20	$ 1,430
Choice	6,100	2.42	14,762
Supreme	3,000	2.64	7,920
			$24,112

ume. The techniques of determining the fixed and variable elements of expenses described in Chapter 21 must be applied in order to project expenses as accurately as possible. The behavior of each expense of the Callaway Company is indicated in the Exhibit 22–5 to emphasize the manner by which the amounts are computed. The expense budget is based on the sales volumes computed in the sales budget shown previously.

The cash budget

The cash budget is prepared after sales, purchases, selling expenses, and administrative expenses have been budgeted. The cash budget is one of the most important budgets, for it indicates the cash requirements necessary to complete the budgeted activities. The cash budget indicates the extent and timing of any need for additional monies, as well as the anticipated repayment date.

EXHIBIT 22–5

CALLAWAY COMPANY
Expense Budget
For the First Quarter, 1964

	January	February	March	Total
Selling:				
Depreciation on store equipment (fixed)	$1,000	$ 1,000	$ 1,000	$ 3,000
Store supplies (variable, 2% of sales)	662	690	698	2,050
Insurance on store equipment (fixed)	300	300	300	900
Sales salaries (semivariable: $1,000 fixed, balance 5% of sales)	2,655	2,725	2,745	8,125
Total selling expenses	$4,617	$ 4,715	$ 4,743	$14,075
Administrative:				
Officers' salaries (fixed)	$1,000	$ 1,000	$ 1,000	$ 3,000
Telephone and telegraph (semivariable: $100 fixed, balance 1% of sales)	431	445	449	1,325
Clerical salaries (variable 10% of sales)*	3,310	3,450	3,490	10,250
Office supplies (semivariable: $100 fixed, balance 1% of sales)	431	445	449	1,325
Taxes (fixed)	200	200	200	600
Total administrative	$5,372	$ 5,540	$ 5,588	$16,500
Total expenses	$9,989	$10,255	$10,331	$30,575

The cash budget is constructed by scheduling receipts and disbursements from all budgeted activities. A cash budget may be subdivided into monthly, weekly, or even daily periods, depending upon the company's cash position. Projected disbursements are subtracted from budgeted receipts to determine the anticipated cash balance at the end of each period.

The cash budget of the Callaway Company is illustrated in Exhibit 22–6. Note the indication that borrowed funds will be needed in January and February and that the company should be able to repay both the loans in March. Preparation of the cash budget begins with the cash balance on January 1. Receipts and disbursements for January are entered, and the projected cash excess or deficiency at the end of the month can then be determined. Anticipated borrowings or repayments of borrowed funds are considered, and the final cash balance at the end of the month is computed. The ending bal-

ance of one month is the beginning balance of the next month, and the process is repeated for each succeeding month until the cash budget is completed.

EXHIBIT 22–6

CALLAWAY COMPANY
Cash Budget
First Quarter, 1964

	January	February	March
Cash balance, first of month	$ 1,200	$ 1,211	$ 696
Receipts:			
Cash sales	14,000	15,000	18,000
Collection of receivables	12,000	13,000	16,000
Collection of notes receivable			4,000
Total available cash	$27,200	$29,211	$38,696
Disbursements:			
Payment of accounts payable for merchandise purchases	$19,000	$20,360	$20,620
Selling and administrative expenses	8,989	11,155	8,831
Purchase of new machine			1,200
Total disbursements	$27,989	$31,515	$30,651
Excess of available funds over disbursements	$ (789)	$(2,304)	$ 8,045
Borrowed funds needed	2,000	3,000	
Repayment of borrowed funds			(5,000)
Cash balance, end of month	$ 1,211	$ 696	$ 3,045

The budgeted sales, expenses, and purchases should not be incorporated into the cash budget without prior adjustment for noncash items. For example, the total sales budgeted for January will not be realized in cash if a portion of the sales are made on credit terms. However, receivables arising from sales in prior months will be collected and must be included in the cash budget. The terms of merchandise purchases determine the time of payment and must be considered when the cash budget is constructed. If the creditors'

terms are 2/10 EOM, the payment for one month's purchases need not be made until the following month.

Adjustment of an expense budget to reflect cash disbursements requires the subtraction of such noncash expenses as depreciation and the amortization of prepaid taxes or insurance. The budgeted selling and administrative expenses of the Callaway Company which were shown in Exhibit 22–5 require adjustment as follows:

	January	February	March
Total budgeted expenses	$9,989	$10,255	$10,331
Less: Depreciation expense	(1,000)	(1,000)	(1,000)
Taxes expense	(200)	(200)	(200)
Insurance expense	(300)	(300)	(300)
Add: Payment of year's taxes		2,400	
Payment of a one-year insurance premium	500		
Total cash expenditures for expenses (to cash budget)	$8,989	$11,155	$ 8,831

Proforma statements

A *proforma statement* is one containing future projections or anticipated amounts, instead of actual amounts which traditional statements contain. The preparation of proforma statements, undertaken after all subbudgets are completed, is the final step in the budget plan. These statements are prepared to reflect the effects of all the budgeted transactions on the company's profitability and financial position.

The proforma income statement drawn from all the Callaway Company subbudgets previously illustrated is shown in Exhibit 22–7. The beginning inventories in the projected income statement would be taken from the current balance sheet, and ending inventories are computed using the budgeted purchases and a LIFO, FIFO, average or other inventory method. The source of each amount in the proforma statement is indicated in the body of the statement for illustrative purposes.

The projected income statement provides a means of determining the over-all effects of the budget plan; if the budgeted net income is too low, these budgets are reviewed for ways of reducing expenses or increasing revenues.

A proforma balance sheet is frequently prepared to project the company's financial position at the end of the budget period. How-

EXHIBIT 22–7

CALLAWAY COMPANY
Proforma Income Statements
For the First Quarter, 1964

	January	February	March
Sales (from the sales budget)	$33,100	$34,500	$34,900
Cost of goods sold:			
Beginning inventory (from the balance sheet at the end of the current period)	$20,000	$20,150	$20,620
Purchases (from the purchases budget)	20,360	20,620	24,112
	$40,360	$40,770	$44,732
Ending inventory (computed using whichever inventory method the company follows—LIFO, FIFO, etc.)	20,150	20,320	23,112
Total cost of sales	$20,210	$20,450	$21,620
Gross profit	$12,890	$14,050	$13,280
Selling and administrative expenses (from the expense budget)	9,989	10,255	10,331
Budgeted net income	$ 2,901	$ 3,795	$ 2,949

ever, a projected balance sheet is less significant than a projected income statement, since the cash budget provides sufficient data for planning the receipts and disbursements of cash.

Planning fixed asset acquisitions

The fixed assets budget reflects the company's plan for acquiring, improving, or retiring its income-producing assets. This part of the budget plan should be extended further into the future than the operating budget just described and is frequently projected five, ten, or twenty years into the future. Long-term planning is necessary to insure that funds are available as needed, through retained profits, borrowing, or investment, for the acquisition of fixed assets.

The acquisition of any asset that is to be capitalized and depreciated or amortized over a period of years should be included in the fixed assets budget. The fixed assets budget does not include ordinary repairs and maintenance, which are part of the current operating expense budget. However, such extensive repairs as the rebuild-

ing of a blast furnace or a major reconstruction of a refinery would be included in the fixed assets budget.

Assume, for example, that the Butterfield Company, a relatively new operation, has a plant with a production capacity of 100,000 units annually. Current and anticipated sales are as follows:

Actual units sold:	1959	40,000
	1960	50,000
	1961	62,000
	1962	76,000
	1963	90,000
Projected units to be sold:	1964	100,000
	1966	125,000
	1968	155,000
	1970	180,000
	1972	210,000
	1974	250,000

The projected sales indicate that the company will need an enlarged plant soon, since its capacity will be reached during the coming year, 1964. Even if capacity is doubled by new construction in 1964, additional capacity will be needed again in 1972. Thus, planning for the acquisition of additional fixed assets must be considered years in advance. The length of the construction period necessary to build the enlarged plant must also be considered when acquisitions of fixed assets are planned.

The fixed assets budget must be flexible enough to allow for fluctuating economic conditions which may alter the projected need for fixed assets. Suppose the board of directors of the Butterfield Company, whose sales projections are shown above, decide that construction of a new building and purchase of additional equipment are to begin immediately. A compromise between overexpansion and underexpansion must be reached; overexpansion increases fixed costs and multiplies the risks of financial failure, while underexpansion will create loss of sales due to the inability to match production with demand. A compromise in the case of the Butterfield Company appears to be a doubling of capacity to accommodate the next seven years' growth. If expansion continues as projected, additional fixed assets will be acquired in 1970.

The capital assets expenditures report

When fixed assets are constructed, periodic reports must be prepared to match actual cost with the budgeted cost. Although the board of directors budgets a given amount for plant expansion, final requirements may be more or less than this figure. A *capital asset expenditures report* is thus prepared, as illustrated in Exhibit 22–8.

EXHIBIT 22–8

BUTTERFIELD COMPANY
Report on Capital Asset Expenditures
as of June 30, 1964

Description	Amount Approved	Expected Completion Date	Original Cost Estimate	Actual Costs to Date	Total Expected Costs
Extend left wing of plant	$ 80,000	1/4/65	$ 78,000	$23,000	$ 79,500
Enlarge power plant	30,000	11/15/64	30,000	19,000	29,600
New machinery	63,000	1/10/65	60,000	5,000	62,000
Totals	$173,000		$168,000	$47,000	$171,100

This report informs management of the expected completion date, the amounts originally approved for the projects, amounts already spent, and the current estimate of the final cost. These reports are especially useful to upper management personnel who are responsible for many widely dispersed acquisitions covering a span of several years.

Questions

22-1. Define budgeting and state the purposes of a budgetary system.

22-2. What is meant by the statement that "a budget is a means of communication and motivation"?

22-3. Describe the functions and responsibilities of a budget officer.

22-4. A foreman of the Pratt Company exceeded his budget of expenses for seven consecutive months. As a result, the budget officer termi-

nated the foreman's employment. Do you feel the budget officer should be given the authority to take action such as this? Why or why not?

22-5. What steps should be completed in establishing a budgetary system preliminary to the actual setting of budgetary amounts?

22-6. Why is the sales budget or forecast the first step in the accumulation of budgetary amounts? Can you think of any circumstances where production amounts instead of sales amounts would be the beginning point?

22-7. What is a proforma financial statement? Of what use is a proforma income statement?

22-8. What is meant by the statement that "the value of a budget report is exactly equal to the confidence which executives have in the accuracy of the budgeted amounts"? Do you agree with this?

22-9. How long should the budget period be?

22-10. If you were the vice-president in charge of sales, you would very likely want to see the sales budget broken down by types of products. Describe other detailed break-downs of the sales budget which you might find useful.

22-11. Describe the procedure used in establishing the inventory and purchases budget.

22-12. Define a fixed cost and a variable cost. What is meant by the statement that "many expenses have both a fixed and a variable element"?

22-13. Describe the nature and name some of the uses of a cash budget.

22-14. Why are the amounts in the sales budget and in the expense budget not always applicable to the cash budget?

22-15. Describe the difference in the periods of time used for budgeting cash, expenses, and capital assets.

22-16. Describe and name some of the purposes of a report on capital asset expenditures.

Exercises

22-17. Analysis of the monthly expenses of the Marylin Mattress Company indicated the following:

	Fixed portion	Variable costs (per unit sold)
Salaries	$11,000	$0.20
Travel and entertainment	600	.12
Supplies	200	.06
Depreciation	4,000	
Delivery expense	1,200	.30
Taxes	1,000	
Building rental	5,000	
Insurance	400	
Repairs	200	.15
Telephone and telegraph	100	.08

January sales were 6,000 mattresses, and actual costs incurred were:

Salaries	$12,900
Travel and entertainment	1,240
Supplies	500
Depreciation	4,000
Delivery expense	3,200
Taxes	1,000
Building rental	5,000
Insurance	400
Repairs	1,020
Telephone and telegraph	700

REQUIRED

Prepare a budget report, which reflects actual expenses, budgeted expenses, and the budget variances.

22-18. The Cambay Company has projected its cash transactions as follows:

	January	February	March
Cash sales and collections of accounts receivable	$15,000	$20,000	$18,000
Merchandise purchases	14,000	13,000	12,000
Salaries expenses	3,800	2,200	2,100
Annual rent payment		2,400	
Purchase of equipment			3,000

The 1/1/64 cash balance is $1,200. When the cash balance is expected to be below $1,000, cash is borrowed in even thousands to maintain a minimum $1,000 balance; when cash exceeds the mini-

mum balance, payments in even thousands are made on a large note payable which the company owes. (The cash balance is not to be less than $1,000 at any time.)

REQUIRED

Prepare a cash budget for the first three months of 1964.

22-19. The following items have been budgeted for the Lemmon Hardware Company for January, 1964:

Sales (30% cash, balance collected 60% in month of sale, 30% in the following month, and 10% in the third month. There were no uncollected receivables on January 1.)	$120,000
Purchases (40% paid in month of acquisition, 60% paid in the following month)	135,000
Dividends	20,000
General expenses (Includes monthly depreciation of $1,200 and tax expense of $300. The annual tax bill of $3,600 is paid in February.)	19,000
Selling expenses (Includes monthly insurance expense of $200. The annual insurance premium of $2,400 is paid in March.)	24,000

The desired cash balance at the end of each month is $2,000. Cash is to be borrowed when the balance is below this amount and is to be repaid when above the $2,000 amount. The beginning cash balance is $2,400.

REQUIRED

Prepare a cash budget for the month.

22-20. The Queensberry Company sells three products, Quality, Regular, and Supreme. The inventories on June 30 were:

	Units
Quality	2,000
Regular	3,000
Supreme	5,000

The president was disturbed because the number of units on hand was excessive and ordered his operating executives to reduce the

inventories by 10% in July, another 10% in August, and 20% in September (all percentages based on June 30 amounts). Sales in units are budgeted as follows for the three months:

	(Expected sales, in units)		
	July	August	September
Quality	3,000	3,300	3,500
Regular	4,000	5,000	5,100
Supreme	6,000	6,100	6,000

REQUIRED

Prepare a purchases budget (in units) for the three month period.

22-21. The Noble Novelty Company carries three major lines of products: gifts, games, and party supplies. Their sales territories are divided into Eastern, Central, and Western territories. Total sales are estimated to be $100,000 in October, $120,000 in November, and $150,000 in December. The Eastern territory is expected to produce 30% of the sales each month, the Central territory 40%, and the Western 30%. The major lines are expected to produce the following portion of the monthly sales in each territory:

Eastern and Central: gifts, 20%; games, 30%; party supplies, 50%. Western: gifts, 30%; games, 20%; party supplies, 50%.

REQUIRED

Prepare a sales forecast showing the expected dollar sales by product lines and territories for each month of the three-month period.

22-22. The board of directors of the Ohio-Western Company approved the following projects at its November 17, 1963, meeting:

	Approved budget	Expected completion date
New building at the St. Louis factory	$340,000	April 1, 1965
New equipment for the Wisconsin branch	69,000	May 1, 1964
New electronic data processing equipment for home office	650,000	Nov. 1, 1964
New equipment for the Alabama branch	102,000	June 1, 1964

The board of directors then authorized the managers of each branch and the president of the home office to request bids on

these capital expenditures and proceed with the installation or construction. By March 31, 1964, the following had been accomplished:

A bid for the construction of the St. Louis factory building had been accepted for $332,000, but completion was not expected until May 1, 1964. A total of $280,000 had been expended, and additions of $6,000 had been made to the original construction contract.

The new equipment for the Wisconsin branch had been ordered at a total cost of $69,500 and is to be delivered on May 1, 1964. No expenditures had been made as yet for the equipment.

The electronic data processing equipment had been ordered at a total cost of $639,000, and $300,000 had been paid. The equipment is to be delivered and installed, ready for operation, on October 15, 1964.

The equipment for the Alabama branch could not be acquired for less than $115,000. Equipment costing $37,500 had been acquired and paid for, and the remainder was to be delivered on July 16, 1964.

REQUIRED

Prepare a report on capital expenditures for the board of directors for its next meeting.

Problems

22-23. (a) The salesmen's travel and entertainment expense is $3,000 when sales are $300,000, and is $4,000 when sales are $500,000.

REQUIRED

Compute the fixed and the variable elements of the expense. If actual travel and entertainment expenses were $3,300 in a month when sales are $400,000, compute the difference between actual expense and the expected expense at that sales volume.

(b) Supplies expense has been analyzed and determined to be $100 fixed per month and variable at .02¢ per dollar of sales. In April, sales were $7,000 and supplies expense was $280.

REQUIRED Compute the expected supplies expense when sales are $7,000, and the difference between expected and actual supplies expense.

(c) Listed below are amounts of expenses expected at the high point of activity and at the low point.

	Expense at sales volume of $100,000	Expense at sales volume of $300,000
Telephone expense	$ 300	$ 500
Depreciation expense	2,000	2,000
Sales commissions	5,000	15,000
Supplies	100	200

REQUIRED Compute the fixed and variable elements of each.

(d) During November, sales were $250,000, and expenses were: telephone, $410; depreciation, $2,000; commissions, $12,500; and supplies, $160.

REQUIRED Compute the variance of each expense from the expected amount determined by the fixed and variable cost structure of each expense in part (c) above.

22-24. On December 31, 1963, the Stillwater Company had a cash balance of $7,000, accounts receivable of $32,000, and accounts payable arising from raw material purchases of $48,000. The company's subbudgets indicate the following expectations for 1964:

	January	February	March
Cash sales	$15,000	$13,000	$12,000
Credit sales	60,000	62,000	68,000
Purchases of raw material	50,000	40,000	60,000
Labor	16,000	17,000	17,000
Taxes	—	—	2,000
Dividends	—	—	10,000
Payment on mortgage	5,000	5,000	5,000

It is expected that $24,000 of the December 31 receivables will be collected in January and the balance in February. It is anticipated that the collection of credit sales will be 30% in the month of sale, 60% in the next month, and 10% in the third month. Purchases of raw material are paid for in the month following the purchase. The company does not want its cash balance to fall below a $2,000 minimum balance and borrows from the bank in even thousand

dollar amounts each month that funds are needed. The company repays these loans in even thousand dollar amounts whenever it has available cash, but the cash balance is not to be less than $2,000 at any time.

REQUIRED

Prepare a cash budget by months for the first three months of 1964.

22-25. The Barnstrom Company sells two products, X and Y, for $10 and $20 per unit, respectively. Product X costs $6, and Product Y costs $11 per unit.

The company's monthly expenses have been analyzed as follows:

	Fixed	Variable
Depreciation	$5,000	
Taxes	1,000	
Supplies	1,000	$0.20 per unit sold
Telephone and telegraph	500	0.30 per unit sold
Delivery expenses	2,000	0.05 per unit sold
Salaries	5,000	1.00 per unit sold
Advertising	2,000	

Beginning inventories were 2,000 units of Product X and 500 units of Y. The company wishes to maintain inventories at these same levels during the year; products are purchased each month for that month's sales.

The company expects to sell units as follows:

January	3,000 units of X, 1,000 units of Y
February	3,500 units of X, 1,200 units of Y
March	4,000 units of X, 1,500 units of Y

REQUIRED

Prepare a sales budget, purchases budget (in units and also amounts), and expense budget for January, February, and March. Then prepare proforma income statements for each of the three months.

22-26. The Nordic-Freeman Company is having difficulty controlling the expenses of its sales department. The general manager contends

that sales expenses should be carefully budgeted, and all contemplated expenditures in excess of budgeted amounts should be approved by him before the expense is incurred. The sales manager contends that this procedure will not work because frequently the salesmen must incur expenses on the spur-of-the-moment when travel or customer entertainment is necessary to close a sale.

The general manager's budget for the sales department has been prepared in the past without careful analysis of the relationship between fixed and variable portions of sales expenses. As a result, the budget was sometimes based on an expected sales volume which differed from the actual sales volume.

The general manager has called you in to help him budget the sales department expenses so that comparisons of actual amounts with budget amounts will be meaningful. The company's ledger accounts contain the following data:

		Sales Expenses Incurred					
Month	Amount of sales	Office & clerical salaries	Supplies	Depreciation	Travel	Salesmen's salaries	Salesmen's commission
Jan.	$300,000	$22,700	$7,620	$4,000	$10,450	$9,000	$6,000
Feb.	280,000	22,200	7,200	4,000	10,000	9,000	5,600
Mar.	300,000	22,800	7,600	4,000	10,350	9,000	6,000
April	290,000	22,400	7,410	4,000	10,200	9,000	5,800
May	310,000	23,100	7,840	4,000	10,500	9,000	6,200
June	330,000	24,000	8,200	4,000	11,000	9,000	6,600
July	340,000	24,500	8,400	4,000	11,150	9,000	6,800
Aug.	360,000	25,400	8,800	4,000	11,600	9,000	7,200
Sept.	350,000	24,850	8,580	4,000	11,400	9,000	7,000
Oct.	320,000	23,550	8,000	4,000	10,800	9,000	6,400
Nov.	300,000	22,900	7,650	4,000	10,400	9,000	6,000
Dec.	320,000	23,650	8,070	4,000	10,750	9,000	6,400

Budgeted sales are $320,000 in January, $340,000 in February, and $360,000 in March.

REQUIRED

1. Compute the monthly fixed and variable portions of each selling expense (use high-low sales volume).
2. Prepare the expense budget for January, February, and March.
3. Actual sales in January were $345,000, and actual expenses were:

Office and clerical salaries	$25,400
Supplies	7,800
Depreciation	4,000
Travel	11,800
Salesmen's salaries	9,000
Salesmen's commissions	6,900

Construct a budget report for the sales department setting out the budgeted amounts, the actual expenses incurred, and the over- or under-budget amounts.

22-27. The trial balance of the Dante Company appeared as follows on December 31, 1963, after closing the books:

Cash	$ 2,000	
Inventory	6,000	
Equipment	60,000	
Allowance for depreciation—equipment		$10,000
Accounts payable (to be paid in January)		5,000
Mortgages payable		25,000
Accrued property taxes		2,200
Capital stock		20,000
Retained earnings		5,800
	$68,000	$68,000

The company sells only on cash terms, and sales for the next two months are budgeted as: January, $30,000, February, $40,000. Gross profit on sales is expected to be 40%, and the inventory is to be reduced 50% during the month of January and is to remain at that amount; all merchandise purchases are for cash. The mortgage is payable each February 1 in annual installments of $5,000; interest is paid monthly at 6% on the unpaid balance. Fixed cash administrative and selling expenses, exclusive of property taxes, are $4,000 per month, and variable cash administrative and selling expenses are 10% of sales. The property tax is accrued at $200 each month, and the annual tax of $2,400 is paid on January 28. Depreciation is $1,000 per month. Extensive advertising costs of $2,600 are to be incurred in January but will not be paid until February.

REQUIRED

Prepare the following:

(a) A proforma income statement for January and for February.
(b) A cash budget for January and February.

(c) A proforma balance sheet as of February 28, 1964.
(d) Write a brief statement concerning whether the company can expect to be in a weaker or sounder financial position at the end of the two-month period.

(Hint—work backward from gross profit to ascertain purchases.)

22-28. The condensed balance sheet and income statement of the Hatiflax Distribution Company for the year ended December 31, 1963 were as follows:

HATIFLAX DISTRIBUTION COMPANY

Balance Sheet

December 31, 1963

ASSETS		EQUITIES	
Cash	$ 13,000	Accounts payable	
Accounts receivable	6,050	(for merchandise)	$ 8,000
Inventory (5,000 units)	14,500	6% notes payable	20,000
Buildings and equipment		Capital stock	60,000
(net)	71,500	Retained earnings	33,450
Land	16,400		
Total assets	$121,450	Total equities	$121,450

HATIFLAX DISTRIBUTION COMPANY

Income Statement

For the Year Ended December 31, 1963

Sales (30,000 units)		$150,000
Cost of units sold		87,000
Gross profit		$ 63,000
Selling expenses	$21,000	
Administrative expenses	30,000	
Interest expense	1,200	
Total expenses		52,200
Net income		$ 10,800

The company's budget committee has approved a budget of sales as follows for the first three months of 1964: January, 2,500 units; February, 2,600 units; March, 3,000 units. The sales price is not expected to change, but the unit cost is expected to increase to $3 each on January 1. A FIFO inventory method is used, and the number of units in the inventory is to remain unchanged.

Sales are 50% for cash, and the other 50% is collected in the month following. All units bought for sale are paid for in the month following purchase.

Selling and administrative expenses are primarily fixed in nature, and the total is expected to increase by 6%. They are incurred and paid evenly throughout the year, except for annual depreciation of $2,400. Depreciation is included in administrative expenses, requires no cash outlay, and will not change during the coming year. Interest on the notes payable is paid monthly, and dividends of $10,000 are to be paid in January.

REQUIRED

1. Prepare proforma income statements for each of the three months.
2. Prepare a cash budget for January, February, and March.

Cases

22-29. Charles Gessman was appointed budget officer of the Maclin Oil Company in 1964. He had no previous background in budgeting, and the president of the company told him to "set up a budgetary program and see that it works. After I approve the budget for next year, it is your responsibility to see that actual expenses stay within those amounts."

Gessman ordered the accounting department to supply him with budget reports each week showing the budgeted amount of each expense for the week (computed by dividing the annual budgeted amount by 52), actual expenses incurred during the week, and the variance for each expense. He also told all supervisors that any continued excess of actual expenses over budgeted amounts would be cause for dismissal.

The first week's budget report on the sales department showed the following:

	Actual	Budget (1/52 of annual total)	Variance over (under)
Sales	$217,000	$188,000	$29,000
Depreciation	$ 2,000	$ 2,010	$ (10)
Salesmen's travel	3,170	2,700	470
Telephone and telegraph	861	740	121
Office supplies	419	390	29

Gessman was highly disturbed over the unfavorable expense variances and told the sales manager that continued unfavorable variances would be sufficient cause for terminating the sales manager's employment. The sales manager then went straight to the president and said that "either the new budget officer leaves or I'm quitting."

Would you consider the expenses "unfavorable"?

If you were president, which of the two men, Gessman or the sales manager, would you support, and why? Can you suggest means of improving the budgetary program?

22-30. The Midtown Specialty Company sells two appliances, Regular and Deluxe. The market for the two products is relatively stable, and increases in the unit sales of one product decrease proportionately the unit sales of the other. Management is not sure which of several courses of action to take. They can:

(a) Push sales of Regular
(b) Push sales of Deluxe
(c) Leave the sales "mix" in its present proportions with no additional advertising effort.

Unit statistics on sales, prices, and costs are presently as follows:

	Regular	Deluxe
Units sold	6,000	3,000
Sales price	$20.00	$28.00
Unit cost	$10.00	$11.00
Transportation-in	$ 1.00	$ 2.00
Fixed sales expenses ($61,200 total)	$ 6.00*	$ 8.40*
Variable sales expenses	$ 2.00	$ 4.00

* The fixed expenses are apportioned on the basis of sales price of each unit, i.e., the $28 unit receives proportionately more than the $20 unit.

An additional expenditure of $4,000 for advertising will not produce additional unit sales, but will shift sales of 2,000 units from Regular to Deluxe, or vice versa, depending upon which product is to be emphasized. All remaining costs are not expected to change.

Would you leave sales as is, with no additional advertising, advertise Regular, advertise Deluxe?

Must the decision be made before budgets for the coming period are established? If a decision to change the advertising program is made during the period, how should previously budgeted amounts be altered?

23

Budgetary control and analysis of variances

Budgetary control is exercised by establishing a detailed plan for future operations, recording transactions so that they may be compared with predetermined plans, reporting differences between actual and planned operations to management for analysis, and taking corrective action wherever indicated. Budgetary planning was discussed in the preceding chapter; the analysis of variances and use of budget data for control purposes is discussed in this chapter.

The significance of a variance depends upon the assumptions made and the accuracy with which the budget was formulated; thus the analysis of variances requires a knowledge of how budget plans were constructed. Variances indicate deviations from the plan but do not indicate the cause. Ascertaining the underlying reason for a variance is one of management's most difficult tasks. Intelligent analysis and interpretation of a variance necessitate judgment, analytical ability, perception of human motivations, and a thorough understanding of the accounting process.

Analysis of sales variances

Differences between planned and actual sales frequently indicate areas where the selling effort should be increased. If sales variances are reported for individual products and territories, data are available to locate those segments not meeting expectations.

The detailed sales budget of the Callaway Company was presented in the previous chapter; the comparison of actual and budgeted sales is illustrated in Exhibit 23–1.

The budget report indicates that actual sales are $1,800 less than the company's plan for the period. Analysis of the larger variances shown in the report discloses the following facts:

Regular product in North territory	$ 500 under budget
Choice product in North territory	1,000 under budget
Supreme product in North territory	400 under budget

EXHIBIT 23–1

CALLAWAY COMPANY

Comparison of Actual with Budgeted Sales

Month of January, 1964

	Budget	Actual	Over or (Under) Budget
Regular			
North	$ 1,500	$ 1,000	$ (500)
South	1,400	1,500	100
Central	2,700	2,750	50
	$ 5,600	$ 5,250	$ (350)
Choice			
North	$ 5,000	$ 4,000	$(1,000)
South	7,000	6,900	(100)
Central	6,800	6,820	20
	$18,800	$17,720	$(1,080)
Supreme			
North	$ 3,000	$ 2,600	$ (400)
South	3,500	3,500	—
Central	2,200	2,230	30
	$ 8,700	$ 8,330	$ (370)
Total	$33,100	$31,300	$(1,800)

Thus a total unfavorable variation of $1,900 may be attributed to the company's North territory, and management must investigate to ascertain the cause. The other sales areas produced no significant variances, and none of the company's products had unfavorable variances in all territories. Thus an analysis of the detailed variances assists in locating the area needing managerial attention.

Price variances and quantity variances

If actual sales differ from budgeted sales, the variance may be caused by either changes in the quantity of units sold or changes in

the sales price of the units. A variance should be analyzed to ascertain the separate effects of quantity and price changes.

Suppose, for example, that the Binton Company establishes a budget plan of 10,000 units to be sold each month during 1964 at a price of $1.00 each. On February 1, 1964, the management reduces the sales price to $.90 per unit; and as a result, 11,000 units are sold during February. Actual sales for February are thus $9,900 (11,000 units @ $.90 = $9,900), and the budget report shows:

Budgeted sales	$10,000
Actual sales	9,900
Unfavorable variance	$ (100)

The $100 total unfavorable variance is the result of an increased number of units sold at a decreased price. The separate effects of the price and quantity factors are computed as follows:

Sales price variation:	
Actual quantity sold at the budgeted price (11,000 @ $1.00)	$11,000
Actual quantity sold at actual sales price (11,000 @ $.90)	9,900
Variance due to price reduction	$(1,100)
Sales quantity variation:	
Budgeted quantity at budgeted price (10,000 @ $1.00)	$10,000
Actual quantity at budgeted price (11,000 @ 1.00)	11,000
Variance due to quantity increase	$ 1,000

The total $100 unfavorable variance thus resulted from a $1,100 unfavorable price change offset by a $1,000 favorable quantity change.

When that part of the variance caused by the price change is computed, the quantity sold is held constant; when the effect of quantity changes is being computed, the price is held constant. The sum of the two parts of the variance will always equal the total variance, as indicated in the above example, where a $1,100 unfavorable plus a $1,000 favorable portion equals the $100 total variance.

Cost of merchandise sold variances

Variances in the cost of merchandise sold should also be analyzed and the effect of quantity and cost changes separated. Suppose, for example, that the Binton Company budgets the cost of merchandise

sold at 10,000 units at $.60 each; however, 11,000 units are sold at a unit cost of $.50. The total budget variance is:

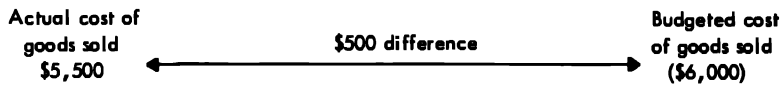
Budgeted cost of goods sold (10,000 units @ $.60)	$6,000
Actual cost of goods sold (11,000 units @ $.50)	5,500
Actual under budget	$ (500)

The total $500 favorable variance contains the effect of both cost and volume changes, which may be separated as follows:

Cost variance:	
Actual quantity sold at budgeted cost (11,000 @ $.60)	$6,600
Actual quantity sold at actual cost (11,000 @ $.50)	5,500
Favorable variance due to cost decrease	($1,100)
Quantity variance:	
Budgeted quantity sold at budgeted cost (10,000 @ $.60)	$6,000
Actual quantity sold at budgeted cost (11,000 @ $.60)	6,600
Unfavorable variance due to quantity increase	$ 600

Note again that the cost is held constant when the quantity change is computed, and the quantity is held constant when the cost change is computed.

The computation of the price and quantity factors analyzes the budget variance into two parts. The total variance which is being analyzed may be shown as follows:



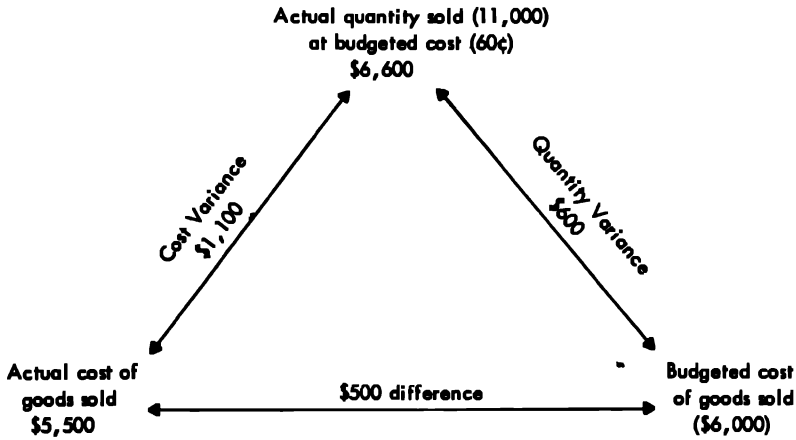
When the actual quantity sold at budgeted cost is inserted between the actual and budgeted amounts, the price and quantity factors included in the total variance become apparent. This computation is illustrated in Exhibit 23–2 on page 686.

Analysis of gross profit variances

The variance between planned and actual gross profit can be explained by combining the analysis of sales and cost of merchandise sold as described in the preceding sections. The amounts previously

EXHIBIT 23–2

Computation of Cost and Quantity Variances



illustrated, for example, would appear in the budget report as follows:

EXHIBIT 23–3

THE BIRTON COMPANY

Partial Budget Report

February, 1964

	Budget	Actual	Over or (Under) Budget
Sales	$10,000	$9,900	$(100)
Cost of merchandise sold	6,000	5,500	(500)
Gross profit	$ 4,000	$4,400	$(400)

The $400 favorable variance in gross profit is the result of the combined sales and cost of merchandise sold factors. A separate statement reconciling the changes in gross profit is sometimes prepared and reported to management as a schedule supporting the budget reports.

Analysis of Variance in Gross Profit

Sales variances are caused by the following:		
Variances due to sales price	($1,100)	
Variances due to quantity sold	1,000	
Total sales variances		($100)
Cost of merchandise sold variances are caused by the following:		
Variances due to changes in cost	($1,100)	
Variances due to changes in quantity	600	
Total cost of merchandise sold variances		(500)
Total variance in gross profit		($400)

Analysis of operating expense variances

Operating expense budget variances are no more accurate than the budget figures used in their computation. The variance will be distorted if budgeted amounts are predetermined for one volume of activity, and that volume is never reached. To achieve a more accurate computation of variances, budgeted amounts should be adjusted to the level of activity *actually* achieved before comparison is made with the expenses incurred. If the budget of operating expenses is originally determined by analyzing the fixed and variable nature of the company's expenses, the budgeted amounts can easily be adjusted to the level of operations before the variance is computed. A budget so adjusted is called a *flexible budget.*

As an illustration of the flexible budget concept, suppose that the salaries expense of the delivery department is semivariable, with a $1,000 fixed amount and the variable portion 2% of sales. If sales are budgeted at $50,000, delivery salaries will be budgeted at $2,000 ($1,000 fixed plus 2% of $50,000 sales). If delivery salaries for the period are actually $2,250 and sales are $65,000, computation of the variance of the salaries expense should be based on the normal salaries expense at a $65,000 level of sales. If the original $2,000 budget is compared with the salaries of $2,250, an unfavorable variance results. However, a higher than expected volume of sales may have necessitated payment of considerable overtime.

Use of the flexible budget of delivery salaries is the most accurate method of measuring the performance of the manager of the delivery department in the incurrence of salary costs. The adjusted salaries budget is $1,000 fixed plus 2% of $65,000, or $2,300. Thus, actual costs of $2,250 are less than the $2,300 adjusted budget, and

the sales manager's performance in maintaining salaries in his department within the budget plan becomes apparent.

Variable expense budget reports illustrated

The expense budget of the Callaway Company, illustrated in the previous chapter, was established at a sales volume of $33,100. The budget, unadjusted for changes in volume, is compared with actual expenses in Exhibit 23–4, using assumed amounts for the actual expenses. The total variation is $36 over the *unadjusted* budget.

EXHIBIT 23–4

CALLAWAY COMPANY
Comparison of Actual with Unadjusted Budget Expenses
Month of January, 1964

	Budget Based on Sales Volume of $33,100	Actual	Over or (Under) Budget
Selling:			
Depreciation on store equipment	$1,000	$ 1,000	$ —
Store supplies	662	670	8
Insurance of store equipment	300	300	—
Sales salaries	2,655	2,700	45
Total selling	$4,617	$ 4,670	$ 53
Administrative:			
Officers' salaries	$1,000	$ 1,000	$ —
Telephone and telegraph	431	420	(11)
Clerical salaries	3,310	3,300	(10)
Office supplies	431	435	4
Taxes	200	200	—
Total administrative	$5,372	$ 5,355	$(17)
Total expenses	$9,989	$10,025	$ 36

However, the budget report based on unadjusted amounts is misleading, because two separate factors cause the variances:

1. The manager may have incurred more or less expenses than he should have for the actual level of operations achieved.

2. The original budget was projected at a level of sales that was not realized. Thus the unadjusted budget expense is not a true measure of the amount which should have been incurred during the month.

The budget report which should be prepared is shown in Exhibit 23–5. Each expense in the report has been adjusted to the actual level of sales, which was $31,300. The fixed and variable nature of each expense is shown in parenthesis but would not appear in a formal report.

EXHIBIT 23–5

CALLAWAY COMPANY

Comparison of Actual Expenses with the Budget Adjusted to Actual Volume of Sales ($31,300)

For the Month of January, 1964

	Adjusted Budget	Actual	Over or (Under) Budget
Selling:			
Depreciation—store equipment	$1,000	$ 1,000	$ —
Store supplies (variable, 2% of sales)	626	670	44
Insurance on store equipment (fixed)	300	300	—
Sales salaries (semivariable: $1,000 fixed, balance 5% of sales)	2,565	2,700	135
Total selling expenses	$4,491	$ 4,670	$179
Administrative:			
Officers' salaries (fixed)	$1,000	$ 1,000	$ —
Telephone & telegraph (semivariable: $100 fixed, balance 1% of sales)	413	420	7
Clerical salaries (variable 10% of sales)	3,130	3,300	170
Office supplies (semivariable: $100 fixed, balance 1% of sales)	413	435	22
Taxes (fixed)	200	200	
Total administrative expenses	$5,156	$ 5,355	$199
Total expenses	$9,647	$10,025	$378

The flexible budget indicates that expenses incurred during the period are $378 above adjusted budget figures. Management is thus informed concerning excessive expenses and is in a position to take appropriate action.

In summary, the detailed budget is a plan of future operations that facilitates coordination of all the company's activities. Budget reports are submitted to the appropriate executives as a means of measuring performance against predetermined plans. If the actual level of activity differs from the expected level, the expense budget must be adjusted to provide an accurate measurement of individual responsibilities.

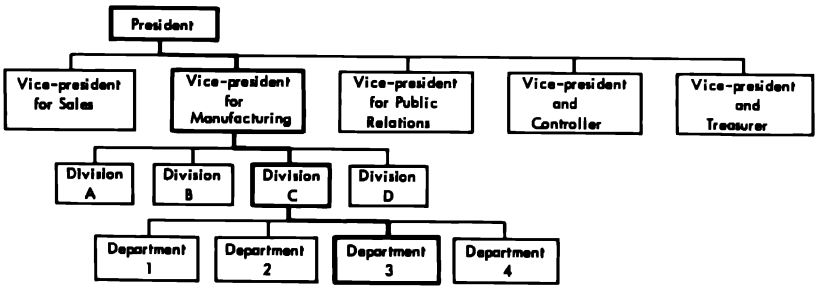
Budgetary control and responsibility accounting

The nature of responsibility accounting was described briefly in Chapter 19 as a process of accumulating and reporting expenses by areas of responsibility. Costs should also be budgeted by areas of responsibility, with a separate budget for each supervisor who has authority to incur costs.

To illustrate, consider the organization chart in Exhibit 23–6. While not all company divisions or departments are indicated, a complete line of authority from the president down to one of the department supervisors is shown.

EXHIBIT 23–6

Partial Organization Chart



The responsibility reports prepared for the department heads, division managers, vice-presidents, and president are illustrated in Exhibit 23–7. Note that the data in the reports becomes somewhat less detailed at the higher levels of authority, but sufficient information is available for each executive to locate the areas within his responsibility which demand immediate attention.

The departmental reports contain a complete breakdown of expenses, subdivided into those within the control of the departmental supervisor and those beyond his control The manager of Department C has exceeded his budget by $90, primarily because salaries were above the expected amount.

The reports to the division managers summarize the performance of each departmental supervisor. Note that the $90 unfavorable budget variance of Department 3 assumes less significance to the divisional manager, since both Departments 1 and 2 have larger unfavorable variances.

The division managers' reports to the vice-president and president include summaries of each of their respective areas of responsibility. The president will probably hold a conference with the vice-presidents of sales and manufacturing to ascertain the causes of their large unfavorable variances. Each of these executives will have conferred with his subordinates in anticipation of the president's questions. Through this process a business is coordinated and its various segments welded into a unified operation.

Limitations of the budget program

Many executives expect the budget program to solve automatically all the company's planning and control problems, but it can be no more effective than the operating supervisor's understanding of its purposes and its limitations. The budget cannot plan or control, but it is a useful tool. Control is exercised by people, who communicate plans and evaluate the efficiency and performance of others, taking action when efficiency and performance are substandard. The executive must rely on his own judgment in determining substandard performance; in his analysis of budgetary variances, he must consider such questions as the following:

1. Is the variance significant enough to warrant investigation?
2. If the variance is from a controllable expense, can steps be taken to eliminate future unfavorable variances?
3. How accurate is the budgeted amount? If the amount was approximated, can the amount of the variance be the result of an error in the budgeted figure? If it is an approximate figure, the size of the variance may reflect an error in budgeting.
4. How accurately have actual amounts been accumulated to match with budgeted amounts? Is the process of matching actual costs with budget figures sufficiently accurate to produce a reliable variance?

EXHIBIT 23–7

Responsibility Reporting

ABC COMPANY
Expense Budget Report
Department 3

	Budget	Actual	Actual Over (Under) Budget
Controllable:			
Salaries	$5,000	$5,100	$100
Supplies	1,000	930	(70)
Heat and power	700	750	50
Noncontrollable:			
Depreciation	2,000	2,000	—
Taxes	500	510	10
Insurance	100	100	—
Total	$9,300	$9,390	$ 90

ABC COMPANY
Expense Budget Report
Division C

	Budget	Actual	Actual Over (Under) Budget
Department 1	$10,500	$10,600	$ 100
Department 2	11,000	13,000	2,000
Department 3	**9,300**	**9,390**	**90**
Department 4	8,100	8,030	(70)
Total	$38,900	$41,020	$2,120

EXHIBIT 23–7

Responsibility Reporting

ABC COMPANY
Expense Budget Report
Manufacturing

	Budget	Actual	Actual Over (Under) Budget
Division A	$ 51,600	$ 51,400	$ (200)
Division B	41,200	41,350	150
Division C	38,900	41,020	2,120
Division D	36,700	36,680	(20)
Total	$168,400	$170,450	$2,050

ABC COMPANY
Expense Budget Report

	Budget	Actual	Actual Over (Under) Budget
Sales	$132,700	$134,100	$ 1,400
Manufacturing	168,400	170,450	2,050
Public Relations	23,200	22,900	(300)
Controller	59,750	57,600	(2,150)
Treasurer	18,740	18,800	60
Total	$402,790	$403,850	$ 1,060

These questions relate to both the accuracy and the amount of the variance. It is possible to waste valuable time following up insignificant variances and to produce unrest by holding supervisors responsible for variances resulting from accounting or budgetary errors.

Motivation

Motivation is the key to a successful budgetary program. A business budget cannot achieve the desired purposes unless the persons who operate under it are motivated by the budgeted amounts to greater achievement. However carefully established, the budget plan cannot be effective if those who use it are not motivated to operate within its limits. One form of motivation is to discharge those supervisors who do not "meet the budget," but this procedure discourages company loyalty and has thus proved highly unsuccessful. Some companies reward adherence to the budget with bonuses or pay increases. This procedure has serious limitations, for the supervisor may attempt to "beat the system" by falsifying his performance.

The key to successful budgeting is to set attainable budget figures so that persons affected by it can meet the budget with reasonable effort. Psychologists have found many different motivating factors active in individuals, and a good budgetary plan should implement these human desires. The motivating factor may be a monetary reward or recognition, but the soundest motivating factor, although perhaps the hardest to instill, is the feeling of a job well done.

Danger of giving bonuses for meeting the budget

If a supervisor is able to reduce expenses in one period by deferring them to the next, the use of a monetary incentive for meeting the budget may not be successful. Suppose, for example, that W. R. Smith, who is a credit department supervisor, is given a $100 bonus each month that he meets his expense budget. His budget has been set as follows:

Salaries	$5,000
Supplies	1,000
Postage	600
Office equipment maintenance	800
Telephone and telegraph	500
Credit reports	300
Total	$8,200

In January, Smith bought few supplies, depleting instead the stock he had on hand; he avoided buying stamps by using those in the postage meter at the beginning of the month; he allowed equipment to fall into disrepair; he purchased few credit reports from credit investigation agencies, approving credit without proper investigation.

In February Smith restocked supplies to their normal level, bought postage for several months in advance, and repaired all the equipment. As a result, expenses for January and February appeared as follows:

	January	February
Salaries	$5,000	$5,000
Supplies	800	1,300
Postage	500	900
Office equipment maintenance	600	1,000
Telephone and telegraph	500	500
Credit reports	100	300
	$7,500	$9,000

Smith's total costs of $26,500 for the two month period are in excess of the budget for two months, yet he will receive a $100 bonus for being under the budget in January. The budgetary system has not accurately measured Smith's performance on a month-by-month basis, because he was able to shift his expenses from one month to another.

The policy of granting a salesman's bonus may also be subject to manipulation, for the salesman may be able to defer sales to those months in which he has a strong chance of earning the bonus.

Budgetary figures must not be so restrictive that the supervisor is prevented from exercising individual initiative, should he find it necessary to exceed the budget. On the other hand, bonuses for meeting the budget are not recommended as effective reward measures.

Return on investment

Many companies maintain separate plants supervised by division managers who are given almost unlimited authority. In many cases the division manager must prepare and administer his own budgetary program, and his effectiveness in the independent operation of his division is measured by his ability to earn profits. Since high profits are assumed to be a fair measure of the manager's effort, the

manager who is able to realize a high return on the company's investment in the assets used by his division is considered to be doing an efficient and effective job.

To illustrate, assume that a company has four divisions, operated by four division managers who report profits as follows:

	Net Profit
Division A	$10,000
Division B	50,000
Division C	30,000
Division D	20,000

The amount of net profit does not indicate the full extent of each manager's effectiveness until it is related to the amount of invested assets. The following table indicates the assets employed, profits realized, and the resulting return on investment:

	Net Profit	Assets Invested	Return on Investment
Division A	$10,000	$ 70,000	14.2%
Division B	50,000	500,000	10.0%
Division C	30,000	400,000	7.5%
Division D	20,000	100,000	20.0%

The return on investments indicates that the manager of Division D is utilizing his assets much more effectively than any of the other managers. Division C shows a rate of return much lower than the other divisions, and, other things being equal, management may want to give further attention to the operations of that division.

The rate of return is computed by dividing the net income as shown on the income statement by the total of the assets appearing on the balance sheet. Care must be taken, however, to insure that the balance sheet and income statements of the various divisions are prepared in a comparable fashion. Their incomes are not comparable, for example, if one division uses a LIFO inventory method while another uses a FIFO method, or if one uses straight-line depreciation and another uses the sum-of-the-years'-digits. In such cases adjustments to the net income figures are necessary to make the return on investment amounts comparable.

Questions

23-1. Describe the process of budgetary control. How does a budgetary variance assist in the control process?

23-2. Budgetary planning usually begins with a sales budget. How can information drawn from monthly comparisons of planned sales and actual sales, by products and territories, assist management in locating sales areas needing attention?

23-3. A difference between budgeted sales and actual sales may be due to either price changes or quantity differences. Describe how these two elements may be separated into a price and a quantity variance.

23-4. A company budgeted sales of 1,000 units at $5 each. During the period the price was increased to $5.50, and 900 were sold. What would the total variance be? The price variance? The quantity variance?

23-5. Does the cost of merchandise sold variance contain a price and a quantity variance? Are they computed the same way as for sales?

23-6. Describe how the total of the sales and cost of merchandise sold variances explains the total variance in gross profit.

23-7. What is a flexible budget? Why should budgetary amounts be adjusted to the level of operations actually achieved when the variance of an operating expense is computed?

23-8. What is meant by the term "accounting by areas of responsibility"?

23-9. What are controllable and non-controllable expenses? Why should expense reports segregate controllable and non-controllable expenses?

23-10. Why are budgetary and expense reports more detailed for operating executives, such as foremen and supervisors, than for top level executives such as the president?

23-11. What is meant by the phrase "motivation is the key to a successful budgetary program"?

23-12. Describe how an employee who is given a bonus each month for meeting his budget could, if not carefully watched, manipulate expenses to make it appear that he has met the budget.

23-13. Describe how return on investment is computed, and how this figure may be used as an index of a manager's effectiveness.

23-14. Describe several different accounting policies or procedures, which, if not uniformly followed between plants or branches of a company, could affect the comparative return on investment figures.

Exercises

23-15. The cost structure of the trucking department of the Pulpwood Paper Company is as follows:

Salaries ($1,300 fixed; variable 1% of sales)	$3,800
Depreciation on delivery trucks (fixed)	400
Gas and oil ($500 fixed; variable 1/10% of sales)	750
Truck repairs ($250 fixed, variable 1/10% of sales)	500
Insurance (fixed)	100
Taxes and licenses (fixed)	120
Utilities ($50 fixed, variable 1/10% of sales)	300
Supplies (variable 1/10% of sales)	250
	$6,220

In November, the company's sales totaled $400,000 and actual expenses were: salaries, $5,500; depreciation on delivery trucks, $400; gas and oil, $910; truck repairs, $600; insurance, $100; taxes and licenses, $120; utilities, $480; supplies, $460.

REQUIRED

Prepare a budget report for the trucking department, using budgeted amounts adjusted to the actual level of operations, and showing variances for each expense.

23-16. The expenses of department 15 of the Maybelle Company were analyzed into fixed and variable components as follows:

Salaries	Fixed $4,000; variable 5% of sales
Telephone and telegraph	Fixed $ 200; variable 1/2% of sales
Supplies and postage	variable 1/2% of sales
Travel and entertainment	Fixed $ 700; variable 1% of sales

Depreciation	Fixed $1,000
Equipment repairs	Fixed $ 400; variable 1% of sales
Insurance	Fixed $ 500

The actual expenses at the end of March, when sales totaled $100,000, were as follows:

Salaries	$8,500
Telephone and telegraph	680
Supplies and postage	470
Travel and entertainment	1,900
Depreciation	1,000
Equipment repairs	1,380
Insurance	500

REQUIRED

Prepare a report showing actual expenses, budgeted expenses for $100,000 of sales, and the resulting variances. Comment on any variances which you feel warrant an investigation.

23-17. The annual budget of the Hydren Company contained expected sales of its three products as follows for March:

Product 11-A	1,000 units at $3
Product 19-C	2,000 units at $5
Product 20-B	3,000 units at $10

On March 1, the prices of the products were changed to $3.10, $5.50, and $11.00, respectively. The number of units sold were 1,100, 1,800, and 3,100, respectively.

REQUIRED

1. Compute the total variance between budgeted sales and actual sales for each product.
2. Compute the portion of each variance due to price variations and to quantity variations.

23-18. Mercle Department Stores, Inc., has retail outlets in several major cities. The effectiveness of the manager of each outlet is measured by the return on the investment of his particular store. The following data were included in the financial reports received from seven of the company's stores:

Store	Net income for the year (on the income statement)	Total investment
A	$10,000	$100,000
B	20,000	250,000
C	5,000	80,000
D	1,000	70,000
E	30,000	200,000
F	10,000	100,000
G	8,000	80,000

All accounting policies relative to inventories and depreciation are similar, except that Store C uses a LIFO inventory method and Store D uses a sum-of-the-years'-digits depreciation method. If these stores had followed the same policies as other stores, their net incomes would have been $8,000 and $12,000 respectively.

REQUIRED

Compute the return on investment for each store, and rank them in order, highest return listed first.

Problems

23-19. The Mayhall Company has three products. Its sales and cost of sales were budgeted as follows for July:

	July Sales Budget		July Cost of Sales Budget	
Product A	(10,000 @ $1)	$10,000	(10,000 @ $.50)	$ 5,000
Product B	(5,000 @ $3)	15,000	(5,000 @ $2)	10,000
Product C	(3,000 @ $5)	15,000	(3,000 @ $3)	9,000
		$40,000		$24,000
		$40,000		$24,000

At the end of July the budget report to the president contained the figures shown at the top of page 701.

The president was disturbed because the actual sales were lower than budgeted sales, and requested a report showing price and quantity variances for sales and cost of sales for each product (all factors affecting the gross profit variance).

	Budget	Actual	Variance over or (under)
Sales	$40,000	$39,300	$ (700)
Cost of sales	24,000	24,740	740
Gross profit	$16,000	$14,560	($1,440)

REQUIRED

Using the following actual data for July, prepare the report for the president:

Actual Sales		Actual Cost of Sales	
(11,000 @ $.95)	$10,450	(11,000 @ $.52)	$ 5,720
(5,200 @ $2.90)	15,080	(5,200 @ $2.10)	10,920
(2,700 @ $5.10)	13,770	(2,700 @ $3.00)	8,100
	$39,300		$24,740

23-20. Cameron and Browne, Inc., has three productive departments in the casting division. Each of these three departments is assigned to a supervisor, who receives budget reports monthly on the expenses he has incurred.

The casting division is one of four divisions making up the entire company. A plant manager is in charge of each division, and the vice-president in charge of manufacturing heads all divisions. Budget reports are prepared monthly for each departmental supervisor, the plant manager, and the vice-president in charge of manufacturing.

Data for the month of January for the casting division were as follows:

	Department A		Department B		Department C	
Casting Division	Budget	Actual	Budget	Actual	Budget	Actual
Controllable:						
Labor	$10,000	$10,200	$20,000	$19,700	$ 8,000	$ 8,100
Materials used	15,000	16,100	31,000	31,200	12,000	11,900
Supplies	2,000	1,700	3,000	2,800	1,000	980
Machinery repairs	1,500	1,400	4,500	4,600	700	690
Non-controllable:						
Depreciation	4,000	4,000	8,000	8,000	2,000	2,000
Insurance	800	780	1,000	1,000	400	400
Taxes	1,100	1,100	1,400	1,450	600	620
Total	$34,400	$35,280	$68,900	$68,750	$24,700	$24,690

Data for the month for the other three divisions (in totals only) were as follows:

	Budget	Actual
Milling division	$180,000	$181,000
Electrical division	105,000	104,800
Assembly plant	200,000	207,000

REQUIRED

1. Prepare individual budget reports for the supervisor of Departments A, B, and C (similar to the example in Exhibit 23–7).
2. Prepare a report for the casting division plant manager.
3. Prepare a report for the vice-president in charge of manufacturing.
4. If you were the casting division plant manager, which department do you feel warrants study first? Why? If you were the vice-president in charge of manufacturing, which division or plant would you investigate first? Why?

23-21. The cost structure of the Plastic Products Corporation, at 100% capacity, appeared as follows:

Cost of merchandise sold—variable, 60% of sales.
Selling expenses—$40,000 fixed; variable, 10% of sales.
Administrative expenses—$55,000 fixed; variable, 5% of sales.

The board of directors is considering the construction of a new building to house the company. If such a move is undertaken, the company's sales are expected to increase to $450,000, and its cost structure will become:

Cost of merchandise sold—no change.
Selling expenses—$58,000 fixed; variable, 6% of sales.
Administrative expenses—$66,000 fixed; variable, 3% of sales.

REQUIRED

1. What is the break-even point in sales under the present cost structure?
2. What is the break-even point under the proposed cost structure?
3. Assume the board of directors did construct the new building. At the end of the next year of operations the company's actual operating data were:

Sales		$450,000
Cost of goods sold		272,000
Gross margin		$178,000
Selling expenses	$85,000	
Administrative expenses	79,000	
Total expenses		164,000
Net income		$ 14,000

Prepare a budget report in the form of an income statement, showing actual, budget, and variance for each item on the income statement.

4. Would you consider that management's projections were fairly accurate in regard to the expected change in the cost structure?

23-22. The Monahan Company has five plants in principal cities throughout the United States. The investment in the plants appearing in the company's records is given below, along with the year in which the investment was made and the net income of each plant for 1964.

Plant	Year of Investment	Original Investment	1964 Reported Income
A	1930	$100,000	$20,000
B	1940	130,000	20,000
C	1945	100,000	10,000
D	1950	180,000	20,000
E	1964	200,000	30,000

The purchasing power of a dollar has declined steadily and may be assumed (for purposes of this problem) to have changed as follows, using 1964 as the base year (100%): 1930, 160%; 1940, 140%; 1945, 120%; 1950, 110%; 1964, 100%.

REQUIRED

1. Compute the return on investment, using 1964 net income and the investment appearing on the company's records.
2. Convert the investments into terms of 1964 dollars so that all investments will be stated in terms of a dollar with uniform purchasing power. (For example, multiply the $100,000 investment in Plant A, made in 1930, by 160%.) Compute the return on investment using the adjusted investment amounts.

3. Comment on any differences between the two procedures. How would you rank the plants in terms of their return on investment?

23-23. The Beachwater Manufacturing Company assigns employees to designated crews, each composed of three men. Each crew is assigned to a particular machine, and transfers of men between crews, or of crews between machines, is relatively rare. The budgeted hourly labor cost of a crew is $6 ($2 per hour per man). The machines operate at different speeds, and budgeted production of each machine is as follows:

Crew Chief	Machine	Budgeted Hourly Production
Warren	1	100 units
Killeen	2	80
Roberts	3	90
Landrum	4	120
Waters	5	80
Neff	6	100

If a machine breaks down or needs adjusting, the crew does the repair work and makes up for lost production in overtime hours, receiving time and one-half pay for any hours worked over eight in any one day. Management watches the production and costs of each crew very carefully to prevent abuse of the overtime payment.

At the end of the week the accounting department reported the following:

Crew	Total Hours Worked	Units Produced	Total Week's Labor Cost
1	44	4,000	$290
2	40	3,400	240
3	42	3,600	270
4	48	5,800	320
5	40	3,500	240
6	42	4,200	260

REQUIRED

Prepare a report showing for each crew (a) actual production (in units), (b) budgeted production (in units) for the hours worked,

(c) production variance (in units), (d) actual labor costs for the week, (e) budgeted labor cost for the week (hours worked @ $6 per hour), and (f) labor cost variance (due to overtime).

How would you rank the crews in order of their efficiency, with the most efficient crew first?

23-24. The Adkins Chemical Company projected its income statement for the first quarter of 1964 as follows:

ADKINS CHEMICAL COMPANY

Proforma Income Statement

(January through March, 1964)

Sales			$400,000
Cost of merchandise sold (60% of sales)			240,000
Gross profit			$160,000
Operating expenses:			
Selling expenses:			
Sales salaries	$42,000		
Store supplies	1,600		
Sales commissions	4,800		
Advertising	15,900		
Depreciation—store equipment	2,700		
Total selling expenses		$67,000	
General and administrative expenses:			
Office salaries	$57,000		
Rent expense	3,000		
Bad debt expense	3,600		
Depreciation—office equipment	6,600		
Supplies	4,800		
Total general and administrative expenses		75,000	
Total expenses			142,000
Net income before income taxes			$ 18,000
Income taxes (30%)			5,400
Net income after income taxes			$ 12,600

Revenues in the quarterly budget are expected to be realized as follows: $100,000 in January, $140,000 in February, and $160,000 in March.

The company's cost structure is:

Fixed costs—advertising (equal amounts monthly), depreciation, sales salaries, office salaries, and rent expense. Income taxes are 30% of net profit before taxes.

Variable costs—all operating expenses not listed above as fixed are considered completely variable with sales.

Data for actual operations, taken from the company's trial balance on January 31, were as follows:

Sales	$130,000 (cr)
Cost of merchandise sold	76,100
Sales salaries	16,000
Store supplies	530
Sales commissions	1,500
Advertising	5,400
Depreciation—store equipment	900
Office salaries	18,800
Rent expense	1,000
Bad debt expense	1,300
Depreciation—office equipment	2,200
Supplies	1,300

REQUIRED

1. Using the data in the proforma income statement for the quarter and the data provided relative to the company's cost structure, prepare an income statement budget for January, February, and March.
2. Prepare a budget report in the form of an income statement, with columns for Actual, Budget, and Variance, comparing the January budget with the actual results of January transactions. (The tax expense is not entered in the books until the end of the year and must be computed from net income for monthly statement purposes.)

Cases

23-25. As budget officer of the Pulpwood Paper Company, Cary Denbow had carefully studied the cost behavior of labor costs of the yard gang. The primary function of this group of men was to move materials, unload flatcars of pine logs, and clean the outside

premises of the plant. Their monthly labor cost was $2,000 fixed and $1.00 variable for each ton of raw materials consumed.

In July, the plant was at half capacity and several men who were normally employed in the stripping and chipping departments were assigned to the yard gang rather than being laid off temporarily. These were specially trained men who might find another job if laid off. Their hourly wage was considerably higher than the usual hourly wage paid to members of the yard gang. They were paid their usual wage while working in the yard, and, being inexperienced in the work, they were somewhat inefficient. As a result, a large unfavorable variance in the labor cost of the yard gang for the month appeared. The budget report showed the following:

	Budget		Actual		Variance	
Yard gang:	Hours	Cost	Hours	Cost	Hours	Cost
———	—	—	—	—	—	—
Labor	2,500	$5,000	2,900	$8,100	400	$3,100
———	—	—	—	—	—	—
———	—	—	—	—	—	—

The supervisor of the yard gang was highly indignant about the variance. He insisted that the variance should not be charged against his operations. Denbow was unsure of how to handle the variance. What would you recommend?

23-26. The supervisor of the Welding Department of the Jones-Hartner Company received the following budget report for the month of May.

	Budget	Actual	Variance Over (Under)
Labor—spot welding	$13,200	$13,280	$ 80
Labor—arc welding	22,900	22,700	(200)
Labor—material handling	1,400	4,800	3,400
Welding supplies	3,500	3,520	20
Machinery repairs	7,900	9,850	1,950
Power costs	4,300	5,400	1,100
Heat, light	900	870	(30)
Depreciation on equipment	2,700	2,700	—
Insurance	600	585	(15)
Taxes	500	490	(10)
	$57,900	$64,195	$6,295

The welding supervisor was a conscientious employee and had never had a total unfavorable variance before. He was very concerned about the $6,295 variance, which is an unusually large variance for any of the company's departments. He went to the accounting department to find what had caused the variance and was told the following:

(1) Total costs of operating the company's power plant are accumulated, then prorated to each department based on total labor costs. Since the labor costs in the welding department were high in May, and labor in other departments was low, a large portion of the power costs were prorated to the welding department.

(2) The mechanics from the repair department, who repair machines, keep time records on each repair job they perform. The total costs of the repair department are prorated to each department receiving their services, based on the time spent repairing equipment in each department. The mechanics had very little work to do all month, and thus each job they did received a large prorated "cost."

The accounting department could not explain the large variance in material handling labor. They had received time tickets from the timekeepers with that amount of labor on them. The supervisor went to the timekeepers for an explanation, and the timekeeper reminded him of Job 174L, where 1,000 heavy, unwieldy units had to be brought back from the assembly department, reworked, and returned one at a time. The material-handling cost had been charged to the welding department. The supervisor remembered that the units had to be reworked because the blueprints he used for the original welding had been incorrect.

The supervisor then returned to his welding department completely disgusted with the budgetary program. He felt that any effort to keep expenses in line with the budget was useless in view of the way expenses were charged to him.

Do you agree with the foreman? How would you handle the power costs? the machinery repairs? the material handling costs?

24

Introduction to manufacturing costs: accumulation, analysis, and behavior

The material, labor, and manufacturing overhead costs incurred in the completion of manufactured products present special accounting problems. These costs must be accumulated so that (1) the cost of goods sold and the cost of the ending inventories can be determined; (2) the cost of operating the factory can be analyzed for control and planning purposes; and (3) inefficient operating areas can be determined and costs reduced to a minimum.

Manufacturing costs are *product* costs and must be accumulated separately from *period* costs, such as selling and administrative expenses. Separate ledger accounts are used to accumulate the various elements of manufacturing cost. The total of these costs is allocated to the ending inventories and the cost of goods sold.

The illustration presented below compares the computations of the cost of merchandise sold for a non-manufacturing company and the cost of goods sold for a manufacturing company.

Merchandise Cost Flow. The cost of merchandise available for sale is determined in non-manufacturing companies by compiling a "pool" of merchandise costs. This merchandise cost pool includes the beginning inventory, all purchases, freight-in, and other miscellaneous costs relevant to the acquisition of merchandise for sale to

customers. A separate ledger account is devoted to each element of this cost pool. At the end of the accounting period, the total of all these costs is apportioned to the cost of goods sold and the ending inventory as illustrated in Exhibit 24–1.

EXHIBIT 24–1

The Cost Pool of a Merchandising Company

Sales		$12,000	
Beginning inventory	$ 2,000		Composition of the pool of merchandise costs
Purchases	9,100		
Transportation-in	150		
Total available for sale	$11,250		
Less: Ending inventory	3,400		Disposition of the pool of merchandise costs
Cost of goods sold		7,850	
Gross profit		$ 4,150	
Operating expenses		2,000	
Net income		$ 2,150	

Manufacturing Cost Flow. Manufacturing companies also accumulate a cost pool for raw material, labor, and factory overhead expenses incurred during the accounting period. Separate accounts are necessary to accumulate the cost of raw materials, transportation-in, labor, and a relatively large number of manufacturing overhead expenses. In addition, a separate inventory must be maintained for raw materials, goods in process, and finished goods, since they represent different stages of completion.

Exhibit 24–2 illustrates the composition and disposition of the cost pool of a manufacturing company. Note that the number of cost elements for a manufacturing company is much larger than for a merchandising company.

The large number of elements in the cost pool of a manufacturing company makes the income statement quite lengthy when each cost element is shown separately. Therefore, a *statement of the cost of goods manufactured and sold* is frequently prepared to report manufacturing cost data, thus reducing the income statement to a more concise presentation. This statement is arranged so that all elements of the manufacturing cost pool are accumulated and totaled, and the costs considered applicable to the ending inventories

EXHIBIT 24–2

The Cost Pool of a Manufacturing Company

Sales			$60,000	
Beginning inventory—raw material		$ 3,000		Composition of the pool of manufacturing costs
Beginning inventory—goods in process		2,000		
Beginning inventory—finished goods		8,000		
Purchases of raw material		19,000		
Transportation-in		1,200		
Manufacturing labor		10,000		
Heat, light and power		1,300		
Depreciation on manufacturing equipment		2,000		
Factory supplies		1,000		
Total manufacturing costs		$47,500		
Less: Ending inventory—raw material	$2,000			Disposition of the pool of manufacturing costs
Ending inventory—goods in process	1,000			
Ending inventory—finished goods	9,000	12,000		
Cost of goods manufactured and sold			35,500	
Gross profit			$24,500	
Operating expenses			11,600	
Net income			$12,900	

are subtracted from the total. The final figure on the statement is thus the cost of goods manufactured and sold; this amount appears in the income statement as a subtraction from sales revenue to determine gross profit.

The statement of the cost of goods manufactured and sold

A completed statement of the cost of goods manufactured and sold is illustrated in Exhibit 24–3. Note that the statement starts with the work in process inventory and finished goods inventory on hand at the beginning of the period. The three major elements of manufacturing cost—raw materials, direct labor, and manufacturing overhead—are listed next, and their total represents the costs placed into production during the period. The cost of goods manufactured and sold is then determined by subtracting the portion of these costs considered applicable to the ending finished goods inventory and the ending goods in process inventory.

EXHIBIT 24–3

JACKSON STAPLE MANUFACTURING COMPANY
Statement of the Cost of Goods Manufactured and Sold
Year Ended December 31, 1964

Finished goods, January 1, 1964			$ 11,200
Goods in process, January 1, 1964			5,200
Costs placed into production:			
Material:			
Inventory, January 1, 1964	$ 14,200		
Purchases	406,100		
Transportation-in	9,700		
Total raw materials available	$430,000		
Less: Inventory, December 31, 1964	8,000		
Total material consumed		$422,000	
Labor		273,000	
Manufacturing overhead:			
Factory supplies	$ 18,000		
Factory building repairs	25,200		
Superintendence	21,000		
Property taxes	8,100		
Depreciation—factory building	14,200		
Depreciation—machinery	13,750		
Patent amortization	9,250		
Factory payroll tax expense	9,740		
Machine repairs	10,070		
Heat, light, and power	8,900		
Factory insurance	6,090		
Total manufacturing overhead		144,300	
Manufacturing costs placed into production			839,300
Total			$855,700
Less: Finished goods, December 31, 1964		$ 9,700	
Goods in process, December 31, 1964		4,500	14,200
Cost of goods manufactured and sold (to the income statement)			$841,500

Materials, labor, and manufacturing overhead are the three basic elements of manufacturing cost and are separated in the statement for purposes of analysis. The separation of these cost elements is based on the natural concept of the manufacturing process as con-

sisting of men (labor), working with a physical product (raw materials), and using equipment (manufacturing overhead), to produce manufactured items. When the owner or manager of a business studies the report, his mind will, in all probability, visualize the labor, material, and manufacturing overhead expenses in this manner. Several approaches to the analysis of these separate cost elements are discussed in this chapter.

Presentation of inventories in the balance sheet

The raw materials, goods in process, and finished goods inventories of a manufacturing company should be reported separately in the balance sheet. The financial position of a manufacturing company is not reflected clearly unless a distinction is made between the amount of the company's products now complete and ready for sale, the amount in process but requiring additional time and expenditure to complete, and the raw materials awaiting the manufacturing process. All three inventories are considered current assets, and their presentation is illustrated below.

Current assets:			
Cash		$ 5,000	
Notes receivable	$ 3,000		
Accounts receivable	14,000		
	$17,000		
Less: Allowance for bad debts	600		
Net receivables		16,400	
Finished goods inventory	$13,000		
Work in process inventory	4,500		
Raw materials inventory	8,000		
Total inventories		25,500	
Prepaid expenses		1,200	
Total current assets			$48,100

Ending inventories and the manufacturing cost flow

The costs to be assigned to the ending inventory are determined by computing unit costs to manufacture. Unit costs are figured each accounting period. The unsold units are counted at the end of the accounting period, and the unit cost to manufacture is applied on a LIFO, FIFO, or average basis to determine the cost of the ending inventory.

A portion of the raw material cost, the labor cost, and each manufacturing overhead expense is included in the unit cost of each product. To illustrate the costing of the finished goods inventory, assume that the total cost pool for an accounting period has been accumulated and consists of the following:

Raw materials consumed	$ 50,000
Manufacturing labor	150,000
Depreciation on machinery	12,000
Heat, light and power	8,000
Factory supplies	30,000
Total cost pool	$250,000

Suppose, further, that 1,250 units were manufactured, of which 1,000 were sold and 250 remain in the finished goods warehouse. The manufacturing cost during the period is $200 per unit, determined by dividing the $250,000 total manufacturing costs by the 1,250 units produced. This $200 unit cost is applied to each of the 1,250 units produced during the period; the finished goods ending inventory is determined by considering any beginning inventory of finished goods, the $200 per unit cost of production during the period, and the company's LIFO, FIFO, or average inventory method. If the company uses a FIFO inventory, for example, the 250 units in the ending inventory, being the latest units produced, are assigned the $200 unit cost. The ending inventory is thus assigned some portion of each cost that enters the cost pool during the accounting period. Note that the materials, labor, depreciation, power, and supplies consumed in the manufacturing process thus enter into the determination of net income only when the units produced are sold; costs associated with unsold units are held as inventory to become part of the cost of goods sold in later periods. A full discussion of the determination of unit costs is deferred to the following two chapters of this text. However, it should be clearly understood at this point that the goods in process and finished goods inventories contain a portion of each manufacturing cost element.

Period and product costs

All costs which are considered a part of the manufacturing cost pool are called *product costs*. These costs follow the physical flow of units and do not enter into the determination of net income until the units are sold. Product costs which attach to unsold units, in-

cluding those completed, in process, or awaiting production, must be carried forward to subsequent accounting periods as ending inventories on the balance sheet.

Period costs are those which are directly associated with the current accounting period and are not considered a part of the cost of manufacturing products. Selling expenses and administrative expenses are considered period costs, unrelated to production, and thus must enter into the determination of the net income for the period in which they were incurred.

Since product costs follow the units which are produced and period costs relate directly to the accounting period, each cost incurred by a manufacturing company must be carefully analyzed to ascertain whether it is a product cost or a period cost. Unless this distinction is properly made, periodic profits will be incorrectly reported, and managerial analysis of manufacturing operations may be distorted.

Manufacturing work sheet

The work sheet frequently prepared by smaller manufacturing companies which do not utilize more sophisticated, mechanized accounting processes, contains a separate column for compilation of the product costs. This column is useful in adjusting and closing the accounts and in the preparation of the statement of the cost of goods manufactured and sold.

Exhibit 24–4 illustrates a work sheet prepared for the Ebonville Manufacturing Company based on the December 31, 1964, trial balance. The following adjusting entries are included:

(a) The ending finished goods inventory as of December 31, 1964, is $13,000. (Note that the ending finished goods inventory is subtracted from the total of the manufacturing cost pool on the work sheet at the same time that it is set up as an asset on the balance sheet.)
(b) and (c) The ending goods in process inventory and raw materials inventory as of December 31, 1964, are $1,125 and $8,000 respectively. (Note that these inventories also are subtracted from the cost pool when set up as assets on the balance sheet.)
(d) Factory supplies on hand December 31, 1964, are $200.
(e) Depreciation on the factory building is $2,000.
(f) Depreciation on factory equipment is $4,000.
(g) Patent amortization is $1,000.
(h) Insurance expense is applicable ½ to factory and ½ to selling expense.

EXHIBIT 24–4

THE EBONVILLE MANUFACTURING COMPANY

Manufacturing Work Sheet

Year Ended December 31, 1964

	Trial Balance		Adjusting Entries		Cost of Goods Manufactured and Sold		Income Statement		Balance Sheet	
	Debits	Credits	Debits	Credits	Debits	Credits	Debits	Credits	Debits	Credits
Cash	3,000								3,000	
Finished goods inventory, Dec. 31, 1963	11,000				11,000					
Goods in process inventory, Dec. 31, 1963	1,350				1,350					
Raw materials inventory, Dec. 31, 1963	7,000				7,000					
Factory supplies	900			(4) 700					200	
Land	8,000								8,000	
Buildings	59,000								59,000	
Accumulated depreciation, buildings		17,000		(5) 2,000						19,000
Equipment	42,000								42,000	
Accumulated depreciation, equipment		11,000		(6) 4,000						15,000
Patents	8,500			(7) 1,000					7,500	
Accounts payable		2,300								2,300
Common stock		80,000								80,000
Retained earnings		14,950								14,950
Sales		175,000						175,000		
Raw materials purchases	65,000				65,000					
Direct labor	49,100				49,100					
Heat, light, and power	6,200				6,200					
Factory taxes	3,150				3,150					
Insurance expense	2,040				(8) 1,020		(8) 1,020			
Machinery repairs	1,910				1,910					
Advertising	5,800						5,800			
Sales salaries	12,300						12,300			
Administrative salaries	14,000						14,000			
	300,250	300,250								
Finished goods inventory, Dec. 31, 1964						(1)13,000			(1)13,000	
Goods in process inventory, Dec. 31, 1964						(2) 1,125			(2) 1,125	
Raw materials inventory, Dec. 31, 1964						(3) 8,000			(3) 8,000	
Factory supplies expense			(4) 700		700					
Depreciation expense, factory buildings			(5) 2,000		2,000					
Depreciation expense, factory equipment			(6) 4,000		4,000					
Patent amortization expense			(7) 1,000		1,000					
			7,700	7,700	153,430	22,125				
Cost of goods manufactured and sold						131,305	131,305			
					153,430	153,430	164,425	175,000	141,825	131,250
Net income							10,575			10,575
							175,000	175,000	141,825	141,825

The cost of goods manufactured and sold is the difference between the debits and credits in the cost of goods manufactured and sold columns and is transferred to the income statement columns for determination of net income.

Closing entries

When the books of a manufacturing company are closed, the cost of goods manufactured and sold is frequently closed to a separate summary account. This special summary account is called the Cost of Goods Manufactured and Sold Summary. The closing entries are taken from the work sheet of the Ebonville Manufacturing Company, illustrated previously. Note that each amount appearing in the cost of goods manufactured and sold column of the work sheet is closed to the special summary account for product costs.

Dec.	31	Cost of Good Manufactured and Sold Summary	$153,430	
		Finished Goods Inventory (Beginning)		$11,000
		Goods in Process Inventory (Beginning)		1,350
		Raw Materials Inventory (Beginning)		7,000
		Purchases		65,000
		Direct Labor		49,100
		Heat, Light, and Power		6,200
		Factory Taxes		3,150
		Insurance Expense		1,020
		Machinery Repairs		1,910
		Factory Supplies Expense		700
		Depreciation—Factory Building		2,000
		Depreciation—Machinery		4,000
		Patent Amortization		1,000
		To close factory costs and beginning inventories to the cost of goods manufactured and sold summary.		
	31	Finished Goods Inventory (Ending)	$ 13,000	
		Goods in Process Inventory (Ending)	1,125	
		Raw Materials Inventory (Ending)	8,000	
		Cost of Goods Manufactured and Sold Summary		$22,125
		To set up ending inventories and reduce the cost of goods manufactured and sold summary for these amounts.		

The balance in the Cost of Goods Manufactured and Sold Summary represents the portion of the pool of manufacturing costs associated with sold units and is closed to the Income Summary to record the income or loss for the period.

Dec.	31	Income Summary	$131,305	
		Cost of Goods Manufactured and Sold Summary		$131,305
		To close the balance in the cost of goods manufactured and sold summary to the income summary.		

The use of a separate cost of goods manufactured and sold summary account can be eliminated, and all the manufacturing, selling, and administrative accounts can be closed directly into the income summary. However, use of a separate summary account for manufacturing costs provides a separate and permanent record in the ledger of the total manufacturing costs for each accounting period. If special analyses or cost studies are later undertaken, it will prove of considerable benefit to have these amounts set out separately.

The factory ledger

The preceding discussion of manufacturing expenses has assumed a relatively simple manufacturing cost system. The work sheet, for example, is used only by those companies with a simple accounting system utilizing a single ledger, containing both manufacturing costs and non-manufacturing expenses. Larger companies and those with more complex manufacturing systems maintain a separate subsidiary ledger for the manufacturing cost accounts. This subsidiary ledger is called a *factory ledger*, and only the control account appears in the general ledger.

The manufacturing subsidiary ledger is based on the same principle as other control-subsidiary arrangements; i.e., all detail is maintained in the subsidiary ledger, and only summary postings are made to the control. A large number of manufacturing cost accounts can be maintained in this manner without making the general ledger cumbersome. The balance of the control account, which must agree with the totals of the individual accounts in the detail ledger, represents the cost of manufacturing during the period. Thus there is no need for a manufacturing work sheet and separate closing entries for manufacturing costs where separate factory ledgers are used.

Analysis of manufacturing costs

Manufacturing costs are analyzed periodically by management to ascertain the efficiency of operations and to locate those operating areas requiring attention. An accurate and effective study of manufacturing costs requires a separate analysis of each of the three major cost elements—material, labor, and manufacturing overhead. Each cost element must be analyzed separately, because inefficiencies and weaknesses in the company's operations may affect one cost element but not another. Poor purchasing policies, for example, may increase material costs but have no effect on labor costs or manufacturing overhead.

Two basic techniques used to analyze and compare manufacturing costs are the *comparative analysis* and the *cost-volume analysis. Comparative analysis* consists of comparisons with the company's costs in prior years, with the costs of other companies, or with the average throughout the industry. A *cost-volume analysis* is based upon studies of the relationship of changes in each manufacturing cost element to changes in the company's volume of manufacturing activity during the period.

Comparative analysis

A comparative analysis of manufacturing costs may be made either internally or externally. *Internal* comparisons relate the company's current manufacturing costs with its costs of prior years. *External* comparisons are made by comparing the company's manufacturing costs with cost data of other companies.

Internal comparison

An internal comparison with the company's own prior costs will indicate whether labor costs, material costs, or manufacturing overhead have changed significantly. This type of comparison is primarily a measurement of current operations with previous operations to locate unfavorable cost trends. Exhibit 24–5 illustrates data used in an internal comparison of the current year's manufacturing costs with those of the previous two years.

Analysis of the data contained in Exhibit 24–5 indicates that materials costs are decreasing both in amount and as a percentage of total manufacturing costs, from 56% of total cost in 1962 to 50% in 1964. Labor costs, on the other hand, are increasing, while manufacturing overhead has remained relatively constant as a percentage of

EXHIBIT 24–5

Internal Comparison of Manufacturing Costs

Cost Element	1964		1963		1962	
	Amount	% of Total	Amount	% of Total	Amount	% of Total
Materials consumed	$24,000	50%	$27,000	53%	$29,000	56%
Direct costs	16,000	33	15,000	29	14,000	27
Manufacturing overhead	8,000	17	9,300	18	8,800	17
Total	$48,000	100%	$51,300	100%	$51,800	100%

total manufacturing costs. As a result of this analysis, an upward trend in labor costs becomes apparent, and further investigation can be made to locate causes and determine what action, if any, should be taken.

External comparison

An external comparison measures a company's manufacturing costs against similar data from other manufacturing companies and indicates those areas in the company's operations which do not compare favorably and are probable areas for improvement. Average costs are published periodically by most trade associations, usually indicating average costs for small, medium, and large companies by geographical areas.

Industry-wide cost data published by trade associations are usually stated in terms of percentage amounts, since a comparison of absolute dollar amounts could be distorted by differences in the size, location, or personnel of the companies being compared. Exhibit 24–6 illustrates an external comparison of manufacturing cost data for the Wellington Company.

This analysis indicates that the Wellington Company has a higher labor cost, a higher manufacturing overhead cost, and a lower material cost than other similar companies. As a consequence, the management of the Wellington Company may well search for means of reducing labor costs, such as increased mechanization, improved production facilities, or more efficient utilization of workmen's time. Although remedial measures are left to management's discretion, the analysis has indicated areas that should receive primary attention.

EXHIBIT 24–6

External Analysis of Manufacturing Costs

Cost Element	Per cent of total manufacturing costs			
	Wellington Company	Company X	Company Y	Industry Average
Material consumed	29%	43%	40%	41%
Direct labor	32	25	27	26
Manufacturing overhead	39	32	33	33
Total	100%	100%	100%	100%

Analysis of cost-volume relationships

One of the most effective methods of analyzing manufacturing costs is to relate the amount of change in each cost element to changes in the volume of production. For example, if production has increased by 20% from the previous year, the changes in each major element of manufacturing cost can be measured in relation to this 20% variation in volume. The reaction of each element of manufacturing cost to changes in the volume of production represents the variability of the cost.

To illustrate the cost-volume analysis of manufacturing overhead expenses, assume that a company's volume of production increased from 60% of capacity in the previous year to 80% of capacity during the current year. Production has thus increased by one-third (80% ÷ 60% = 133⅓%). An increase in material costs of one-third would be considered reasonable, because the cost of materials will in most cases bear a direct relationship to production. An increase in labor costs of approximately one-third would also be reasonable, since changes in labor costs should also vary in reasonably direct proportion to production. Each manufacturing overhead expense must be studied separately, since some expenses in the overhead classification are fixed and some are variable.

The example on page 723 is presented to illustrate still further the cost-volume analysis technique. Income statements of the Boll-Mertz Company for both the current year and the prior year are presented. Note that the volume of activity increased from 75% of capacity in the prior year to 90% during the current year.

The volume of production in 1964 is 20% greater than the prior year (90% ÷ 75% = 120%). Material costs have increased from $45,000 to $54,600, or 21.3%. Labor costs have increased from $32,000 to $40,000, or 25%. These costs are proportionately higher than the increase in the level of production, a fact which should be

EXHIBIT 24–7

BOLL–MERTZ COMPANY
Manufacturing Costs
During the Year Ended December 31, 1964

	1964 (90% capacity)		1963 (75% capacity)	
Material consumed		$ 54,600		$45,000
Labor		40,000		32,000
Manufacturing expenses:				
Depreciation	$5,000		$5,000	
Taxes	2,000		2,000	
Heat, light and power	9,600		8,000	
Total manufacturing expense		16,600		15,000
Total		$111,200		$92,000

carefully studied by management. Labor costs, in particular, appear to be significantly out of proportion to the increase in production.

Each item of the Boll-Mertz Company's manufacturing expenses must be measured separately against the volume change. Depreciation and taxes have remained constant, as might reasonably be expected since they are fixed costs. Heat, light and power costs have increased from $8,000 to $9,600, a 20% increase which is in direct proportion to the volume increase. If heat, light and power normally fluctuate directly in proportion to volume change, this increase would be considered normal.

Need for cost studies

Measurement of the changes in each element of the manufacturing cost against variations in production volume necessitates a thorough knowledge of the company's operations and the nature of its cost structure. Management personnel in some companies rely solely on their "feel" for operations when analyzing costs and make little attempt at a careful and systematic analysis of the fixed and variable nature of each cost element. This subjective, intuitive type of cost analysis is conducive to error. Use of carefully drawn statistical studies of cost behaviors and the relationship of costs to volume change is a sound approach to the measurement and control of expenses.

The use of careful analysis in determining cost-volume relationships has increased in the past few years. The cost-volume analysis of

non-manufacturing expenses was discussed in Chapter 20, and all manufacturing costs are subject to the same type of analysis. Fixed and variable manufacturing costs can be computed by use of the scattergraph or the high-low points method, using the number of units produced, the factory capacity, or labor cost as the volume base. Sales volumes cannot be used as the base for analyzing the fixed and variable natures of manufacturing costs, since there is no direct relationship between the volume of sales and the volume of production in any given accounting period.

Questions

24-1. Why is it important to distinguish between the three major elements of manufacturing costs: materials, labor, and manufacturing overhead, when reporting on manufacturing operations?

24-2. What differences exist between the balance sheet of a merchandising company and a manufacturing company?

24-3. Why is it desirable to show three separate inventories on a manufacturing company's balance sheet?

24-4. Describe what information management needs in operating reports concerning manufacturing operations.

24-5. What is meant by the "variability" of a manufacturing cost? Name several manufacturing overhead items which vary differently with the volume of production.

24-6. Why is a separate statement of cost of goods manufactured and sold usually necessary for a manufacturing company, while the cost of merchandise sold detail appears directly in the income statement of a merchandising company?

24-7. How does a manufacturing work sheet differ from one prepared for a merchandising company?

24-8. Explain what is meant by the statement that "a portion of each manufacturing cost element is apportioned to ending finished goods and work in process inventories."

24-9. Which of the following are product costs and which are period expenses:

(a) Bad debts expense
(b) Insurance on machinery
(c) Taxes on building used ⅔ for factory and ⅓ for general office
(d) Patent amortization expense
(e) Advertising

(f) Travel costs of factory manager
(g) Light bulbs used in factory office
(h) Christmas party for factory employees
(i) Machinery repairs
(j) Depreciation on accounting department equipment

24-10. What purpose is served by closing the cost of goods manufactured and sold to a separate summary account in a manufacturing company's books?

24-11. Distinguish between internal and external comparisons. What information can be derived from such comparisons?

24-12. What is a cost trend? Why is management interested in cost trends?

24-13. Which of the following labor costs would vary directly with production and which would not:

Janitorial work
Final assembly of radios
Machinery repairs
Painting refrigerators
Supervisory salaries
Gathering scrap and waste
Drilling holes in metal furniture legs

Exercises

24-14. The following information was accumulated by the Malloy Manufacturing Company, Inc.:

Finished goods, April 1	$13,000
Goods in process, April 1	2,800
Raw materials, April 1	7,000
Sales	50,000
Purchases	20,000
Labor	9,000
Repairs on machinery	1,000
Factory supplies	700
Factory depreciation	3,000
Sales salaries	4,000
Advertising	1,100
Selling supplies used	500
Finished goods, April 30	11,200
Goods in process, April 30	1,900
Raw materials, April 30	5,000

REQUIRED

Prepare a statement of the cost of goods manufactured and sold for the month of April, using whatever of this data you feel should be included in the statement.

24-15. Using the information in Exercise 24-14, prepare complete closing entries summarizing product costs separately in a cost of goods manufactured and sold summary, and the period costs in an income summary.

24-16. The trial balance of the Amander Company as of December 31, 1964, appears below.

Cash	$ 1,000	
Accounts receivable	6,000	
Finished goods inventory, 1/1/64	9,000	
Goods in process inventory, 1/1/64	3,000	
Raw materials, 1/1/64	2,000	
Machinery	18,000	
Accounts payable		$ 3,000
Common stock		25,000
Retained earnings		7,000
Sales		51,000
Raw material purchases	16,000	
Transportation-in	500	
Labor	21,000	
Depreciation on machinery	3,000	
Factory taxes	1,000	
Factory supplies	800	
Advertising	1,200	
General office salaries	3,500	
	$86,000	$86,000

Finished goods inventory, 12/31/64	$8,000
Goods in process inventory, 12/31/64	2,000
Raw materials inventory, 12/31/64	4,000

REQUIRED

Using this data, prepare a statement of the cost of goods manufactured and sold for the year, and an income statement.

24-17. The manufacturing costs incurred by the Grissolm Company during 1963 and 1964 are shown below. Production in 1963 was at 100% of capacity and in 1964 was at 90% of capacity.

	Manufacturing costs for the year ended December 31,			
	1963		1964	
Materials consumed		$ 60,000		$ 50,100
Manufacturing labor		50,000		45,000
Manufacturing overhead:				
Depreciation on machinery	$8,500		$9,500	
Factory supplies	1,100		1,000	
Heat, light and power	2,000		2,100	
Factory building rent	9,000		9,000	
Insurance	900		890	
Machinery repairs	4,800		5,100	
Telephone and telegraph	600		650	
Total manufacturing expenses		26,900		28,240
		$136,900		$123,340

During 1964 an additional machine was bought, which resulted in $1,000 more depreciation but a reduction of labor costs by $1,600. The machine required repairs of $500 and extra power of $300.

REQUIRED

Considering these changes, list the costs which you feel need further investigation because they have not changed in reasonable proportion to changes in production. State why you feel each of these costs should be investigated.

24-18. The Cortable Company has incurred operating losses for the past three years, and management is concerned about the costs to manufacture its products. They feel that their machinery is outdated and should be replaced. The following data have been collected:

	Cortable Company		Nearest Competitor	Average of Industry
	Amount	Percentage	Percentage	Percentage
Materials costs	$ 9,000	30%	30%	32%
Labor	12,000	40%	30%	29%
Depreciation on machinery	6,000	20%	30%	31%
Repairs and maintenance	1,500	5%	5%	4%
Factory supplies	1,500	5%	5%	4%
Total manufacturing costs	$30,000	100%	100%	100%
Sales	$40,000		$50,000	$47,000
Gross profit (% of sales)	25%		40%	39%

The company has no beginning or ending inventories since it sells its products as they are completed. The management of the Cortable Company believes that machinery can be bought which will reduce direct labor costs by 30%, but will increase repairs and maintenance by 50%. Depreciation expense will increase by 20%.

REQUIRED

1. Would the purchase of the new machinery increase the profitability of the Cortable Company? Prepare a schedule showing the effect on manufacturing costs and on gross profit if the machinery is bought. Assume sales will stay constant.
2. Does the purchase of the machinery make the cost structure of the Cortable Company closer to the industry average? Prepare a schedule comparing the Cortable Company with the industry average, if the new machinery is bought and cost changes are as expected.

24-19. The Folsom Company was formed in 1963 for the purpose of manufacturing a single product. At its inception it maintained only summary details of the various cost elements. At the end of 1963, the first year of its operations, the following cost data were available from its records:

Number of units manufactured	20,000
Number of units sold	20,000
Sales price per unit	$11
Total material costs	46,000
Total labor costs	75,000
Total manufacturing overhead	56,000

On January 1, 1964, the company appointed a new president. He immediately made several shifts in production methods which created additional overhead costs, but eliminated the need for several employees. He also altered the type of materials used in the manufacturing process, and changed the sales price of the product to $10 per unit in an attempt to increase the sales volume. The following data summarize the company's operations in 1964:

Number of units manufactured	25,000
Number of units sold	25,000
Sales price per unit	$10
Total material costs	60,000
Total labor costs	68,000
Total manufacturing overhead	81,000

The sales manager was very happy with the results of the new president's decisions and offered as evidence the fact that sales increased from 20,000 to 25,000 units. The production manager was not so sure, since his total manufacturing costs are higher.

REQUIRED

You are requested by the president to ascertain the results of his decision on profits.

1. Prepare an income statement comparing the prior year with the current year.
2. Prepare an analysis showing the per unit cost of each element of manufacturing cost in the prior year and in the current year.

Problems

24-20. The Aaron-Battle Company closes its books on December 31 of each year. The following information is applicable to the year 1964.

Purchased raw materials costing $22,000.
Incurred and paid labor costs of $17,000.
Paid $1,000 of factory taxes, $500 for machinery repairs, and $3,000 for heat and power.
Recorded $4,000 depreciation on factory equipment.
Recorded $10,000 depreciation on the building. One-fourth of the building was used for the sales office and three-fourths for the factory.
Paid administrative expenses of $15,000.
Recorded the following beginning and ending inventories:

	Beginning	Ending
Finished goods	$11,000	$9,000
Goods in process	5,000	4,000
Raw materials	3,000	2,000

REQUIRED

Prepare a statement of cost of goods manufactured and sold.

Production for the year was 10,000 units. The manufacturing costs were expected to be as follows:

	Per unit of production
Materials consumed	$2.50
Labor	1.60
Manufacturing overhead	1.60
Total per unit	$5.70

REQUIRED Prepare a schedule comparing budgeted and actual per unit costs, indicating both total and per unit variances for each of the three major cost elements.

24-21. The management of the Troell Manufacturing Company has not received separate monthly statements showing the costs to manufacture and sell its products. You have been requested to prepare one for the month of May, 1964, and have found the following information:

On the first of the month, the company had on hand raw materials which cost $10,600, finished goods in the warehouse of $16,000, and partially finished products containing a total of $11,300 of the prior month's materials, labor, and manufacturing overhead. The purchases journal showed a total of $17,000 of raw materials had been bought. A total of $24,000 of raw material had been put into process during the month.

The payroll journal showed labor costs of $15,000, of which $14,000 was factory payroll and $1,000 was selling payroll. Factory supplies of $1,000, depreciation on machinery of $9,000, factory taxes of $1,500, and heat, light, and power of $3,000 had been incurred. At the end of the month the incompleted goods in process included $1,000 of material, $800 of direct labor, and $400 of manufacturing expenses. Finished goods sold during the month had a cost of $65,000.

REQUIRED

Prepare the statement of the cost of goods manufactured and sold.

24-22. The Follstram Manufacturing Company's trial balance, with the related adjustment data, is as follows:

Cash	$ 1,500	
Accounts receivable	7,300	
Finished goods inventory, 1/1/64	9,100	
Goods in process inventory, 1/1/64	800	
Raw materials inventory, 1/1/64	1,400	
Machinery	47,000	
Accumulated depreciation, machinery		$ 8,000
Patents	2,500	
Accounts payable		1,300
Mortgage payable		6,000
Common stock		40,000
Retained earnings		6,000
Sales		75,000
Purchases	31,000	
Transportation-in	1,200	
Labor	18,400	
Machinery repairs	1,700	
Factory supplies	700	
Factory rent	2,000	
Factory taxes	700	
Insurance expense	200	
Advertising	1,400	
Office supplies	300	
Sales commissions	2,100	
Office salaries	7,000	
	$136,000	$136,000
Finished goods inventory, 12/31/64	$ 6,200	
Goods in process inventory, 12/31/64	1,100	
Raw materials inventory, 12/31/64	900	

Fifty dollars of insurance is prepaid. One-half of the insurance expense for the year is on the factory building, and the balance is on the general office.

Depreciation on the machinery is $1,000 for the year.

The patent had five years of remaining life at the beginning of 1964.

REQUIRED

Using the information listed above, prepare:

(a) A work sheet for the Follstran Manufacturing Company with a separate column for the cost of goods manufactured and sold

(b) A statement of the cost of goods manufactured and sold
(c) An income statement for the year

24-23. The adjusted trial balance of the Queens Company appears below. The ending inventories are: Finished goods, $36,000; Goods in process, $19,000; Raw materials, $14,000.

THE QUEENS COMPANY

Adjusted Trial Balance

December 31, 1964

Cash	$ 1,000	
Accounts receivable	6,000	
Allowance for uncollectible accounts		$ 300
Raw materials inventory, 1/1/64	2,000	
Goods in process inventory, 1/1/64	7,000	
Finished goods inventory, 1/1/64	10,000	
Machinery	61,000	
Accumulated depreciation—machinery		6,000
Furniture and fixtures	$ 14,000	
Accumulated depreciation—furniture and fixtures		$ 3,000
Accounts payable		1,850
Capital stock		50,000
Retained earnings		14,000
Sales		281,500
Sales discounts	1,400	
Purchases	88,000	
Purchases returns		500
Transportation-in	1,200	
Labor	90,000	
Building rent	21,000	
Heat, light, and power	2,000	
Machinery repairs	1,800	
Taxes	700	
Depreciation—machinery	2,000	
Advertising	3,400	
Salesmen's salaries	21,700	
Selling expenses	3,650	
Office salaries	18,000	
Depreciation—furniture and fixtures	1,000	
Bad debts expense	300	
	$357,150	$357,150

The taxes are ½ applicable to the factory and ½ to the general office.

The building rent is applicable ⅔ to the factory and ⅓ to the general office.

One-fourth of the heat, light, and power is applicable to the general office.

REQUIRED

1. Prepare a manufacturing work sheet for the year 1964. Since the adjustments have already been entered and posted by the company's accountant, no adjustments are necessary in this problem.
2. Prepare a statement of the cost of goods manufactured and sold.
3. Prepare an income statement.

24-24. (a) In 1964 the Pratt Products Company sold its product for $300 per unit. Manufacturing costs on this unit were $200, and the selling and administrative expenses were $80 per unit. Manufacturing costs were composed of labor 40%, material 25%, and manufacturing overhead 35%. A total of 2,000 units was sold during the year, and the company has no beginning or ending inventories.

REQUIRED Prepare an income statement for 1964.

(b) The company's manufacturing overhead include $50,000 of fixed costs. The labor, material, and remaining manufacturing expenses are completely variable. The selling and administrative expenses include $100,000 of fixed costs and the remainder are variable. The sales manager wants to set a price of $280 on its product and expects to sell 2,300 units at that price.

REQUIRED Is the lower price and increased volume more profitable for the company? Prepare a projected income statement if the price is lowered.

24-25. The management of the Brenton Company was concerned in the prior year about the cost of manufacturing its product. Its per unit costs then were:

Labor	$ 6.00
Materials	9.80
Manufacturing overhead	6.50
Per unit	$22.30

During 1964, the company produced 8,000 units, and at the end of the year, trial balance and ending inventories were:

Cash		$ 2,000	
Accounts receivable		8,000	
Finished goods inventory, 1/1/64		12,000	
Goods in process inventory, 1/1/64		–0–	
Raw materials inventory, 1/1/64		6,000	
Machinery		25,000	
Factory building		56,000	
Accounts payable			$ 9,000
Common stock			100,000
Retained earnings			26,000
Sales			211,000
Purchases		79,000	
Transportation-in		1,000	
Labor		53 000	
Factory taxes		3,000	
Factory supplies		2,000	
Heat, light, and power		10,000	
Machinery repairs		8,000	
Depreciation–factory building		25,000	
Depreciation–machinery		17,000	
Salesmen's salaries		12,000	
Advertising		3,000	
Selling supplies		2,000	
Administrative salaries		22,000	
		$346,000	$346,000

Ending inventories:

Finished goods, 12/31/64	$14,000
Goods in process, 12/31/64	–0–
Raw materials, 12/31/64	8,000

REQUIRED

1. Prepare a statement of the cost of goods manufactured and sold during the year.
2. Compute the unit costs of manufacturing for labor, materials, and manufacturing overhead. Indicate which of these three cost elements you would be concerned about if you were the company's general manager.

Cases

24-26. The Smith Company manufactures a plastic case similar to that used for table radios. The company was formed in 1962 by two

men who knew little about accounting, and their books are kept by a bookkeeper who has no formal training in accounting.

During 1962 the company produced 10,000 units. In 1963 production was 20,000 units, due primarily to a large government contract. In 1964 the company produced 13,000 units. They have no beginning or ending inventories. Their costs of goods manufactured and sold for the three years were as shown below:

THE SMITH MANUFACTURING COMPANY

Comparative Statement of the

Cost of Goods Manufactured and Sold

For the Year Ended December 31, 1964

	1962	1963	1964
Materials consumed	$20,000	$40,000	$26,000
Labor costs	10,000	20,000	18,000
Factory building depreciation	3,000	3,000	3,000
Supplies	2,000	3,000	2,800
Heat, light and power	900	1,400	1,300
Insurance	500	500	500
Factory taxes	200	200	200
Machinery repairs	1,090	1,800	1,700
Depreciation on machinery	3,000	3,000	3,000
Factory telephone expense	600	900	800
Total	$41,200	$73,800	$57,300

No production changes have been made during the three years, and production costs of both 1962 and 1963 are representative. J. Jones, one of the two founders of the company, feels that some of the manufacturing costs in 1964 are too high. S. Smith, the other founder of the company, points out that every one of the 1964 expenses are equal to or less than the amount for last year and that he cannot understand why Jones considers them too high. Analyze the company's costs and describe whether you feel any of the 1964 costs are too high, and if so, which ones and why you feel they are too high.

24-27. The manufacturing overhead of the Brayville Company for 1964 was as follows:

Factory labor	$274,000
Raw materials issued to factory	328,700
Factory insurance expired	8,200
Factory building depreciation	17,200
Factory equipment depreciation	9,320

Factory supplies	3,840
Heat, light, and power	7,580
Equipment repairs	63,400

The factory insurance was almost double that of the previous year because several policies had been cancelled and new policies taken. The equipment repairs expense was four times the normal amount because of extensive and unexpected repairs during the year.

The company had no beginning inventory of work in process or finished goods because changes in their products beginning in 1964 had necessitated clearing out all old models. During 1964 a total of 10,000 new units was started; 8,000 units were completed; and 6,000 were sold. The incomplete units were half finished.

William Baker, the company's sales manager, had been instrumental in changing the company's products and was not disturbed when the company reported net income for the year of $87,800, which was $45,000 below the previous year. He stated, "We actually had a good year, even though profits are down, because our factory insurance and repair costs were almost $50,000 more than in previous years. If it had not been for these costs our net income would have been greater than the previous year."

Do you agree with Baker?

25

Determination and analysis of product costs

The preceding chapter has discussed the over-all accumulation, analysis, and flow of the three major elements of manufacturing costs: labor, material, and manufacturing overhead. As discussed in that chapter, the costs assigned to ending inventories were subtracted from the total pool of manufacturing costs to arrive at the cost of goods manufactured and sold. Use of unit costs, multiplied by the number of units sold, incomplete, or unsold, is the basic method by which manufacturing costs are assigned to inventories and to the cost of goods sold. The techniques of determining unit costs are covered in this chapter.

Unit costs must be determined for each of the company's different products. The cost of all the different products in the ending inventory or the cost of all the products sold can be computed accurately only if unit costs for each product are available.

Uses of unit costs

Unit costs to manufacture each product are essential not only for the determination of ending inventories, but also for managerial planning and control. Without unit costs, management would have difficulty in setting selling prices, determining the cost of added or discontinued products, planning production of specific products, or locating operations which need attention. The uses of unit costs for each separate product may be summarized as follows:

(a) To determine what portion of the total manufacturing cost pool should be attached to ending inventories and to cost of goods sold for preparation of the balance sheet and income statement.

(b) As an aid to management in controlling operations. Product costs broken down by cost elements provide information as to which costs, products, or processes need managerial attention.

(c) As an aid to management in planning future operations. Unit costs are needed to set unit selling prices, to help solve problems relative to expanded operations, discontinued products, and alterations in product design.

The nature of the "unit" to be used varies, since some products are best measured by pounds, others by barrels, sets, pairs, dozens, or gross. The unit selected should be small enough to provide sufficient detail, yet large enough to permit facility in accumulating costs. "Dozens" would be too small to use as the unit basis for measuring the cost of manufacturing nails; pounds would fit that product much better. On the other hand, the use of dozens in the manufacture of locomotives would be equally inadequate, for the unit is too large. Each product must be considered separately in the selection of the best unit basis for cost accumulation and analysis.

Unit costs and the determination of ending inventories

The cost of the ending finished goods inventory is found by multiplying the units on hand by the cost of each unit. A physical count may be taken to ascertain the number of different units in the ending inventory, but those units must then be converted to a dollar amount. Since different costs are incurred in the manufacture of different sizes, models, and styles of a company's products, a unit cost must be computed for each.

The number of incomplete units in the ending goods in process inventory and the number of units in the raw materials inventory must also be accumulated and multiplied by a unit cost. The unit cost of incomplete products is difficult to ascertain and usually consists of a determination of the amount of labor, materials, and manufactured overhead incurred in getting the incomplete units to their present stage of completion. The unit cost of raw materials is the simplest to find, since the purchase price of these units can be taken from the supplier's invoices. Obviously, any inaccuracies in computing unit costs will result directly in an inaccurate determination of net income.

Unit costs for control

For good operating control a unit cost must be broken down into its various cost elements. While some control over costs may be main-

tained by comparing or analyzing *total unit costs* for each product, there is usually not sufficient information in total unit costs for management to spot inefficient areas. The following total unit cost, for instance, does not provide sufficient detail to indicate why the cost of Product A is higher than the estimated or expected cost.

	Total unit cost of last units completed	Estimated or expected total unit cost
Product A	$12.00	$9.00

While total unit cost information does inform management that costs to manufacture a product have increased, the particular element of cost that caused the increase is not known. The following analysis of costs provides a better measure for cost control over the manufacture of Product A.

Product A:	Unit cost of last units completed	Estimated or expected unit cost
Direct labor	$ 6.00	$3.05
Direct material	4.30	4.35
Manufacturing overhead	1.70	1.60
Total	$12.00	$9.00

An analysis by cost elements, similar to that above, more nearly pinpoints the area within the manufacturing process that needs attention. Labor costs are obviously out of line for this product, since labor increased from $3.05 per unit to $6.00 per unit. Immediate steps should be taken to determine why labor costs to produce product A have increased. The difference may be the result of inefficiency, machinery breakdowns, or some similar item within the control of management. Unit costs are thus the basis for locating cost elements that are out of line and will provide leads as to where management's effort may be expended most profitably in controlling costs.

Use of perpetual inventories

The use of perpetual inventories is a prerequisite to quick and accurate determination of unit costs. While perpetual inventory records require additional clerical cost to maintain, they will provide information at any time on the cost of raw materials on hand, the cost of work in process, and the cost of finished goods in the ware-

house. For good operating control, management needs information readily and frequently on inventory amounts and costs. Three separate perpetual inventory accounts are maintained by progressively managed manufacturing companies, one for raw materials, one for goods in process, and one for finished goods. These three perpetual inventory accounts are debited and credited when units are bought, produced, or sold.

Raw materials perpetual inventory

When raw materials are purchased, the Raw Materials perpetual inventory account is debited with the cost of the raw materials and any related freight. The account is credited with the cost of raw materials as they are consumed in the manufacturing process. The balance of the raw materials inventory account at any given time represents the amount currently on hand. The entry for the purchase of $100,000 of raw materials would be as follows if a perpetual inventory method is used.

Aug.	7	Raw Materials	$100,000	
		Accounts Payable		$100,000
		To record purchase of raw materials.		

The entry for the issuance of $40,000 of the raw materials into production, using a perpetual inventory, would be:

Aug.	9	Goods in Process	$40,000	
		Raw Materials		$40,000
		To record raw materials consumed in production.		

The $60,000 balance of the Raw Material account represents the amount on hand and available for future production.

Goods in process perpetual inventory

The Goods in Process perpetual inventory account is debited with the cost of all direct materials consumed, direct labor expended on that material, and the manufacturing overhead applied to production. The account is credited with the cost of the units completed. The balance in this account represents the cost of the incomplete units currently in process. The following three entries illustrate how materials, labor, and manufacturing overhead are debited directly to the Goods in Process account:

Aug.	10	Goods in Process	$40,000	
		Raw Materials		$40,000
		To record raw materials consumed in production.		
	11	Goods in Process	$40,000	
		Accrued Payroll		$40,000
		To record direct labor expended in production.		
	14	Goods in Process	$35,000	
		Manufacturing Overhead		$35,000
		To record manufacturing overhead applied to production.		

The Goods in Process account is credited directly when complete units are transferred to finished goods, as illustrated in the following entry:

Aug.	14	Finished Goods	$105,000	
		Goods in Process		$105,000
		To record completed production.		

Since the Goods in Process account in the above illustration was debited for $115,000 and credited for $105,000, it has a $10,000 debit balance. This balance represents the cost of incomplete units.

Finished goods perpetual inventory

The finished goods perpetual inventory is debited with the cost of the products completed in the manufacturing process and credited with the cost of those units sold. The balance of this account represents the cost of finished goods currently on hand. The following entries illustrate the completion of finished goods costing $105,000 and the sale of $73,000 of these units:

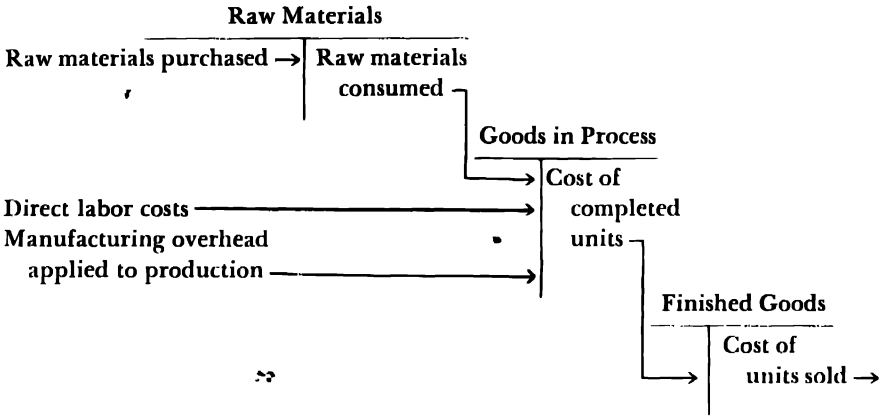
Aug.	14	Finished Goods	$105,000	
		Goods in Process		$105,000
		To record completed production.		
	18	Cost of Goods Sold	$ 73,000	
		Finished Goods		$ 73,000
		To record the cost of finished goods sold.		

The use of perpetual inventory accounts for raw materials, goods in process, and finished goods is basically a process of moving costs through the inventory accounts as the physical units move through

the plant. The perpetual inventories thereby provide financial information for day-to-day control and planning. Exhibit 25–1 illustrates the flow of costs through the perpetual inventory accounts.

EXHIBIT 25–1

Cost Flow Through Perpetual Inventory Accounts



Inventory subsidiary ledgers

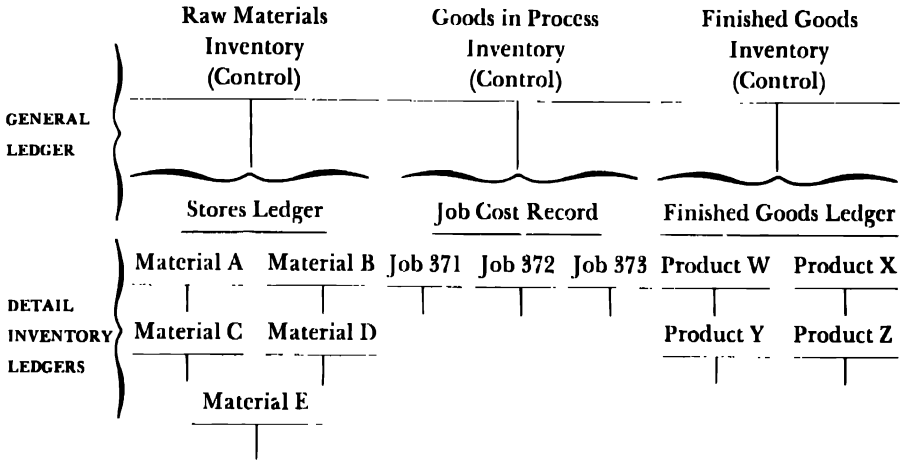
The perpetual inventory accounts should contain both the number of units and the dollar costs. Each of the three perpetual inventory accounts is a general ledger control account, and a separate, detailed subsidiary ledger is maintained for each one.

The *stores subsidiary ledger* contains a record of each type of raw material; the *job cost record* is a ledger containing a record of each product currently in process; and the *finished goods subsidiary ledger* contains a record of each finished product. Thousands of different raw materials may be used in making the company's many products, and the raw materials ledger contains an account for each of these. Hundreds of different jobs may be in process, and the detailed records provide data on the cost of each job. The three perpetual inventory accounts and their related subsidiary ledgers are illustrated in Exhibit 25–2.

The subsidiary ledgers may be separate cards in a card file or pages in a loose-leaf binder. They operate similarly to a customers' ledger of accounts receivable or an accounts payable ledger; any totals posted to the control accounts as debits or credits in the general ledger must be similarly posted to the appropriate subsidiary ledger accounts.

EXHIBIT 25–2

Perpetual Inventory Control Accounts and Subsidiary Ledgers



The stores ledger is the subsidiary record of raw materials, and the number of units currently on hand and the cost of an item of raw materials can be known at any time. This information is needed by the purchasing and production scheduling departments in purchasing raw materials and scheduling production.

The Job Cost Record subsidiary ledger provides a detailed record of the costs incurred on each job or product currently in production. These job cost records accumulate costs for each different type of product, since separate job cost records are inserted in the subsidiary ledger whenever production of a different product begins. When a job is completed, the total costs accumulated in the related Job Cost Record represent the cost of manufacturing the units on that job. Thus the unit cost of a finished product can be determined directly from the job record. The debits to the Finished Goods subsidiary ledger accounts match the credits to the Job Cost Record.

Exhibit 25–3 illustrates the costs as accumulated in the Job Cost Record for Job 6051, which is for the production of 1,000 units of Model C–6. The $12,000 total cost of the job includes labor, materials, and manufacturing overhead, and this total is transferred to the Finished Goods subsidiary record for Model C–6. Note that the $12.00 unit cost is determined by dividing the $12,000 total cost assigned to the job by the 1,000 units which the job produced.

EXHIBIT 25–3

JOB COST RECORD

Job 6051
For 1,000 units of Model C

Materials	$ 4,000	To Finished goods	$12,000
Labor	3,200		
Manufacturing expenses	4,800		
	$12,000		$12,000

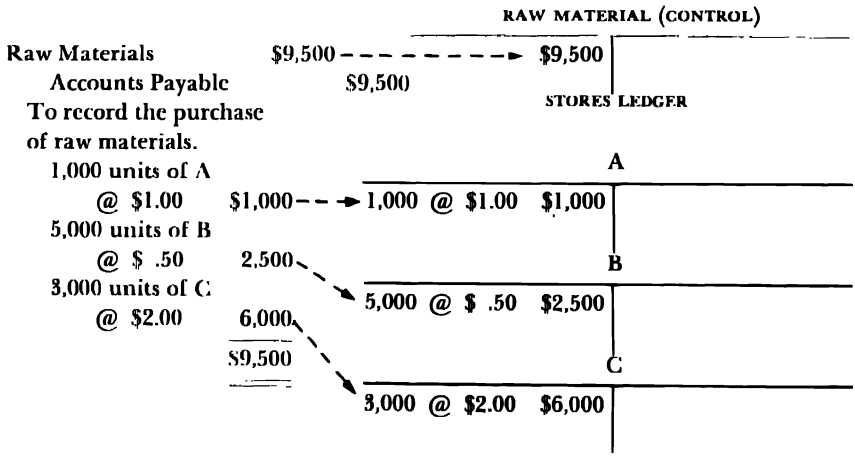
FINISHED GOODS DETAIL LEDGER

Model C-6

(1,000 units @ $12.00 each) $12,000	

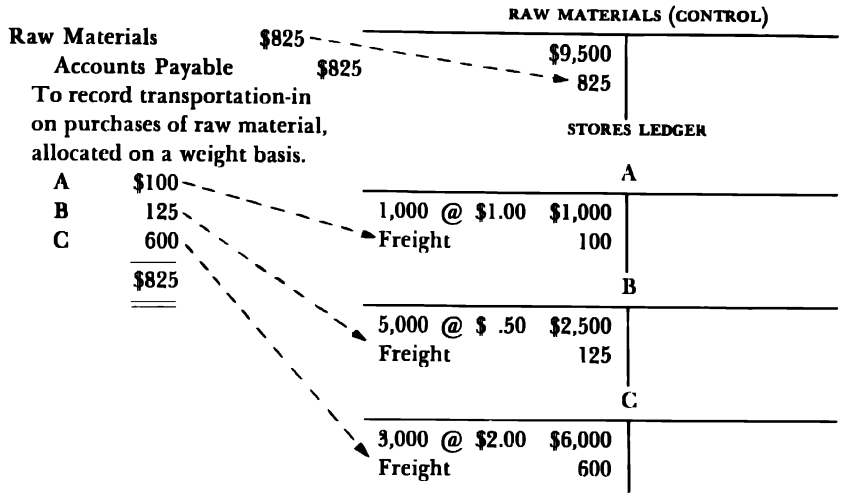
Accounting for raw materials

When perpetual inventory accounts are maintained, the purchase of raw materials is debited directly to the raw materials control account and to the related subsidiary accounts. The supplier's invoice or the receiving report is the basis for making this entry.

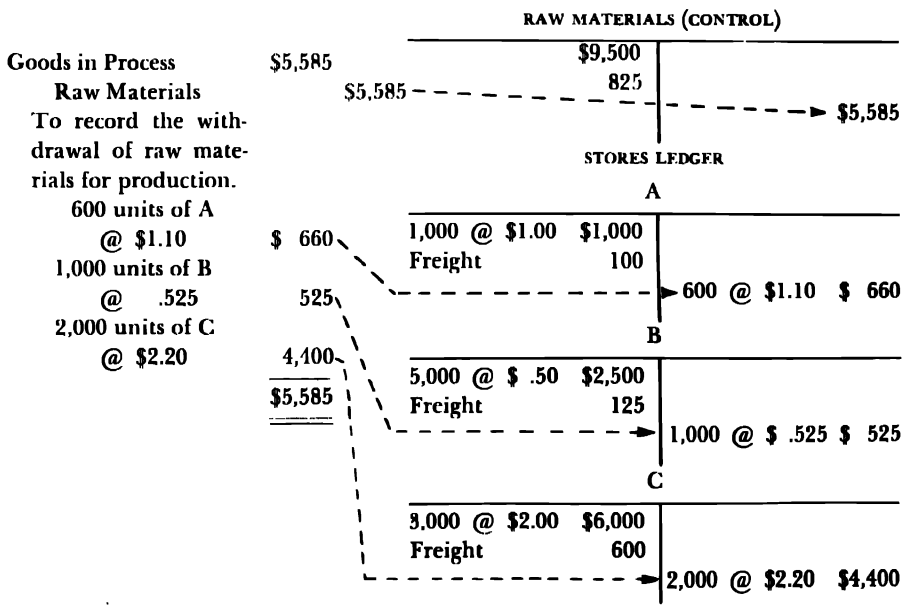


Transportation on the material purchased should be considered a part of the raw materials cost and should be debited to the raw materials control account and to the stores ledger. The freight invoice is the basis for this entry, and allocations of freight costs to different raw materials on the basis of weight may have to be made in some cases.

When raw materials are withdrawn for use, the workman requesting the material prepares a *materials requisition* form. This requisi-



tion lists the raw materials that are being placed into production and indicates the job on which they will be used. The cost transferred out of each stores account is determined by use of these materials requisitions. The total of all the requisitions is the amount of the entry crediting the raw materials control account. The freight cost is included in computing the unit raw materials cost which is credited to each store's account.



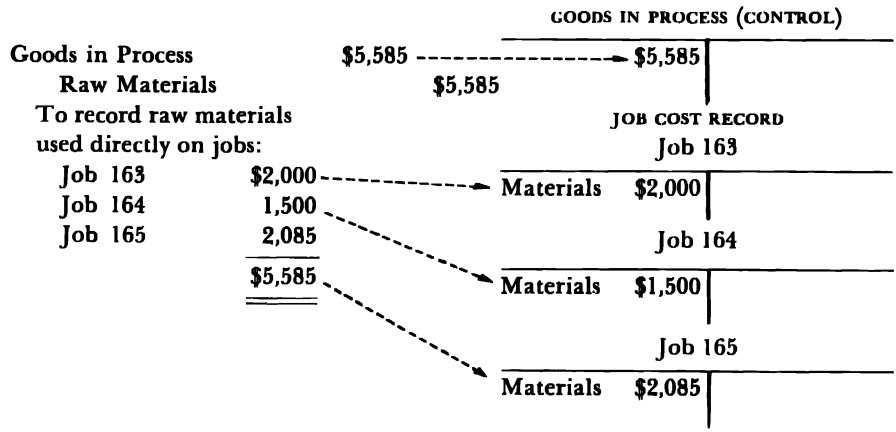
A full raw materials stores record is shown in Exhibit 25–4. The stores records contain columns for materials received, used, and on hand. Information from this card is available on raw material purchases, freight, and withdrawals for use in production. The ending balance is cumulative and gives the purchasing department and production scheduling departments the information needed to keep raw materials in sufficient supply. See page 747.

Accumulating job costs

The job cost records accumulate the material, labor, and manufacturing overhead associated with each job order entering the manufacturing process. These job cost records are the means by which production costs are accumulated for detailed analysis and the cost of completed units is determined.

Materials

All materials withdrawn from the stockroom should be assigned to specific jobs if at all possible. Those materials which can be directly charged to specific jobs are called *direct materials* and are debited to the goods in process control account and to the detailed job records.



The direct materials withdrawn from the stockroom for production must be analyzed not only to determine the amount chargeable to each specific job, but also to determine the appropriate credits to the stores cards. The materials requisition forms accumulate in-

EXHIBIT 25–4

RAW MATERIALS STORES CARD

Material A-135

Location Stockroom, Bin 35

Date	Received			Used			Balance		
	Quantity	Unit Cost	Total	Quantity	Unit Cost	Total	Quantity	Unit Cost	Total
Jan. 4	1,000	$1.00	$1,000				1,000	$1.00	$1,000
6	Freight	.10	100				1,000	$1.10	$1,100
8				600	$1.10	$660	400	$1.10	440

EXHIBIT 25–5

JOB COST RECORD

Article	Electric Clocks, #735-12	Job Number	19349
Amount	200	Date Started	7/9/63
For	Stock	Date Finished	7/15/63

Material		Labor			Total	
Date	Amount	Date	Hours	Amount		
7/9	$ 20.00	7/9	20	$ 29.00	Total material	330.00
7/10	9.00	7/10	10	16.00	Total labor	315.00
7/11	11.00	7/11	80	110.00	Manufacturing overhead (60% of labor cost)	189.00
7/14	240.00	7/14	50	90.00		
7/15	50.00	7/15	35	70.00		
	330.00			315.00	Total cost	834.00
					Unit cost	4.17

formation for this entry, since they contain information on the specific raw materials withdrawn and the exact jobs on which they were used.

All raw materials which cannot be associated directly with a specific job are called *indirect materials*. Since these materials cannot be associated with a specific job, they cannot be posted directly to the job cost records. Nails and glue used in the manufacture of furniture, paint used when materials from many jobs are processed in a paint-spray line, and thread used in garment manufacture are illustrations of raw materials which are difficult to trace directly to specific jobs. Indirect materials are debited to the manufacturing overhead account when withdrawn from the raw materials inventory.

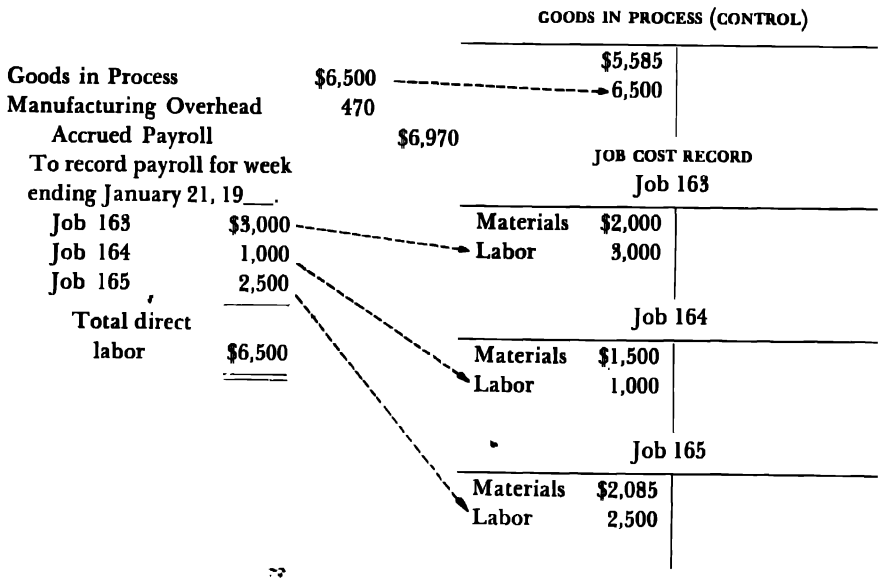
Aug.	13	Manufacturing Overhead	$110	
		Raw Materials		$110
		To record use of raw materials which cannot be charged directly to jobs.		
		Material A—100 units @ $1.10 $110		

Manufacturing overhead costs are then prorated to all jobs worked on during the period. The proration procedure is discussed later in this chapter.

Labor

Labor costs are assigned to different jobs by means of a work record prepared daily for each employee, indicating the number of hours spent on each job or each activity. These daily records are called *employees' time sheets*. When an employee is working directly on a job, the job number is indicated on the time sheet. When he is not working on a specific job, his labor for that time is considered indirect labor, and the time sheet indicates the nature of the work he was doing, such as machinery repair, clean-up, material handling, or idle time. Analysis of the time sheets provides information for assigning direct labor costs to individual jobs; since indirect labor is not directly connected with a specific job, it is debited to manufacturing overhead.

Note that the total payroll in the following illustration is divided into direct labor and indirect labor. The $6,500 of direct labor is debited to specific jobs and to the Goods in Process control, while the $2,000 of indirect labor is debited to the Manufacturing Overhead account.

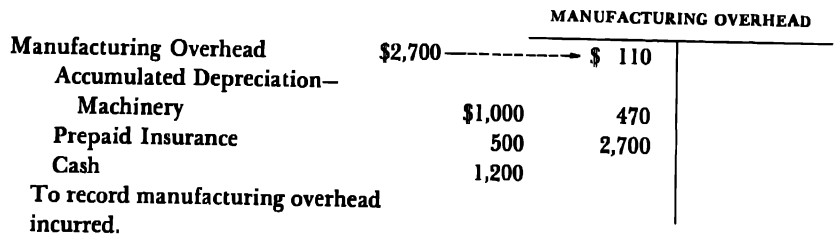


Note that the Goods in Process control account and the individual job cost records now contain both direct materials and direct labor costs; also note that the control and subsidiary ledger are maintained in balance.

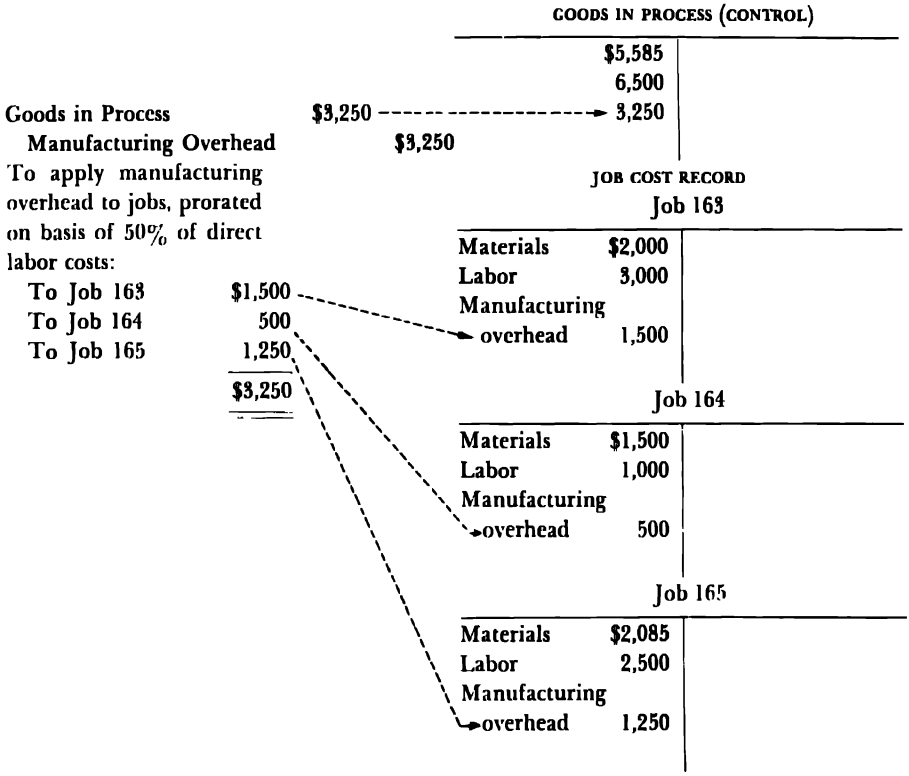
Manufacturing overhead

Manufacturing overhead costs are debited directly to the Manufacturing Overhead account as they are incurred. All factory costs which cannot be assigned directly to a job cost record are debited to this account. Thus the Manufacturing Overhead account contains such costs as depreciation, insurance, taxes, indirect labor, indirect materials, supplies, heat, light and power.

The Manufacturing Overhead account shown in the following illustration contains the indirect labor and indirect materials shown in previous entries, plus the amount in the entry shown below.

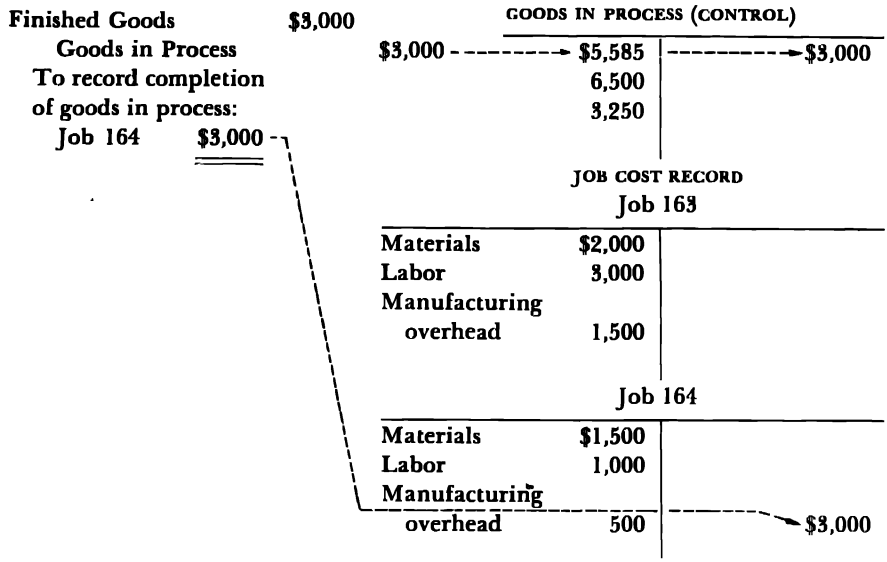


The total of the manufacturing overhead is prorated to all jobs worked on during the period. The amounts of direct labor cost, direct materials cost, machine hours, or direct labor hours spent on each job may be used as the bases for prorating overhead to individual jobs. The manufacturing overhead account is credited when manufacturing expenses are applied to jobs; the following entry illustrates the application to jobs, using an allocation basis equal to 50% of the direct labor cost in each job.



Completion of goods in process

When a job is completed, the number of units finished is entered on the job record, and that job record is removed from the detailed job ledger. An entry is then made transferring the cost of the completed products from Goods in Process to Finished Goods.



Determination of the manufacturing overhead application rate

The rate to be used in applying overhead expenses to individual jobs is usually determined at the beginning of the year. A predetermined rate is used, since some jobs will be completed before the actual total of the year's manufacturing expenses is known, and the cost of these completed jobs should be accumulated as soon as possible.

The predetermined application rate is computed by estimating all the overhead expenses to be incurred during the coming year and dividing this amount by an appropriate proration base. If direct labor cost is used as the proration base, the computation is as follows:

$$\frac{\text{Estimated Total Manufacturing Overhead for 1964}}{\text{Total Estimated Direct Labor Costs for 1964}} = \frac{\$100{,}000}{\$200{,}000} = 50\%$$

Using estimates of costs for the coming year, a predetermined rate of 50% of direct labor cost is established. The rate of 50% of direct labor means that when a job is completed the amount of manufacturing overhead to be applied to that job will be 50% of the direct labor cost posted to the job record. For example, if Job 163, which has a predetermined application rate of 50%, is completed on January 16 with a labor cost of $3,000, the manufacturing overhead applied to that job would be $1,500 (50% of $3,000).

At the end of the accounting period the balance in the manufac-

turing overhead control account represents the difference between actual manufacturing overhead and the amount applied to jobs. This balance is called the *manufacturing overhead over- or under-applied.* If the manufacturing overhead account has a debit balance, the overhead expenses are *under*-applied. If the manufacturing overhead account has a credit balance, the overhead expenses are *over*-applied. The over- or under-applied manufacturing overhead is closed to the Income Summary at the end of each year, since profits or losses cannot be accurately determined without considering the balance in this account. The over- or under-applied manufacturing overhead is classified in an income statement as an addition to the cost of goods sold. However, if the amount of the over- or under-application is abnormally large, it should be prorated between ending inventories and the cost of goods sold.

Job order costs illustrated

Journal entries and posted ledger accounts for the Barron Company are shown to illustrate the complete job order costing system. Assume that the company uses three raw materials, X, Y, and Z, and manufacture two products which are called Model A and Model B. There were no beginning inventories, and a predetermined manufacturing expense application rate of 150% of direct labor had been set. Note that the final entry for the cost of sales could not be made without first determining the cost of producing the units sold. The transactions are shown below numbered (1) through (8). The resulting entries then follow the transactions.

(1) Purchases of raw materials were: X 100 units @ $1 each.
Y 2,000 units @ $.10 each.
Z 500 units @ $.50 each.

(2) Two jobs were placed into production:
Job 609 for 100 units of Model A.
Job 610 for 50 units of Model B.

(3) Raw materials were issued to production as follows:
to Job 609 10 units of X, 1,000 units of Y.
to Job 610 500 units of Y, 200 units of Z.
indirect materials 100 units of Y.

(4) Labor cost (not yet paid) for the period were:

on Job 609	$800
on Job 610	400
indirect labor	100

(5) Additional manufacturing overhead was (all for cash except depreciation):

Depreciation	$1,000
Factory taxes	200
Heat, light and power	300
Factory supplies	100

(6) Manufacturing overhead was applied to jobs, using the predetermined rate of 150% of direct labor.

(7) Job 609 was finished, completing 100 units of Model A.

(8) 20 units of Model A were sold @ $30 each.

SOLUTION

(1)	Raw Materials	$550	
	Accounts Payable		$550
	To record the purchase of raw materials:		
	X $100		
	Y 200		
	Z 250		
	$550		
(2)	No entry until costs are actually incurred.		
(3)	Manufacturing Overhead	$ 10	
	Goods in Process	260	
	Raw Materials		$270
	To record the issuance of raw materials:		

Materials:			
X	$ 10	#609	$110
Y	160	610	150
Z	100	Indirect materials	10
	$270		$270

(4)	Manufacturing Overhead	$ 100	
	Goods in Process	1,200	
	Accrued Payroll		$1,300
	To record payroll for the week:		

Job 609	$ 800
Job 610	400
Indirect labor	100
	$1,300

(5)	Manufacturing Overhead	$1,600	
	Accumulated Depreciation		$1,000
	Cash		600
	To record manufacturing overhead:		
	Depreciation $1,000		
	Taxes 200		
	Heat, light and power 300		
	Factory supplies 100		
	$1,600		
(6)	Goods in Process	$1,800	
	Manufacturing Overhead		$1,800
	To record manufacturing expenses applied to jobs using a rate of 150% of direct labor.		

Job #	Direct Labor	Manufacturing Overhead Applied
609	$800	$1,200
610	400	600
		$1,800

(7)	Finished Goods	$2,110	
	Goods in Process		$2,110
	To record completion of Job 609: Total job cost $2,110; completed 100 units; unit cost $21.10.		
(8)	Accounts Receivable	$ 600	
	Sales		$ 600
	To record sale of 20 units of Model A @ $30 per unit.		
(9)	Cost of Goods Sold	$ 422	
	Finished Goods		$ 422
	To record cost of sales of 20 units of A @ $21.10 per unit.		

The general ledger controls and the subsidiary ledger accounts would appear as shown on page 756 after the entries are posted.

Note that a subsidiary ledger for Manufacturing Overhead is shown in the illustrative ledgers. A detail of each overhead cost is necessary for analysis and interpretation of cost data. The application of overhead, which credits the Manufacturing Overhead account, destroys the balance between the control and the subsidiary, but does not destroy the effectiveness of the subsidiary as a means of accumulating useful data.

Raw Materials (Control)

$550	$270

STORES LEDGER

Material X

100	10

Material Y

200	160

Material Z

250	100

Manufacturing Overhead (Control)

$ 10	$1,800
100	
1,600	

MANUFACTURING EXPENSE SUBSIDIARY LEDGER

Indirect Materials

10

Indirect Labor

100

Depreciation

1,000

Factory Taxes

200

Heat, Light & Power

300

Factory Supplies

100

Goods in Process (Control)

$ 260	$2,110
1,200	
1,800	

JOB COST RECORDS

Job 609

100	2,110
800	
1,200	

Job 610

150
400
600

Finished Goods (Control)

$2,110	$422

FINISHED GOODS LEDGER

Model A

2,110	422

Model B

Determining unit costs in continuous process industries

Job cost records are necessary in those companies that manufacture a relatively large number of different products, using different materials and methods to complete each product. The use of job order cost techniques is not applicable to those industries that manufacture uniform products in a constant manufacturing process. Many industries, such as cement manufacturing, flour milling, and brick making, utilize a constant process and manufacture a relatively small number of products. These companies do not need as much detail as that provided by job cost records.

In continuous process industries, unit costs are accumulated through a separation of costs by manufacturing departments or processes, instead of by jobs. The total costs incurred by a department or process for a period of time, usually a month, are divided by the number of units produced during the month to determine unit costs. Suppose a company manufacturing only loaves of bread has set up three separate processes for cost accumulation—mixing, baking, and packaging. The company's materials, costs, labor, and manufacturing overhead are accumulated by departments (or processes) as follows:

Aug.	21	Mixing Department	$5,000	
		Baking Department	1,000	
		Packaging Department	3,000	
		Raw Materials		$9,000
		To record raw materials consumption by departments.		
Aug.	24	Mixing Department	$7,000	
		Baking Department	9,000	
		Packaging Department	3,000	
		Accrued Payroll		$19,000
		To record direct labor costs by departments in which the labor was incurred.		
Aug.	27	Mixing Department	$3,500	
		Baking Department	4,500	
		Packaging Department	1,500	
		Manufacturing Expenses		$9,500
		To apply manufacturing overhead to departments on a basis of 50% of direct labor cost.		

Note that the departmental or process accounts used in continuous process industries are general ledger accounts, and no subsidiary goods in process records are maintained. The process accounts in the illustration shown above appear as follows in the general ledger after the entries for material, labor, and manufacturing expenses are posted:

Mixing Department			Baking Department		
Material	5,000		Material	1,000	
Labor	7,000		Labor	9,000	
Mfg. overhead	3,500		Mfg. overhead	4,500	

Packaging Department		
Material	3,000	
Labor	3,000	
Mfg. overhead	1,500	

If production for the month is 200,000 loaves, the manufacturing costs of the company's product are reported to management as shown in Exhibit 25–6.

EXHIBIT 25–6

BAILEY BREAD COMPANY
Departmental Production Cost Report
Month of July, 1964

	Total costs (200,000 loaves)	Per unit cost
Mixing department costs:		
Materials	$ 5,000	$ .025
Labor	7,000	.035
Manufacturing overhead	3,500	.017
	$15,500	$ .077
Baking department costs:		
Materials	$ 1,000	$ .005
Labor	9,000	.045
Manufacturing overhead	4,500	.022
	$14,500	$ .072
Packaging department costs:		
Materials	$ 3,000	$ .015
Labor	3,000	.015
Manufacturing overhead	1,500	.008
	$ 7,500	$ .038
Total per unit cost	$37,500	$ .187

Analysis of unit costs

As discussed previously, unit costs should be computed and reported to management in considerable detail. This is especially true of direct materials and direct labor. Each separate raw material going into a job or process and each labor operation should be analyzed on a "cost per unit" basis, for the efficiency of labor and the efficiency of materials usage can be measured most accurately by unit cost comparisons.

Suppose, for example, that the management of the Surville Manufacturing Company has carefully studied the costs of manufacturing its men's white shirts, size 14–32, and has established the following standard for that product:

Standard Cost of White Shirt, Size 14–32

Material:	2 yards of cloth @ 30¢	$ .60
	10 buttons @ $.001	.01
Labor:	Cutting ⅕ hour @ $2 per hour	.40
	Sewing ¼ hour @ $2 per hour	.50
	Packing 1/10 hour @ 2 per hour	.20
Manufacturing overhead, 50% of labor costs		.55
		$2.26

Suppose further that Job 347–B, shown in Exhibit 25–7, has just been completed.

Comparison of actual costs on Job 347–B with expected costs reveals those areas of operations which need attention and those which have exceeded expectations.

		Unit Costs, 1,000 shirts, size 14-32		Differences	
		Actual	Expected	Favorable	Unfavorable
Direct material:	Cloth	$ .71	$ .60		.110
	Buttons	.008	.01	.002	
Direct labor:	Cutting	.40	.40		
	Sewing	.49	.50	.010	
	Packing	.32	.20		.120
		$1.928	$1.71	.012	.230

EXHIBIT 25–7

SURVILLE MANUFACTURING CO.

JOB $347-B

ITEM 1,000 shirts, size 14-32

Direct Labor		Direct Material		Total	
Cutting	$ 400	Cloth	$710	Direct labor	$1,210
Sewing	490	Buttons	8	Direct material	718
Packing	320			Manufacturing overhead @ 50% of labor	605
Totals	$1,210		$718		$2,533

The cost analysis indicates that attention should be directed toward reducing the cost of cloth. Either the material is being used inefficiently, or too much is being paid for the bolts of cloth used to make shirts. Similarly, packing labor costs need to be investigated, for packing labor per unit is considerably higher than management thought it should be.

Unit costs are valuable in managerial planning and decision-making. For example, suppose an exclusive men's shop approaches the Surville Manufacturing Company with an offer to buy 1,000 shirts, size 14–32, made exactly like those in Job 347–B, except that a more expensive cloth be used. This cloth will cost $.90 per yard. How much will the manufacturing costs be for the shirts using the more expensive materials? What selling price should the Surville Company place on these shirts?

The answer to these questions can be found by working with the unit costs to manufacture.

Material (2 yards @ $.90)	$1.80
Buttons	.01
Labor	1.10
Manufacturing overhead (50% of labor)	.55
	$3.46

The selling price must be set high enough to cover the cost of $3.46, plus a profit margin. Without unit costs for each step in the manufacturing process, management could not accurately determine the expected cost of the proposed new product. The cost of each type of materials and each labor operation performed is available from material requisition forms and workmen's time sheets.

The preceding illustrations concerning the use of unit costs have dealt only with direct materials and direct labor. The analysis and control of manufacturing overhead must be undertaken through an analysis of their fixed and variable natures and through careful budgeting of their costs.

Questions

25-1. Why are unit costs to manufacture individual products accumulated?

25-2. Is total unit cost sufficient to spot undesirable or inefficient operations? Why or why not?

25-3. What unit would you consider the best measurement device for each of the following:

Cement
Nails
Cookies
Paint
Paper clips
Typewriters
Automobiles
Wire for telephone lines

25-4. Name the perpetual inventory accounts used in a job order accounting system. Why are perpetual inventory accounts of value to management?

25-5. Name the control accounts and the subsidiary ledgers used in cost accounting in a job lot system. Why are the subsidiary accounts necessary?

25-6. Describe the procedures by which detailed raw material costs are gathered; describe the process by which labor costs are gathered.

25-7. Why is a detail ledger maintained for manufacturing overhead? How detailed should the ledger be?

25-8. Why is a proration method used to apply manufacturing overhead to jobs or processes?

25-9. How is an application rate for manufacturing overhead set? Name several bases for prorating manufacturing overhead to jobs.

25-10. What is the source of unit costs for the finished goods inventory records?

25-11. Would you recommend a job lot or a continuous process costing system for the following industries:

Print shop
Cement manufacturing
Toy manufacturing
Flour milling
Gasoline refining
Furniture manufacturing
Radio manufacturing

25-12. How do the computations of unit costs in job order and process cost accounting differ?

25-13. Why are unit costs for each separate labor operation and material needed for management analysis and planning?

Exercises

25-14. The Jason company uses a job-order costing system with perpetual inventories. The following transactions were completed during 1964:

(1) Purchased raw materials costing $7,000 for cash.
(2) Issued $6,000 of the raw materials to production. Of this amount, $500 was indirect materials.
(3) Labor costs for the period were $15,000, of which $1,000 was indirect labor.
(4) Paid $7,200 of manufacturing overhead costs.
(5) Manufacturing overhead was applied to production using a rate of 60% of direct labor costs.
(6) Jobs with a total cost of $23,000 were completed.
(7) Finished goods costing $15,500 were sold for $24,000 cash.

REQUIRED

Journalize the transactions.

25-15. The time sheets of the Kronin Company showed the following regarding Robert Kraft, employee No. 373, for the week ending July

30, 1963. Kraft's pay rate is $2.00 per hour, and he receives one hour for lunch from 12:00 to 1:00 pm.

Date	Began	Ended	Work Done
July 26	8 am	5 pm	Job 742
27	8 am	10 am	Job 742
	10 am	3 pm	Machinery repairs
	3 pm	5 pm	Job 780
28	8 am	12 am	Job 750
	12 am	5 pm	Clean up
29	8 am	5 pm	Job 742
30	8 am	2 pm	Job 780
	2 pm	5 pm	Idle time (no work)

REQUIRED

Prepare the general journal entry to record the labor cost and the accrued payroll due Kraft, indicating in the explanation to the entry the costs which would be charged to specific jobs and to the manufacturing overhead detail ledger.

25-16. The Wilson Company lists its raw materials requisitions and prepares a journal entry each week from this list.

Materials Requisition Number	Raw Materials	Withdrawn	Job on which materials are used	
			Job Number	Amount
3756	X	$300	427	$100
			431	200
3757	Y	100	427	55
			440	45
3758	Z	50	440	50
3759	X	100	431	180
	Y	200	441	120
3760	Z	120	431	120

REQUIRED

Prepare the journal entry, indicating the detail raw materials ledger postings and the job order postings in the explanation to the entry.

25-17. The Johnson Company uses a continuous process costing system. Its costs for the week were:

	Department 1	Department 2	Department 3
Labor	$15,450	$38,500	$4,000
Materials	10,300	19,000	1,500
Manufacturing overhead	5,150	9,600	2,000

REQUIRED

1. Prepare a Departmental Production Cost Report for the company's three departments for the week.
2. Show total costs and unit costs in the report for each department. A total of 5,000 units was completed during the week.

25-18. In December, 1963, the cost accountants of the Zebra Paint Company established the following base for allocating manufacturing overhead to all jobs worked on in 1964.

$$\frac{\text{Estimated manufacturing overhead} = \$100{,}000}{\text{Estimated direct labor} = \$133{,}000} = 75\%$$

During 1964 the direct labor cost was $150,000, and the actual manufacturing overhead was:

Cash expenses:	
Factory supplies	$ 7,000
Rent	36,000
Heat, light & power	12,000
Indirect labor	9,000
Indirect materials	15,000
Non-cash expenses:	
Depreciation on machinery	25,000
Factory insurance	3,000

REQUIRED

1. Record the actual manufacturing overhead in general journal form and the application of manufacturing overhead to goods in process.
2. What is the manufacturing overhead over- or under-applied? (Indicate which.)
3. Describe some of the factors that could have caused the over- or under-application of manufacturing overhead during the period.

25-19. The management of the Yamast Manufacturing Company is unsure of the effects of using different bases of applying manufacturing overhead to its jobs. The total manufacturing overhead for the next year is estimated to be $150,000. Other estimates for the coming year are:

Direct labor	$300,000
Direct materials	400,000
Machine hours	600,000
Direct labor hours	200,000
Number of units to be produced	50,000

REQUIRED

1. Compute an application rate using five different bases of allocating manufacturing overhead.
2. Job 34-A2, which is shown below, was completed on January 17. Compute the manufacturing overhead which would be applied to this job using each of the different rates computed in Part 1.

Job 34-A2

Number of units 500

Machine Hours	Direct Labor		Direct Materials	Manufacturing Expenses
	Hours	Amount		
2,000	700	$1,200	$3,000	
4,000	400	900	1,500	
1,500	800	1,400	400	

25-20. The data from the Job Card for Job A-341 and Job A-752 are shown below:

Job No. A-341

Product Oval Duplicators, Model A — Date started March 7, 1964

Number 50 — Date completed March 19, 1964

Labor		Materials		Total	
Date	Amount	Requisition No.	Amount		
				Total labor	370.00
3/7	105	8457	90	Total materials	290.00
3/9	20	8632	125	Manufacturing	
3/12	210	8901	75	overhead	277.50
3/19	35			Total	937.50

Job No. A-752

Product Oval Duplicators, Model A — Date started April 5, 1964

Number 100 — Date completed April 18, 1964

Labor		Materials		Total	
Date	Amount	Requisition No.	Amount		
4/5	200	9801	105	Total labor	720.00
4/11	190	9910	320	Total materials	585.00
4/18	330	9982	160	Manufacturing overhead	540.00
				Total	1,845.00

REQUIRED

1. What is the manufacturing overhead application rate if direct labor is used as the base?
2. Compute the unit cost of labor, materials, and manufacturing overhead for Oval Duplicators, Model A, on each of the two jobs.
3. Why is the per unit manufacturing overhead lower on Job A-752 when the same application rate is used?

25-21. The Waco Company uses a job order cost system. The Goods in Process account appeared as follows:

Goods in Process

Beginning balance	–0–	To finished goods	$19,000
Labor	$ 6,000		
Manufacturing overhead	12,000		
Materials	7,500		

REQUIRED

1. What is the rate used to apply manufacturing overhead to goods in process, if direct labor is used as the base?
2. If one job is in process at the end of the month with $2,000 material costs, what are the direct labor and the manufacturing overhead costs in this job?

Problems

25-22. The Franklin Company manufactures metal lawn furniture. There were no beginning inventories. On January 6, 1964, Jobs No. 6431, 6432, 6433, and 6434 were started. Materials requisitions during the month were as follows:

For Job 6431	$3,000
6432	1,000
6433	1,500
6434	2,100
Indirect materials	700
Total materials	$8,300

The payroll for the month was as follows:

For Job 6431	$1,200
6432	1,400
6433	1,700
6434	1,100
Superintendence	600
Machinery repairs	200
Total payroll	$6,200

The company applies manufacturing overhead to jobs on a predetermined application rate of 150% of direct labor cost. Additional manufacturing overhead during the month was:

Depreciation on machinery	$3,100
Factory supplies bought and consumed	200
Prepaid factory taxes expired	150

Jobs 6431 and 6433 were completed on January 31.

REQUIRED

1. Prepare general journal entries for the above transactions.
2. Prepare a job card for Job 6431, which was for 100 units of lawn chairs, type B, white, and place the appropriate cost data given in the problem on the card.

25-23. The Greyson Company completed the following transactions during April, 1964. The company uses a job order accounting system, and there were no beginning inventories.

Purchased on account 1,000 units of raw material AA at $1.10 per unit, and 500 units of BB at $2.00 per unit.

Issued 800 units of AA to production and 400 units of BB, as follows:

Job 61 used 200 of the units of AA and 100 of the units of BB.
Job 62 used 300 of the units of AA and no units of BB.
Job 63 used 200 of the units of AA and 300 units of BB.
100 of the units of AA were used for general factory purposes.

Labor for the month was:

Job 61	$ 800
Job 62	200
Job 63	1,000
Superintendence	500

Manufacturing overhead is applied using a rate of 80% of direct labor.

Actual manufacturing overhead was:

Factory building depreciation	$800
Factory supplies bought and consumed	100
Heat, light and power expenses	200
Insurance expired	50

Job 61 was completed and produced 100 units of Model X.

Job 62 was completed and produced 50 units of Model Z.

40 units of Model X were sold for cash at $25.00 each, and 20 units of Model Z were sold for cash at $18.00 each.

REQUIRED

1. Set up T-accounts for Raw Materials, Goods in Process, Finished Goods, and Manufacturing overhead with T-accounts for subsidiary ledgers for each of these four control accounts.
2. Journalize and post the transactions to the control and subsidiary accounts.

25-24. The Pratt Paper Company manufactures paper from pine logs and uses a continuous process accounting system. Its operations are divided into three departments:

Department A strips the bark off the logs and chips it into small pieces.
Department B mixes the chips with chemicals in a vat.
Department C presses the chemically dissolved pulp into paper.

The process does not change, and the company's operations move at a constant speed so that beginning and ending inventories are always in the same amount and at the same stages of completion. For this reason, the inventories of goods in process are not considered in determining production for each period.

Purchased for cash three car load lots of logs for $2,700 and one tank car of chemicals for $1,000.

Placed two car loads of logs and one-half of the chemicals into process.

Labor for the week was:

Department A	$1,500
B	700
C	900
Superintendence	800

Manufacturing overhead (paid in cash except for depreciation) was:

Depreciation	$400
Machinery repairs	100
Power	100
Supplies	50
Taxes	100

The company applies manufacturing overhead to departments on the basis of 50% of direct labor costs.

During the week 200 tons of paper were produced.

REQUIRED

1. Journalize the following transactions.
2. Set up T-accounts for the three departments and post the journal entries.
3. Prepare a departmental production cost report showing total production costs and unit costs for each element in each department for the week ending August 13, 1964.

25-25. The Borranti Company uses a job order costing system and completed the following transactions during February, 1963. There were no beginning inventories.

Purchased for cash 600 units of material Y for $2 per unit and 1,000 units of material Z for $1 per unit.

Issued the material as follows:

to Job A-36: 100 units of Y and 50 units of Z
to Job A-37: 300 units of Y and 400 units of Z
to Job A-38: 150 units of Y and 50 units of Z
for general factory use: 200 units of Z

Recorded the following labor costs:

Job A-36	$2,000
A-37	1,100
A-38	600
Indirect labor	300

Applied manufacturing overhead to jobs based on a rate of 60% of labor costs.

Recorded the following manufacturing overhead costs:

Depreciation	$600
Supplies bought and consumed	350
Prepaid taxes which expired	100
Prepaid insurance which expired	200
Machinery repairs not yet paid	500

Jobs A-36 and A-38 were completed. Job A-36 completed 100 units of product Alpha and Job A-38 completed 200 units of product Beta.

Sold 60 units of Alpha for cash at $50 per unit and 120 units of Beta for cash at $10 per unit.

REQUIRED

1. Set up general ledger T-accounts for Manufacturing Overhead, Raw Materials, Goods in Process, and Finished Goods. Also set up subsidiary ledger T-accounts for the manufacturing overhead ledger, the stores ledger, the job cost records, and the finished goods ledger.
2. Journalize the transactions and post to both the control accounts and the subsidiary ledgers.

25-26. The Brane Baking Company manufactures pies in a continuous production process. Two departments are used—the mixing department and the baking department. There were no beginning or ending inventories. The ledger accounts for these two departments are shown below for the month of June, 1964:

Mixing Department

Materials	$9,000	
Labor	7,200	
Manufacturing overhead (50% of direct labor)	3,600	

Baking Department

Materials	$1,290	
Labor	5,160	
Manufacturing overhead (50% of direct labor)	2,580	

The mixing department started 50,000 pounds of mix during the month, but spoiled 5,000 pounds of the mix, and only 45,000 good

pounds were produced. The company's accountants have developed cost estimates for each pie, and these estimates have proved accurate in the past. They are:

	Cost per unit
Mixing:	
Materials	$0.181
Labor	.158
Manufacturing overhead	.079
	$0.418
Baking:	
Materials	$0.030
Labor	.100
Manufacturing overhead	.050
	$0.180
Total	$0.598

During the month the master baker was discharged and a new baker was employed. His inefficiency due to being unfamiliar with the company's process caused labor costs to be higher than usual.

REQUIRED

1. Reproduce the journal entries for the materials, labor, and manufacturing overhead costs incurred during the period.
2. Prepare a departmental production cost report showing total costs and the costs per unit for each department.
3. Write a short explanation at the bottom of the report explaining why costs are greater than the expected costs for any significant differences.

25-27. The Robinson-Snell Company manufactures automobile air conditioners, as well as other appliances. Most of its parts are bought from other manufacturers. A job order accounting system is used. Its costs for each unit of the air conditioner, Model 435-2, have been:

Materials:	
2-speed switch	$ 4.10
Condenser	122.00
Case	15.00
Fan	21.00
Miscellaneous other parts	12.00

Labor:	
Assembly	$ 20.00
Packing	5.00
Manufacturing overhead:	
75% of labor	

A major automobile producer requested bids from the Robinson-Snell Company for a large number of air conditioners similar to Model 435-2. The specifications which the automobile manufacturer set for the new air conditioner require a 3-speed switch which will cost $7.20, a larger condenser, which costs 10% more than the one used on Model 435-2. The cost to assemble and pack the new unit will be 20% more than the old unit. The Robinson-Snell Company will have to construct special equipment costing $2,000, which will be of no further use after the automobile manufacturer's order is complete. Assume the other manufacturing expenses are completely variable. The Robinson-Snell Company must earn a gross profit equal to 40% of cost. What price should the Robinson-Snell Company bid if the order is for:

(a) 100 units
(b) 500 units
(c) 2,000 units

REQUIRED

Prepare a schedule of costs and indicate what the selling price should be for each of the possible order sizes.

Cases

25-28. The Brandon and McFarland Company manufactures a variety of products, including a new unit called a "Spool-Holder." This unit is made of plastic and is sold to retail stores for $.27 each. The company has determined that the cost of manufacturing the unit is $.23 as follows:

Materials	$.07
Labor	.08
Overhead (applied on basis of 100% of labor cost)	.08
	$.23

The sales manager wants the unit discontinued, claiming that the gross profit of only $.04 per unit is not sufficient to cover selling costs, which are approximately $.05 per unit. He feels that competition prevents an increase in selling price of the unit.

The plant manager argues that if the unit is not manufactured, his costs, other than material and labor, will not change. As a result the overhead application rate will have to be increased to 110% of labor for all the company's other products. He further stated that if a direct materials base were used to prorate overhead, the spool-holder cost would be reduced by $.03 per unit, since the spool-holder has a low material cost.

Would you recommend discontinuance of the product or changing the overhead application method? What other information would you want before making a decision?

25-29. The Storey-Blatz Company manufactures and sells a line of lawn mowers. The company constructed a large plant several years ago and has never produced more than 6,000 units, which is 60% of capacity. At the beginning of 1963 the company set the rate at which it would apply manufacturing overhead to jobs as follows:

$$\frac{\text{Estimated total manufacturing overhead at 60\% capacity}}{\text{Estimated total direct labor hours at 60\% capacity}} = \frac{\$90{,}000}{45{,}000} = 200\%$$

Based upon this application rate the cost estimate for manufacturing product 123-L was:

Materials	$ 20
Labor	30
Manufacturing overhead (200% of direct labor)	60
Total	$110

The company set its selling price on this mower at $150, since its selling expenses are $32 per unit. The company received an offer from a large chain store for 3,000 of the 123-L units at a proposed price of $90 each.

The sales manager did not want to accept the offer, maintaining the price of $90 would cause a loss on each unit sold. "Why sell a product if you lose money on every one of them?" was his contention. The production manager wanted to sell the units because it would keep his plant busy.

The president requested a study of the company's cost structure to help him decide. He found the factory fixed costs to be $30,000

and the variable portion $10 for each unit manufactured, and the fixed selling expenses to be $100,000 and the variable portion $15 per unit sold.

Would the sales price offered by the chain store of $90 be profitable for the Storey-Blatz Company? What other factors would enter into the decision?

26

Standard costs for measuring performance

Standard costs are predetermined costs. They are usually set at the beginning of each year and used during the year to measure and evaluate actual operating costs. A standard is established for each labor operation and for all materials used in the company's manufacturing process, representing the cost which *should be incurred* in future operations. Careful study and analysis, utilizing past cost experience and a projection of future events, is necessary to establish realistic standard costs. Predetermined costs are used primarily for manufacturing operations, because factory processes tend to be repetitive; however, they are occasionally utilized in non-manufacturing operations.

Nature of standard costs

Standard costs for raw materials are based upon a systematic determination of the exact size, quantity, and quality of the materials comprising the product, plus any related freight costs. Labor standards are set by detailed time and motion studies involving the workmen and their machines. Every detail of physical motion and mechanical operation is carefully timed to accumulate the labor hours necessary to produce each item that the company manufactures.

Standard labor hours are then multiplied by the predetermined wage rate applicable to each type of operation to arrive at the standard labor cost. Some operations require skilled labor, others semiskilled, and some unskilled; the different wage rates applicable to each class of labor must be used to determine standard costs.

The standard manufacturing overhead applicable to each product is more difficult to determine and less accurate than standard labor

and raw materials costs, because there is no direct relationship between overhead and specific units of product. The standard overhead cost for the entire manufacturing plant must first be estimated and this total prorated to all the units which the company expects to produce. The standard manufacturing overhead cost per unit of product is thus the total standard overhead divided by the standard number of units to be produced. The standard cost of a relatively simple product may be illustrated as follows:

Standard Cost Per Unit of Product L-134-C

Labor:	Two hours at $2.00 per hour	$ 4.00
Materials:	One gallon of material X-73, at $1.50 per gallon	1.50
	Two pounds of material Y-41, at $3.00 per pound	6.00
Manufacturing Overhead		5.00
Total		$16.50

Variations from standard

Any variation or difference between actual and standard cost is recorded and reported to management. Standards must be sufficiently detailed to permit the computation of variations by areas of responsibility. If one supervisor incurs costs in excess of the standards, the resulting variation must indicate the operating area involved. Thus the responsibility for favorable or unfavorable variations can be tied to the performance of specific individuals. By watching these variations, management can quickly detect those areas which are not meeting standard and thus need attention.

Five basic variation accounts are used to accumulate data for measuring individual performance. They are:

Materials price variation account—accumulates differences between standard prices and actual prices paid for raw materials.

Materials efficiency variations account—accumulates differences between the standard amount of raw materials needed and the amount actually used.

Labor price variation account—accumulates differences between the standard labor rates and the labor rates actually paid to workers.

Labor efficiency variation account—accumulates differences between the standard production expected of employees and their actual production.

Manufacturing overhead variation account—accumulates differences between the manufacturing overhead actually incurred and the standard amount applied to production.

These five variations are the basis of the standard cost system. They may be computed separately for each department or process, and many companies using a job order cost system compute the labor and materials variations for each individual job. Reports on these cost variations are prepared at frequent intervals and in considerable detail.

Materials standards

The standard cost of each product contains separate standards for each type of raw material used in that product. Raw materials standards include both a standard quantity and a standard price. Engineers assist in the establishment of the type of material and the quantity that should be used, taking into account a normal amount of material spoilage. Freight is also included in the raw materials standard costs, so that excessive freight costs will appear as unfavorable variances. Purchasing department personnel, assisted by the company's engineers and cost accountants, establish the standard materials costs. The raw materials standard costs of Product 143-A are illustrated in Exhibit 26–1. The labor and overhead standards for this same product are illustrated later.

EXHIBIT 26–1

Direct Materials Standards

Product 143-A

		Total standard cost
1 sheet .008 gauge cold roll steel, 24″ x 32″	$1.40 each	$1.40
3 bolts, hexagon head, 3″ x 1/8″	.04 each	.12
3 nuts, hexagon, 1/8″ I.D.	.01 each	.03
4 ft. copper wire, 1/32″ O.D.	.04 per foot	.16
Total standard materials for each unit of product 143-A		$1.71

Materials price variance

When raw materials are purchased, any difference between the actual cost and the predetermined standard cost is recorded immediately as a *materials price variance*. Establishing variances quickly

and reporting them to appropriate executives is one of the primary reasons for the use of a standard cost system. If the prices paid for raw materials are above the predetermined standards, management should be apprised of this fact as quickly as possible, for the purchasing department may not be searching diligently enough for the lowest prices or buying in sufficient quantities to get the lowest prices. On the other hand, there may have been a general upward trend in raw materials prices, so that it may be necessary to change to a less expensive material or raise the sales price of the product to cover the increased cost of production.

An accounting entry recording the materials price variance is made when the purchase is recorded. If 1,000 sheets of steel with a standard cost of $1.40 are bought at a cost of $1.50 each, the entry is as follows:

May	20	Raw Materials Inventory	$1,400	
		Materials Price Variance	100	
		Accounts Payable		$1,500
		To record the purchase of 1,000 sheets of .008 gauge cold roll steel, 24″ x 32″, and the resulting unfavorable materials price variance.		

Note that raw materials are entered in the inventory account at standard cost. Materials Price Variance is a separate ledger account, which accumulates all the materials price variances, both favorable and unfavorable. A debit balance in the Materials Price Variance account represents an additional manufacturing cost, over and above the standard, while a credit balance represents a saving. Had the steel in the above illustration been purchased for $1.35 per sheet, the entry would be:

May	23	Raw Materials Inventory	$1,400	
		Materials Price Variance		$ 50
		Accounts Payable		1,350
		To record the purchase of 1,000 sheets of .008 gauge cold roll steel, 24″ x 32″, and the resulting favorable materials price variance.		

Materials efficiency variance

When raw materials are withdrawn from the stockroom, the actual quantity used in the manufacture of a product is matched with

the standard quantity required, and any differences are set out in the *Materials Efficiency Variance*. A job calling for the manufacture of 100 units of Product 143-A, for which the raw materials standards have been illustrated previously, should thus require only 100 sheets of .008 gauge steel. The use of 103 sheets would represent inefficiency or defective materials. The entry to record the use of 103 sheets at a standard cost of $1.40 each, when 100 should have been used, is:

May	25	Goods in Process	$140.00	
		Materials Efficiency Variance	4.20	
		Raw Materials Inventory		$144.20
		To record the use of 103 sheets of .008 gauge steel and the resulting unfavorable materials efficiency variance.		

Note that all units used are credited to the Raw Materials account at standard cost, but only the standard quantity is debited to Goods in Process.

Had only 97 sheets been used, the Materials Efficiency Variance account would be credited for the savings. The entry for the manufacture of 100 units of the product, using only 97 sheets of steel, would be:

May	25	Goods in Process	$140.00	
		Materials Efficiency Variance ...		$ 4.20
		Raw Materials Inventory		135.80
		To record the use of 97 sheets of .008 gauge steel and the resulting favorable materials price variance.		

Separation of the materials price variance and the materials efficiency variance is important, since different employees are responsible for each. The workmen who use a material usually have no responsibility for its purchase price, while the person who buys the material frequently is not responsible for its use.

Labor standards

Standard costs are established for each labor operation and include the standard time required for that operation and the standard wage rate which should be paid for that type of work. Labor standard costs for Product 143-A are illustrated in Exhibit 26–2.

EXHIBIT 26–2

Direct Labor Standards

Product 143-A

Operation	Time	Hourly wage rate	Standard cost
Shear one 24" x 32" sheet steel into strips	10 min.	$3.00	$ .50
Punch holes in strips	15 min.	2.00	.50
Bend strips	5 min.	3.00	.25
Insert bolts and tighten nuts	5 min.	3.00	.25
Attach wire	15 min.	2.00	.50
Total standard time and cost	50 min.		$2.00

Each employee's daily time sheet indicates the operation performed, the time expended on the operation, and how many units were completed. From these time sheets the actual and the standard costs of each operation are computed.

Labor price variance

Variances resulting from differences between actual wage rates and standard wage rates are recorded in a *Labor Price Variance* account. A wage increase granted an employee or a blanket raise for the entire labor force may result in an unfavorable labor price variance. If an employee earning $3.10 per hour works for eight hours at a task which is normally performed by an employee earning $3.00 per hour, a loss has resulted; this loss is recorded as an unfavorable labor price variance, as follows:

May	27	Goods in Process	$24.00	
		Labor Price Variance	.80	
		Wages Payable		$24.80
		To record 8 hours work at $3.10 per hour on operations with a standard rate of $3.00 per hour.		

Note that Goods in Process is debited for the standard wage cost, and Wages Payable is credited for the amount owed the employee. The difference is recorded in the Labor Price Variance account.

Labor efficiency variance

A difference between the standard time for performing an operation and the time actually consumed produces a *labor efficiency variance*. To illustrate the computation of labor efficiency, assume that a standard of 48 sheets of steel is figured for an 8-hour day. If a workman shears only 45 during the day, the failure to meet standard production results in an unfavorable labor efficiency variance. The three units of lost production, multiplied by the unit standard labor cost of $0.50, is the amount recorded in the Labor Efficiency Variance account. Thus, if the workman's pay rate is $3.00 per hour and the standard cost of each unit sheared is $0.50, the entry for the day's wages is:

May	27	Goods in Process	$22.50	
		Labor Efficiency Variance	1.50	
		Wages Payable		$24.00
		To record the production of 45 pieces with a standard labor cost of $0.50 each at an actual wage cost of $24.00.		

Note that Goods in Process is debited for the standard cost of the worker's production, and Wages Payable is credited for the full amount of the wages payable. The Labor Efficiency Variance account is debited for the $1.50 difference, which represents the $0.50 per unit standard cost of the 3 units of lost production.

Suppose that the same workman shears 50 units the next day. The Labor Efficiency Variance Account would then be credited for the $0.50 standard cost of the two units of extra production, as follows:

May	30	Goods in Process	$25.00	
		Wages Payable		$24.00
		Labor Efficiency Variance		1.00
		To record the production of 50 pieces with a standard labor cost of $0.50 each at an actual wage cost of $24.00.		

Frequently the labor price variance and the labor efficiency variance are computed simultaneously. To illustrate, assume that a workman receiving $3.10 per hour shears 50 sheets of steel in 8 hours. The efficiency standard for this operation is 48 sheets per 8-hour day, and the standard wage is $3.00 per hour. The Labor Price Variance is debited for $.80 (eight hours at $.10 above standard),

and the Labor Efficiency Variance is credited for $1.00 (standard efficiency for an 8-hour day is 48 pieces, but 50 were actually completed). The two pieces above standard, multiplied by the $0.50 standard labor cost per piece, equal a $1.00 favorable labor efficiency variance. The entry is:

May	30	Goods in Process (50 pieces @ 50¢ standard labor each)	$25.00	
		Labor Price Variance (8 hours @ 10¢ above standard)	.80	
		Labor Efficiency Variance (2 extra pieces at 50¢ each)		$ 1.00
		Accrued Payroll (8 hours @ $3.10)		24.80
		To record 8 hours work @ $3.10 per hour which completed the shearing operation on 50 sheets of steel.		

When the two labor variances are computed at the same time, the labor price variance is computed first. The labor efficiency variance, which is the difference between a workman's standard production and his actual production, is then computed using standard wage rates.

Separation of labor price and labor efficiency variances is necessary for measurement of different areas of responsibility. The workman is responsible for his own production or efficiency, but he has little control over his wage rate. The person responsible for wage rates may have no direct control over the individual workman's efficiency.

Manufacturing overhead standards

Standard manufacturing overhead for each product is more difficult to establish in advance than the standard for direct materials or direct labor, because of the widely varying types of costs included in manufacturing overhead. The relationship between manufacturing overhead and specific productive operations is also less direct. The standard manufacturing overhead for each product is determined as follows:

1. Analyze each expense included in manufacturing overhead into its fixed and variable elements. (This will have been completed previously if the company has a flexible budgetary program.)
2. Estimate the volume of production or level of activity which is standard (or normal) for the company.

3. Using the standard (or normal) volume of production, and the fixed-variable elements of each manufacturing overhead expense, compute the company's total standard (or normal) manufacturing overhead at the standard volume of production.
4. Prorate the company's total standard (or normal) manufacturing overhead to normal production. The result is a standard amount of manufacturing overhead for each product.

Through this process a standard manufacturing overhead figure is included with labor and materials in the cost of each product. The process of setting the standard manufacturing overhead for each product may be illustrated as follows:

Step 1.—Analyze manufacturing overhead into fixed and variable elements. This is completed by applying the fixed-variable techniques described in the chapter on cost-volume-profit relationships. Assume the following fixed and per-unit variable expenses:

	Fixed	Variable per unit
Depreciation	$10,000	—
Heat, light and power	1,000	$0.20
Indirect labor	2,500	.10
Indirect material	1,800	.15
Machinery repairs	900	.08
Taxes	1,900	—

Step 2.—Ascertain the standard level of production, or the normal number of units manufactured. Assume 10,000 units is standard.

Step 3.—Compute the standard manufacturing overhead incurred in the manufacture of 10,000 units:

	Fixed	Variable, for 10,000 units	Total, for volume of 10,000 units
Depreciation	$10,000	—	$10,000
Heat, light and power	1,000	$2,000	3,000
Indirect labor	2,500	1,000	3,500
Indirect materials	1,800	1,500	3,300
Machinery repairs	900	800	1,700
Taxes	1,900	—	1,900
Total			$23,400

Step 4.—Ascertain the standard manufacturing overhead per unit by dividing the total standard manufacturing overhead by the standard number of units to be produced.

$$\frac{\text{Standard (or normal) Manufacturing Overhead}}{\text{Standard (or normal) Units of Production}} = \frac{\$23{,}400}{10{,}000} = \$2.34 \text{ per unit}$$

Manufacturing overhead of $2.34 is applied to each unit as it is completed, so that each unit absorbs a standard amount of manufacturing overhead. The entry to apply the standard manufacturing overhead of $2.34 to 100 completed units is illustrated below. Note that Goods in Process is debited with the standard overhead for each unit and Manufacturing Overhead is credited.

May	30	Goods in Process	$234.00	
		Manufacturing Overhead		$234.00
		To apply standard manufacturing overhead of $2.34 to 100 units.		

A direct labor cost, direct labor hours, machine hours, or direct materials cost may be used as the basis for making the computation of the standard overhead cost per unit. When one of these is used as the basis, the procedure is the same: substitute the selected base for the *number of units* used in the above step-by-step illustration. The entry to apply the standard overhead cost to Goods in Process would be the same, although the amount would probably differ.

The manufacturing overhead variance

The balance in the Manufacturing Overhead account at the end of the accounting period represents the over- or under-applied portion of manufacturing overhead. Manufacturing Overhead is debited for actual overhead expenses and is credited for the standard amounts applied to completed units. The over- or under-applied manufacturing overhead is thus the difference between the overhead expenses actually incurred and the standard overhead absorbed by completed production.

Assume, for example, that a company has a standard overhead of $2.34 per unit, as previously computed. Suppose, further, that during a given period actual manufacturing overhead costs are $21,500, and 9,000 units are produced. The entries to record the application of the overhead to completed units and the incurrence of actual overhead costs are:

May	30	Goods in Process	$21,060	
		Manufacturing Overhead		$21,060
		Applied standard overhead of $2.34 per unit to 9,000 units of production.		
May	30	Manufacturing Overhead	$21,500	
		Cash (or other credits)		$21,500
		Incurred overhead costs.		

After these entries are posted, the Manufacturing Overhead Account will appear as follows:

Manufacturing Overhead

Actual costs incurred	$21,500	Applied to completed production	$21,060

The $440 debit balance represents under-applied manufacturing overhead. This is considered an unfavorable variance, since actual overhead is more than standard. Had the Manufacturing Overhead account shown a credit balance, it would have been over-applied, with actual overhead less than the amount applied to production. Over-applied is considered favorable, since actual cost is less than standard. The overhead variance is sometimes further analyzed into a volume, budget, and rate variance; such an analysis is beyond the scope of this text.

Inventories at standard costs

When standards are used to cost the company's products, all inventories are carried at standard cost. The previous discussion of materials standards indicated that the raw materials inventory is carried at standard cost and that all price variances are entered separately when the purchase of materials is recorded. Goods in process are carried at standard costs also; materials are debited to Goods in Process at standard prices and quantities, labor is debited to Goods in Process at standard, and manufacturing overhead is applied to Goods in Process at the standard amount.

When goods in process are completed, the standard cost of the completed units is transferred from Goods in Process into Finished Goods Inventory. If a job order system is used, the standard cost of each job, when completed, is transferred to Finished Goods In-

ventory; if a process cost system is used, all units are transferred into Finished Goods Inventory at standard at the end of the period. The entry for the completion of 100 units of a product with a standard unit cost of $6.05 is as follows:

May	30	Finished Goods Inventory	$605	
		Goods in Process		$605
		To record completion of 100 units of Product 143-A, with a unit standard cost of:		
		Direct materials $1.71		
		Direct labor 2.00		
		Manufacturing expenses 2.34		
		$6.05		

Since products are entered in the Finished Goods Inventory at standard cost, the entry for the cost of goods sold is also prepared using standard costs. For example, if 6,000 units, with a standard cost of $6.05, are sold for $10.00 each, the entries for the sale and the cost of goods sold are:

June	6	Cash	$60,000	
		Sales		$60,000
		Record the sale of 6,000 units at $10 each.		
June	6	Cost of Goods Sold	$36,300	
		Finished Goods Inventory		$36,300
		Record the cost of 6,000 units sold, with a standard cost of $6.05 per unit.		

Variances in the income statement

Variances from standard are treated as adjustments to the cost of goods sold in the income statement. These variances are additional costs (if a debit balance) or reductions of cost (if a credit balance) and thus relate to cost of goods sold rather than to selling or administrative expenses. The income statement in Exhibit 26–3 illustrates the presentation of variances in an income statement prepared for internal management's use.

If the income statement were prepared for reporting to groups outside the company, such as stockholders or creditors, the variances would not be shown separately, and only the total $23,400 adjusted

EXHIBIT 26–3

SAMUELSON COMPANY
Income Statement
Month Ended January 1, 1964

Sales		$42,000
Cost of goods sold—at standard	$23,000	
Materials price variance	600	
Materials efficiency variance	(150)	
Labor price variance	(200)	
Labor efficiency variance	350	
Manufacturing overhead, over-applied	(200)	
Cost of goods sold, adjusted for variances		23,400
Gross profit		$18,600
General and administrative expenses	$ 5,200	
Selling expenses	6,300	11,500
Net income		$ 7,100

cost of goods sold would appear in the statement. The variances are for management's use and are not usually of interest to persons outside the company's management.

Detailed variance reports for operating management

Operating management needs frequent variance reports indicating favorable or unfavorable operating results for each raw material and each labor operation. Reports that show detailed variances in this manner assist management in locating those areas which differ from the predetermined standards. Any abnormal variance, whether favorable or unfavorable, should be investigated, for either could indicate weaknesses in the manufacturing operation. A large unfavorable variance for an item of raw material may indicate inferior material, inefficient usage, theft, or carelessness. On the other hand, a large favorable variance may indicate use of an insufficient amount of the material, resulting in a finished product of inferior quality.

A detailed variance report for operating management is illustrated in Exhibit 26–4. This report is prepared for production supervisors who are responsible for the efficiency of labor and materials, but who have no responsibility for material or labor price variances or for manufacturing overhead variances. Detailed variance reports are submitted only to those persons who have responsibility over the

areas covered in the report; similar reports detailing other variances are prepared and submitted to the supervisors responsible for those areas.

EXHIBIT 26–4

Direct Materials and Direct Labor Report

Product: Potato chips, one-ounce packages
Quantity produced: 10,000 pounds
Period covered: July 1–July 5, 1964

Materials Efficiency Variances	Standard Cost Per pound	Standard Cost Total	Actual Cost Per pound	Actual Cost Total	Total Variance from Standard
Potatoes	$.070	$ 700.00	$.074	$ 740.00	$40.00
Corn oil	.002	20.00	.002	20.00	—
Salt—plain	.001	10.00	.001	10.00	—
Salt—onion	.001	10.00	.001	10.00	—
Bags	.026	260.00	.025	250.00	(10.00)
Cardboard cartons	.040	400.00	.041	410.00	10.00
Total material	$.140	$1,400.00	$.144	$1,440.00	$40.00
Labor Efficiency Variances					
Peeling	$.061	$ 610.00	$.059	$ 590.00	$(20.00)
Slicing	.040	400.00	.042	420.00	20.00
Cooking	.052	520.00	.051	510.00	(10.00)
Packaging	.070	700.00	.076	760.00	60.00
Total labor	$.223	$2,230.00	$.228	$2,280.00	$50.00

Revision of standard costs

Frequent changes in standard costs could result in confusion in the measurement of actual costs with standard costs. For this reason, standard costs are usually adjusted annually. Standards are changed during the accounting year only as the result of a major change in expected costs, such as a steep and permanent rise in raw materials prices. A minor error usually will not destroy the effectiveness of a standard as a cost measurement device once management is aware of the error.

Manufacturing standard costs illustrated

The following problem illustrates the operation of a standard cost system and the related basic accounting entries. Note that the fixed and variable manufacturing overhead and the standard costs for the company's product are determined in advance of actual operations.

Completed prior to the current year:

Manufacturing overhead is analyzed as follows:

Total fixed manufacturing overhead	$20,000.00
Total variable manufacturing overhead per unit	5.00

8,000 units are set as the standard volume of production.

The standard for the company's product is:

Raw materials	10 units @ $2 per unit		$20.00
Labor	4 hours @ $3 per hour		12.00
Manufacturing overhead:			
Total fixed		$20,000	
Total variable (8,000 @ $5)		40,000	
		$60,000	
	÷ 8,000 units		
	Per unit		7.50
Total standard cost per unit			$39.50

Transactions during the current year:

1. Purchased 75,000 units of raw material @ $2.10 per unit:

Raw Materials Inventory	$150,000	
Materials Price Variance	7,500	
Accounts Payable		$157,500
To record the purchase of materials and the resulting materials price variance.		

2. Consumed 74,000 units of raw material in producing 7,300 units:

Goods in Process	$146,000	
Materials Efficiency Variance	2,000	
Raw Materials Inventory		$148,000
To record the use of raw material and the resulting material efficiency variance. Goods in Process debited with standard cost (7,300 units @ $20 = $146,000).		

3. Incurred 29,000 labor hours @ $3.10 per hour in producing 7,300 units:

Goods in Process	$ 87,600	
Labor Price Variance	2,900	
Labor Efficiency Variance		$ 600
Accrued Wages Payable		89,900
To record accrued wages earned by employees and the resulting labor variances. Standard cost debited to Goods in Process (7,300 units @ $12 = $87,600). Labor price variance: 29,000 hours @ $0.10 = $2,900. Labor efficiency variance: 200 excess hours @ $3 = $600.		

4. Recorded actual manufacturing overhead incurred:

Manufacturing overhead	$ 56,000	
Cash (or various other credits)		$ 56,000
To record actual manufacturing overhead incurred.		

5. Applied standard manufacturing overhead ($7.50 per unit) to the 7,300 units produced:

Goods in Process	$ 54,750	
Manufacturing Overhead		$ 54,750
To apply manufacturing overhead to production at standard amounts (7,300 units @ $7.50 per unit = $54,750).		

6. Transferred 7,300 completed units to finished goods at standard cost:

Finished Goods	$288,350	
Goods in Process		$288,350
To transfer completed production to finished goods at standard (7,300 @ $39.50 = $288,350).		

7. Recorded selling and administrative expenses:

Selling and Administrative Expenses	$ 51,000	
Cash (or other credits)		$ 51,000
To record selling and administrative expenses for the period.		

8. Sold 7,000 units @ $50 each:

Accounts Receivable	$350,000	
Sales		$350,000
To record sales of 7,000 units at $50 each.		

Cost of Goods Sold	$276,500	
Finished Goods Inventory		$276,500
To record cost of 7,000 units sold at standard cost of $39.50.		

The income statement resulting from these transactions appears as follows:

Income Statement

For the Year Ended December 31, 1964

Sales		$350,000
Cost of goods sold (at standard)	$276,500	
Variances from standard cost:		
Materials price variance	7,500	
Materials efficiency variance	2,000	
Labor price variance	2,900	
Labor efficiency variance	(600)	
Manufacturing overhead under-applied	1,250	
Cost of goods sold adjusted for variances		289,550
Gross profit		$ 60,450
Selling and administrative expenses		51,000
Net profit		$ 9,450

Standards for selling and administrative expenses

Selling and administrative expenses are related to functions other than the production of finished goods, and therefore standards for these costs must be based on a measurement other than units produced. The processing of purchase orders, for example, has no direct relationship either to the number of units produced or the number of units sold; therefore, the number of orders procured becomes the basis of measurement. A standard cost may also be prepared for each letter typed by a stenographer, each sales order processed, each customer's statement prepared, or each check written.

Standards for selling and administrative expenses are not as accurate as manufacturing standards, because the operation being measured is not as consistent or repetitive. For this reason, selling and administrative cost variances are rarely entered in the accounting records, although they are reported to management in special reports.

Exhibit 26–5 illustrates the accumulation of a standard labor cost for processing the payment of an account payable. Note that standard time is computed for each step in the payment process as a means of accumulating the total standard time required to process and prepare each payment; the related standard salary cost is then determined by using the prevailing salary rate for accounts payable personnel.

EXHIBIT 26–5

Standard Salary Costs for Processing and Paying Accounts Payable

	Standard Time in Minutes	Total Minutes
Processing Purchase Orders:		
Sort in numerical order	.2	
Insert in general ledger account number	1.1	
File in "pending" file	.8	2.1
Processing Receiving Reports:		
Sort in numerical order	.2	
File one copy with purchase order in "pending" file	2.3	
File one copy numerically	.7	3.2
Processing Vendors' Invoices:		
Match with purchase orders and receiving reports from "pending" file	2.3	
Prove extensions and totals	1.4	
Write voucher	1.0	
File in "approved for payment" file	.8	5.5
Preparing Checks:		
Remove from "approved for payment" file	.7	
Type check	1.3	2.0
Filing Paid Vouchers and Related Documents:		
File		.6
Total standard time		13.4
Hourly salary rate		$2.00
Total standard salary cost		$0.45

The standard time necessary to complete each step in a selling or administrative process is valuable in arranging employee work loads.

The standard time required to prove extensions and totals on vendors' invoices in Exhibit 26–5 is 1.4 minutes; if an average of 500 invoices is checked daily, the supervisor of the accounts payable section is informed that 700 minutes, or 11.7 hours, is the standard time required each day to complete the operation. As a result, one employee is assigned full time on that operation, and one-half of another employee's time is also devoted to it. If the employees assigned to the task do not complete the work, the supervisor of the section is placed on notice that the employees assigned to the task may be performing below standard.

Selling and administrative standards are also useful as a basis for managerial decisions. Computation of standard costs for taking orders, filling orders, and making collections assists in determining the cost of making a sale. As a result, small, unprofitable orders may be discouraged. For example, assume that a company selling wholesale builders' supplies has the following standard costs for processing each sales order:

	Standard Cost
Preparing an order	$0.53
Filling an order	.46
Preparing an invoice	.07
Posting an invoice	.04
Handling a collection	.11
Posting a collection	.04
Total	$1.25

If the gross margin on the company's merchandise is 25%, an order for $5.00 will realize a gross profit of $1.25, which is just sufficient to cover the cost of processing the order. As a result, the company's management may establish a policy of not accepting orders of less than $5.00.

Standard costs for selling and administrative expenses have been employed primarily in larger companies where the volume of activity permits arrangement of the selling and administrative operations into repetive tasks. A considerable effort is necessary to accumulate the data for selling and administrative standards, and smaller companies rarely use standards except for manufacturing costs. Even in larger companies special office machines are needed to accumulate sufficient data for comprehensive selling and administrative cost standards. A later chapter describes the mechanical equipment used to accumulate such a mass of data.

Questions

26-1. Define a "standard" as used in cost measurement.

26-2. How are raw materials standards determined? How are labor standards determined?

26-3. What is a "variation from standard," and why are variations significant to operating management?

26-4. Name five basic variations, and explain what each signifies.

26-5. How detailed should raw materials and labor standards be?

26-6. Is one total standard cost amount for raw materials or labor sufficient? Why or why not.

26-7. The Swenson Company set a standard of 3 units of raw material at $1 each for its product. The first unit completed required 4 units of raw material which cost $0.90 each. What is the amount of the two raw materials variances on this first unit of production? State whether the variances are favorable or unfavorable.

26-8. Are variances recorded in separate ledger accounts? If so, is a debit or a credit balance favorable or unfavorable?

26-9. Why should materials price variances be recorded at the time raw materials are purchased, while raw materials efficiency variances are recorded when raw materials are consumed?

26-10. The Eggon-Bart Company has a labor standard on one unit of its completed product of 6 hours of labor at an hourly rate of $3.00. One unit produced in January required 5 hours of labor at a rate of $3.20 per hour. State the amount of the two labor variances and whether they are favorable or unfavorable.

26-11. What connection is there between responsibility of individuals and the separation of price and efficiency variances for materials or labor?

26-12. Why are manufacturing overhead variations more difficult to determine than materials and labor variances?

26-13. How is the standard amount of manufacturing overhead determined for each unit of completed product?

26-14. Explain how all three inventories, raw materials, goods in process, and finished goods, are maintained at standard costs.

26-15. In what account does the manufacturing overhead variance appear? Describe how it arises.

26-16. How are manufacturing variances reported on the income statement?

26-17. Why should detailed variance reports by separate labor operations and materials be prepared? Who should receive these reports?

26-18. Why are variances for selling and administrative expenses used less frequently than variances for manufacturing operations?

Exercises

26-19. Product X, manufactured by the Toolson Die Company, has the following standards for materials and labor:

Materials	3 units @ $4.00	$12
Labor	6 hours @ $3.00	18

During January 1,000 units were completed, requiring 3,050 units of raw materials, which were purchased for $3.90 per unit and 5,800 hours of labor, which cost a total of $18,000.

REQUIRED

Compute the materials price, materials efficiency, labor price, and labor efficiency variances, and state whether they are favorable or unfavorable.

26-20. The Barbson-Lott Company uses a job order system. The labor standard for a single unit of Z-2 is:

Shear into strips	10 minutes @ hourly rate of $2.40	$ .40
Weld strips	20 minutes @ hourly rate of $3.00	1.00
Paint	6 minutes @ hourly rate of $2.50	.25
Assemble	15 minutes @ hourly rate of $2.00	.50
Pack and crate	10 minutes @ hourly rate of $2.40	.40
Total labor standard cost		$2.55

The employees' time sheets contained the following information for the week ended January 17:

Date	Operation	Hours Worked	Pieces Completed	Total Labor Cost
Jan. 14	Shear	35	200	$ 76.00
15	Weld	75	200	232.00
15	Paint	20	200	52.00
16	Assemble	52	200	95.00
17	Pack and crate	30	200	80.00
	Total			$535.00

REQUIRED

Prepare a detailed report setting out variances resulting from each operation. State which operation you would investigate first if you were the production manager.

26-21. The fixed and variable production costs of the Murchinson Manufacturing Company are:

Total fixed costs	$120,000
Variable cost per unit	$8.00

The company estimated that production for the coming year would be 10,000 units and at the beginning of the year established standard manufacturing overhead per unit on that basis. During the year the company produced 12,000 units and incurred $210,000 of manufacturing overhead.

REQUIRED

1. Compute the standard manufacturing overhead to be applied to each unit.
2. Record the entries for the incurrence of the actual manufacturing overhead and to apply manufacturing overhead to goods in process.
3. Set up a T-account for manufacturing overhead, and post amounts incurred and applied. Explain why manufacturing overhead was under- or over-applied.

26-22. The Halliburton-Snell Company computes the price variance on raw material purchases at the time the invoice is recorded as a liability. The following materials standards have been set for the raw materials used by the company:

Wire—1/16" copper extruded	$1.25 lb.
Felt—1" strips	2.00 lb.
Bolts—1/2" x 2", hexagonal head	.02 each
Nuts—1/2" I.D. hexagonal head	.01 each
Paint—Enamel, white	4.00 gallon

The following transactions were completed during July:

July 1 Received an invoice for 100 lbs. of copper wire, $130.00, and 70 lbs. of felt, $135.00.
2 Received an invoice for 17 gallons of white enamel paint, $72.
3 Received an invoice for $17 freight on the copper wire and felt in the transaction of July 1.
4 Returned 30 lbs. of the copper wire bought on July 1, receiving $39 credit from the supplier for the defective wire.
5 Received an invoice for 1,000 bolts, $21.00, and 1,000 nuts, $9.00.
6 Received an invoice for 10 gallons of white enamel paint, $42.
7 Received an invoice for 50 lbs. of felt, $97.

REQUIRED

Prepare a schedule showing total standard cost, total actual cost, and the material price variance for each product.

26-23. Prepare journal entries for the following basic standard cost transactions:

(1) Materials with a standard cost of $18,000 were purchased for $18,200.
(2) Materials with a standard cost of $14,000 were used to complete production which had standard material requirements of $14,100.
(3) Labor costs of $6,000 were incurred. $50 of the labor cost was due to labor rates higher than the standard rate. The labor produced units with standard labor of $6,200.
(4) Manufacturing overhead of $11,000 was incurred.
(5) Standard manufacturing overhead of $11,800 was applied to production.
(6) All goods in process were completed.

26-24. Presented below are selected ledger accounts of the Quontin Company. The transactions posted to these accounts are numbered.

Raw Materials

(1) 5,600	4,000 (2)

Goods in Process

(2) 4,150	
(3) 2,950	
(4) 7,000	

Accounts Payable

	5,700 (1)
	6,800 (5)

Accrued Wages Payable

	3,000 (3)

Manufacturing Overhead

(5) 6,800	7,000 (4)

REQUIRED

1. Determine the five variances from standard from these entries, if the labor price variance was $100 unfavorable.
2. Indicate whether each variance is favorable or unfavorable.

Problems

26-25. The Paladium Equipment Company set the following standard on its product:

Labor	2 hours @ $3.00 per hour	$ 6
Materials	6 units @ $2.00	12
Manufacturing overhead		5
		$23

The standard manufacturing overhead is determined on the following basis:

Normal production, 10,000 units.
Normal manufacturing overhead for 10,000 units = $50,000.
$50,000 ÷ 10,000 units = $5 per unit.
Manufacturing overhead is fixed, $20,000; variable, $3 per unit.

The following transactions occurred during the year:

(1) Purchased on account 60,000 units of raw material @ $2.10.
(2) Used 53,000 units of raw material in producing 9,000 units.
(3) Incurred 18,100 hours of labor @ $2.90 per hour in producing 9,000 units.
(4) Incurred $46,000 of manufacturing overhead.
(5) Applied manufacturing overhead to production for the 9,000 units.
(6) Completed the 9,000 units and transferred them to finished goods.
(7) Incurred $80,000 of general and selling expenses.
(8) Sold 6,000 units for $40 each.

REQUIRED

1. Journalize the transactions, recording each variance in a separate ledger account.
2. Prepare an income statement for the period.

26-26. The Roytun Company manufactures two products, X and Y. Two supervisors are employed, one in charge of the manufacture of product X and the other in charge of the manufacture of product Y. The company uses three types of raw materials in the manufacture of its two products, and the normal costs and requirements of these raw materials are as follows:

Raw Materials	Standard Cost per Unit	Units required for one completed unit of	
		X	Y
A	$1.00	1	2
B	.50	2	1
C	2.00	1	3

During the year the company completed 10,000 units of X and 8,000 units of Y. All raw materials are issued out of the stockroom to the supervisors at standard cost. An analysis of the raw materials usages for the period revealed that the supervisors had consumed materials as follows:

Materials	Standard cost of materials used by the supervisor in charge of product	
	X	Y
A	$10,200	$15,900
B	9,800	4,500
C	20,400	54,100

REQUIRED

1. Prepare a general journal entry for the issue of the raw material from the storeroom and the resulting material efficiency variance.
2. Prepare a schedule showing the standard cost, actual cost, and variance of each material as used by each of the two supervisors.
3. In your opinion, which supervisor was most efficient in his use of raw materials? Which material appears to have been used least efficiently, or cost more than the standard, considering both departments together?

26-27. The Schmidt Company has two products, Beta and Theta. The unit material and labor standards for the two products are:

Beta			Theta		
Material:			Material:		
A	2 units @ $2	$4.00	Y	3 units @ $1	$3.00
B	1 unit @ $1	1.00	Z	2 units @ $3	6.00
Labor:			Labor:		
Assemble	1 hour @ $2	$2.00	Paint	½ hour @ $2	$1.00
Pack	½ hour @ $1	.50	Crate	1 hour @ $1	1.00

During the month of March the company completed the following transactions:

Purchased materials as follows:

2,000 units of A for	$4,070
1,000 units of B for	980
700 units of Y for	750
500 units of Z for	1,460

Consumed materials as follows:

1,700 units of A and 780 units of B were used to complete 800 units of Beta.

610 units of Y and 380 units of Z were used to complete 200 units of Theta.

Employees' time tickets showed the following labor costs:

Assembling	800 units of Beta	– 790 hours @ $2.10 per hour
Packing	800 units of Beta	– 410 hours @ $1.10 per hour
Painting	200 units of Theta	– 90 hours @ $1.90 per hour
Crating	200 units of Theta	– 205 hours @ $1.00 per hour

REQUIRED

1. Prepare journal entries for the purchase and consumption of the materials and for the labor costs for the month using a standard cost system.
2. Prepare a detailed schedule showing how you computed the materials price variance, materials efficiency variance, labor price variance, and labor efficiency variance for each material and each labor operation.

26-28. The Wilson Abrasive Company established the following flexible budget of each manufacturing overhead expense at the beginning of the year:

	Fixed	Variable per unit manufactured
Depreciation on building	$ 5,000	
Depreciation on machinery	4,000	
Factory supplies		$ .20
Heat, light and power		.10
Indirect labor	1,000	.40
Indirect materials	800	.15
Insurance	200	
Machinery repairs	2,000	.25
	$13,000	$1.10

The company's sales forecast showed 10,000 units would be sold, and no inventory is needed, since units are sold as they are manufactured. Standard manufacturing overhead per unit is based upon the 10,000 unit volume and is applied to units as they are manufactured.

At the end of the year the company had manufactured and sold 11,000 units and had incurred $25,560 of manufacturing overhead, as follows:

Depreciation on the building	$ 5,000
Depreciation on machinery	4,050
Factory supplies	2,400
Heat, light and power	1,010
Indirect labor	5,600
Indirect materials	2,300
Insurance	200
Machinery repairs	5,000
	$25,560

REQUIRED

1. Compute the standard manufacturing overhead per unit.
2. Prepare entries to record the incurrence of manufacturing overhead during the year, and the application of manufacturing overhead to products.
3. Prepare a budget report for the year, showing the actual manufacturing expenses, the budgeted expenses at a volume of 11,000 units, and the budget variance for each manufacturing expense item.

26-29. The Smithson Company set the following standard on its product at the beginning of the year:

Materials:	
4 pounds of X @ 30¢ per pound	$ 1.20
5 units of Y @ $1.00 each	5.00
1 gallon of Z @ $4.00 per gallon	4.00
Labor:	
Molding 3 hours @ $3.00	9.00
Forming 1 hour @ $2.00	2.00
Crating 1 hour @ $1.00	1.00
Manufacturing overhead:	
80% of direct labor	9.60
Total	$31.80

The standard manufacturing overhead rate of 80% of direct labor was determined by dividing the normal expenses of $48,000 by the standard labor in 5,000 units. The company has fixed costs of $23,000 and variable costs of $5 per unit. The rate was thus computed as follows:

$$\frac{\text{Normal manufacturing overhead for 5,000 units} = \$48,000}{\text{Standard labor costs for 5,000 units } (5,000 \times \$12) = \$60,000} = 80\%$$

At the end of the year the president received the following income statement:

Sales (6,000 units @ $50.00)		$300,000
Cost of goods sold at standard	$190,800	
Total variances from standard	3,490	194,290
Gross profit		$105,710
Selling and administrative expenses		95,000
Net profit		$ 10,710

The president was disturbed by the $3,490 variance. He asked you to investigate and prepare a report showing the variances in more detail. You analyzed the company's records and found the following costs were incurred in producing the 6,000 units which were sold:

25,000 pounds of X were purchased at a cost of $7,600 and consumed.
28,000 units of Y were purchased for $29,000 and consumed.
6,100 gallons of Z were purchased for $23,800 and consumed.
Molding operations took 19,000 hours at $3.10 per hour.
Forming operations took 5,900 hours at $1.90 per hour.
Crating operations took 6,400 hours at $1.20 per hour.
Actual manufacturing overhead incurred was $56,100.

REQUIRED

1. Prepare journal entries to record all the above transactions.
2. Reconstruct the income statement for the president showing the total materials price, materials efficiency, labor price, labor efficiency, and manufacturing overhead variances separately.

26-30. The Framemore Company uses a continuous process system, and all materials enter into process A where they are liquified and pass on into department B. In department B the material is molded into the desired shape and passed on to department C, where it is finished and smoothed. The following standards were predetermined for the company's one product:

Department A:			
Materials	2 units @ $4	$8	
Labor	1 hour @ $2	2	
Manufacturing overhead		1	$11
Department B:			
Labor	2 hours @ $3	$6	
Manufacturing overhead		3	9
Department C:			
Labor	2 hours @ $2	$4	
Manufacturing overhead		2	6
			$26

The company has no beginning or ending inventories. During the month of February the company completed 20,000 units, and the costs were:

Materials purchased for cash and consumed: 41,000 units at $3.80 each
Labor: Department A 20,100 hours at $2.10 per hour
Department B 38,000 hours at $3.05 per hour
Department C 41,000 hours at $2.00 per hour
Actual manufacturing overhead: Department A $19,000
Department B $61,000
Department C $40,500

REQUIRED

1. Journalize the entries to record the materials, labor, and manufacturing overhead costs incurred during the period, and the cost of completed production going into finished goods.
2. Prepare a report, showing each variance separately for each department.

Cases

26-31. The Winson Manufacturing Company has a standard cost for part number 643A as follows:

Direct materials	One unit of material Y7	$1.00
Direct labor	3 per hour, at $2.40 per hour	.80
Overhead (50% of labor)		.40
		$2.20

The company has two machines on which the part can be made. Both machines can be run at varying speeds, and each has a top speed of 4 units per hour. However, at top speeds the machines have a tendency to wrinkle the material, and thus spoilage is increased. The standard material does not include any allowance for spoilage, since the standard production is 3 units per hour. Smith operates Machine 1 and receives an hourly wage of $2.50; Barron operates Machine 2 and receives an hourly wage of $2.30.

Production statistics for the week ended August 13, when both employees operated their machines 40 hours, were as follows:

	Machine 1 (Smith)	Machine 2 (Barron)
Units started	160	110
Units completed	30	108
Units spoiled	30	2

What variances would be reported for each of the two operators? Which employee do you consider to have done the better job during the week?

What factors other than those given should be considered when analyzing which did a better job?

26-32. The Dalton Company is considering installing a standard cost system. A job order system is being used at the present time to accumulate costs, and the only cost analysis being done is to compare the costs appearing on each job order with costs for the same product as accumulated on prior job orders.

The production manager maintains that prior jobs are not an accurate measure of what costs should be on a current job. He maintains that material price changes from time to time, employees pay raises, the change in the number of units in each job, and alterations in the production process make prior costs poor measures of current costs.

All the company's foremen oppose the use of standard costs. They feel that standards will be set low in order to force the workers to speed up production, and unrest and discontent among the workers will result.

The general manager of the plant, in order to attempt to resolve the disagreement, decided to use standards for one department on an experimental basis. He asked the foreman of the selected department to provide the accounting department with standards on the product which his department produced. The foreman's standards were as follows:

Metal forming	2 hours at $2 per hour
Metal punching	1 hour at $2 per hour
Welding	2 hours at $3 per hour
Grinding	½ hour at $2 per hour

At the end of the first week the department showed the following results:

Units produced	5,000
Metal forming	9,000 hours at $1.80 per hour
Metal punching	4,600 hours at $1.80 per hour
Welding	9,800 hours at $3.05 per hour
Grinding	2,550 hours at $2.00 per hour

Was the experimental department efficient in its operations? If you were the general manager of the plant would you commend the foreman of the department for a job well done, and put standard costs into use in all departments since they appear successful? Analyze the situation and discuss what, if anything, should be done to get a good standard cost program instituted.

27

Cost analysis for managerial decisions

Decision making is one of the basic functions of management. Decision making is a continuous process, involving review of past decisions as well as formulation of new, and it concerns such problems as what products to sell, the most efficient and inexpensive method of production, what duties to assign to employees, what quantities to produce or buy, where, how, and when to sell the products, and at what prices.

There are usually several possible courses of action in solving any given business problem. All pertinent cost and revenue data must be considered, and comparisons made of the relative effects of each on the company's profits. The best course of action is usually the one that produces the greatest profit, but the long range objectives of the company must also be considered.

Historical cost and expense information from a company's records serves only as a beginning point in analyzing any problem. Considerable care must be exercised in using historical cost and expense data, because succeeding events may make past data inapplicable. The solution to most business problems requires an estimate of the effect of future events on the company's costs and revenues, and historical data must be adjusted accordingly.

Differential costs and revenues

One of the most useful techniques in selecting a course of action is a comparison of the effects of each possible solution to a problem. Since maximum profit is one of the basic objectives of business, the course of action producing the greatest long-range increase in revenues, or decrease in costs, will probably be the best choice.

The first step in selecting a course of action is to compute the *differential revenue* or the *differential cost.* These terms are used to designate the difference in revenue, or cost, between alternative choices. Suppose, for example, that a company has a limited amount of a new product and is able to supply only one market location. If data indicate the probability of $2,000 more in sales in the city of Flagstone than in the city of Genoa, this figure is the differential revenue between the two location choices. If selling expenses are expected to be $2,500 greater in Flagstone than in Genoa, this figure is the cost differential. The sum of the revenue and cost differential is the *profit differential,* which in this case indicates $500 more profit to the company if the product is marketed in the Genoa territory.

Procedure in making a differential analysis

There is no universal procedure in making an analysis of cost and revenue differences, but the following steps are generally applicable:

1. Clearly define the alternate courses of action.
2. Ascertain the costs or revenues pertinent to each.
3. Determine the extent to which each alternate course of action will affect revenues and costs.
4. Compare the revenue and cost changes to determine the differential cost, the differential revenue, and the sum of these two—the differential profit.
5. Select the course of action producing the greatest profit differential, taking into account the objectives of the company.

The most difficult of these steps is the determination of which costs or revenues will be affected by the change and to what extent they will be affected. The inclusion of irrelevant costs in the computations may very easily result in an unprofitable, or less profitable, decision. Unfortunately, the selection of a less desirable course of action may not become apparent for some time, if at all.

Asset replacement decisions

A differential analysis is frequently necessary in determining whether to replace an existing asset. Assuming that such an asset is essential to the operation of the business, the alternate choices are clearly (1) to retain the old asset, or (2) to buy a new one. However, determining the effects of each choice on costs and revenues is more difficult, and both historical data and future estimates must be included in the computations.

To illustrate the nature of such a decision, assume that a company's management is considering the replacement of one of its

factory machines with a more efficient machine with the same remaining life as the old. If the machine currently in use is retained, management does not anticipate any appreciable change in its operating costs, which in past years have been as follows:

Two operators' wages, total	$14,000 per year
Related payroll taxes on operators' wages	840
Machinery maintenance	1,000
Power	500
Material spoilage	1,200
Total annual cost	$17,540

If the new machine is bought, management estimates its operating costs to be as follows:

One operator's wages, total	$ 8,000 per year
Related payroll taxes on operator's wages	480
Machinery maintenance	1,500
Power	1,000
Material spoilage	800
Total annual cost	$11,780

The *annual* cost differential, favoring the purchase of the new machine, is $5,760, computed by subtracting the $11,780 annual operating cost of the new machine from the $17,540 annual operating cost of the old machine. For purposes of simplification, if the life of both the assets is five years, the differential cost over the entire life of the machines would result in a total cost savings of $28,800 ($5,760 × 5 years) with the purchase of this new machine.

Having computed the cost differential resulting from the purchase of the new machine, a second computation is necessary to ascertain whether this cost saving is sufficient to cover the purchase price of the new equipment. Note that if the new machine cost only $21,000, the company's profit would be increased by $7,800; the old asset should be replaced.

Five-year cost saving by using the new machine	$28,800
Cost of the new machine, with a five-year life	21,000
Increase in profits over five years	$ 7,800

In general, purchase of a new asset is indicated when the savings resulting from its acquisition exceed its purchase cost. Obviously,

if the purchase price of the new asset exceeds potential savings, replacement would not be wise.

Use of net cost

In the above example the new asset was assumed to cost $21,000. This cost is the *net cost* of acquiring the new machine and would be computed as the list price of the new asset, less any trade-in value received for the old asset or any proceeds from its sale.

To illustrate, assume that the old asset has an undepreciated cost of $15,000, with a current trade-in value of $4,000 and that the new asset has a list price of $25,000. The net cost of $21,000 is computed by subtracting the trade-in value of $4,000 from the list price of $25,000. The net cost of the new machine must be used in the cost analysis, since the savings and the net cost of realizing these savings must be compared if a correct analysis is to be made.

Depreciation expense on both the old machine and the new is excluded in computing the cost savings; nor is a gain or loss on the trade or sale of the old asset considered in the computation. Depreciation expense and any loss on the trade are irrelevant costs in this analysis.[1] The only relevant data are (1) the cost in dollars to buy the new machine, as compared with (2) the dollars in operating costs saved by the new machine.

Effects of using irrelevant costs

Sometimes the loss which would be recorded on the trade or sale of the old asset is incorrectly considered when a differential analysis is made concerning the replacement of equipment. Continuing the preceding example, assume that an old asset with a book value of $15,000, plus $21,000 cash, is traded for a new asset with a list price of $25,000. Thus a book loss of $11,000 may be recorded as follows:

Jan.	18	Loss on Trade of Machinery	$11,000	
		New Machine	25,000	
		Old Machine		$15,000
		Cash		21,000
		Recorded trade of an old asset plus $21,000 cash for a new asset.		

[1] If discounted cash flow were applied to this example, the depreciation and gain or loss on disposition would, for income tax reasons, enter into the computations.

The $11,000 loss recorded when the trade is made must not be included in the analysis; if it is included, an incorrect decision to retain the old machinery may be reached. Such an incorrect analysis follows:

Incorrect Analysis

Five-year operating savings	$28,800
Less book loss on trade	11,000
	$17,800
Cost of new machine	21,000
Decrease in profits if the new machine is bought	($ 3,200)

The incorrectness of this analysis is illustrated by preparation of comparative income statements covering the five-year lives of the two machines. Assuming that equal revenue totaling $120,000 over the five-year period would be produced by each machine, Exhibit 27–1 illustrates two income statements, one resulting from retention of the old asset and the other from purchase of the new asset. Note that depreciation expense and loss on the trade have been included in the income statements, even though they did not enter into the computations leading to the replacement decision.

EXHIBIT 27–1

Five-Year Income Statement If Old Asset Is Kept			Five-Year Income Statement If New Machine Is Acquired		
Sales		$120,000	Sales		$120,000
Expenses,			Expenses,		
$17,540 × 5 years	$87,700		$11,780 × 5 years	$58,900	
Depreciation on old machine	15,000	102,700	Depreciation on new machine	25,000	
			Loss on trade	11,000	94,900
Net income		$ 17,300			$ 25,100

The net income is $7,800 greater if the new machine is acquired ($25,100 less $17,300). Note that this is the same amount computed when depreciation and losses were *excluded* from the differential analysis. Had the loss on the trade been used in making the analysis, an entirely incorrect decision would have been reached.

Make or buy decisions

Frequently management must decide whether to make parts, materials, or operating assets or have them supplied from an outside source. Such decisions require special cost studies which are as important as any the managerial accountant must make. Even after the final decision has been reached, the cost to make as compared with the cost to buy must be constantly reviewed in the light of changing production levels and methods, available working capital, and shifting competitive pressures.

A make-or-buy decision is based upon a comparison of the incremental costs to buy and the incremental costs to make. *Incremental costs* may be defined as the additional costs which will be incurred. If the parts or assets are procured from outside, the full purchase price is incremental over not buying; if the parts are manufactured, the incremental cost is the difference between manufacturing them and not manufacturing them. If the incremental cost to make is less than the incremental cost to buy, the parts or materials should be manufactured.

To illustrate, assume that the Bolton Company is studying the feasibility of buying or making part No. 164–B1, used in the manufacture of their main product. Approximately 1,000 parts will be needed. This part could be bought from outside suppliers for $5.70 each. The company's engineers and accountants estimate that the unit cost to manufacture the part would be as follows:

Direct cost:		
Material	$2.42	
Labor (1 hour)	1.87	
Depreciation on special equipment which must be bought to make this part	.40	$4.69
Indirect cost:		
Fixed manufacturing expenses, apportioned to all the company's products (depreciation, insurance and taxes on the factory buildings, etc.)	$ .94	
Variable manufacturing expenses, computed to be .60 per direct labor hour	.60	1.54
Total		$6.23

The decision *should not* be made by comparing the $5.70 outside purchase price with the $6.23 total unit cost to manufacture.

Only the incremental costs, or those which would be incurred as a direct consequence of manufacturing the part, should be included for comparative purposes. The general fixed manufacturing cost of $.94 would be incurred whether or not the parts were manufactured; consequently, only the direct costs of $4.69 and the variable costs of $.60 would be incremental costs of manufacturing, and the comparison should be between the $5.70 unit purchase price and the incremental manufactured unit cost of $5.29.

Cost if purchased	$5.70
Incremental or "additional" cost if manufactured	5.29
Cost savings if manufactured	$ .41 per unit

If the Bolton Company has the capacity available, it should manufacture part 164–B1, as the net savings or profit differential between the two choices is $.41 per unit. This $.41 is a contribution toward covering the company's total fixed costs, which would be lost if the parts were purchased.

Additional processing decisions

Another problem calling for an analysis of cost and revenue differences is whether to add further steps to the company's manufacturing process in order to make a more valuable product. The decision must be based on a comparison of the additional processing costs and the additional revenue which would be realized by having a better quality product or a different type of finished product.

Further processing will usually require an additional investment in equipment and other fixed assets, and the incremental costs must include all costs incurred and all anticipated costs. However, the question of additional processing necessitates the use of costs which are assumed, or *imputed*. An imputed cost may be defined as an income given up. For example, if additional investment in equipment is needed for further processing, the funds required for the new equipment, if invested in other properties, would be income producing. The income which these funds would earn, if not sunk in additional equipment for further processing is an imputed cost which must be considered in the differential analysis.

To illustrate the analysis involved in such a decision, assume that the Farley Manufacturing Company sells its product for $50 per unit as presently manufactured. If the product is further processed, resulting in a better quality product, the sales price could be increased to $55 per unit. The revenue differential is thus $5 per unit.

Assume further that the present sales volume of 10,000 units per year would not be affected by the proposed additional processing and increase in price. Consequently, the total revenue differential is $50,000. The following estimated annual costs would be incurred in further processing:

Additional labor, per year	$28,000
Additional variable manufacturing expense, per year	8,000
Additional annual fixed manufacturing expense (one fixed asset, cost $100,000, life 10 years)	10,000
Total annual cost of further processing	$46,000

If the decision to process further involved only comparison of the expected costs of $46,000, with the additional revenue of $50,000, it would appear that a profit of $4,000 would be realized by further processing. However, as indicated above, an investment in fixed assets of $100,000 is necessary to complete the additional processing. If this $100,000 could be invested in other income-producing properties that would yield a 6% return, or $6,000, the return from such investment would be more profitable, other things being equal, than investing it in equipment for further processing.

In the final analysis, the $50,000 additional revenue from further processing should be compared with the $52,000 actual and imputed cost to process further:

Actual costs to be incurred	$46,000
Imputed interest on the additional investment ($100,000 @ 6%)	6,000
Total additional costs to process further	$52,000
Incremental revenue	$50,000
Loss in profit if further processing is undertaken	($ 2,000)

With this analysis it becomes evident that further processing is not the best course of action and that, other factors being equal, the company's funds should be invested in other ventures.

Plant shut-down or continued operation at a loss

Sometimes a decision must be made between continuing operations at one of the company's plants even though losses are being incurred, or ceasing operations and keeping the plant on a "stand-by" basis. There is always hope that the plant's profit picture will

improve. However, an immediate decision is necessary concerning whether a smaller loss would be incurred by continuing operations or by temporarily closing the plant.

The losses on a shut-down basis will equal the fixed costs. Since no operations are being performed, there will be no revenue and no variable costs; consequently, the fixed costs will measure the extent of the loss incurred on a shut-down basis. As long as revenues exceed *variable* costs, the plant is realizing a contribution margin and is covering a portion of its fixed costs. If any contribution is made toward fixed costs by continuing operations, the plant should not be shut down.

The following case illustrates the differential analysis necessary in deciding between shut-down and continued operations at a loss. The Smith Company is presently selling 1,000 units per year, at $100 each, with annual fixed costs of $50,000, and variable costs of $80 per unit. On a stand-by basis, a loss of $50,000 would be incurred, or the amount of the fixed costs; the loss incurred by continuing operations is only $30,000, computed as follows:

Sales, 1,000 units at $100	$100,000
Less variable costs, 1,000 units at $80	80,000
Contribution to fixed costs	$20,000
Less fixed costs	50,000
Net loss	($ 30,000)

As a result of this comparative analysis, the decision to continue operations becomes more apparent.

Discontinuing a product

Dropping a particular product from a company's line is a difficult decision because of the inability to foresee all the possible consequences. However, the basic approach to this problem begins with an analysis of the fixed and variable (or direct and indirect) costs applicable to each product. The contribution margin of the product in question may thus be computed and weighed against such unknown factors as the possible loss in sales of other products when a full line is not maintained.

To illustrate, assume that the Northeast Producing Company sells three products. The company's accountants have prepared a conventional income statement by products as follows:

	Product A	Product B	Product C	Total
Sales	$100,000	$60,000	$40,000	$200,000
Cost of goods sold	55,000	35,000	25,000	115,000
Gross profit	$ 45,000	$25,000	$15,000	$ 85,000
Selling and general expenses	40,000	24,000	18,000	82,000
Profit (loss)	$ 5,000	$ 1,000	($ 3,000)	$ 3,000

This statement indicates that net losses are being incurred by Product C, while the other two products are profitable. Suppose, however, that both the cost of goods sold and the selling and general expenses were analyzed, and the following breakdown of fixed and variable costs was determined:

	Product A	Product B	Product C	Total
Variable costs in cost of goods sold	$30,000	$25,000	$14,000	$ 69,000
Fixed costs in cost of goods sold				46,000
Total cost of goods sold				$115,000
Variable costs in selling and general expenses	25,000	15,000	8,000	$ 48,000
Fixed costs in selling and general expenses				34,000
Total selling and general expenses				$ 82,000

The fixed expenses are prorated in the conventional income statement and thereby tend to give an erroneous impression of the results of selling Product C. An income statement rearranged to reflect the contribution margin expresses more clearly whether or not Product C is contributing to general fixed costs. Such a statement would appear as follows:

	Product A	Product B	Product C	Total
Sales	$100,000	$60,000	$40,000	$200,000
Total variable expenses	55,000	40,000	22,000	117,000
Contribution toward fixed costs	$ 45,000	$20,000	$18,000	$ 83,000
Total fixed costs				80,000
Net profit				$ 3,000

The contribution of Product C toward fixed costs is almost as great as that made by Product B. Profits would decrease by $18,000 if

Product C were dropped. The following income statement reflects the effect on profits if Product C were to be eliminated. Note that while fixed costs remain at $80,000, there is less contribution to cover it.

	Product A	Product B	Total
Sales	$100,000	$60,000	$160,000
Variable expenses	55,000	40,000	95,000
Contribution margin	$ 45,000	$20,000	$ 65,000
Total fixed costs			80,000
Total net loss			($ 15,000)

The company would incur a loss of $15,000 with Product C eliminated, instead of the $3,000 profit currently realized. The $18,000 difference between the $3,000 profit and the $15,000 loss is the contribution made by Product C toward fixed costs. In the absence of unusual market conditions, when a product covers its variable costs and contributes toward fixed costs, the company's profits will decrease if the product is discontinued.

Pricing additional sales

Occasionally a company will receive a request to fill an unusually large order at discounted prices. If the company has idle productive capacity, a decision must be reached concerning whether or not the order would be profitable. There are sometimes marketing and regulatory problems involved, such as the effect on existing customers if they learn that the company is selling to others at lower prices. These marketing problems are beyond the scope of this text. However, there are certain cost analysis problems inherent in such decisions.

Generally, increased sales volume will be profitable whenever the incremental revenue received exceeds the incremental costs. To illustrate, assume that the Carlson Container Corporation's accountants have developed the following full cost for container No. 167:

Direct materials	$.07
Direct labor	.05
Variable manufacturing expenses	.04
Fixed manufacturing expenses	.08
Total	$.24

The container is normally sold for 35¢. A distributor in Mexico, where the Carlson Container Corporation does not normally market its products, has offered to buy 10,000 containers exactly like No. 167 for 20¢ each. Assuming sales to this customer would have no effect on the company's existing market, and no governmental regulations concerning fair trade were violated, should the offer of 20¢ per container be accepted?

Fixed costs should not be included in the per unit amount when the differential costs are analyzed for this purpose. The fixed costs of 8¢ per unit should be subtracted from the full cost of 24¢, leaving an incremental cost of 16¢ to produce the additional containers. The company would thus realize a contribution margin of 4¢ per unit on the proposed sale (sales price 20¢, less incremental cost of 16¢).

Caution should be exercised, however, in pricing additional sales below full cost. A tendency to be overly volume conscious while cutting sales prices below full cost can be dangerous, for each product or territory should fully cover fixed costs if the company is to be profitable over the long run. Any product sold below full cost is not carrying its fair share of fixed costs, and only sales prices at or above full cost represent the most stable long-run pricing policy. Sales prices which do not cover both fixed and variable costs should be used as temporary measures only.

Comparing investment proposals

Almost all companies have only a limited amount of funds available for the purchase of income producing assets. Management must have a reliable method of measuring the relative merits of alternate investment proposals. Three of the most widely used techniques employed in screening investment proposals are the payback period, the rate of return on the investment, and the discounted cash flow. Each of these techniques is a means by which investment possibilities are reduced to common terms for purposes of comparison.

Payback period

The payback period is the length of time required for the proceeds from an investment to return the original cost and is usually stated in years or fractions of years. If an investment of $10,000 produces revenue of $2,000 per year, its payback period is five years. Another $10,000 investment possibility, producing $4,000 revenue

per year would have a payback period of 2½ years. The shorter payback period is obviously more desirable, other things being equal.

The payback period should not be used as the only indicator of the relative merits of alternate investment possibilities, since it reduces only one part of unlike investments to common terms, i.e., the period required to recapture the *principal* of the investment. It does not reflect in any way the relative profitability of investments, because it ignores the length of time revenue will continue to be earned after the payback period. One investment possibility may have a payback period of 2½ years and cease to produce revenue after that year; another investment may have a payback period of five years and continue to produce revenue for twenty additional years. For this reason, the payback computation must be combined with other techniques in comparing investment possibilities.

Return on investment

The rate of return realized from an investment is another means by which investments are frequently compared. The annual rate of return is computed by dividing the expected annual income from the investment by the cost of the investment. For example, a 10% rate of return is earned by a $10,000 investment producing $1,000 annual income ($1,000 ÷ $10,000 = 10%).

This method of comparison has the disadvantage of not considering the length of time required to recapture the original investment. For this reason, the payback period, which considers the recapture of the principal, and the rate of return, which considers income from the investment, are used as dual measurement devices to compare the investment alternatives from which a company may choose.

To illustrate, assume that a company is studying two alternatives: (1) whether to invest $100,000 in a coal mine in order to have a ready source of raw material and (2) whether to use the $100,000 to modernize the manufacturing plant. Assume further that the first alternative would result in savings of $5,000 in raw material costs the first three years, and $20,000 per year for seven years thereafter. Modernization of the plant would save the company $12,000 in production costs annually for twelve years. The management of the company would compare these two investment possibilities as follows:[2]

[2] Average investment is not used here, because it unnecessarily complicates the analysis. In addition, use of full investment in computing rate of return approximates more closely the discounted rate of return, due to differences in timing of the cash flow.

First investment possibility (Purchase of a raw material supply)

	Annual Savings	Savings Total
Years 1–3	$ 5,000	$ 15,000
Years 4–10	20,000	140,000
Total savings		$155,000
Cost of the investment		100,000
Total profit		$ 55,000
Annual profit ($55,000 ÷ 10 years)		$ 5,500
Rate of return ($5,500 ÷ $100,000)		5.5%

Payback period:

Year	Annual Revenue	Cumulative Revenue
1	$ 5,000	$ 5,000
2	20,000	10,000
3	5,000	15,000
4	20,000	35,000
5	5,000	55,000
6	20,000	75,000
7	20,000	95,000
	→	7¼ years payback
8	20,000	
9	20,000	
10	20,000	

Second investment possibility (Modernization of the plant)

Total savings, 12 years @ $12,000	$144,000
Cost of the investment	100,000
Total profit	$ 44,000
Annual profit ($44,000 ÷ 10 years)	$ 4,400
Rate of return ($4,400 ÷ $100,000)	4.4%

Payback period:

Year	Annual Revenue	Cumulative Revenue
1	$12,000	$12,000
2	12,000	24,000
3	12,000	36,000

4	12,000	48,000
5	12,000	60,000
6	12,000	72,000
7	12,000	84,000
8	12,000	96,000
		→ 8⅓ years payback
9	12,000	
10	12,000	
11	12,000	
12	12,000	

The first investment proposal would yield a return of 5.5% per year, with a payback of 7¼ years, while the second investment proposal would yield a 4.4% return with a payback in 8⅓ years. The two investments are thus placed on a comparative basis as far as yield and return of investment are concerned. Obviously a final decision would involve other factors, such as raw materials shortages or whether present plant equipment can meet expected demands for the next twelve years. These subjective factors must be weighed individually, but having the return of principal and the income of the two alternate investments reduced to comparable terms assists in the evaluation.

Discounted cash flow

The discounted cash flow method of comparing investment possibilities combines the principles of both the payback and the rate of return. This procedure is one of determining the present value of the expected future cash receipts from a proposed investment. Discounting future income back to the present is based on the premise that a dollar held today is more valuable than one to be received at a future date, since today's dollars can earn interest if invested.

To illustrate the discounting process, assume that money invested today will earn a 6% return. Thus, a dollar today would be worth $1.06 one year from now. Conversely, $1.06 to be received one year from now would presently be worth exactly one dollar. The discounting process reduces future receipts back to present values, using whatever rate of discount the company deems appropriate for its investments. With some exceptions in both extremes, current discount rates range from 6% to 30%, depending upon the risks and the availability of funds for investment purposes.

Suppose, for example, that a company is considering investment of $9,000 in a project which will return $10,000 in equal annual

payments of $2,000 for the next five years. The investment is profitable, since it returns a total of $10,000 for an investment of $9,000. However, the fact that the $10,000 return is received over a five-year period in the future may make the rate of return too small for the company to accept. By discounting the $10,000 future receipts back to the present, using a discount rate selected by the company as a minimum acceptable rate, the $10,000 in future receipts can be equated with the $9,000 present outlay.

A present value table is used to perform the calculations necessary to discount future receipts back to the present. Exhibit 27–2 illustrates such a table, with rates ranging from 4% to 20%.

EXHIBIT 27–2

Present Values of Future Dollars

Number of Years Before Receipt of the Dollar	Present value if rate of discount is:							
	4%	5%	6%	7%	8%	10%	16%	20%
1	.962	.952	.943	.935	.926	.909	.862	.833
2	.925	.907	.890	.873	.857	.826	.743	.694
3	.889	.864	.840	.816	.794	.751	.641	.579
4	.855	.823	.792	.763	.735	.683	.552	.482
5	.822	.784	.747	.713	.681	.621	.476	.402
6	.790	.746	.705	.666	.630	.564	.410	.335
7	.760	.711	.665	.623	.583	.513	.354	.279
8	.731	.677	.627	.582	.540	.467	.305	.233
9	.703	.645	.592	.544	.500	.424	.263	.194
10	.676	.613	.558	.508	.463	.386	.227	.162

Assume that management has established a 10% return as the minimum acceptable rate. Using the amounts in the present-value table, at 10%, the following computation determines the present value of the $10,000 future cash proceeds which are to be received in five annual amounts of $2,000 each.

Year	Cash to be received	Present value of a dollar at 10%	Present value of cash proceeds
1	$ 2,000	.909	$1,818
2	2,000	.826	1,652
3	2,000	.751	1,502
4	2,000	.683	1,366
5	2,000	.621	1,242
	$10,000		$7,580

The present value of $10,000 in future receipts at 10% is only $7,580, which is less than the $9,000 cost. Thus the investment will not earn the required 10%, and management will consider the investment unacceptable. When the discounted value of the proceeds is less than the present cost of the investment, the project will not earn the rate of return which the company considers necessary for its investments.

Federal income taxes and managerial decisions

When considering an investment possibility, the effects of the federal income tax cannot be ignored. Since the tax rate for corporations is approximately 50% of profits, over half the income earned from an investment may be paid in taxes. Such factors as the use of accelerated depreciation methods, the deductibility of book losses when old assets are sold and new assets bought, and the applicability of a lower tax rate to gains on the sale of certain types of fixed assets has had a strong influence on investment decisions.

Many companies use discount rates of 20% to 30% before taxes when computing the present value of investment possibilities. This seemingly high rate is necessary because approximately one-half of any income which the investment may earn will be paid in federal income taxes, leaving the other half to cover profit and the risk of making the investment and to offset inflationary pressures and decreases in the value of the dollar.

Questions

27-1. Define differential costs, differential revenue, and differential profit. Why are these terms of primary importance in problems concerning managerial decisions?

27-2. One factor which is considered in reaching most business decisions is the cost to be incurred. Why are costs from previous income statements not always applicable in reaching decisions affecting the future?

27-3. Is it possible that a decision which maximizes profit in the immediate future may be detrimental to the company's long-range future?

27-4. When a decision must be reached concerning the purchase of a new machine, is it generally true that the machine should be replaced if the cost of the new machine is less than the savings realized by its use?

27-5. If the answer to question four, above, is "yes," why is depreciation on the new machine not considered when the savings and cost are being compared?

27-6. What is an irrelevant cost? Can a cost be relevant to one decision but irrelevant to another?

27-7. What is a "make or buy" decision? Describe how incremental costs enter into such a decision.

27-8. What is an "additional processing" decision? How do incremental costs and revenues enter into such decisions?

27-9. What is an imputed cost? Are these costs included in the traditional income statement?

27-10. Is the statement true that losses incurred on a "shut-down" basis are equal to the company's fixed costs? Explain.

27-11. When a decision is being considered relative to the discontinuance of one of a company's products, why must the variable (or incremental) costs incurred in the manufacture of that product be computed?

27-12. When reaching a decision relative to pricing "additional sales," how do incremental revenues and incremental costs enter into the decision?

27-13. What is a "payback period"? Is the investment with the shortest payback period always the best choice? Why or why not?

27-14. What is meant by rate of return on investment? Is the investment with the highest rate of return always the best choice?

27-15. What is meant by discounted cash flow? Do you agree that a dollar owned today is more valuable than a dollar to be received in the future?

27-16. Why are federal income taxes important in analyzing an investment alternative?

Exercises

27-17. The Henderson Manufacturing Company is considering buying a new machine for $14,000. The cost of operating the old machine

is $15,000 per year, and the new machine can be operated for $12,000 per year. Both the old and new machines have remaining useful lives of five years. The old machine can be sold now for $1,000, and both the old and new machines will have no salvage value at the end of five years.

REQUIRED

Would you buy the new machine? Show computations to support your answer.

27-18. The Lester Bakery has an oven which must be replaced because it is inadequate to produce the necessary volume of production. The old oven can be sold for $1,000 at the present time, and its operating costs are $19,000 per year. The company has two choices:

Choice A: This oven has a ten-year life, will cost $20,000, and operating costs will be $16,000 per year.

Choice B: This oven has an eight-year life, will cost $29,000, and operating costs will be $14,000 per year.

REQUIRED

If both ovens have the same capacity and no salvage value at the end of their useful lives, which one would you recommend that the company buy?

27-19. A company uses a small one-sixth horsepower motor in one of its products. The motor can be acquired from an outside source at a cost of $5.75 each. The company's accountants have computed the following total costs to manufacture the motor:

Direct materials	$1.70
Direct labor	2.50
Variable manufacturing expenses (50% of labor)	1.25
Fixed manufacturing expenses (20% of labor)	.50
Total	$5.95

REQUIRED

1. Assuming the company has sufficient manufacturing capacity, should the motor be bought or manufactured? Support your answer with computations.

2. Assuming the company uses 10,000 motors per year, how much will be saved each year by manufacturing (or buying)?

27-20. A company presently sells its units for $12.00 each, and its average volume of sales is 100,000 units per year. The company's cost structure is $400,000 of fixed costs and variable costs of $4 per unit.

The company's market analysts have estimated that if the company adds a high speed, three-way switch to the unit it could be sold for $12.50. The number of units sold would not change. New equipment costing $100,000 with a five-year life and no salvage value must be acquired to manufacture the switch, and additional material and labor costs of 25¢ per unit would be incurred in making and installing the switch.

The $100,000 for the necessary equipment must be borrowed from the bank at 6% interest.

REQUIRED

Would you recommend that the switch be added (excluding any market considerations)? Support your answer with computations. Would your answer differ if the company had sufficient funds and did not have to pay 6% interest for the $100,000?

27-21. The Evertrue Manufacturing Company has three product lines: A, B, and C. The company's management requested an income statement by product lines and received the following:

	Product			
	A	B	C	Total
Sales	$400,000	$100,000	$300,000	$800,000
Cost of goods sold	250,000	60,000	200,000	510,000
Gross profit	$150,000	$ 40,000	$100,000	$290,000
Operating expenses	130,000	70,000	80,000	280,000
Net income (loss)	$ 20,000	($ 30,000)	$ 20,000	$ 10,000

The company's president and principal stockholder argued that such an analysis is misleading, and he requested further information about the company's operating expenses. He was given the following:

	Product			
	A	B	C	Total
Variable operating expenses	$110,000	$ 30,000	$ 50,000	$190,000
Total fixed operating expenses				90,000
Total				$280,000

REQUIRED

1. Prepare an income statement showing the contribution by products toward covering the company's fixed costs. Would you recommend discontinuance of Product B?
2. Prepare an income statement if Product B were discontinued, assuming no change in sales or cost of goods sold of the other products.

27-22. The Bake Mite Company has analyzed its costs as follows for its product 175-LY:

Direct labor	$3.00
Direct materials	2.00
Variable manufacturing expenses	1.00
Fixed manufacturing expenses (apportioned at 33⅓% of labor)	1.00
Total	$7.00

The product normally sells for $10.00 per unit. A foreign wholesaler approached the company with an offer to buy 10,000 units at $7.00 each. Sales to the foreign customer would not affect the company's domestic market, but an additional cost of 50¢ per unit for overseas transportation would be incurred.

REQUIRED

Ignoring other factors not stated in the problem, would you accept the offer? Support your answer with computations.

27-23. The White Investment Company is considering the possibility of investing $100,000 in a special project. This venture will return $25,000 per year for five years.

REQUIRED

Compute (1) the payback period, (2) the annual rate of return, and (3) the present value of the investment using a 5% rate (use the table in Exhibit 27–2).

27-24. The Glasson Company is considering two investments, each requiring a present expenditure of $36,000. Proposal A will return $6,000 each year for ten years, while proposal B will return $10,000 each year for five years.

REQUIRED

For each investment proposal compute (a) the total dollar return, (b) the payback period, (c) the annual rate of return, and (d) the present value of the investment, using an 8% rate (from the table in Exercise 27-2).

Problems

27-25. (a) The Rondwell Company has the following cost structure:

Fixed manufacturing expenses	$100,000
Fixed selling and administrative expenses	80,000
Variable manufacturing expenses (per unit):	
Direct labor	2
Direct material	4
Variable overhead	1
Variable selling and administrative expenses (per unit)	2

REQUIRED

Compute the total cost per unit to manufacture the company's product if:

(a) 100,000 units are produced;
(b) 50,000 units are produced;
(c) 200,000 units are produced.

(b) The company sells its product for $13 per unit. A request was received from a wholesaler for 50,000 units at a special price of $10 each. (Assume this order will not affect the company's present market.)

REQUIRED Prepare computations which indicate whether the offer would be profitable.

Assume the company sells 100,000 units at regular prices. Prepare two income statements, one to reflect the results of operations if the special order is not accepted and the other to reflect the results of operations if the special order is accepted. (The *difference* between the two should be the same as the result of computations in the preceding part.)

27-26. The Mayfield Company incurred the following costs when 10,000 units were produced and sold:

Direct labor	$25,000
Direct material	30,000
Variable manufacturing expenses	40,000
Fixed manufacturing expenses	20,000
Variable selling and administrative expenses	10,000
Fixed selling and administrative expenses	30,000

The company's units sell for $17.50 per unit. A notice was received that the state government was receiving bids on 3,000 units similar to those manufactured by the Mayfield Company. The state specifications required an extra part not usually installed on the company's unit. Making and installing this part would require the purchase of a special machine at a cost of $5,000, and additional materials and labor which would cost $1 per unit. The machine would have no further use after the 3,000 special units were made and it could then be sold for $2,000. Variable selling and administrative costs would apply to the 3,000 units if the company is awarded the contract.

REQUIRED

1. What is the lowest bid price per unit which could be quoted without a resulting reduction in present profits?
2. What is the price which should be bid to produce a profit of 10% of the sales price?
3. Assume the company bid a unit price of $13.50 and was awarded the contract, and also manufactured and sold 10,000 units at their regular $17.50 price. Prepare an income statement.

27-27. The Arrow Company manufactures and sells three products, with the following per unit data applicable to each:

	Economy unit	Regular unit	De Luxe unit
Sales price	$25.00	$40.00	$50.00
Direct material	$ 8.00	$13.00	$16.00
Direct labor	4.00	5.00	7.00
Variable manufacturing expenses	5.00	7.00	9.00
Variable selling and administrative expenses	3.00	4.00	5.00
Total	$20.00	$29.00	$37.00
Contribution to fixed costs	$ 5.00	$11.00	$13.00

The company's fixed costs are $100,000, and 4,000 economy units, 5,000 regular units, and 3,000 de luxe units are sold each year. A proposal is being considered by the company's management that would eliminate the economy unit from the company's line. Market research indicates that if the economy unit is discontinued, the sales of regular units will increase to 7,000 units, and the sale of de luxe units will increase to 4,000 units. Further, special equipment used only for the manufacture of the economy units would be sold, and thus total fixed costs (depreciation, insurance, and taxes on the equipment) would decrease by $5,000.

REQUIRED

1. Prepare an income statement if all units are continued.
2. Prepare an income statement if the economy unit is discontinued.
3. State whether you would recommend discontinuing the economy unit and describe the factors causing the profit differential between the income statements in parts (1) and (2).

27-28. The Omaha Sheet Metal Company is considering the replacement of an old machine with a new one. The old machine is adequate and is to be replaced only if the new machine is a good investment. Data relative to the old machine and two possible replacements are as follows:

	Old Machine	New Machine A	New Machine B
Cost	$80,000	$100,000	$110,000
Accumulated depreciation	$50,000		
Present market value	$ 1,000		
Remaining useful life	10 years	10 years	10 years
Salvage value at end of remaining useful life	$ 1,000	$ 1,000	$ 25,000
Annual operating costs	$21,000	$ 10,000	$ 12,000

REQUIRED

1. Would you replace the machine with one of the new ones? If so, state which one and present computations in support of your decision. (You may assume that the company has sufficient funds to purchase the new machine and ignore any present value computations.)
2. If the company does not invest any funds unless the expected return is at least 10%, would you recommend that the machine be replaced? (Discount the annual savings and expected salvage proceeds of the new machines to the present to ascertain if the sum of the present value of the annual savings and salvage proceeds, at 10%, is greater than the present outlay for the machine. If so, the investment will produce a return of 10%.)

27-29. The board of directors of the Hornsby Company is in the process of setting the total advertising budget for the coming year. The company's cost structure, exclusive of advertising, is as follows:

Fixed manufacturing costs	$60,000
Variable manufacturing costs (per unit)	10
Fixed selling and general costs	40,000
Variable selling and general costs (per unit)	5

The present advertising expenditure is $20,000.

The company is currently producing and selling 10,000 units per year at a sales price of $28.00 and has an annual capacity of 20,000 units.

K. C. Taylor, a new member of the board of directors, is an experienced market analyst and developed the following data:

If the annual advertising expenditure is:	Then the total number of units sold will be:
$ 5,000	$ 5,000
10,000	7,000
15,000	8,500
20,000	9,500
25,000	10,500
30,000	11,000
35,000	11,400
40,000	11,700
45,000	11,900

REQUIRED

1. At what amount would you recommend that the advertising budget be set? Prepare data to support your decision. (Set up a

table showing (1) *increased* revenue and (2) *increased* advertising and variable costs at each advertising level. The difference is increased profit.)

2. Prepare three income statements, one at the level of advertising you selected in part (a), one at the next lowest level, and one at the next highest level. (The statements should support your selection of the best level, since the level you select should produce the highest profit.)

27-30. Presented below are the cash proceeds which are expected to be received from alternate investments. Each investment requires an outlay of $80,000, and the company has funds to accept only one of them.

	Cash expected to be received						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
Investment A	$10,000	$10,000	$20,000	$20,000	$25,000	$25,000	$110,000
Investment B	30,000	30,000	20,000	10,000	10,000	10,000	110,000
Investment C	40,000	40,000	10,000	10,000	5,000	5,000	110,000
Investment D	5,000	5,000	20,000	20,000	30,000	30,000	110,000
Investment E	60,000	30,000	5,000	5,000	5,000	5,000	110,000
Investment F					50,000	60,000	110,000

REQUIRED

1. Compute the total present value at a 10% rate (using the present values in Exhibit 27–2), the payback period, and the rate of return for each of the investments.
2. Rank the investments in the order in which you would accept them, placing the most desirable first.

Cases

27-31. The Nesford Company has a hydraulic press which cost $70,000 seven years ago. The machine had a twenty-year life, and the accumulated depreciation account now has a balance of $24,500. The machine has a present market value of $20,000, and annual operating costs applicable to the machine are as follows:

Labor	$4,000
Materials spoilage	500
Power	1,000
Fixed and variable overhead, apportioned at 100% of labor	4,000
	$9,500

A machinery salesman approached the Nesford Company officials and explained that his company had developed a new semi-automatic machine which could reduce the company's operating labor by one-half. (The Nesford Company engineers agreed that labor costs would probably be reduced by 50%.) The new machine cost $90,000 and has a twenty-year life. The salesman presented the following proof that his machine should be bought:

	Annual operating costs of new machine		
Labor	$2,000		
Materials spoilage	400		
Power	800		
Fixed and variable overhead, apportioned at 100% of labor	2,000		
	$5,200		
Operating cost of old machine		$ 9,500	
Operating cost of new machine		5,200	
Annual savings			$ 4,300
Savings over 20 years (4,300 × 20)			$86,000
Price of new machine		$90,000	
Proceeds from sale of old machine		20,000	
Net cost			70,000
Savings by using new machine			$16,000

Would you accept the salesman's figures? Do you think the machine should be acquired?

27-32. The Pringle Candy Company operates a chain of candy stores throughout several states. Each store manufactures and sells a special chocolate packaged in one-pound boxes. Mr. Pringle is president of the company and the only shareholder. He is particularly concerned about Store #8. This store, located in Dallas, was at one time one of the most profitable in the chain, but in recent years has incurred losses. The volume of business has leveled, and the losses have been about the same for the past three years. Store number eight has its own candy-making equipment, which has an expected remaining life of 15 years and an undepreciated cost of $45,000. The store building is under lease for 15 years. Store #8 has excess capacity to accept additional business.

The operating results for the year ended December 31, 1964, are shown on page 834. (Inventories are negligible and may be ignored.) The year 1964 is representative of Store #8 operations over the past

several years. There appears to be little likelihood of increasing profits except by changing prices or expanding the market.

Sales (50,000 one lb. boxes @ $1.50)		$75,000
Less: Direct candy-making wages (50,000 lbs. 30¢)	$15,000	
Manager's salary	7,500	
Two sales clerks' salaries (these two can handle any volume of sales)	7,000	
Direct materials (50,000 lbs. @ 65¢)	32,500	
Candy boxes (50,000 @ 3¢)	1,500	
Rent	5,000	
Depreciation	3,100	
Insurance	1,000	
Maintenance	500	
Advertising	400	
Telephone	150	
Gas and electricity (primarily for candy making)	600	
Allocated head office overhead	4,500	78,750
Net loss		$ 3,750

The telephone, manager's salary, sales salaries, advertising, maintenance, insurance, depreciation, and rent of Store #8 are fixed expenses. The company's head office is in Little Rock, and each year the total head office expenses are allocated equally to each store.

Mr. Pringle is currently attempting to reach a decision relative to Store #8. Any one or all of the following possibilities are available to him:

(1) He has been offered $30,000 by a local businessman for the equipment and lease, which will be used so as not to compete with the Pringle Candy Company.

(2) He can reduce the selling price of candy at Store #8 from $1.50 per lb. to $1.30 per lb. and thereby increase the number of boxes sold by 10,000 per year.

(3) A candy distributor in Shreveport, Louisiana, has offered to buy 30,000 one-pound boxes of the candy each year for $1.10 per box, FOB Shreveport. Freight costs to Shreveport are 4¢ per lb., and there is little likelihood that sales in Shreveport would affect the Pringle Candy Company's market.

Compute the break-even point for Store #8 at $1.50 sales price per box, and compute how many additional boxes of candy must be sold at that price before the store reports a profit.

Would you recommend that the business be sold? If not, would you recommend that the regular sales price be reduced to $1.30, or that the candy be sold to the distributor at $1.06?

28

Determination of the value of a business enterprise

The current market value of the ownership rights in a business enterprise depends in large measure upon the value of its assets and its profit potential. The balance sheet, income statement, and statement of retained earnings, which report current financial position and the result of past operations, are the foundation for appraising the company's value. The data in these financial statements must be analyzed thoroughly for a realistic and reliable valuation of the firm.

The purchase and sale of businesses or major portions of business ownership, which occur with some frequency, necessitate the placing of a value on the business as a continuing entity. Valuation is normally undertaken when ownership is transferred or a controlling stock interest is to be sold, when a partner's equity is changed by admittance of a new partner or withdrawal of an existing partner, when a new issue of capital stock is offered to the public, or when a major reorganization or refinancing is undertaken.

To illustrate, assume that Logan Brail owns 90% of the capital stock of a company and that the remaining 10% is owned by several other individuals. Mr. Brail, having reached retirement age, is interested in selling his stock. The value of Brail's stock ownership is directly dependent upon the value of the business enterprise. Even though shares owned by one of the other stockholders have recently been traded, the price received for such minority shares does not provide a basis for evaluating Brail's holdings, since his 90% ownership controls the company. Only by placing a valuation on the enterprise as a going concern can an intelligent appraisal of the value of the controlling interest in the company be made.

Reasonable range of values

The fact should be evident at this point that accounting data provide information of value in solving a business problem, but factors

outside the scope of financial data enter into the solution of almost all business problems. When a value is placed on a business enterprise, the seller will usually assess a higher value than will a prospective purchaser. The final price is a product of bargaining between the two parties. The methods discussed in this chapter provide a means of quantifying or reducing to dollar amounts some of the factors which the buyer and seller must consider.

Several alternative procedures are discussed in this chapter, any one of which could be applied to a given situation. By using several of these methods, a reasonable range of values may be established within which the buyer and seller will negotiate.

Valuation of assets and earnings

In measuring the value of a business, the company's assets and earning power must be evaluated separately. Properties presently owned must be included in assessing the value of an enterprise, but the value of present assets standing alone will not in most cases reflect the value of a going concern as a future source of net income. For example, one business whose assets have a present market value of $100,000 may have annual profits of $15,000, while a similar business with the same dollar value of assets may realize annual profits of only $5,000. The first company, which has a greater profit potential, is obviously more valuable as a continuing enterprise, even though its assets are worth no more than those of the second company.

The need for a separate evaluation of the assets and the profit potential of a company may be illustrated by a simple example. Assume L. P. Jones has for sale a cold drink vending machine, located in a choice spot. Both the machine and the monopoly it enjoys because of its location will be included in the sales price, and a value must be assigned to each. The current value of the machine is $300, without consideration of the location; this amount measures the value of the asset itself, whether in its present location or at another site.

The value of the location is determined by appraising the "excess profits" which it produces. If the average net income from the use of similar machines in other locations is $70 annually, while this particular site returns a profit of $100, the excess profit is $30 per year. *Capitalization* of this excess profit is one method by which the extra earning power may be valued. The term "to capitalize" means to compute the amount of investment which, at a selected rate of interest, will produce, in this case, $30 annual income. If 20% is a

mutually agreeable rate of interest, the capitalized value is found by dividing $30 by 20% (or .20):

$$\$30 \div .20 = \$150$$

An investment of $150, earning 20% annually, will produce $30 of income; consequently, the excess profits are worth $150. Using this method of evaluation, the vending machine, in its present location, is worth $450, determined by adding the $300 value of the asset to the $150 valuation of the location. An investor would therefore pay $450 for the machine in expectation of a $100 return each year, $70 of which is the normal return and $30 of which is a 20% return of the price he paid for the location.

Steps in the valuation process

The valuation process involves four basic steps, which were followed in appraising the value of the vending machine in the previous example.

1. Determine the value of the assets.
2. Project into the future the annual net income of the business and determine the amount which may be considered excess earnings.
3. Place a value on the excess earnings.
4. Add the total asset values in Step 1 to the total value of the excess future earnings in Step 3 to arrive at the computed value of the business as a continuing enterprise.

There are several ways in which each of these steps may be accomplished, with varying results. These alternate procedures and the application of financial data to the valuation process are discussed in the remainder of this chapter.

Role of accounting data in the valuation process

The historical data in financial statements do not always reflect future expectations, and the value of a business enterprise must obviously be based on its potential. For this reason, financial statements serve only as a beginning point in the valuation of a business and must be adjusted in the light of future expectations.

With the exception of cash and receivables, which appear at realizable value, all the assets on the balance sheet reflect only the unexpired cost, which is dependent upon the selected depreciation or amortization policy and usually has no relationship to current value.

For example, the method of recording depreciation, computing the cost of the ending inventory, and amortizing intangible assets will directly affect the book value of an asset at any given moment in its useful life.

The net income which a business reports each accounting period is also directly affected by the company's accounting policies. The choice of a depreciation method (such as straight-line vs. declining balance) and the selection of an inventory valuation method (such as FIFO vs LIFO) play major roles in the determination of reported profits. In addition, fluctuations in the value of the dollar may prevent accurate comparisons of one year's net income with that of another. A net profit of $10,000 in 1933 should not be equated with a profit of $10,000 in 1963 without adjustment, because the dollar in 1963 has less than half the purchasing power the dollar enjoyed in 1933. If the financial statements of past years are used as a basis for estimating future income, the data must be so adjusted that the net incomes of all periods included in the analysis are comparable.

Valuation of assets

There are three different concepts which may be applied in the valuation of the assets of a business. The assets may be assigned (1) their value if sold individually on the open market, (2) the cost of procuring similar assets, or (3) their value as a collective group of income-producing assets. The latter is generally considered the most appropriate valuation basis.

The concept of assigning to assets a value equal to their proceeds if sold individually on the open market is based on a liquidation assumption, rather than on a going concern basis. Assets sold in this manner almost invariably realize less than their value as a group of productive assets. The liquidation value of individual assets is relevant only in certain instances when the company has incurred consistent losses or when its profits have been considerably less than those of similar companies within the industry. In such cases, the assets should be sold and the proceeds invested in properties that will produce a normal return.

Replacement value, or the estimated cost of procuring similar assets in like condition, is not always a good measure of the value of the collective assets of a going concern, because the costs incurred and the time consumed in gathering and arranging the assets into productive properties are not usually considered. Furthermore, as-

signment of replacement value assumes that similar assets in like condition are available.

The best measure of the value of a company's total assets is their present worth as a group of related, income-producing properties. There is no absolute method by which this value can be assessed, but it is generally replacement cost plus the cost of the time, effort, and expense of bringing the assets together.

To illustrate the valuation of a company's assets, assume that the Crandall Company has been earning average annual profits of $10,000, which is above the average in the industry. Their trial balance appears as follows:

Cash	$ 2,000	
Inventory	10,000	
Machinery and equipment	60,000	
Accumulated depreciation—machinery and equipment		$10,000
Common stock		40,000
Retained earnings		22,000
	$72,000	$72,000

Assume further that the machinery and equipment could be sold individually for a total of $50,000, and that the inventory has an immediate value of $5,000 on a liquidation sale basis. Machinery and equipment similar to the existing assets would cost $57,000, and the inventory could not be replaced for less than $11,000. In addition, an estimated $4,000 would be spent in acquiring similar machines and equipment, transporting them to the company's location, installing, and testing them.

Since the profits of this company have been above the average in the industry, the going concern basis of valuation should be used rather than the liquidation basis. The value of the machinery and equipment on a going concern basis is $61,000, which is the replacement cost of similar equipment ($57,000) plus the cost of gathering them into an income-producing entity ($4,000). The inventory should be valued at $11,000.

Estimation of future earnings

The next step in the valuation process is to estimate future earnings. Past earnings are the beginning point in determining future profits, but such expenses as depreciation and amortization must be adjusted to reflect the new valuation that has been placed upon the

assets. In past years, the company's profits were computed using depreciation and amortization expenses based on the original cost of the assets; when future earnings are estimated, depreciation and amortization expenses should be based on the adjusted value of the assets. If the business is sold, the new owner must compute future earnings using depreciation and amortization costs based on the price he paid for the assets.

In the previous illustration, the inventory was reflected on the Crandall Company books at $10,000, and the machinery and equipment at an undepreciated cost of $50,000. Their adjusted market values were estimated in that illustration to be $11,000 and $61,000, respectively. Assume that the machinery and equipment have a remaining useful life of five years and that a FIFO inventory method is to be used. A buyer, paying the adjusted market value for the assets, could expect his future profits to be lower than those reported in previous years by the following amounts, other factors being equal:

EXHIBIT 28–1

Profit Reduction Resulting from Changed Asset Costs

	Cost on seller's books	New cost to purchaser	Reduction in future profits Year 1	2	3	4	5
Inventory	$10,000	$11,000	$1,000				
Machinery and equipment	50,000	61,000	2,200	$2,200	$2,200	$2,200	$2,200
Decrease in expected profits			$3,200	$2,200	$2,200	$2,200	$2,200

Assuming that the company has been earning $10,000 annually, and that present operations will continue unchanged in the future, the new owner paying current market value for the assets can expect a profit of only $6,800 in the first year after acquisition and $7,800 for the next four years.

Obviously, many factors in addition to the adjusted market value of the assets will affect future profits. Upward cost trends, population shifts, and improved production or marketing methods, for example, should be considered when future profits are estimated. Both purchaser and seller must reach an agreement on the probable ef-

fects of such factors before they can be quantified and figured into the estimation of future earnings.

Valuing excess earnings

Future earnings will command a purchase price only if it is anticipated that they will be in excess of a normal return on invested capital. A purchaser paying the adjusted market value for a company's assets expects a normal return on his investment. If he cannot anticipate such a return, in the absence of other considerations, he will not buy the assets and continue them in their former use.

To illustrate, assuming that 6% is considered a normal return on invested capital, a purchaser paying $100,000 for the assets of a business would expect earnings of at least $6,000 per year. If future profits are estimated at only $4,000 annually, or less than the normal return, the assets are not worth $100,000 as a group of related income-producing properties. The assets may in this case produce more income if sold individually and the proceeds invested elsewhere at 6%.

If expected profits are $6,000, assets worth $100,000 and earning only 6% will produce only a normal return and there will be no excess profits. Expected earnings of $8,000 per year, however, will yield excess earnings of $2,000. An estimate must be made of the period of time over which excess earnings will continue. Obviously, the longer these profits can be expected to continue, the greater will be their value. Since there is no reliable way by which this time period can be ascertained, it is necessary for both seller and purchaser to arrive at a mutually acceptable estimate.

The value of a company's excess earnings may be considered (1) the total excess earnings for a specified number of years, (2) the capitalized value of annual excess earnings, or (3) the present value of future excess earnings.

Specified number of years

When excess earnings for a specific number of years are used to value the company's profits, a relatively short period of time is normally selected. With some notable exceptions, a period longer than five or six years has not been allowed in the valuation cases settled in court. If excess profits are $2,000 per year, use of a five-year period would place a $10,000 valuation on the company's profits, which would be added to the adjusted market value of the assets to determine the total valuation of the enterprise. If the assets

are valued at $100,000, the business would be considered worth a total of $110,000.

Capitalization

Assuming that a 20% rate of interest is mutually acceptable, the capitalized value of excess profits of $2,000 per year is determined by dividing the annual excess earnings by the selected percentage, as follows:

$$\$2{,}000 \div .20 = \$10{,}000$$

The $10,000 capitalized valuation indicates that an investment of $10,000 earning a 20% return will produce a $2,000 income each year.

The selected interest rate must be sufficient to provide a satisfactory return on the investment and, at the same time, cover the risk involved in projecting excess profits into the future. Consequently, the selected rate may be as high as 20 to 30 per cent.

Present value

Use of present value computations is based on the premise that the inflow of future dollars from excess earnings will not be as valuable as an equal number of current dollars. Therefore, future excess profits for a specified period may be valued by discounting them back to the present at a selected discount rate. The discount rate should be sufficient to provide a normal return and also cover the risk inherent in buying future excess profits.

To illustrate, assume that excess profits are estimated to be $2,000 per year, that a 10% rate is to be used, and that the excess earnings are not reasonably assured for more than ten years. The total present value of the estimated excess profits is computed by using amounts from a present value table similar to Exhibit 27–2. Each dollar of excess profits over the ten-year period is discounted back to the present to determine its current value. The computation would be made as shown in Exhibit 28–2.

The stream of expected excess profits is thus estimated to have a present value of $12,292, dependent upon selection of a 10% rate and a ten-year period. Use of other percentage figures or a different number of years could produce significantly different valuations.

EXHIBIT 28–2

Year	Expected excess profits	Present value of a dollar at 10%	Present value of excess profits
1	$2,000	.909	$ 1,818
2	2,000	.826	1,652
3	2,000	.751	1,502
4	2,000	.683	1,366
5	2,000	.621	1,242
6	2,000	.564	1,132
7	2,000	.513	1,026
8	2,000	.467	934
9	2,000	.424	848
10	2,000	.386	772
Total			$12,292

Valuation of a business illustrated

The case shown below is given to illustrate the entire valuation procedure. The current financial position of the Graybell Company and its profit position are reflected in the following financial statements:

EXHIBIT 28–3

GRAYBELL COMPANY

Condensed Balance Sheet

December 31, 1964

ASSETS			EQUITIES		
Cash		$ 2,000	Accounts payable	$2,000	
Accounts receivable	$ 8,000		Accrued taxes payable	1,000	$ 3,000
Less Allowance for uncollectible accounts	500	7,500	Two-year note payable		2,500
			Capital stock		20,000
Inventory		10,000	Retained earnings		4,000
Equipment	$19,000				
Less Accumulated depreciation	9,000	10,000			
Total assets		$29,500	Total equities		$29,500

GRAYBELL COMPANY

Income Statement

For the Year Ended December 31, 1964

Sales		$100,000
Cost of goods sold		63,000
Gross profit		$ 37,000
Expenses:		
Depreciation on equipment	$ 2,000	
Salaries	21,500	
Supplies	1,500	
Rent	5,000	30,000
Net income		$ 7,000

All the capital stock of the company, which is owned by T. R. Graybell, is to be sold. The Wycoll Company is interested in acquiring the business and wishes to purchase all of the stock from Graybell. Representatives of the Wycoll Company and Mr. Graybell arrive at the following decisions after considerable negotiation:

1. The Wycoll Company agrees to accept the valuation of all assets and liabilities as presented on the balance sheet, with the exception of the equipment, which has a current market value $10,000 greater than its book value and five years of useful life remaining.
2. The $7,000 net income for 1964 is representative of the company's operations, and no foreseeable events are expected to change materially its profit position.
3. A 10% return on invested capital is a normal return in this industry.
4. Excess profits, if any, are to be discounted at 16% for a five-year period to determine their present value.
5. The price to be paid for the company's stock is the current market value of the net assets plus the present value of any excess profits.

Valuation of assets

The net assets (assets less liabilities) total $24,000 on the books. Their market value is $10,000 greater than their book value; therefore, the agreed current market value of the net assets is $34,000.

Computation of excess profits

The depreciation expense has been $2,000 per year, as reflected by the company's income statements, but will be $4,000 when based on

the equipment's current market value of $20,000 and its remaining five-year life. Thus the increased depreciation expense will reduce anticipated future profits to only $5,000 per year.

A normal return on the $34,000 valuation of the company's assets at the agreed 10% rate would be $3,400 per year. Thus only $1,600 of the expected $5,000 net income is excess profits. ($5,000 expected profits less $3,400 normal profits = $1,600 excess profits.)

Present value of excess profits

The two parties agreed that future excess profits are to be discounted to their present value using a five-year period and a 16% rate.

The present value of the excess profits is computed as follows:

Year	Excess profits	Present value of a dollar	Present value of excess profits
1	$1,600	.862	$1,379.20
2	1,600	.743	1,188.80
3	1,600	.641	1,025.60
4	1,600	.552	883.20
5	1,600	.478	764.80
Total			$5,241.60

The present value of future excess profits is thus $5,241.60, and a total valuation of $39,241.60 is placed on the business, computed by adding the $34,000 current market value of the assets to the $5,241.60 present value of the excess profits.

Value of a deficit

Federal income tax regulations permit a parent corporation owning all or substantially all of the stock of another corporation to combine the income or loss of the subsidiary with that of its own in a single consolidated tax return. Tax regulations further permit a corporation to carry forward accumulated losses to offset profits of future years. These two conditions make the accumulated losses of one company valuable to another.

To illustrate, assume that Company A, a profitable concern, is paying federal income taxes at the rate of 50%. Company B, on the other hand, has accumulated losses of $70,000 during the past three years. If Company A buys all or substantially all the stock of Com-

pany B, a consolidated tax return can be filed, and the $70,000 losses of Company B can be offset against the current taxable profits of Company A. In effect, the $70,000 loss "carry-forward" of Company B is worth $35,000 in tax savings to Company A ($70,000 @ 50% tax rate). The value of a deficit which can be used to reduce the taxes of a purchasing company should be considered when a valuation is placed on the company.

Comparing partnership and corporation financial data

Two factors of major importance should be considered when the financial statements of a partnership or proprietorship are compared with those of a corporation. First, the income taxes paid by a corporation are an expense of the business, while profits of partnerships and proprietorships are taxable as personal income to the owners. Second, the services of partners or proprietors are not reflected in the salaries expense accounts, since any assets they withdraw are recorded in withdrawal accounts instead of a salary expense account.

Consider, for example, the following two income statements for the Atlas Corporation and the Hale-Bartt partnership. For the purpose of illustration, assume that these companies are identical in every respect, except the form of ownership.

ATLAS CORPORATION

Income Statement
For the Year Ended Dec. 31, 1964

Sales		$300,000
Cost of goods sold		160,000
Gross profit		$140,000
Expenses:		
Depreciation	$10,000	
Salaries	90,000	
Supplies	5,000	
Insurance	3,000	108,000
Net income before taxes		$ 32,000
Federal income tax expense		10,600
Net income after taxes		$ 21,400

HALE–BARTT COMPANY

Income Statement
For the Year Ended Dec. 31, 1964

Sales		$300,000
Cost of goods sold		160,000
Gross profit		$140,000
Expenses:		
Depreciation	$10,000	
Salaries	50,000	
Supplies	5,000	
Insurance	3,000	68,000
Net income		$ 72,000

The partnership net income of $72,000 appears on the surface to be much better than the $21,400 corporate net income after taxes.

However, note that the sales, cost of goods sold, gross profit and depreciation, supplies, and insurance expense are identical. Only the salaries expense differs in amount, and only the statement of the corporation reflects a federal income tax expense. The salaries of all administrative officers are considered expenses to the corporation, but the services of the partners are not reflected in the salaries expense account of the partnership. If the salaries expense of the partnership contains an additional $40,000, an amount assumed to be comparable to the salaries received by the two top corporate executives, the statements of the companies would reflect identical operating results. Therefore, when the value of a partnership is computed by a prospective corporate purchaser, partnership profits should be adjusted to the corporate form.

Questions

28-1. Why is the determination of the current value of a business entity necessary? Name several events which necessitate placing a value on the business enterprise.

28-2. Presently owned assets and the earning power of a business must be evaluated separately when placing a value on the enterprise. Explain why this is necessary.

28-3. Describe briefly the four steps in the valuation process.

28-4. Why are past financial data valuable, but nevertheless only a beginning point in the valuation of a business?

28-5. Accounting policies adopted by a company directly affect the balance sheet amounts of assets and also the periodic net income. Contrast the balance sheets and reported income of two companies, where one uses a LIFO inventory and sum-of-the-years'-digits depreciation while the other uses straight line depreciation and a FIFO inventory method.

28-6. Do you feel that a company that has made a consistent profit of $10,000, without fluctuation, since 1933, has "remained steady" or has its profitability decreased in terms of purchasing power? Explain.

28.7. Distinguish between the valuation of assets based on (a) a liquidation assumption, (b) a replacement basis, and (c) as a collective group of productive assets. Which is more appropriate to a profitable going concern?

28-8. When an attempt is being made to set a value on a business enterprise and future profits are being estimated, explain why past profits must be adjusted to take into consideration current asset values.

28-9. Why is a relatively short period of time, such as five or six years, normally used when the value of excess future profits is considered the total excess for a specified period of time?

28-10. Describe the process of "capitalizing" excess profits.

28-11. Describe the process of discounting excess profits back to the present. Is a specified period of time necessary for this computation?

28-12. How can a deficit of one company be of value to another company if the two are jointly owned and file a joint return?

28-13. Why do salaries and federal income taxes make the income of proprietorships and partnerships not comparable with corporations? Would you consider a corporate net income of $50,000 equal to a partnership net income of $50,000?

Exercises

28-14. John Craine owns the cold drink concession at a ball park. He paid $5,000 for the concession two years ago, and it has three years of remaining life. His other assets used in the operations of the concession are of negligible amount. Profits have averaged $3,000 each season.

REQUIRED

If a 10% return is considered normal on investments of this nature, and if the present level of profits can reasonably be expected to continue for three years, discount the earnings back to present value and determine a valuation of the concession rights. (Use the table in Exhibit 27–2.)

28-15. William Hott is considering the purchase of all the stock in a company which has net assets of $100,000. Profits have been $18,000 each year, after deducting depreciation expenses of $8,000. They are expected to continue unchanged if Hott buys the business, with the exception of the increased depreciation expense.

REQUIRED

If the net assets have a current value of $120,000 and a remaining life of ten years, and if excess profits are to be assigned a value equal to their amount over the next five years, compute a total valuation of the enterprise.

28-16. Compute from the data given in the following three independent cases the value which would be assigned to excess profits:

(a) Normal earnings in the industry are 10% on net assets, and excess profits are to be given a value equal to the total excess profits to be earned during the next five years. The company has net assets worth $200,000, and total profits are expected to be $27,000 annually.

(b) Normal earnings in the industry are 8% of net assets, and excess profits are to be capitalized at 10%. The company has net assets of $100,000, and total profits are expected to be $11,000 annually.

(c) Normal earnings in the industry are 15% on net assets, and excess profits for the next five years are to be discounted to present value at 20%. The company has $200,000 of net assets, and profits are expected to be $10,000 annually. (Use the table in Exhibit 27–2.)

28-17. The Heldrik-Kertal Company has a deficit of $60,000, which resulted from continued losses over the past three years. Under new management, the company will probably earn profits of $4,000 on its net assets which have a present market value of $100,000. The Masterson Company is considering buying the stock of the Heldrik-Kertal Company and operating it just long enough to use the deficit to offset some of its taxable income. The Masterson Company has an annual income of approximately $150,000 and pays 50% of this profit as federal income taxes.

REQUIRED

Compute the amount which the Masterson Company would be willing to pay for the Heldrik-Kertal Company if it must earn 10% on the total paid for the company over the next four years, at which time the assets are to be sold for an expected $80,000 and the Heldrik-Kertal Company liquidated.

(Hint: Discount the total proceeds from the $4,000 annual expected profits over four years, the $80,000 to be received at the end of four years, and the present value of the tax savings from the deficit.)

Problems

28-18. The Lockman Holding Company, who averaged $90,000 in net income in recent years, pays an income tax of 50% on this figure. The company is presently considering the acquisition of all the common stock of the Trade Mart Company. The net assets of the Trade Mart Company have a book value of $120,000 and a present market value of $140,000, and have a twenty-year remaining life. Its retained earnings has a debit balance (deficit) of $36,000 which resulted from a very heavy loss two years ago when it embarked on a new marketing program which proved a failure. The Trade Mart Company expects its future after-tax earnings to average $18,000 in future years, based on depreciation computed using the present book value of the assets. The Trade Mart Company is in a lower income tax bracket and pays income taxes at a rate of 30%.

REQUIRED

1. Compute a reasonable price which the Lockman Company might pay for 100% of the stock of the Trade Mart Company if excess earnings are to be capitalized at 10%, and if the tax savings resulting from the deficit (20% of the $36,000) is discounted for one year at 10% to determine its present value. A normal return in this industry is 10% of net assets.
2. List all the factors which must be mutually agreeable to both seller and buyer before a valuation as determined in this problem is computed.

28-19. The amounts appearing on the Redline Company's books and the estimated present value of the assets on December 31, 1964, appear at the top of page 851.

Negotiations are in process for the Donahue Corporation to purchase the entire common stock of the Redline Company. Both parties agree that the equipment has a seven-year remaining life and the buildings a twenty-year remaining life. Depreciation used in past profit determinations has been $6,000 annually for equipment and $7,000 annually for buildings. Both parties agree that the company's sales will continue to average $300,000 annually over the foreseeable future, and that expenses, exclusive of depreciation and income taxes of 50%, will average $260,000.

	Book Value		Estimated Present Value
Cash	$ 7,200		$ 7,200
Accounts receivable (net)	11,400		10,800
Inventory	24,200		24,200
Equipment (net)	36,400		35,000
Buildings (net)	87,000		100,000
Land	18,700		25,000
Accounts payable		$ 24,600	
Mortgages payable		50,000	
Capital stock		80,000	
Retained earnings		30,300	
	$184,900	$184,900	

REQUIRED

1. Compute valuations of the business for each of the following three independent assumptions if normal return on investment in the industry is 10% and if excess profits are valued: (1) as being equal to the total excess profits earned during the next five years; (2) by capitalizing at 10%; (3) by discounting excess earnings for the next ten years at 16% to determine present discounted value. (Use the table in Exhibit 27–2.)
2. Assume the business is bought for cash by the Donahue Corporation for the amount determined in part (1) above. Record in general journal form the entry on the Donahue Company's books for the purchase. (Record goodwill for the excess paid over the present value of the assets.)
3. What do you think should be done with the goodwill? Should it be amortized? If so, over what period of time?

28-20. The entire ownership of Collins, Inc., a corporation, and the Jones-Bertman Company, a single proprietorship, are for sale. Both companies are in the same industry. The Collins Corporation pays its president and only stockholder, Mr. J. C. Collins, a salary of $20,000 each year. Mr. L. K. Jones, sole owner of the Jones-Bertman Company performs the same function as does the president of a corporation, but receives no salary. The corporation pays 30% of its profits in taxes, while the proprietorship pays no taxes as a business entity, but would pay the same percentage as the Collins Corporation if incorporated.

The assets of both companies cost $150,000 twenty years ago and have been depreciated using a total expected life of thirty years. The assets of both companies have a present going concern value of $110,000 with a ten-year remaining life. The profits of the corporation were $20,000 in 1963, and the profits of the proprietorship that same year were $50,000. No changes are expected in the future profitability of the two companies.

REQUIRED

1. Compute the value of each business to a corporate purchaser if normal profits in the industry are 10% of investment, and excess profits are capitalized at 20%.
2. Describe briefly any other factors which you would want to investigate before acquiring either business for the amount computed in part (a).

28-21. Harvey Wayton agreed to purchase the entire common stock of the Midway Corporation for $159,000. The trial balance of the Midway Company was as follows at the time the stock was acquired by Wayton:

Cash	$ 3,000	
Accounts receivable (net)	17,000	
Equipment (net)	36,000	
Buildings (net)	80,000	
Land	10,000	
Accounts payable		$ 11,000
Mortgages payable		25,000
Common stock		70,000
Retained earnings		40,000
	$146,000	$146,000

The building has a fair market value of $100,000 and a 25-year remaining life; the land has a present value of $15,000; receivables a value of $16,000, and equipment a value of $40,000 with a ten-year remaining life. All other assets have a value equal to the amounts in the trial balance.

The company's past profits have averaged $20,000, based on annual depreciation of $3,000 on the building and $3,000 on equipment. Other than for depreciation changes, these profits should remain constant. Normal profits in the industry are 10% on investment, and Wayton agreed to compute a value for excess profits by capitalizing them at 20%.

In order to acquire the Midway Corporation, Wayton formed a new company, the Wayton Corporation, and invested $160,000 for its common stock. He then paid the $159,000 to the Midway Corporation for its assets and liabilities.

In the first year after acquiring the corporation's assets and liabilities, the Wayton Corporation rendered services to customers for cash, $300,000, and paid selling and administrative expenses of $270,000 in cash. Depreciation was recorded at the new cost and expected life of the assets. Goodwill, recorded when the Wayton Corporation acquired its properties, was amortized using a five-year life.

REQUIRED

1. Reconstruct the computations which were used to arrive at the $159,000 value of the business when Wayton purchased it.
2. Journalize all Wayton Corporation transactions for its first year of operations, including the issuance of stock and acquisition of the Midway Corporation.
3. Prepare an income statement from the transactions in part (2).
4. Compute the percentage return which Wayton realized on his investment (net profit from part (3) divided by his $160,000 investment).

Cases

28-22. The Parsons Corporation offered Joe Killan $120,000 for his business, the Midgett Company, which was owned entirely by Killan. The Midgett Company was formed five years ago, and it has realized profits as follows:

1959	$ 1,000 loss
1960	3,000 net income
1961	6,000 net income
1962	5,000 net income
1963	11,000 net income

The Midgett Company has net assets on its books of $80,000. A conservative estimate of their present value is $90,000, although they cost Killan only $60,000 five years ago. They have a ten-year remaining life. Most companies in the same industry consider 10% on investment a normal return.

Would you consider the offer of the Parsons Corporation reasonable? If not, what amount would you consider a fair valuation of the business?

28-23. Mr. Robert Holt, president and sole owner of the Hillside Hotel, a corporation, is considering selling his stock in the company and retiring. He acquired the stock three years ago for $150,000. The company's financial statements appear below.

Mr. Holt had an independent appraiser examine the assets of the company, and the appraiser's report indicated that the balance sheet amounts represented current value except for land and buildings. The report stated that the land has a current value of $50,000 and the buildings a value of $120,000 with a thirty-year remaining life.

Mr. Holt has been receiving a salary of $5,000 annually from the business. He set his salary low, since he preferred to take the profits of the company in the form of dividends. Presidents of

HILLSIDE HOTEL

Comparative Balance Sheet

	December 31		
ASSETS	1962	1963	1964
Cash	$ 7,500	$ 16,100	$ 3,300
Accounts receivable	12,000	12,700	13,000
Less Allowance for uncollectible accounts	(700)	(700)	(800)
Supplies	10,100	10,300	10,900
Buildings	190,000	190,000	190,000
Less Accumulated depreciation	(72,000)	(77,000)	(82,000)
Furniture, fixtures, and equipment	63,500	73,500	79,100
Less Accumulated depreciation	(23,900)	(28,000)	(40,100)
Land	30,000	30,000	30,000
Total assets	$216,500	$226,900	$203,400
EQUITIES			
Accounts payable	$ 20,700	$ 34,900	$ 21,800
Mortgage payable (annual principal payments of $5,000)	75,000	70,000	65,000
Capital stock	100,000	100,000	100,000
Retained earnings	20,800	22,000	16,600
	$216,500	$226,900	$203,400

similar hotel corporations receive a salary of $15,000. Average return on invested assets in the industry may be assumed to be 10%.

HILLSIDE HOTEL

Income Statement

	For the Year Ended December 31		
	1962	1963	1964
Revenues:			
From room rental	$100,000	$105,000	$104,000
From food and beverage sales	37,000	39,000	40,000
Total revenues	$137,000	$144,000	$144,000
Operating expenses:			
Salaries	$ 69,000	$ 71,000	$ 74,000
Utilities	14,500	14,700	15,100
Depreciation	9,100	9,100	9,100
Supplies	6,800	7,000	7,200
Total operating expenses	$ 99,400	$101,800	$105,400
Net income before taxes	$ 37,600	$ 42,200	$ 38,600
Federal income taxes	$ 13,000	$ 17,000	$ 16,000
Net income after taxes (to retained earnings)	$ 24,600	$ 25,200	$ 22,600

HILLSIDE HOTEL

Statement of Retained Earnings

	For the Year Ended December 31		
	1962	1963	1964
Retained earnings, beginning balance	$ 11,200	$ 20,800	$ 22,000
Understatement of prior years taxes		(4,000)	
Correction of depreciation expense of prior year			(8,000)
Corrected beginning balance of retained earnings	$ 11,200	$ 16,800	$ 14,000
Current year's income	24,600	25,200	22,600
Dividends paid	(15,000)	(20,000)	(20,000)
Retain earnings, ending balance	$ 20,800	$ 22,000	$ 16,600

(a) How would you determine a value for the business? Compute a valuation using several alternative methods and several different rates of interest or discount, and select a valuation which you feel is reasonable.

(b) Do you think Mr. Holt has received a fair rate of return on the $150,000 he paid for the hotel three years ago? Compute the amount and rate of return he has received each year on his investment.

29

Mass data accumulation and data processing

Most businesses would be unable to accumulate and process financial data efficiently without using mechanical equipment. Those companies whose operations are complex find that extensive use of accounting machines is less costly than an increased number of clerical employees. In addition, mechanical equipment will usually increase the speed with which reports and financial statements are prepared.

Efficient managerial control depends upon frequent and comprehensive financial reports, and data accumulation thus plays a major role in the control process. Often management executives, faced with the necessity of making a decision quickly, must rely upon the rapid accumulation of financial data. In many cases, such accumulation would be impossible without specialized accounting equipment.

Machine types and characteristics

There are many different kinds of data processing equipment, but they may be classified in four categories:

1. Listing and adding machines
2. Accounting machines
3. Tabulating and statistical machines
4. Electronic computers

Equipment in the first two categories, which include listing, adding, and accounting machines, is used primarily as a mechanical aid in computing, totaling, and posting accounting transactions. While equipment of this type will minimize clerical effort, it has a rela-

tively limited use and cannot process data quickly enough to satisfy the needs of the larger, more complex companies.

Equipment in the latter two categories, which include tabulating and statistical machines and electronic computers, can process thousands of individual transactions in a matter of minutes. In addition to their speed, these machines also shorten the accounting process by virtually eliminating the need for a journal or ledger. Data stored on punched cards or rolls of punched tape replace the traditional journal and ledger sheets.

Listing and adding machines

Listing and adding machines are used primarily for such simple clerical tasks as adding lists of figures or numbers. These machines usually print a single tape containing the amounts which have been placed in the machine, while two registers within the machine accumulate subtotals and a final total. Either of these totals may be extracted at any time by depressing the appropriate key. By the attachment of several special registers, most of these machines can also be designed to multiply and divide.

Listing and adding machines are relatively slow to operate, for they cannot process data faster than the human skill in punching information into the keyboard. The greatest limitation of these machines is their inability to sort or compare data automatically.

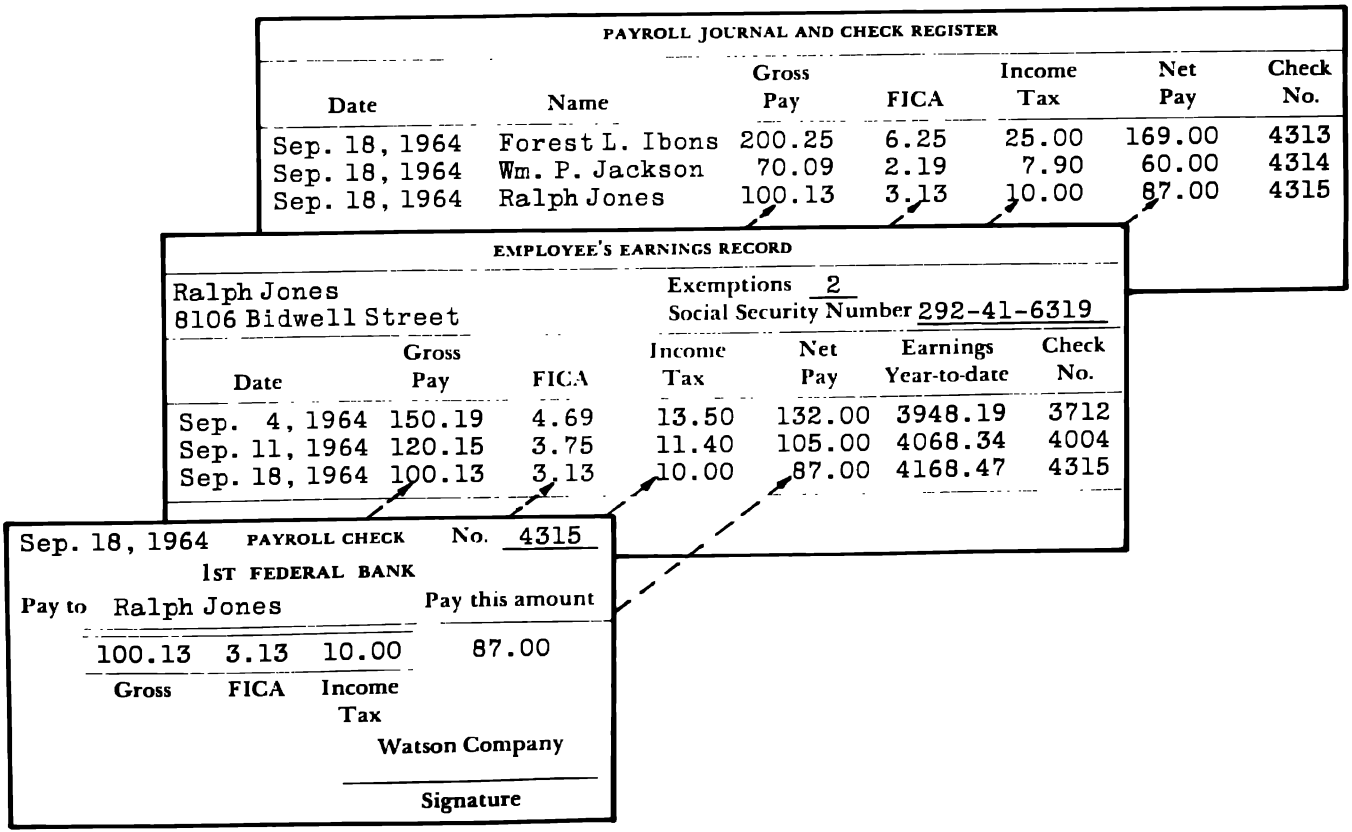
Accounting machines

An accounting machine contains several specialized registers, by means of which it can add, subtract, multiply, and divide, at the same time that it can process business documents, print a journal entry, or post to a ledger account. One operator using an accounting machine can, in a single operation, enter sales transactions into a sales journal, post the sales to the accounts receivable ledger, and accumulate the total of all the credit sales thus posted for comparison with the summary posting to the general ledger control account. By means of a slight adjustment, the same machine can then simultaneously compute employees' salaries, compute and subtract withholdings, prepare pay checks, post individual payroll information to employees' earnings records, and accumulate totals for posting to the general ledger accounts.

Several accumulating registers within the machine provide the mechanism for making the computations. The use of carbon paper and specially designed journals and ledgers provide for the simul-

Exhibit 29–1

Multiple Preparation of Documents with Accounting Machines



PAYROLL JOURNAL AND CHECK REGISTER

Date	Name	Gross Pay	FICA	Income Tax	Net Pay	Check No.
Sep. 18, 1964	Forest L. Ibons	200.25	6.25	25.00	169.00	4313
Sep. 18, 1964	Wm. P. Jackson	70.09	2.19	7.90	60.00	4314
Sep. 18, 1964	Ralph Jones	100.13	3.13	10.00	87.00	4315

EMPLOYEE'S EARNINGS RECORD

Ralph Jones
8106 Bidwell Street

Exemptions 2
Social Security Number 292-41-6319

Date	Gross Pay	FICA	Income Tax	Net Pay	Earnings Year-to-date	Check No.
Sep. 4, 1964	150.19	4.69	13.50	132.00	3948.19	3712
Sep. 11, 1964	120.15	3.75	11.40	105.00	4068.34	4004
Sep. 18, 1964	100.13	3.13	10.00	87.00	4168.47	4315

Sep. 18, 1964 PAYROLL CHECK No. 4315

1ST FEDERAL BANK

Pay to Ralph Jones — Pay this amount 87.00

Gross	FICA	Income Tax
100.13	3.13	10.00

Watson Company

Signature

taneous printing of the documents, which are so arranged that the information prints in exactly the right place on each document.

Exhibit 29–1 illustrates the preparation of an employee's pay check and the simultaneous posting to the individual earnings record and the payroll journal by use of carbon paper. A new check and the appropriate earnings record are inserted for each employee's payroll computation. The payroll journal and check register remain in the machine until the entire payroll has been completed, and the totals of gross pay, deductions, and net pay, which have been accumulating in the machine, are then printed at the bottom of the payroll journal.

Exhibit 29–2 illustrates another application of mechanized equipment, wherein a sales journal and an accounts receivable subsidiary ledger are posted simultaneously. For more efficient posting to customers' ledger accounts, the sales invoices are arranged in alphabetical order as they are received from the sales departments. The correct customer account card is placed in the machine, and the credit sales to that customer are posted. The sales journal, which remains in the machine, automatically moving up one line as each invoice is posted, is often a continuous roll of ruled paper containing the credit sales for the entire day. A register inside the machine accumulates the sales as they are posted, and the total is printed at the bottom of the sales journal upon completion of the posting process.

EXHIBIT 29–2

SALES JOURNAL

Customer	Date	Invoice No.	Total
F. L. Satterwhite	July 14, 1964	8015	$ 51.00
A. B. Sipton	July 14, 1964	8002	264.00
Wm. L. Small	July 14, 1964	8006	132.00
Alfred Smith	July 14, 1964	8019	46.00

Alfred Smith
4100 2nd Street
City

CUSTOMER'S LEDGER

Date	Particulars	Invoice No.	Debit	Credit	Balance
July 13, 1964		7562	10.00		10.00
July 2, 1964				10.00	-0-
July 14, 1964		8019	46.00		46.00

Handwritten transactions are virtually eliminated when accounting machines are used to accumulate, record, and post transactions. Control over the journalization and posting process is also facilitated, the carbon imprint will reveal unauthorized corrections and erasures. Many companies make all corrections of errors on a separate line, permitting no erasures.

While accounting machines expedite the accounting process, they are incapable of handling the mass of documents which many of the larger companies must process. These companies utilize more expensive but much more efficient methods.

Punched card accounting

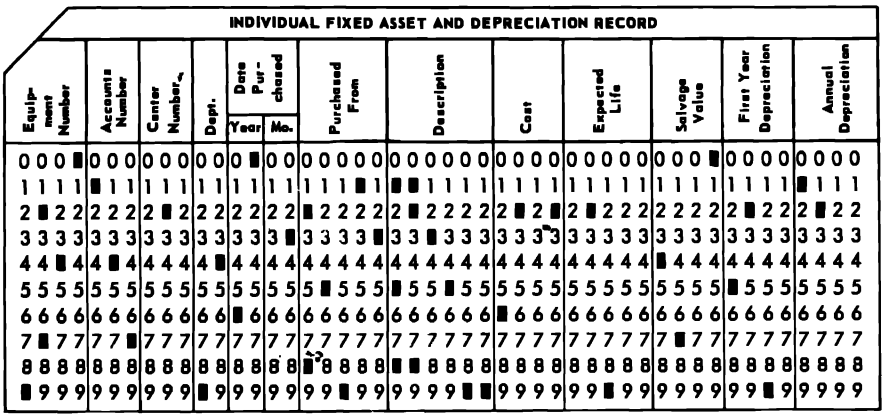
By means of punched card accounting thousands of documents or transactions can be processed in a very short time. Punched card accounting is based on the principle of punching holes in cards, each hole placed in a designated location, thereby representing specific information. The cards, when punched, are run through an automatic sorter which can separate them in any desired manner. Cards containing transactions of like nature are quickly sorted, summarized, and totaled. The cards can then be processed through a tabulator which reads and automatically prints the information which the holes represent.

Punched card accounting virtually eliminates the journalizing and posting procedures and the need for the traditional ledgers and journals. The accounting process is reduced to punching a card for each transaction, mechanically sorting the cards, and extracting totals. Once a card has been punched, there is no need to transcribe the data onto another record. The card and the data it contains can be classified and reclassified, sorted and resorted, and reports or totals can be drawn directly from the cards. Hundreds of cards can be processed in a matter of minutes. Fewer employees are needed to perform the clerical accounting work, yet reports and analyses can be prepared in much greater detail, and the accountant's work becomes more supervisory in nature. Obviously these cards must be carefully maintained and safeguarded against loss or mutilation; only authorized personnel have access to the cards.

Exhibit 29–3 illustrates the type of punched card used to record data for a fixed asset and its related depreciation. Information from all or any part of the card can be extracted at any time. For example, if management wants to know the number of assets the company

owns which cost over $10,000 each and have less than five years of depreciable life, the cards can be sorted and a report prepared in a very short time.

EXHIBIT 29–3



The card is punched when the asset is bought. From that point on, the card itself is the detail fixed asset subsidiary ledger and is removed from the card files only when the asset is sold, traded, or scrapped.

Card punching. Cards similar to the fixed asset card in Exhibit 29–3, with a different arrangement of headings, may be used for any type of accounting record. Cards are punched with a special machine which can be adjusted to punch information in any spot on the card. Many punching machines have a double keyboard similar to both an adding machine and a typewriter. The appropriate card is inserted into the punching machine automatically from a magazine attached to the machine, and by activating either keyboard, the operator of the machine can punch both words and amounts into the cards.

Card Sorting. After the cards are punched, they are sorted by a special sorting machine. Sorting is an extremely rapid operation and is completely automatic. The sorting machine has a row of brushes, or an electric eye, which is set to detect certain holes as they pass through the sorter. A card with a hole punched at the indicated location is automatically segregated from the other cards. The sorting

machine can be set to segregate those cards with holes punched in any location or any combination of locations.

Card Tabulating. The cards selected by the sorter are processed next in a separate tabulating machine, which is adjusted to react to holes in the card and to translate the holes into the letters of the alphabet or the numbers which they represent. Any combination of selected data from a card may be tabulated; the tabulator prints only the information that it has been "wired" to print.

The tabulator has a number of accumulating registers just as an accounting machine has. Totals are accumulated in these registers as the data on each card are being printed. After all the selected cards have been processed, these totals are automatically printed at the bottom of the card "run."

The card runs are printed on continuous rolls of paper which feed from the printing machines. A card run may require literally yards of paper before completion. The paper is then cut into page-size sheets and bound in book form.

Considerable flexibility is thus possible in the reports which may be drawn from the cards. Exhibit 29–4 illustrates the printed report from a card "run" of fixed asset cards. Note that this run was made to determine the depreciation expense for the period by wiring the machine to print and accumulate selected information from the cards.

Illustration of punched card accounting: sales and customer billing

Punched card accounting has unlimited possibilities and is particularly useful in those areas where a large number of like transactions are processed. The use of punched cards by the Shalerock Oil Company for sales, accounts receivable, and customer billing is described below to illustrate one area in which a vast amount of accounting data can be processed in a short time.

The Shalerock Oil Company sells gasolines and oils through thousands of service stations located in several states. The company issues plastic credit cards to qualified customers, and tens of thousands of these customers use their cards several times monthly. At the time his credit card is issued, a punched card is prepared for each customer containing holes for his name, address, and credit card number.

When the customer makes a purchase at one of the company's service stations, he presents his plastic credit card to the service station attendant. The amount of the purchase, the credit card number, and the customer's name and address are written or printed

Exhibit 29–4

Machine-Printed Report from Fixed Asset Cards

FIXED ASSET AND DEPRECIATION REPORT

Asset Number	Description	Department	Cost	Current Year's Depreciation
035612	Vertical boring mill	17	3,650.70	365.07
035613	Drill press–floor type	17	792.35	79.24
035614	Adjustable drilling machine	17	1,632.20	81.00
035615	Reversible-feed milling machine	17	520.00	52.00
035616	Backgeared screw lathe	17	4,190.00	845.00
035617	Bed turret lathe	17	659.95	66.00
035618	Vertical milling machine	17	130.00	13.00
	Subtotal	17	11,575.20	1,501.31
035619	Horizontal-feed screw machine	18	1,584.50	158.45
035620	15" Automatic-feed shear press	18	249.00	24.90

on a special sales invoice, which the customer signs. There are several carbon copies of the invoice, one of which is made of relatively heavy paper. This heavy paper copy is forwarded to the offices of the Shalerock Oil Company for accounting purposes.

As the hard-paper copies of the sales invoices are received by the Shalerock Oil Company, they are sent to the punching machines, where the customer's credit card number and the amount of the sale are punched directly into them. The punched sales invoices, which then become punched cards, are run through a sorter, where they are arranged in numerical order by customer credit card number.

The next step is to match the customer's master punched card with the sales invoices which he has signed during the month. For this purpose a collating run is made, which places the master cards and sales slips of each customer together, with the master card immediately preceding all the credit sales slips for that customer.

The cards are now sent to the tabulator. A stock of monthly statement forms feeds into the tabulator automatically, one form entering the printing chamber as each customer's master card and sales slips enter the "reading" chamber. The tabulator reads the customer's name and address and prints them on his monthly statement; the machine then reads and accumulates the amounts on each of the sales invoices following the master card and prints the total on the customer's statement. At this point the next customer's master card enters the reading chamber, and the process is initiated again. A separate register in the tabulator is accumulating the debits to receivables and the credits to sales as the tens of thousands of credit invoices are processed. In a relatively short time all customers' invoices are printed and ready for mailing.

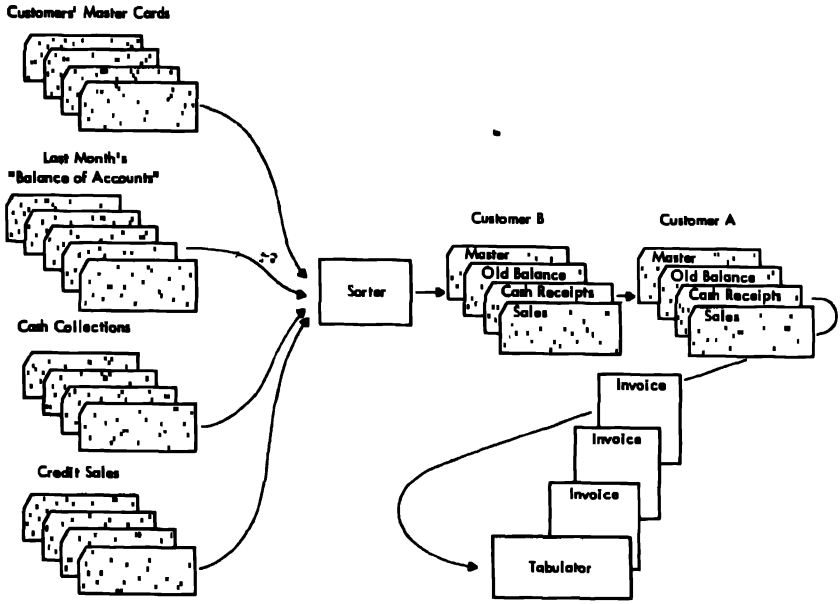
Except for the punched cards, no accounts receivable ledger is maintained. As payments on account are received, a "cash received" card is punched showing the customer's name, address, credit card number, and the amount received. This card is sorted and placed immediately behind the customer's master card; when the credit sales invoices are ready for processing in the next period, the tabulator will automatically subtract this payment from the customer's balance.

The tabulator can also be wired to activate a punching machine, so that a customer's "balance of account" card is cut automatically when the tabulator has accumulated all the cash collections and credit sales for the customer. This "balance of account" card is

sorted and placed behind the customer's master card the following month.

The entire accounting process for credit sales and customer receivables consists of punching cards, sorting them, and running them through the tabulator. Exhibit 29–5 illustrates the flow of punched cards into the tabulator, their arrangement, and the completed invoices that feed from the tabulator.

EXHIBIT 29–5



Punched card accounting has unlimited applications, but the equipment is expensive to buy or lease. Use of this type of equipment is feasible only when a company has a mass of similar transactions, such as those encountered in processing sales, receivables, cash payments, inventory, and payrolls.

Electronic computers

The electronic computer is a complicated electric calculator which can hold thousands of figures in its storage "cells" and can add, subtract, multiply, divide, or compare these figures as directed. Working with the speed of electricity, these machines process thousands of

figures in a single second. One electronic computer can do the work of thousands of employees working with ordinary desk calculators; in fact, the machine is usually waiting for the next information to be fed into it.

Electronic computers are frequently used in conjunction with the punched card accounting system. The cards are prepared and read as described in the preceding section, and the information is fed into the computer, where it is retained in the "storage cells." Sorting of the cards can thus be reduced and in some cases eliminated, since the computer can hold a large quantity of data in its storage cells.

One type of computer has a storage "drum" with tens of thousands of magnetic cells. Each cell, no larger than the head of a pin, can hold ten to twenty digits, each representing significant information. Information from a hole in a punched card is transferred by electronic impulse to a magnetic cell on the drum. The electronic impulse causes the cell to be electrically magnetized and thus to hold the information until needed. Demagnitizing the cell will erase the information when it is no longer needed.

Each cell is numbered so that it can automatically be located by the machine as the data are needed. A prepared "program" instructs the machine to select data from the cells, and to add, subtract, divide, multiply, or compare these data with data from any other cell. An "accumulator" within the computer performs these functions. After the data are processed in the accumulator, the result is transferred to another storage cell to await further use.

There is a popular misconception that these "electric brains" can think in the manner of a human being. However, the electronic computer is in reality nothing more than an exceedingly high-speed calculator, which must be "instructed" to perform every calculation that it completes. However, computers promise to have an overwhelming impact on business practice because of the vast quantity of data which they are able to compute, accumulate, compare, and classify. Management planning and control of operations is greatly facilitated through use of these high-speed machines.

Instructions to the computer

The instructions to a computer are in the form of a "program," which tells the computer where to store information, what steps are to be performed, and what to do with the results. The results of one step may be stored for use in a later step of the program. The program must be fed into the machine and is the first data to be stored

in the cells of the magnetic drum, a portion of which is set aside specifically for that purpose. Then, as the information is fed into it, the machine will follow the "program," doing exactly as it is instructed.

Each instruction to the computer contains three separate parts: (1) the location of the data on which the operation is to be performed, (2) what to do with the data, and (3) the location of the next instruction. The steps in a simple instruction to the computer to add two numbers would be as follows, assuming the numbers were stored in cells number 1,000 and 1,001:

1st instruction	Locate cell 1000. Transfer the data in cell 1,000 to the accumulator. Return to cell 57 for the next instruction.
2nd instruction (Located in cell 57)	Locate cell 1001. Transfer the data in cell 1,001 to the accumulator and add it to the data already in the accumulator. Return to cell 58 for the next instruction.
3rd instruction (Located in cell 58)	Go to the accumulator. Transfer the balance of the accumulator (which is the sum of the two amounts) to cell 1,002. Return to cell 59 for additional instructions.

Performing such a simple addition on an electronic computer would be pointless, since the preparation of the program and cutting punched cards would consume more time than performance of the same operation on an adding machine. However, when the same step is performed many times, such as the multiplication of the FICA tax rate of $3\frac{1}{8}\%$ by the earnings of each of 5,000 employees, the use of the computer becomes more efficient than the use of an ordinary calculator.

Following is the program for an electronic computer to handle the sales, receivables, and billing of the Shalerock Oil Company, as described earlier in this chapter. This illustration is intended to describe how the machine proceeds from one step to another until the billing is completed. The actual program would, of course, be much more complicated, although the same basic steps would apply. Assume that punched cards have not been arranged in any particular order. All customers' master cards are to be run through the reading

chamber first, followed by cards containing the previous balance, cards containing cash received, and finally, credit sales invoice cards.

Instruction 1. Beginning with cell number 000,100 and proceeding in sequence, transfer each customer's number from his master card to a magnetic cell. When the last customer's card has been read and recorded, proceed to instruction 2.

Instruction 2. Transfer both the customer's number and his previous balance from the "customer's previous balance" cards to cells, beginning with cell number 015,000 and proceeding in sequence. When the last card of this kind has been read, proceed to instruction 3.

Instruction 3. Transfer both the customer's number and the amount of any cash payments from the "cash received" cards, beginning with cell number 030,000 and proceeding in sequence. When the last card of this kind has been processed, proceed to instruction 4.

Instruction 4. Transfer both the customer's number and his credit purchases from the credit data on the sales card to cells, beginning with number 045,000 and proceeding in sequence. When the last card of this kind has been processed, go to instruction 5.

At this point all data have been placed in the machine, where they are stored on the magnetic cells, ready for use. No sorting has been done. The next step is to select the data for each customer, in sequence, so that his former balance, credit sales, and cash collections are pulled together and the present balance computed. The following steps, which are a continuation of the previous program, would perform this function:

Instruction 5. Transfer to the accumulator the first customer's credit card number, located in cell 000,100, and compare with the numbers in all the other storage cells to locate any old balance and all new transactions with that customer. (The computer accomplishes this by transferring the customer's number in each cell to the accumulator and subtracting it from the customer's number already in the accumulator. If the result is zero, the numbers are the same and the amount in that cell applies to the customer whose balance is being computed. As amounts applying to that customer are located, they are transferred to another part of the accumulator, where the

customer's balance is being computed. After all cells have been examined for that customer's number, his balance is computed, and the machine proceeds to instruction 6.)

Instruction 6. Transfer the customer's credit card number and the new balance which has been computed to cells beginning with number 060,000. Proceed to instruction 7.

Instruction 7. Go to the next number in the customers' master information section (the number will now be 000,101), and repeat steps 5, 6, and 7. When there are no more customer numbers to process, proceed to instruction 8.

Instruction 8. STOP.

Note that the process repeats itself until all customers' data have been processed. The new balances owed by customers are stored in cells numbered in sequence from 060,000 and can be extracted from the machine by having a final step of the program activate a printer and place the data contained in each of these cells on an invoice. In addition, the program can be expanded to accumulate totals or subtotals, and these amounts can be extracted as one of the last steps in the program.

Use of tape instead of cards

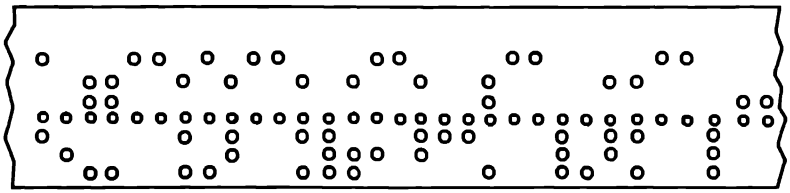
While punched cards are frequently used as the means of feeding information to the machine, the cards cannot be moved through the reading chamber as rapidly as the computer is able to process or store the information. Continuous tapes with the same information punched into them can move through the reading chamber much more rapidly and are frequently used to transfer information into or out of the machine. Exhibit 29–6 depicts a section of a roll of continuous tape with information punched into it.

Tape can be stored in much less space than punched cards. All data on a payroll for 10,000 employees, including earnings, withholdings, and net pay, can be stored in a few cubic inches when the length of tape is rolled onto a spool.

Tape used in electronic computer applications may be either paper or thin metal. Paper tape may tear or deteriorate, and the machine must read punched holes by means of electric brushes or electric eyes when paper tape is used. Metal tape is more durable and need not by punched, since data can be placed on it by magnetizing small spots, just as cells are magnetized on the drum of the com-

EXHIBIT 29–6

Punched Tape for Computer Input or Output



puter. Metal tape may be read electrically without the use of brushes, and hundreds of digits can be processed in a single second.

When tapes are used instead of punched cards, the processing of data can be accelerated, but the accounting process is not changed. Frequently punched cards are cut, as described in the preceding discussion, and are processed through a special machine which converts the information on the cards to metal tape. The tape is then run through a high-speed reader and sent to the electronic calculator for processing. Thus a number of card punchers and card-to-tape converters can be used, with a single electronic calculator to process all the tapes. This is an economical arrangement, since the electronic calculator is the most expensive item of equipment and should be used to full capacity if possible.

Relationship of accounting to data processing

The applications of electronic data processing to accounting are unlimited. One of the most frequent applications is in computing and preparing payrolls. Data processing is also frequently used in the areas of inventories, costs of manufactured products, sales and accounts receivable billings, budgets and operating forecasts, and production scheduling.

However, the advent of electronic data processing has much more powerful implications than as a high-speed bookkeeping mechanism. Management now has available detailed information which can be summarized or classified in an almost unlimited number of ways, thus strengthening the planning and control functions.

The following actual case illustrates how the computer assists management plan and control more effectively. A manufacturer of automotive parts had an inventory of 85,000 different items. An

average of 50,000 of these items was sold daily. The company needed some means of maintaining perpetual inventory records to insure an adequate daily inventory of each item. Before the company decided to use an electronic computer, it had used punched cards. Approximately ¼ million cards had to be maintained in the active files. The volume of transactions was so great that the cards could not be processed fast enough on sorters and printers, and inventory records ran two weeks to a month behind. As a result, control over inventory and purchasing for inventory replacement was weak.

When the company installed an electronic computer, the complete inventory was placed on eleven reels of magnetic tape, which could be stored in one cubic foot of space. Each day data were fed into the computer, including the tape containing the previous day's ending balance of each inventory item, and the current day's sales and purchases, which had also been taped. The machine digested this information and produced a new tape. At the end of every day the number of items on hand for each of the 85,000 inventory items was available.

Minimum and maximum amounts for each inventory item were placed on another tape. When the current balance of the inventory from one tape and the predetermined minimum and maximum inventory balances from another were fed into the computer, it automatically indicated the items which were low in stock and needed to be replenished. By use of the electronic calculator, full inventory data became available daily, and the information needed for purchasing items for stock was obtained automatically. It would have been impossible to obtain this information quickly by any means other than the electronic computer.

The accounting function and mass data accumulation

The accounting process has been altered in recent years by the application of high-speed computers. No change has been made in the balance sheet and the income statement, as external reporting devices, but internal reports to management have undergone considerable change. With the aid of high-speed machines which can accumulate, process, and store masses of data, the accounting process can assist in the measurement and control of operating areas over which there previously had been little control. For these reasons, the accountant is assuming a more important role as a member of the management team, and the accounting process is expanding and becoming much more useful to internal management.

Questions

29-1. Describe the major categories of equipment used in the accounting process.

29-2. The vice-president of a company made the following statement to a friend of his: "While adding machines are very helpful in the accounting process, they are inadequate and cannot process the volume of data generated by our company." His friend replied "Why not? You can keep increasing the number of adding machines until they will do the job." Who is correct, the vice-president or his friend? What is the vice-president really trying to say about the inadequacy of adding machines?

29-3. Describe how an accounting machine can prepare three or four documents, make calculations, and compile totals and subtotals simultaneously.

29-4. Describe the accounting process relative to recording credit sales if accounting machines are used to record amounts in the sales journal and customers' ledgers simultaneously.

29-5. Describe how payroll computations and payroll record keeping is reduced by use of accounting machines.

29-6. How are data previously entered on a punched card "read" from the card at a later date?

29-7. Describe how punched cards are sorted and how they are tabulated.

29-8. Describe how invoices are prepared for credit customers when a punched card system is used by a retail petroleum products company.

29-9. Some people feel that the electronic computer is an electric "brain." Is this belief correct? Explain.

29-10. What is a computer "program"? Describe briefly the nature of such a program.

29-11. What advantages does metal tape have over punched paper tape as an input device for an electronic data processing machine?

29-12. Name several areas in the operations of a business where electronic data equipment makes information possible that otherwise could not be gathered.

Exercises

29-13. Refer to the punched card for fixed assets shown in Exhibit 29–3.

REQUIRED

1. Discuss the information which would be drawn from these fixed asset cards for (a) balance sheet purposes, (b) income statement purposes, and (c) when an asset is sold, traded, or scrapped.
2. Discuss the general technique by which the machines would be "wired" to extract this information.
3. Describe how the data in each column of the card could be used by management.

29-14. List the data which would be placed on a punched card for prepaid insurance and insurance expense purposes. Assume that a card is to be punched at the time each insurance premium is paid.

List the data which would be placed on a punched card for notes receivable and interest income purposes. Assume a card is to be punched each time a note is received.

29-15. The Banter Company uses a punched card system for sales, accounts receivable, and billing purposes. When a sale is made a punched card is cut and contains, with other data, the customer's credit card number. The first sorting of the cards is by the first digit (0 through 9) in the customer's number (all customers' numbers *beginning* with 0, 1, 2, 3, etc., are segregated). The stack is then sorted again in the sorting machine by the second digit in the customer's credit number, etc.

A stack of sales cards, in the order received from the sales department contained the following customers' numbers. The numbers given are illustrative only—the company has approximately 3,000 individual cards daily.

1075	9720
8896	1072
2041	5320
1970	1740
3520	2136
6481	7158
3490	8120

REQUIRED

1. In what order would the 14 cards given above be after the (a) first sorting run, and (b) the second?
2. How many runs would be necessary to get a day's total of 3,000 cards in numerical sequence?
3. What procedures could be instituted to insure that no cards were lost in the sorting process?

29-16. The Slatter Company uses a punched card system for its payroll. All employees are on a fixed monthly salary, and all salary and withholding changes are effective on the first day of a month. Two basic punched cards are prepared for each employee. The first card contains the employee's name, salary, withholding tax deduction, and FICA deduction. The deductions on this card are constant, unless the employee increases the number of his dependents or the FICA tax rate is changed by the federal government. When this occurs, a new card is cut for the employee.

The second card contains the employee's name and his variable deductions, other than withholding tax and FICA deductions. These deductions include United Fund contributions, savings bond purchases, and similar deductions.

Both sets of employee cards are arranged in separate files, by departments. Payroll checks are prepared on punched card forms automatically by machine, except for final signature. Bank reconciliations are prepared monthly.

REQUIRED

1. Enumerate the operations required and the equipment needed to prepare payroll checks.
2. How would a payroll check register be prepared?
3. Describe how the outstanding checks could be located for bank reconciliation purposes.

29-17. The Westwood Automobile Accessory Company supplies garages and retail stores with various repair parts and accessories. The company stocks 5,000 different parts and averages 2,000 invoices each day. Perpetual inventory records are maintained.

The company's management wishes to install a punched card system for inventory, receivable, and sales purposes. One card is to be cut for each sales transaction.

REQUIRED

1. Describe the data which should be placed on the sales transaction card in order to have information relative to sales analysis

by product, inventory movement, the sale of high margin as opposed to low margin products, and whether the proper products are being emphasized by each salesman, in each territory, and by each customer.

2. Discuss briefly how the data on the cards would be extracted and used.

Problems

29-18. The Magnum Manufacturing Company employs a job order costing system, which utilizes punched cards. Perpetual inventory records are maintained for raw materials, work-in-process, and finished goods. Separate punched cards are cut for each of the following transactions:

Purchase of raw materials
Issuance of raw materials to production
Workmen's labor cost (a separate card for each workman each day, or for each portion of a day spent on a different job)
Jobs started in process
Overhead costs (other than indirect labor and materials). One card is punched for each transaction which incurs a manufacturing overhead cost.
Completion of a job
Sale of a finished unit

The company wants information daily on the raw material inventories, including such data as the balance of each item on hand, items on order, and items needed for scheduled production. Daily information is also needed on work-in-process, including the number of unfinished jobs and the costs to date. Information should also be available daily for the production scheduling department and for the sales department concerning the finished goods on hand.

REQUIRED

List the data which should be punched into each card for each of the company's basic job order transactions.

29-19. The following four purchase invoices were received by the Pallon Company on December 13:

From	Product purchased	Amounts
Company W:	A	$300
	B	150
	C	200
Company X:	B	70
	C	200
Company Y:	A	90
	B	600
	C	40
Company W:	A	150
	B	80

REQUIRED

1. (a) What are the total purchases of each product?
   (b) What is the total purchased from each company?
   (c) What is the total purchases?
2. How would you recommend that the company maintain its accounting records so that the information in part 1 is available each morning for the previous day's purchases (a) if the above invoices represent 10% of a full day's purchases? (b) if the above represents one-tenth of one per cent of a day's purchases?
3. List the data you would punch into a punched card if one were prepared for each purchase transaction and if the card is to be used to provide full data on inventories and purchases.

29-20. The McAdams Company has 100 employees. When the weekly payroll is prepared, the computations are made on a hand calculator and are then hand written on a payroll sheet. Totals from the payroll sheet are used as the basis for a general journal entry which is posted to the ledger. The payroll checks are prepared by hand, and the payroll data for each employee are hand written into an individual earnings record.

REQUIRED

1. Describe how this process could be shortened by use of specially constructed forms and the use of carbon paper.
2. Prepare a copy of the forms as you think they should appear.

3. If the company had only ten employees, would you still recommend that the company follow your answer to parts (1) and (2), above?
4. If the company had 10,000 employees, would you recommend another procedure than that in your answer to parts 1 and 2?

Cases

29-21. The city of Western Falls has a population of approximately 200,000, and its residents receive electric service from the Western Falls Electric Company. Approximately 35,000 individual businesses, homes, schools, and churches receive electricity, and a monthly billing is made to each of these customers. The bills are prepared from data secured by "meter-readers," who read each of the 35,000 meters and record the kilowatt hours used by each customer. The monthly charge is determined by multiplying these kilowatt hours by standard rates which decline as the consumption increases.

Describe a punched card billing and collection procedure which the Western Falls Electric Company might use. Include in your answer the timing of the bills (all made at the end of the month, or spaced during the month), the equipment needed, source documents which the accounting department would need, the required data on the source documents, and the frequency with which postings to the general ledger might be made.

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