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Managerial Accounting

Chapter Preview

This chapter focuses on issues illustrated in the following Feature Story about **Current Designs** and its parent company **Wenonah Canoe**. To succeed, the company needs to determine and control the costs of material, labor, and overhead, and understand the relationship between costs and profits. Managers often make decisions that determine their company's fate—and their own. Managers are evaluated on the results of their decisions. Managerial accounting provides tools to assist management in making decisions and evaluating the effectiveness of those decisions.

Feature Story

Just Add Water ... and Paddle Mike Cichanowski grew up on the Mississippi River in Winona, Minnesota. At a young age, he learned to paddle a canoe so he could explore the river. Before long, Mike began crafting his own canoes from bent wood and fiberglass in his dad's garage. Then, when his canoe-making shop outgrew the garage, he moved it into an old warehouse. When that was going to be torn down, Mike

came to a critical juncture in his life. He took out a bank loan and built his own small shop, giving birth to the company **Wenonah Canoe**.

Wenonah Canoe soon became known as a pioneer in developing techniques to get the most out of new materials such as plastics, composites, and carbon fibers—maximizing strength while minimizing weight.

In the 1990s, as kayaking became popular, Mike made another critical decision when he acquired **Current Designs**,

a premier Canadian kayak manufacturer. This venture allowed Wenonah to branch out with new product lines while providing Current Designs with much-needed capacity expansion and manufacturing expertise. Mike moved Current Designs' headquarters to Minnesota and made a big (and potentially risky) investment in a new production facility. Today, the company's 90 employees produce about 12,000 canoes and kayaks per year. These are sold across the country and around the world.

Mike will tell you that business success is "a three-legged stool." The first leg is the knowledge and commitment to make a great product. Wenonah's canoes and Current Designs' kayaks are widely regarded as among the very best. The second

leg is the ability to sell your product. Mike's company started off making great canoes, but it took a little longer to figure out how to sell them. The third leg is not something that most of you would immediately associate with entrepreneurial success. It is what goes on behind the scenes—accounting. Good accounting information is absolutely critical to the countless decisions, big and small, that ensure the survival and growth of the company.

Bottom line: No matter how good your product is, and no matter how many units you sell, if you don't have a firm grip on your numbers, you are up a creek without a paddle.

Source: Adapted from the Wenonah Canoe website.

Chapter Outline

LEARNING OBJECTIVES	REVIEW	PRACTICE-DO IT!
1. Identify the features of managerial accounting and the functions of management.	<ul style="list-style-type: none"> • Comparing managerial and financial accounting • Management functions • Organizational structure 	1. Managerial Accounting Overview
2. Describe the classes of manufacturing costs and the differences between product and period costs.	<ul style="list-style-type: none"> • Manufacturing costs • Product versus period costs • Illustration of cost concepts 	2. Managerial Cost Concepts
3. Demonstrate how to compute cost of goods manufactured and prepare financial statements for a manufacturer.	<ul style="list-style-type: none"> • Balance sheet • Income statement • Cost of goods manufactured • Cost of goods manufactured schedule 	3. Cost of Goods Manufactured
4. Discuss trends in managerial accounting.	<ul style="list-style-type: none"> • Service industries • Focus on the value chain • Balanced scorecard • Business ethics • Environmental, social, and governance issues • The value of data analytics 	4. Trends in Managerial Accounting

Go to the Review and Practice section at the end of the chapter for a targeted summary and practice applications with solutions. Additional tutorials and practice opportunities are available in the Wiley online course.

1.1 Managerial Accounting Basics

LEARNING OBJECTIVE 1

Identify the features of managerial accounting and the functions of management.

Managerial accounting provides economic and financial information for managers and other internal users. The skills that you learn in these next chapters will be vital to your future success in business. Don't believe us? Let's look at examples of some of the crucial activities of employees at **Current Designs** and where those activities are addressed in this text.

- In order to know whether it is making a profit, Current Designs needs accurate information about the cost of each kayak (Chapters 2 and 3). To be profitable, Current Designs adjusts the number of kayaks it produces in response to changes in economic conditions and consumer tastes. It needs to understand how changes in the number of kayaks it produces impact its production costs and profitability (Chapter 5).
- Further, Current Designs' managers often consider alternative courses of action. For example, should the company accept a special order from a customer, produce a particular kayak component internally or outsource it, or continue or discontinue a particular product line (Chapter 7)?
- In order to plan for the future, Current Designs prepares budgets (Chapter 10). It then compares its budgeted numbers with its actual results to evaluate performance and identify areas that need to change (Chapter 11).
- Finally, Current Designs sometimes needs to make substantial investment decisions, such as the building of a new factory or the purchase of new equipment (Chapter 12).

Someday, you are going to face decisions just like these. You may end up in sales, marketing, management, production, or finance. You may work for a company that provides medical care, produces software, or serves up mouth-watering meals. No matter what your job position or product, the skills you acquire in this class will increase your chances of business success.

Put another way, in business you can either guess or you can make an informed decision. As former **Microsoft** CEO Steve Ballmer said, "If you're supposed to be making money in business and supposed to be satisfying customers and building market share, there are numbers that characterize those things. And if somebody can't speak to me quantitatively about it, then I'm nervous." These next chapters give you the skills you need to quantify information so you can make informed business decisions.

Comparing Managerial and Financial Accounting

There are both similarities and differences between managerial and financial accounting.

- Each field of accounting deals with the economic events of a business. For example, *determining* the unit cost of manufacturing a product is part of managerial accounting. *Reporting* the total cost of goods manufactured and sold is part of financial accounting.
- Both managerial and financial accounting require that a company's economic events be quantified and communicated to interested parties.

Illustration 1.1 summarizes the principal differences between financial accounting and managerial accounting.

ILLUSTRATION 1.1
Differences between financial
and managerial accounting

Feature	Financial Accounting	Managerial Accounting
Primary Users of Reports	<ul style="list-style-type: none"> External users: stockholders, creditors, and regulators. 	<ul style="list-style-type: none"> Internal users: officers and managers.
Types and Frequency of Reports	<ul style="list-style-type: none"> External financial statements. Quarterly and annually. 	<ul style="list-style-type: none"> Internal reports. As frequently as needed.
Purpose of Reports	<ul style="list-style-type: none"> General-purpose. 	<ul style="list-style-type: none"> Special-purpose for specific decisions.
Content of Reports	<ul style="list-style-type: none"> Pertains to business as a whole. Highly aggregated (condensed). Limited to accrual accounting and cost data. Governed by generally accepted accounting principles (GAAP). 	<ul style="list-style-type: none"> Pertains to subunits of the business. Very detailed. Extends beyond accrual accounting to any relevant data. Evaluated based on relevance to decisions.
Verification Process	<ul style="list-style-type: none"> Audited by CPA. 	<ul style="list-style-type: none"> No independent audits.

Management Functions

Managers' activities and responsibilities can be classified into three broad functions.

1. Planning.
2. Directing.
3. Controlling.

In performing these functions, managers make decisions that have a significant impact on the organization.

Planning requires managers to look ahead and to establish objectives.

- These objectives are often diverse: maximizing short-term profits and market share, maintaining a commitment to environmental protection, and contributing to social programs.
- A key objective of management is to **add value** to the business under its control. Value is usually measured by the price of the company's stock and by the potential selling price of the company.

For example, **Hewlett-Packard**, in an attempt to gain a stronger foothold in the computer industry, greatly reduced its prices to compete with **Dell**.

Directing involves coordinating a company's diverse activities and human resources to produce a smooth-running operation.

- This function relates to implementing planned objectives and providing necessary incentives to motivate employees.
- Directing also involves selecting executives, appointing managers and supervisors, and hiring and training employees.

For example, manufacturers such as **Campbell Soup Company**, **General Motors**, and **Dell** need to coordinate purchasing, manufacturing, warehousing, and selling. Service corporations such as **American Airlines**, **Federal Express**, and **AT&T** coordinate scheduling, sales, service, and acquisitions of equipment and supplies.

The third management function, **controlling**, is the process of keeping the company's activities on track.

- In controlling operations, managers determine whether planned goals are met.
- When there are deviations from targeted objectives, managers decide what changes are needed to get back on track.

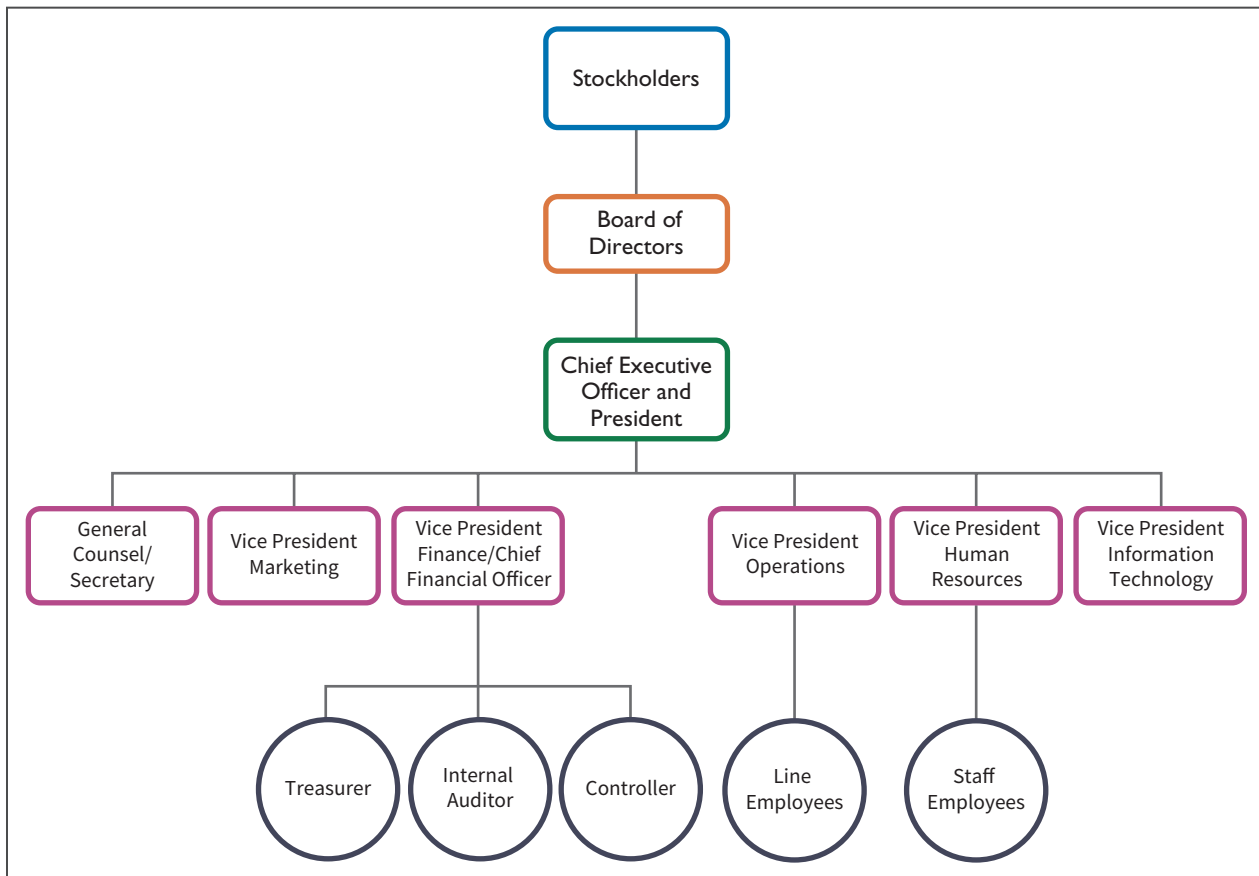
Scandals at companies like **Theranos** and **Danske Bank** attest to the fact that companies need adequate controls to ensure that the company develops and distributes accurate information. How do managers achieve control? A smart manager in a very small operation can make personal observations, ask good questions, and know how to evaluate the answers. But using this approach in a larger organization would result in chaos. Imagine the president of **Apple** attempting to determine whether the company is meeting its planned objectives without some record of what has happened and what is expected to occur. Thus, large businesses typically use a formal system of evaluation. These systems include such features as budgets, responsibility centers, and performance evaluation reports—all of which are features of managerial accounting.

Decision-making is not a separate management function. Rather, it is the outcome of the exercise of good judgment in planning, directing, and controlling.

Organizational Structure

Most companies prepare **organization charts** to show the interrelationships of activities and the delegation of authority and responsibility within the company. **Illustration 1.2** shows a typical organization chart.

ILLUSTRATION 1.2 A typical corporate organization chart



Stockholders own the corporation. They provide oversight indirectly through a **board of directors** they elect.

- The board formulates the operating policies for the company or organization.
- The board selects officers, such as a president and one or more vice presidents, to execute policy and to perform daily management functions.

The **chief executive officer (CEO)** has overall responsibility for managing the business. As the organization chart shows, the CEO delegates responsibilities to other officers.

Responsibilities within the company are frequently classified as either line or staff positions.

- Employees with **line positions** are directly involved in the company's primary revenue-generating operating activities. Examples of line positions include the vice president of operations, vice president of marketing, factory managers, supervisors, and production personnel.
- Employees with **staff positions** are involved in activities that support the efforts of the line employees. In a company like **General Electric** or **Meta**, employees in finance, legal, and human resources have staff positions.
- While activities of staff employees are vital to the company, these employees are nonetheless there to support the line employees who engage in the company's primary operations.

The **chief financial officer (CFO)** is responsible for all of the accounting and finance issues the company faces. The CFO is supported by the **controller** and the **treasurer**. The controller's responsibilities include the following.

1. Maintaining the accounting records.
2. Ensuring an adequate system of internal control.
3. Preparing financial statements, tax returns, and internal reports.

The treasurer has custody of the corporation's funds and is responsible for maintaining the company's cash position.

Also serving the CFO is the internal audit staff. The staff's responsibilities include the following.

- Reviewing the reliability and integrity of financial information provided by the controller and treasurer.
- Ensuring that internal control systems are functioning properly to safeguard corporate assets.
- Investigating compliance with policies and regulations.

In many companies, these staff members also determine whether resources are used in the most economical and efficient fashion.

The vice president of operations oversees employees with line positions. For example, the company might have multiple factory managers, each of whom reports to the vice president of operations. Each factory also has department managers, such as fabricating, painting, and shipping, each of whom reports to the factory manager.

Management Insight: DPR Construction



Tashi-Delek/E+/Getty Images

Does a Company Need a CEO?

Can a company function without a person at the top? Nearly all companies have a CEO although some, such as **Oracle**, **Chipotle**, and **Whole Foods**, have operated with two people in the CEO position. **Samsung** even had three CEOs

at the same time. On the other hand, **Abercrombie & Fitch** operated for more than two years without a CEO because its CEO unexpectedly quit and a suitable replacement was hard to find.

In fact, some companies replace the CEO position with a management committee. These companies feel this structure

improves decision-making and increases collaboration. For example, the 4,000 employees of **DPR Construction** are overseen by an eight-person committee. Committee members are rotated off gradually but then continue to advise current members. The company notes that this approach provides more continuity over time than the sometimes sudden and harsh changes that occur when CEOs are replaced.

Source: Adapted from Rachel Feintzeig, "Companies Manage with No CEO," *Wall Street Journal* (December 13, 2016).

What are some of the advantages cited by companies that choose a structure that lacks a CEO? (Answer is available near the end of the chapter.)

DO IT! 1**Managerial Accounting Overview**

Indicate whether the following statements are true or false. If false, explain why.

1. Managerial accountants have a single role within an organization: collecting and reporting costs to management.
2. Financial accounting reports are general-purpose and intended for external users.
3. Managerial accounting reports are special-purpose and issued as frequently as needed.
4. Managers' activities and responsibilities can be classified into three broad functions: cost accounting, budgeting, and internal control.
5. Managerial accounting reports must now comply with generally accepted accounting principles (GAAP).

Solution

1. False. Managerial accountants do determine product costs, but they are also responsible for evaluating how well the company employs its resources. As a result, when the company makes critical strategic decisions, managerial accountants serve as team members alongside personnel from production, marketing, and engineering.
2. True.
3. True.
4. False. Managers' activities are classified into three broad functions: planning, directing, and controlling. Planning requires managers to look ahead to establish objectives. Directing involves coordinating a company's diverse activities and human resources to produce a smooth-running operation. Controlling keeps the company's activities on track.
5. False. Managerial accounting reports are for internal use and thus do not have to comply with GAAP.

Related exercise material: [BE1.1](#), [BE1.2](#), [DO IT! 1.1](#), and [E1.1](#).

ACTION PLAN

- Understand that managerial accounting is a field of accounting that provides economic and financial information for managers and other internal users.
- Understand that financial accounting provides information for external users.
- Analyze which users require which different types of information.

1.2 Managerial Cost Concepts

LEARNING OBJECTIVE 2

Describe the classes of manufacturing costs and the differences between product and period costs.

In order for managers at **Current Designs** to plan, direct, and control operations effectively, they need good information. One very important type of information relates to costs. Managers should ask questions such as the following.

1. What costs are involved in making a product or performing a service?
2. If we decrease production volume, will costs change?
3. What impact will automation have on total costs?
4. How can we best control costs?

To answer these questions, managers obtain and analyze reliable and relevant cost information. The first step is to understand the various cost categories that companies use.

Manufacturing Costs

Manufacturing consists of activities and processes that convert raw materials into finished goods. Contrast this type of operation with merchandising, which sells products in the form in which they are purchased.

- Manufacturing costs incurred to produce a product are classified as direct materials, direct labor, and manufacturing overhead.
- Typically, manufacturing costs are incurred at the production facility (the factory). The terms *manufacturing cost* and *product cost* are used interchangeably.



Direct Materials To obtain the materials that will be converted into the finished product, the manufacturer purchases raw materials. **Raw materials** are the basic materials and parts used in the manufacturing process.

Raw materials that can be physically and directly associated with the finished product during the manufacturing process are **direct materials**. Examples include flour in the baking of bread, syrup in the bottling of soft drinks, and steel in the making of automobiles. A primary direct material of many Current Designs' kayaks is polyethylene powder. Some of its high-performance kayaks use Kevlar.

Some raw materials cannot be easily associated with the finished product. These are called indirect materials. **Indirect materials** have one of two characteristics.

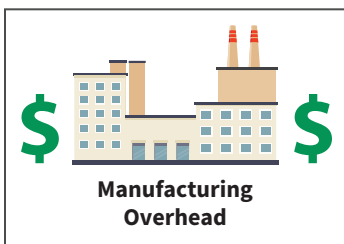
1. They do not physically become part of the finished product (such as polishing compounds used by Current Designs for the finishing touches on kayaks).
2. They are impractical to trace to the finished product because their physical association with the finished product is too small in terms of cost (such as cotter pins and lock washers used in kayak rudder assembly).

Companies account for indirect materials as part of **manufacturing overhead**. So, all direct materials are raw materials, but not all raw materials are direct materials.



Direct Labor The work of factory employees that can be physically and directly associated with converting raw materials into finished goods is **direct labor**. Bottlers at **Coca-Cola**, bakers at **Hostess Brands**, and equipment operators at Current Designs are employees whose activities are usually classified as direct labor.

Indirect labor refers to the work of manufacturing-related employees that has no physical association with the making of the finished product or for which it is impractical to trace costs to the goods produced. Examples include salaries and wages of factory maintenance people, factory security, product quality inspectors, and factory supervisors. While these employees work in the production facility, they are not directly involved in converting raw materials into the finished product. Like indirect materials, companies classify indirect labor as **manufacturing overhead**.



Manufacturing Overhead **Manufacturing overhead** consists of manufacturing costs that are indirectly associated with the manufacture of the finished product.

- Manufacturing overhead includes indirect materials, indirect labor, depreciation on factory buildings and machines, and insurance, taxes, and maintenance on factory facilities.
- If the cost is manufacturing-related but cannot be classified as direct materials or direct labor, it should be considered manufacturing overhead.

ALTERNATIVE TERMINOLOGY

Some companies use terms such as *factory overhead*, *indirect manufacturing costs*, and *burden* instead of **manufacturing overhead**.

One study of manufactured goods found the following magnitudes of the three different product costs as a percentage of the total product cost: direct materials 54%, direct labor 13%, and manufacturing overhead 33% (see **Alternative Terminology**). Note that the direct labor component is the smallest. This component of product cost is dropping substantially because of automation. Companies are working hard to increase productivity by decreasing labor. In some companies, direct labor has become as little as 5% of the total cost.

Tracing direct materials and direct labor costs to specific products is fairly straightforward. Good recordkeeping can tell a company how much plastic it used in making each type of gear, or how many hours of factory labor it took to assemble a part. But tracing overhead costs to specific products presents problems. How much of the purchasing agent's salary is attributable to the hundreds of different products made in the same factory? What about the grease that keeps the machines running smoothly, or the electricity costs of the factory? Boiled down to its simplest form, the question becomes: Which products cause the incurrence of which costs? In subsequent chapters, we show various methods of aggregating and allocating overhead to products as these costs cannot be directly traced.

Product versus Period Costs

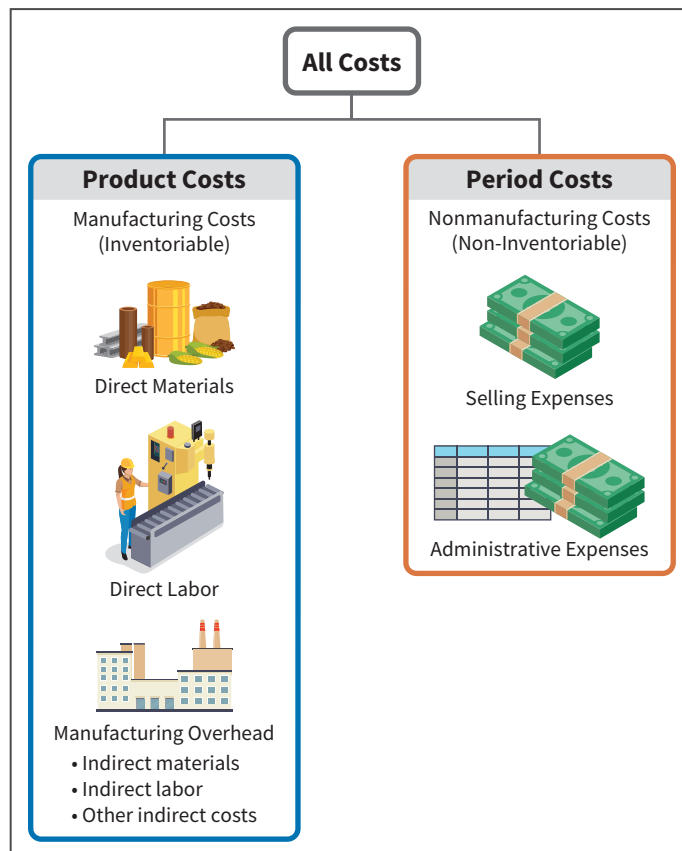
Each of the manufacturing cost components—direct materials, direct labor, and manufacturing overhead—are product costs. As the term suggests, **product costs** are costs that are a necessary and integral part of producing the finished product (see **Alternative Terminology**).

- All manufacturing costs are classified as product costs.
- Companies record product costs, when incurred, as an asset called inventory.
- These costs do not become expenses until the company sells the finished goods inventory.
- At that point, the company records the expense as cost of goods sold.

Period costs are costs that are matched with the revenue of a specific time period rather than included in inventory as part of the cost to produce a salable product.

- These are nonmanufacturing costs.
- Period costs include selling and administrative expenses.
- In order to determine net income, companies deduct these period costs from revenues in the period in which they are incurred.

Illustration 1.3 summarizes these relationships and cost terms. Our main concern in this chapter is with product costs.



ALTERNATIVE TERMINOLOGY

All manufacturing costs are product costs, which are also called *inventoriable* costs.

ILLUSTRATION 1.3 Product versus period costs

Illustration of Cost Concepts

To improve your understanding of cost concepts, we illustrate them here through an extended example. Suppose you started your own snowboard factory, Terrain Park Boards. Think that's impossible? **Burton Snowboards** was started by Jake Burton Carpenter, when he was only 23 years old. Jake initially experimented with 100 different prototype designs before settling on a final design. Then Jake, along with two relatives and a friend, started making 50 boards per day in Londonderry, Vermont. Unfortunately, while they made a lot of boards in their first year, they were only able to sell 300 of them. To get by during those early years, Jake taught tennis and tended bar to pay the bills.

Illustration 1.4 shows some of the costs that your snowboard factory, Terrain Park Boards, would incur. We have classified each cost as a product cost or a period cost, as well as provided an explanation for the classification. We have also specified whether product costs are direct materials, direct labor, or manufacturing overhead.

ILLUSTRATION 1.4

Assignment of costs to cost categories

Cost	Product Cost (direct materials, direct labor, or man- ufacturing overhead)	Period Cost (non- manufacturing)	Explanation
1. Wood cores, fiber-glass, and resin (\$30 per board)	Direct materials		Essential components of finished product
2. Labor to trim and shape boards (\$40 per board)	Direct labor		Physically and directly associated with converting raw materials into finished goods
3. Factory equipment depreciation (\$25,000)	Manufacturing overhead		Factory cost that is not direct materials or direct labor
4. Property taxes on factory building (\$6,000 per year)	Manufacturing overhead		Factory cost that is not direct materials or direct labor
5. Advertising costs (\$60,000 per year)		X	Not a cost associated with producing product
6. Sales commissions (\$20 per board)		X	Not a cost associated with producing product
7. Factory maintenance salaries (\$25,000 per year)	Manufacturing overhead		A factory cost, but maintenance employees are not physically and directly involved with converting raw materials into finished goods
8. Salary of factory manager (\$70,000 per year)	Manufacturing overhead		A factory cost, but a factory manager is not physically and directly involved with converting raw materials into finished goods
9. Cost of shipping boards to customers (\$8 per board)		X	Not a cost associated with producing product
10. Salary of product quality inspector (\$20,000 per year)	Manufacturing overhead		A factory cost, but a quality inspector is not physically and directly involved with converting raw materials into finished goods

Total manufacturing costs are the sum of the **product costs**—direct materials, direct labor, and manufacturing overhead—incurred in the current period. If Terrain Park Boards produces 10,000 snowboards the first year, the total manufacturing costs would be \$846,000, as shown in **Illustration 1.5**.

Once it knows the total manufacturing costs, Terrain Park Boards can compute the average manufacturing cost per unit. Assuming 10,000 units, the cost to produce one snowboard is \$84.60 ($\$846,000 \div 10,000$ units).

Cost Item	Manufacturing Cost
1. Material cost (\$30 × 10,000)	\$300,000
2. Labor cost (\$40 × 10,000)	400,000
3. Depreciation on factory equipment	25,000
4. Property taxes on factory building	6,000
7. Factory maintenance salaries	25,000
8. Salary of factory manager	70,000
10. Salary of product quality inspector	20,000
Total manufacturing product costs	\$846,000

ILLUSTRATION 1.5**Computation of total manufacturing product costs**

The cost concepts discussed in this chapter are used extensively in subsequent chapters. So study Illustration 1.4 carefully. If you do not understand any of these classifications, go back and reread the appropriate section.

Service Company Insight: Allegiant Airlines



sharply_done/
Getty Images

Low Fares but Decent Profits

When other airlines were cutting flight service due to recession, **Allegiant Airlines** increased capacity by 21%. Sounds crazy, doesn't it? But it must have known something because while the other airlines were losing money, it was generating profits. In fact, it often has the industry's highest profit margins. Consider also that its average one-way fare is only \$83. So how does it make money? As a low-budget airline, it focuses on controlling costs.

Allegiant purchases used planes for \$3 million each rather than new planes for \$40 million. It flies out of small towns, so wages are low and competition is nonexistent. It minimizes hotel

costs by having its flight crews finish their day in their home cities. The company also only flies a route if its 150-passenger planes are nearly full (it averages about 90% of capacity). The bottom line is that Allegiant knows its costs to the penny. Knowing what your costs are might not be glamorous, but it sure beats losing money.

Sources: Adapted from Susan Carey, "For Allegiant, Getaways Mean Profits," *Wall Street Journal Online* (February 18, 2009); and Scott Mayerowitz, "Tiny Allegiant Air Thrives on Low Costs, High Fees," *yahoo! news* (June 28, 2013).

What are some of the line items that would appear in the cost of services performed schedule of an airline? (Answer is available near the end of the chapter.)

DO IT! 2

Managerial Cost Concepts

A bicycle company has these costs: tires, wages of employees who put tires on the wheels, factory building depreciation, advertising expenditures, factory machine lubricants, spokes, salary of factory manager, salary of accountant, handlebars, salaries of factory maintenance employees, and salary of product quality inspector. Classify each of these costs as a product cost or a period cost. Specify direct materials, direct labor, or manufacturing overhead for product costs.

Solution

Cost	Product Cost	Period Cost
Tires	Direct materials	
Wages of employees who put tires on the wheels	Direct labor	
Factory building depreciation	Manufacturing overhead	
Advertising expenditures		X
Factory machine lubricants	Manufacturing overhead	
Spokes	Direct materials	
Salary of factory manager	Manufacturing overhead	
Salary of accountant		X
Handlebars	Direct materials	
Salaries of factory maintenance employees	Manufacturing overhead	
Salary of product quality inspector	Manufacturing overhead	

Related exercise material: **BE1.3, BE1.4, BE1.5, BE1.6, DO IT! 1.2, E1.2, E1.3, E1.4, E1.5, E1.6, E1.7, and E1.8.**

ACTION PLAN

- **Direct materials:** any raw materials physically and directly associated with the finished product.
- **Direct labor:** the work of factory employees directly associated with the finished product.
- **Manufacturing overhead:** any costs indirectly associated with the finished product.
- **Costs that are not product costs are period costs.**

1.3 Manufacturing Costs in Financial Statements

LEARNING OBJECTIVE 3

Demonstrate how to compute cost of goods manufactured and prepare financial statements for a manufacturer.

The financial statements of a manufacturer are very similar to those of a merchandiser. For example, you will find many of the same sections and same accounts in the financial statements of **Procter & Gamble** that you find in the financial statements of **Dick's Sporting Goods**. The principal differences between their financial statements occur in two places.

1. The current assets section in the balance sheet.
2. The cost of goods sold section in the income statement.

Each step in the accounting cycle for a merchandiser also applies to a manufacturer.

- For example, prior to preparing financial statements, manufacturers make adjustments.
- The adjustments are essentially the same as those of a merchandiser.

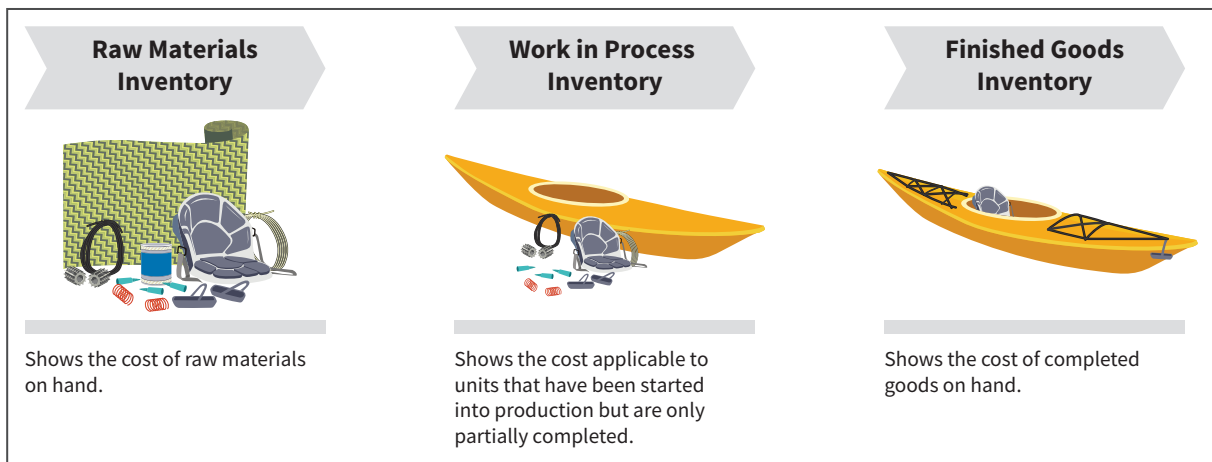
DECISION TOOLS

The balance sheet helps managers determine whether sufficient inventory exists to meet forecasted demand.

Balance Sheet

The balance sheet for a merchandising company shows just one category of inventory. In contrast, the balance sheet for a manufacturer may have three inventory accounts, raw materials, work in process, and finished goods, as shown in **Illustration 1.6** for Current Designs' kayak inventory (see **Decision Tools**).

ILLUSTRATION 1.6 Inventory accounts for a manufacturer



Finished Goods Inventory is to a manufacturer what Inventory is to a merchandiser. In both cases, these represent the goods that the company has available for sale. The current assets sections presented in **Illustration 1.7** contrast the presentations of inventories for merchandising and manufacturing companies. The remainder of the balance sheet is similar for the two types of companies.

ILLUSTRATION 1.7 Current assets sections of merchandising and manufacturing balance sheets

Merchandising Company	
Balance Sheet	
December 31, 2027	
Current assets	
Cash	\$100,000
Accounts receivable (net)	210,000
Inventory	400,000
Prepaid expenses	<u>22,000</u>
Total current assets	<u>\$732,000</u>

Manufacturing Company	
Balance Sheet	
December 31, 2027	
Current assets	
Cash	\$180,000
Accounts receivable (net)	210,000
Inventory	
Finished goods	\$80,000
Work in process	25,200
Raw materials	<u>22,800</u>
Prepaid expenses	<u>18,000</u>
Total current assets	<u>\$536,000</u>

Income Statement

Under a periodic inventory system, the income statements of a merchandiser and a manufacturer differ in the cost of goods sold section.

- Merchandisers compute cost of goods sold by adding the beginning inventory to the **cost of goods purchased** and subtracting the ending inventory.
- Manufacturers compute cost of goods sold by adding the beginning finished goods inventory to the **cost of goods manufactured** and subtracting the ending finished goods inventory.

Illustration 1.8, which assumes a periodic inventory system, shows these different methods.

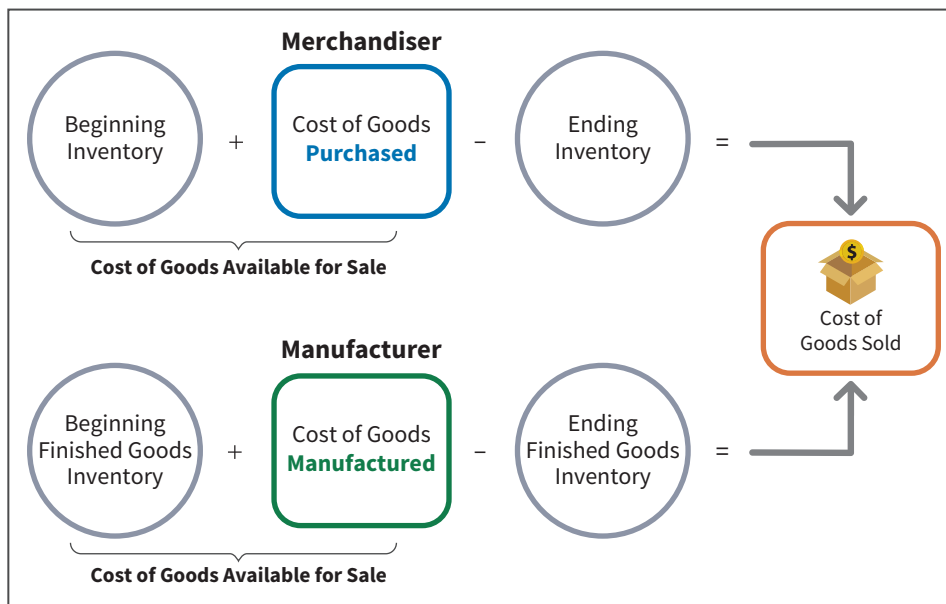


ILLUSTRATION 1.8 Merchandiser versus manufacturer cost of goods sold calculations

A number of accounts are involved in determining the cost of goods manufactured. To eliminate excessive detail, income statements typically show only the total cost of goods manufactured. A separate statement, called a Cost of Goods Manufactured Schedule, presents the details (see Illustration 1.11).

Illustration 1.9 shows the different presentations of the cost of goods sold sections for merchandising and manufacturing companies. The other sections of an income statement are similar for merchandisers and manufacturers.

ILLUSTRATION 1.9 Cost of goods sold sections of merchandising and manufacturing income statements

Merchandising Company		Manufacturing Company	
Income Statement (partial)		Income Statement (partial)	
For the Year Ended December 31, 2027		For the Year Ended December 31, 2027	
Cost of goods sold		Cost of goods sold	
Inventory, Jan. 1	\$ 70,000	Finished goods inventory, Jan. 1	\$ 90,000
Cost of goods purchased	<u>650,000</u>	Cost of goods manufactured	
		(see Illustration 1.11)	<u>370,000</u>
Cost of goods available for sale	720,000	Cost of goods available for sale	460,000
Less: Inventory,		Less: Finished goods inventory,	
Dec. 31	<u>400,000</u>	Dec. 31	<u>80,000</u>
Cost of goods sold	<u>\$320,000</u>	Cost of goods sold	<u>\$380,000</u>

Cost of Goods Manufactured

An example may help show how companies determine the cost of goods manufactured. Assume that on January 1, **Current Designs** has a number of kayaks in various stages of production. In total, these partially completed manufactured units are called beginning **work in process inventory**. These are kayaks that were worked on during the prior year but were not completed. As a result, these kayaks will be completed during the current year. The cost of beginning work in process inventory is based on the **manufacturing costs incurred in the prior period**.

Current Designs first incurs manufacturing costs in the current year to complete the kayaks that were in process on January 1. It then incurs manufacturing costs for production of new orders. The sum of the direct materials costs, direct labor costs, and manufacturing overhead incurred in the current year is the **total manufacturing costs** for the current period.

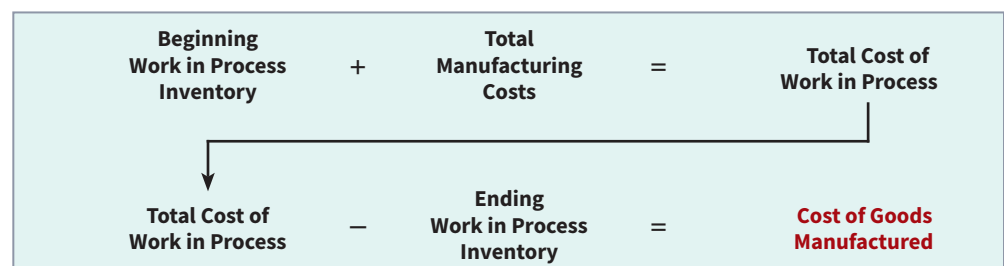
We now have two cost amounts.

1. The cost of the beginning work in process.
2. The total manufacturing costs for the current period.

The sum of these costs is the **total cost of work in process** for the year.

At the end of the year, Current Designs may have some kayaks that are only partially completed. The costs of these unfinished units represent the cost of the **ending work in process inventory**. To find the **cost of goods manufactured**, we subtract the ending work in process inventory from the total cost of work in process. **Illustration 1.10** shows the calculation for determining the cost of goods manufactured.

ILLUSTRATION 1.10 Cost of goods manufactured calculation



Cost of Goods Manufactured Schedule

The **cost of goods manufactured schedule** reports cost elements used in calculating cost of goods manufactured. **Illustration 1.11** shows the schedule for Current Designs (using assumed data). The schedule presents detailed data for direct materials and for manufacturing overhead (see **Decision Tools**).

DECISION TOOLS

The cost of goods manufactured schedule helps managers determine if the company is maintaining control over the costs of production.

Current Designs		
Cost of Goods Manufactured Schedule		
For the Year Ended December 31, 2027		
Work in process, January 1		\$ 18,400
Direct materials		
Raw materials inventory, January 1	\$ 16,700	
Raw materials purchases	<u>152,500</u>	
Total raw materials available for use	169,200	
Less: Raw materials inventory, December 31	<u>22,800</u>	
Direct materials used		\$146,400*
Direct labor		175,600
Manufacturing overhead		
Indirect labor	14,300	
Factory repairs	12,600	
Factory utilities	10,100	
Factory depreciation	9,440	
Factory insurance	<u>8,360</u>	
Total manufacturing overhead		<u>54,800</u>
Total manufacturing costs		<u>376,800</u>
Total cost of work in process		395,200
Less: Work in process, December 31		<u>25,200</u>
Cost of goods manufactured		<u><u>\$370,000</u></u>

*To simplify the presentation, assumes that all raw materials used were direct materials.

ILLUSTRATION 1.11

Cost of goods manufactured schedule

You should be able to distinguish between “Total manufacturing costs” and “Cost of goods manufactured.”

- As Illustration 1.11 shows, total manufacturing costs is the sum of all manufacturing costs (direct materials, direct labor, and manufacturing overhead) **incurred during the period**.
- Cost of goods manufactured is the cost of those goods that were **completed during the period** and are no longer work in process; these costs relate to finished goods.
- If we add beginning work in process inventory to the total manufacturing costs incurred during the period and then subtract the ending work in process inventory (the calculation given in Illustration 1.10), we arrive at the cost of goods manufactured during the period.
- Cost of goods manufactured represents the costs related to items that were completed during the period and are therefore included in finished goods.

ACTION PLAN

- Start with beginning work in process as the first item in the cost of goods manufactured schedule.
- Sum direct materials used, direct labor, and manufacturing overhead to determine total manufacturing costs.
- Sum beginning work in process and total manufacturing costs to determine total cost of work in process.
- Cost of goods manufactured is the total cost of work in process less ending work in process.

DO IT! 3**Cost of Goods Manufactured**

The following information is available for Keystone Company.

	<u>March 1</u>	<u>March 31</u>
Raw materials inventory	\$12,000	\$10,000
Work in process inventory	2,500	4,000
Raw materials purchased in March	\$ 90,000	
Direct labor in March	75,000	
Manufacturing overhead in March	220,000	

Prepare the cost of goods manufactured schedule for the month of March 2027. (Assume that all raw materials used were direct materials.)

Solution

Keystone Company		
Cost of Goods Manufactured Schedule		
For the Month Ended March 31, 2027		
Work in process, March 1		\$ 2,500
Direct materials		
Raw materials, March 1	\$ 12,000	
Raw materials purchases	<u>90,000</u>	
Total raw materials available for use	102,000	
Less: Raw materials, March 31	<u>10,000</u>	
Direct materials used		\$ 92,000
Direct labor		75,000
Manufacturing overhead		<u>220,000</u>
Total manufacturing costs		<u>387,000</u>
Total cost of work in process		389,500
Less: Work in process, March 31		<u>4,000</u>
Cost of goods manufactured		<u>\$385,500</u>

Related exercise material: [BE1.7](#), [BE1.8](#), [BE1.9](#), [BE1.10](#), [DO IT! 1.3](#), [E1.9](#), [E1.10](#), [E1.11](#), [E1.12](#), [E1.13](#), [E1.14](#), [E1.15](#), [E1.16](#), [E1.17](#) and [E1.18](#).

1.4 Managerial Accounting Today

LEARNING OBJECTIVE 4

Discuss trends in managerial accounting.

In this rapidly changing world, managerial accounting needs to continue to innovate in order to provide managers with the information they need.

Service Industries

Much of the U.S. economy has shifted toward an emphasis on services.

- Today, approximately 80% of U.S. workers are employed by service companies.
- Airlines, marketing agencies, cable companies, and governmental agencies are just a few examples of service companies.
- Service companies differ from manufacturing companies in that services are consumed immediately by customers.

For example, an airline uses special equipment to provide its product, but the output of that equipment is consumed immediately by the customer in the form of a flight. A marketing agency performs services for its clients that are immediately consumed by the customer in the form of a marketing plan. In contrast, a manufacturing company like **Boeing** records the airplanes that it manufactures as inventory until they are sold.

This chapter's examples feature manufacturing companies because accounting for the manufacturing environment requires the use of the broadest range of accounts. That is, the accounts used by service companies represent a subset of those used by manufacturers because service companies are not producing inventory. Neither an airline nor a marketing agency produces an inventoriable product. However, just like a manufacturer, each needs to keep track of the costs of its services in order to know whether it is generating a profit (see **Ethics Note**). An airline needs to know the cost of flight service to each destination, and a marketing agency needs to know the cost to develop a marketing plan. The techniques shown in this chapter to accumulate manufacturing costs to determine manufacturing inventory are equally useful for determining the costs of performing services.

Many of the examples we present in subsequent chapters, as well as some end-of-chapter materials, will be based on service companies.

ETHICS NOTE

Do telecommunications companies have an obligation to provide service to remote or low-user areas for a fee that may be less than the cost of the service?

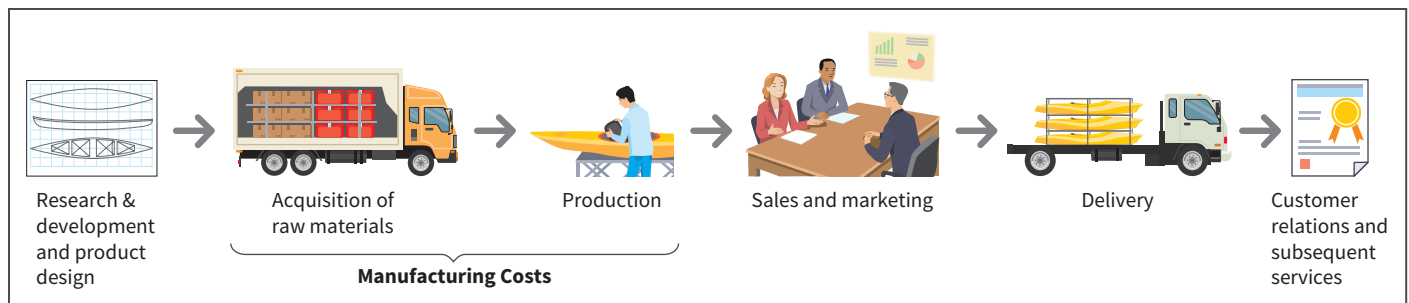
Focus on the Value Chain

The **value chain** refers to all business processes associated with providing a product or performing a service. **Illustration 1.12** depicts the value chain for a manufacturer.

- Note that the value chain includes both manufacturing and nonmanufacturing costs.
- Many of the most significant business innovations in recent years have resulted either directly, or indirectly, from a focus on the value chain.

For example, **lean manufacturing** was originally pioneered by Japanese automobile manufacturer **Toyota** but is now widely employed. Lean manufacturing requires a review of all business processes in an effort to increase productivity and eliminate waste, all while continually trying to improve quality.

ILLUSTRATION 1.12 A manufacturer's value chain



Just-in-time (JIT) inventory methods, which have significantly lowered inventory levels and costs for many companies, are one innovation that resulted from the focus on the value chain.

- Under the JIT inventory method, goods are manufactured or purchased just in time for sale.
- However, JIT also necessitates increased emphasis on product quality. Because JIT companies do not have excess inventory on hand, they cannot afford to stop production because of defects or machine breakdowns. If they stop production, deliveries will be delayed and customers will be unhappy.

Partially as a consequence of JIT, many companies now focus on **total quality management (TQM)** to reduce defects in finished products, with the goal of zero defects. **Toyota** was

one of the pioneers of TQM processes as early as the 1940s. Some of the largest companies in the world, including **Ford** and **ExxonMobil**, have benefitted from these practices.

Another innovation is the **theory of constraints**.

- This involves identification of “bottlenecks”—constraints within the value chain that limit a company’s profitability.
- Once a major constraint has been identified and eliminated, the company moves on to fix the next most significant constraint.

General Motors found that by applying the theory of constraints to its distribution system, it could more effectively meet the demands of its dealers and minimize the amount of excess inventory in its distribution system. This also reduced its need for overtime labor.

Technology has played a big role in the focus on the value chain and the implementation of lean manufacturing. For example, **enterprise resource planning (ERP) systems**, such as those provided by **SAP**, provide a comprehensive, centralized, integrated source of information to manage all major business processes—from purchasing, to manufacturing, to sales, to human resources.

- ERP systems have, in some large companies, replaced as many as 200 individual software packages.
- In addition, the focus on improving efficiency in the value chain has resulted in adoption of automated manufacturing processes.

As overhead costs have increased because of factory automation, the accuracy of overhead cost allocation to specific products has become more important. In response, managerial accountants devised an allocation approach called **activity-based costing (ABC)**.

- ABC allocates overhead based on each product’s use of particular activities in making the product.
- In addition to providing more accurate product costing, ABC can contribute to increased efficiency in the value chain.

For example, suppose one of a company’s overhead pools is allocated based on the number of setups that each product requires. If a particular product’s cost is high because it is allocated a lot of overhead due to a high number of setups, management will be motivated to try to reduce the number of setups and thus reduce its overhead allocation. ABC is discussed further in Chapter 4.

Management Insight: Inditex SA



Africa Studio/Adobe Stock

Supplying Today’s (Not Yesterday’s) Fashions

In terms of total sales dollars, **Inditex SA** is the planet’s largest fashion retailer. What does it do differently than its competitors? How did it double its sales over a recent seven-year period while competitors such as **Gap Inc.** stumbled badly? Inditex distinguishes itself in its value

chain’s ability to react quickly to constantly changing customer tastes.

First, designers and commercial staff sit side by side in a massive, open workspace facility, taking direct input from sales staff around the world regarding new product ideas. Manufacturing facilities are located relatively near company headquarters,

allowing more direct input and oversight into production. Also, all goods (other than online sales) are shipped straight from the production facility to stores, rather than warehouses.

As a result of its unique approach to how it designs, manufactures, and distributes its goods, Inditex can actually sometimes get a new product from initial idea to the store shelf in two weeks rather than the industry norm of two to eight months. And because Inditex provides customers with designs that competitors don’t have yet, it can charge higher prices while also continuing to look for ways to increase efficiency and thus cut costs.

Source: Adapted from Patricia Kowsmann, “Fast Fashion: How a Zara Coat Went from Design to Fifth Avenue in 25 Days,” *Wall Street Journal* (December 6, 2016).

What steps has Inditex taken that make its value chain unique? (Answer is available near the end of the chapter.)

Balanced Scorecard

The **balanced scorecard** corrects for management's sometimes biased or limited perspective.

- This approach uses both financial and nonfinancial measures to evaluate all aspects of a company's operations in an integrated fashion.
- The performance measures are linked in a cause-and-effect fashion to ensure that they all tie to the company's overall objectives.

For example, to increase return on assets, the company could try to increase sales. To increase sales, the company could try to increase customer satisfaction. To increase customer satisfaction, the company could try to reduce product defects. Finally, to reduce product defects, the company could increase employee training. The balanced scorecard, which is discussed further in Chapter 11, is now used by many companies, including **Hilton Hotels**, **Walmart**, and **HP**.

Business Ethics

All employees within an organization are expected to act ethically in their business activities. Given the importance of ethical behavior to corporations and their owners (stockholders), an increasing number of organizations provide codes of business ethics for their employees.

Creating Proper Incentives Companies like **Amazon.com**, **IBM**, and **Nike** use complex systems to monitor, control, and evaluate the actions of managers. Unfortunately, these systems and controls sometimes unwittingly create incentives for managers to take unethical actions.

- Because budgets are also used as an evaluation tool, some managers try to “game” the budgeting process by underestimating their division's predicted performance so that it will be easier to meet their performance targets.
- But, if budgets are set at unattainable levels, managers sometimes take unethical actions to meet the targets in order to receive higher compensation or, in some cases, to keep their jobs.

In a recent example, the largest bank in the United States, **Wells Fargo**, admitted that it had fired 5,300 employees for opening more than 2 million accounts without customer approval or knowledge. According to the director of the Consumer Financial Protection Bureau, “Wells Fargo employees secretly opened unauthorized accounts to hit sales targets and receive bonuses.”

Code of Ethical Standards In response to corporate scandals, the U.S. Congress enacted the **Sarbanes-Oxley Act (SOX)** to help prevent lapses in internal control.

- CEOs and CFOs are now required to certify that financial statements give a fair presentation of the company's operating results and its financial condition.
- Top managers must certify that the company maintains an adequate system of internal controls to ensure accurate financial reports.
- Companies now pay more attention to the composition of the board of directors. In particular, the audit committee of the board of directors must be comprised entirely of independent members (that is, nonemployees) and must contain at least one financial expert.
- The law substantially increased the penalties for misconduct.

To provide guidance for managerial accountants, the Institute of Management Accountants (IMA) has developed a code of ethical standards, entitled *IMA Statement of Ethical Professional Practice*. Managerial accountants should not commit acts in violation of these standards. Nor should they condone such acts by others within their organizations. Throughout the text, we address various ethical issues managers face.

Environmental, Social, and Governance Issues

The balanced scorecard attempts to take a broader, more inclusive view of corporate profitability measures. Many companies, however, have begun to evaluate not just corporate profitability but also **environmental, social, and governance (ESG) issues**.

- Corporate social responsibility considers a company’s efforts to employ sustainable business practices with regard to its employees, society, and the environment.
- Recent reports indicate that nearly 80% of the 500 largest U.S. companies provide sustainability reports.

Make no mistake, these companies are still striving to maximize profits—in a competitive world, they won’t survive long if they don’t.

In fact, you might recognize a few of the names on a recent list (published by Corporate Knights) of the 100 most sustainable companies in the world. Are you surprised that **General Electric, adidas, BMW, Coca-Cola, or Apple** made the list? These companies have learned that with a long-term, sustainable approach, they can maximize profits while also acting in the best interest of their employees, their communities, and the environment. In addition, a monetary bonus was provided by 87% of the companies on the list to managers that met sustainability goals. At various points within this text, we discuss situations where real companies use the very skills that you are learning to evaluate decisions from a sustainable perspective, such as in the following Insight box.

Environmental, Social, and Governance Insight: Phantom Tac



aabeele/Shutterstock.com

People Matter

Many clothing factories in developing countries are known for unsafe buildings, poor working conditions, and wage and labor violations. One of the owners of **Phantom Tac**, a clothing

manufacturer in Bangladesh, did make efforts to develop sustainable business practices. This owner, David Mayor, provided funding for a training program for female workers. He also developed a website to educate customers about the workers’ conditions.

But Phantom Tac also had to make a profit. Things got tight when one of its customers canceled orders because Phantom Tac failed a social compliance audit. The company had to quit funding the training program and the website.

Recently, Bangladesh’s textile industry has seen some significant improvements in working conditions and safety standards. As Brad Adams, Asia director of **Human Rights Watch**, notes, “The (Dhaka) government has belatedly begun to register unions, which is an important first step, but it now needs to ensure that factory owners stop persecuting their leaders and actually allow them to function.”

Sources: Based on Jim Yardley, “Clothing Brands Sidestep Blame for Safety Lapses,” *The New York Times Online* (December 30, 2013); and Palash Ghosh, “Despite Low Pay, Poor Work Conditions, Garment Factories Empowering Millions of Bangladeshi Women,” *International Business Times* (March 25, 2014).

What are some of the common problems for many clothing factories in developing countries? (Answer is available near the end of the chapter.)

The Value of Data Analytics

Companies have never had so much available data. In many companies, virtually every aspect of operations—the employees, the customers, even the manufacturing equipment—leaves a data trail. However, while “big data” can be impressive, it can also be overwhelming.

- Having all the data in the world will not necessarily lead to better results.
- The trick is having the skills and know-how to use the data in ways that result in more productive (and happier) employees, more satisfied customers, and more profitable operations.

It is therefore not surprising that one of the most rapidly growing areas of business today is data analytics. **Data analytics** is the use of techniques, which often combine software and statistics, to analyze data to make informed decisions.

Throughout the remainder of this text, we continue to offer many examples of how successful companies are using data analytics. We also provide examples of one analytical tool, data visualizations. **Data visualizations** often help managers acquire a more intuitive understanding of (1) the relationships between variables and (2) business trends.

Data Analytics Insight: The Walt Disney Company



Paulbr/Pixabay

Using Data in Its Own World

The Walt Disney Company makes fun seem effortless at its theme parks, but there is a magic mountain of data collection going on behind the scenes. For example, Disney employs

behavioral analytics, which uses data to both predict and influence customer behavior, in countless ways.

Disney collects the data through its “MagicBands” worn by visitors to the parks. While the MagicBands provide visitors with many benefits (e.g., delivering customized itineraries, reducing wait lines, and providing customer recognition by Disney characters), these bands are also delivering continual information to

the company about the locations, activities, eating habits, and purchases of Disney visitors.

Disney uses the MagicBand information to support daily adjustments of operations as well as long-term planning. For example, the company can use this information to monitor park usage and subsequently encourage visitors to change their itineraries to different activities that will require a shorter wait time. If customers are waiting in line, they aren’t happy—and they also aren’t spending money. Long-term planning uses of MagicBand information include designing new attractions and updating menu options in response to supply and demand.

Source: Based on Randerson112358, “How Disney World Uses Big Data,” *medium.com* (May 18, 2019).

What is behavioral analytics, and how does Disney use it to minimize lines at its theme parks? (Answer is available near the end of the chapter.)

DO IT! 4

Trends in Managerial Accounting

Match the descriptions that follow with the corresponding terms.

Descriptions:

- _____ All activities associated with providing a product or performing a service.
- _____ A method of allocating overhead based on each product’s use of activities in making the product.
- _____ Systems implemented to reduce defects in finished products with the goal of achieving zero defects.
- _____ A performance-measurement approach that uses both financial and nonfinancial measures, tied to company objectives, to evaluate a company’s operations in an integrated fashion.
- _____ Inventory system in which goods are manufactured or purchased just as they are needed for use or sale.
- _____ A company’s efforts to employ sustainable business practices with regard to its employees, society, and the environment.
- _____ A code of ethical standards developed by the Institute of Management Accountants.

Terms:

- Activity-based costing.
- Balanced scorecard.
- Corporate social responsibility.
- Just-in-time (JIT) inventory.
- Total quality management (TQM).
- Statement of Ethical Professional Practice.
- Value chain.

ACTION PLAN

- **Develop a forward-looking view, in order to advise and provide information to various members of the organization.**
- **Understand current business trends and issues.**

Solution

1. g 2. a 3. e 4. b 5. d 6. c 7. f

Related exercise material: **BE1.11**, **DO IT! 1.4**, and **E1.19**.

Using the Decision Tools comprehensive exercises ask you to apply business information and the decision tools presented in the chapter. Most of these exercises are based on the companies highlighted in the Feature Story.

USING THE DECISION TOOLS | Current Designs

Current Designs faces many situations where it needs to apply the decision tools in this chapter, such as analyzing the balance sheet for optimal inventory levels. For example, assume that the market has responded enthusiastically to a new Current Designs' model, the Otter. As a result, the company has established a separate manufacturing facility to produce these kayaks. Now assume that the company produces 1,000 of these kayaks per month. Current Designs' monthly manufacturing costs and other data for the Otter are as follows.

1. Rent on manufacturing equipment (lease cost)	\$2,000/month
2. Insurance on manufacturing building	\$750/month
3. Raw materials (plastic, fiberglass, etc.)	\$180/kayak
4. Utility costs for manufacturing facility	\$1,000/month
5. Utility costs for administrative office	\$800/month
6. Wages for assembly-line workers in manufacturing facility	\$130/kayak
7. Depreciation on administrative office equipment	\$650/month
8. Miscellaneous manufacturing materials used (lubricants, solders, etc.)	\$12/kayak
9. Property taxes on manufacturing building	\$24,000/year
10. Manufacturing supervisor's salary	\$5,000/month
11. Advertising for the Otter	\$30,000/year
12. Sales commissions	\$30/kayak
13. Depreciation on manufacturing building	\$4,000/month

Instructions

- a. Prepare an answer sheet with the following column headings.

	<u>Product Costs</u>				
<u>Cost</u>	<u>Direct</u>	<u>Direct</u>	<u>Manufacturing</u>		<u>Period</u>
<u>Item</u>	<u>Materials</u>	<u>Labor</u>	<u>Overhead</u>		<u>Costs</u>

Enter each cost item on your answer sheet, placing an "X" under the appropriate headings.

- b. Compute total manufacturing costs for the month.

Solution

- a.

<u>Cost Item</u>	<u>Product Costs</u>			<u>Period</u> <u>Costs</u>
	<u>Direct</u> <u>Materials</u>	<u>Direct</u> <u>Labor</u>	<u>Manufacturing</u> <u>Overhead</u>	
1. Rent on manufacturing equipment (\$2,000/month)			X	
2. Insurance on manufacturing building (\$750/month)			X	
3. Raw materials (\$180/kayak)	X			
4. Manufacturing utility costs (\$1,000/month)			X	
5. Office utility costs (\$800/month)				X
6. Wages for assembly workers (\$130/kayak)		X		
7. Depreciation on administrative office equipment (\$650/month)				X
8. Miscellaneous manufacturing materials used (\$12/kayak)			X	

Cost Item	Product Costs			Period Costs
	Direct Materials	Direct Labor	Manufacturing Overhead	
9. Property taxes on manufacturing building (\$24,000/year)			X	
10. Manufacturing supervisor's salary (\$5,000/month)			X	
11. Advertising cost (\$30,000/year)				X
12. Sales commissions (\$30/kayak)				X
13. Depreciation on manufacturing building (\$4,000/month)			X	
b.	Cost Item		Manufacturing Cost	
	Rent on manufacturing equipment		\$ 2,000	
	Insurance on manufacturing building		750	
	Raw materials ($\$180 \times 1,000$)		180,000	
	Manufacturing utilities		1,000	
	Labor ($\$130 \times 1,000$)		130,000	
	Miscellaneous materials ($\$12 \times 1,000$)		12,000	
	Property taxes on manufacturing building ($\$24,000 \div 12$)		2,000	
	Manufacturing supervisor's salary		5,000	
	Depreciation on manufacturing building		<u>4,000</u>	
	Total manufacturing costs		<u>\$336,750</u>	

Current Designs' monthly manufacturing cost to produce 1,000 Otters is \$336,750.

Review and Practice

Learning Objectives Review

1 Identify the features of managerial accounting and the functions of management.

The *primary users* of managerial accounting reports, issued as frequently as needed, are internal users, who are officers, department heads, managers, and supervisors in the company. The purpose of these reports is to provide special-purpose information for a particular user for a specific decision. The content of managerial accounting reports pertains to subunits of the business. It may be very detailed, and may extend beyond the accrual accounting system. The reporting standard is relevance to the decision being made. No independent audits are required in managerial accounting.

The functions of management are planning, directing, and controlling. Planning requires management to look ahead and to establish objectives. Directing involves coordinating the diverse activities and human resources of a company to produce a smooth-running operation. Controlling is the process of keeping the activities on track.

2 Describe the classes of manufacturing costs and the differences between product and period costs.

Manufacturing costs are typically classified as either (1) direct materials, (2) direct labor, or (3) manufacturing overhead. Raw materials that can be physically and directly associated with the finished product during the manufacturing process are called direct materials. The work of factory employees that can be physically and directly associated with converting raw materials into finished goods is considered direct labor. Manufacturing overhead consists of costs that are indirectly associated with the manufacture of the finished product. Manufacturing costs are typically incurred at the manufacturing facility.

Product costs are costs that are a necessary and integral part of producing the finished product (manufacturing costs). Product costs are also called inventoriable costs. These costs do not become expenses until the company sells the finished goods inventory.

Period costs are costs that are identified with a specific time period rather than with a salable product. These costs relate to non-manufacturing costs and therefore are not inventoriable costs. They are expensed as incurred.

3 Demonstrate how to compute cost of goods manufactured and prepare financial statements for a manufacturer.

Companies add the cost of the beginning work in process to the total manufacturing costs for the current year to arrive at the total cost of work in process for the year. They then subtract the ending work in process from the total cost of work in process to arrive at the cost of goods manufactured.

The difference between a merchandising and a manufacturing balance sheet is in the current assets section. The current assets section of a manufacturing company's balance sheet presents three inventory accounts: finished goods inventory, work in process inventory, and raw materials inventory.

The difference between a merchandising and a manufacturing income statement is in the cost of goods sold section. A manufacturing cost of goods sold section shows beginning and ending finished goods inventories and the cost of goods manufactured.

4 Discuss trends in managerial accounting.

Managerial accounting has experienced many changes in recent years, including a shift toward service companies as well as an emphasis on ethical behavior. Improved practices include a focus on managing the value chain through techniques such as just-in-time inventory, total quality management, activity-based costing, and theory of constraints.

The balanced scorecard is now used by many companies in order to attain a more comprehensive view of the company's operations, and companies are now evaluating their performance with regard to their corporate social responsibility.

Finally, data analytics and data visualizations are important tools that help businesses identify problems and opportunities, and then make informed decisions.

Decision Tools Review

Decision Checkpoints	Info Needed for Decision	Tool to Use for Decision	How to Evaluate Results
What is the composition of a manufacturing company's inventory?	Amount of raw materials, work in process, and finished goods inventories	Balance sheet	Determine whether there are sufficient finished goods, raw materials, and work in process inventories to meet forecasted demand.
Is the company maintaining control over the costs of production?	Cost of material, labor, and overhead	Cost of goods manufactured schedule	Compare the cost of goods manufactured to revenue expected from product sales.

Glossary Review

Activity-based costing (ABC). A method of allocating overhead based on each product's use of activities in making the product. (p. 1-18).

Balanced scorecard. A performance-measurement approach that uses both financial and nonfinancial measures, tied to company objectives, to evaluate a company's operations in an integrated fashion. (p. 1-19).

Board of directors. The group of officials elected by the stockholders of a corporation to formulate operating policies and select officers who will manage the company. (p. 1-5).

Chief executive officer (CEO). Corporate officer who has overall responsibility for managing the business and delegates responsibilities to other corporate officers. (p. 1-6).

Chief financial officer (CFO). Corporate officer who is responsible for all of the accounting and finance issues of the company. (p. 1-6).

Controller. Financial officer responsible for a company's accounting records, system of internal control, and preparation of financial statements, tax returns, and internal reports. (p. 1-6).

Cost of goods manufactured. Total cost of work in process less the cost of the ending work in process inventory. Cost of all the items completed during the period. (p. 1-14).

Data analytics. The use of techniques, which often combine software and statistics, to analyze data to make informed decisions. (p. 1-20).

Direct labor. The work of factory employees that can be physically and directly associated with converting raw materials into finished goods. (p. 1-8).

Direct materials. Raw materials that can be physically and directly associated with manufacturing the finished product. (p. 1-8).

Enterprise resource planning (ERP) system. Software that provides a comprehensive, centralized, integrated source of information used to manage all major business processes. (p. 1-18).

Indirect labor. Work of factory employees that has no physical association with the finished product or for which it is impractical to trace the costs to the goods produced. (p. 1-8).

Indirect materials. Raw materials that do not physically become part of the finished product or that are impractical to trace to the finished product because their physical association with the finished product is too small. (p. 1-8).

Just-in-time (JIT) inventory. Inventory system in which goods are manufactured or purchased just in time for sale. (p. 1-17).

Line positions. Jobs that are directly involved in a company's primary revenue-generating operating activities. (p. 1-6).

Managerial accounting. A field of accounting that provides economic and financial information for managers and other internal users. (p. 1-3).

Manufacturing overhead. Manufacturing costs that are indirectly associated with the manufacture of the finished product. (p. 1-8).

Period costs. Costs that are matched with the revenue of a specific time period and charged to expense as incurred. (p. 1-9).

Product costs. Costs that are a necessary and integral part of producing the finished product. All manufacturing costs are classified as product costs and are included in inventory. (p. 1-9).

Sarbanes-Oxley Act (SOX). Law passed by Congress intended to reduce unethical corporate behavior. (p. 1-19).

Staff positions. Jobs that support the efforts of line employees. (p. 1-6).

Theory of constraints. A specific approach used to identify and manage constraints in order to achieve the company's goals. (p. 1-18).

Total cost of work in process. Cost of the beginning work in process plus total manufacturing costs for the current period. (p. 1-14).

Total manufacturing costs. The sum of direct materials, direct labor, and manufacturing overhead incurred in the current period. (p. 1-10).

Total quality management (TQM). Systems implemented to reduce defects in finished products with the goal of achieving zero defects. (p. 1-17).

Treasurer. Financial officer responsible for custody of a company's funds and for maintaining its cash position. (p. 1-6).

Value chain. All business processes associated with providing a product or performing a service. (p. 1-17).

Work in process inventory. Partially completed manufactured units. (p. 1-14).

Practice Multiple-Choice Questions

1. (LO 1) Managerial accounting

- a. is governed by generally accepted accounting principles.
- b. places emphasis on special-purpose information.
- c. pertains to the entity as a whole and is highly aggregated.
- d. is limited to cost data.

2. (LO 1) The management of an organization performs several broad functions. They are

- a. planning, directing, and selling.
- b. planning, directing, and controlling.
- c. planning, manufacturing, and controlling.
- d. directing, manufacturing, and controlling.

3. (LO 2) Direct materials are a

	Product Cost	Manufacturing Overhead Cost	Period Cost
a.	Yes	Yes	No
b.	Yes	No	No
c.	Yes	Yes	Yes
d.	No	No	No

4. (LO 2) Which of the following costs would a computer manufacturer include in manufacturing overhead?

- a. The cost of the hard drives.
- b. The wages earned by computer assemblers.
- c. The cost of the memory chips.
- d. Depreciation on testing equipment.

5. (LO 2) Which of the following is **not** an element of manufacturing overhead?

- a. Sales manager's salary.
- b. Factory manager's salary.
- c. Factory repairman's wages.
- d. Product inspector's salary.

6. (LO 2) Indirect labor is a

- a. nonmanufacturing cost.
- b. raw material cost.
- c. product cost.
- d. period cost.

7. (LO 2) Which of the following costs are classified as a period cost?

- a. Wages paid to a factory custodian.
- b. Wages paid to a production department supervisor.
- c. Wages paid to the CEO.
- d. Wages paid to an assembly worker.

8. (LO 3) For the year, Redder Company has cost of goods manufactured of \$600,000, beginning finished goods inventory of \$200,000, and ending finished goods inventory of \$250,000. The cost of goods sold is

- a. \$450,000.
- b. \$500,000.
- c. \$550,000.
- d. \$600,000.

9. (LO 3) Cost of goods available for sale is a step in the calculation of cost of goods sold of

- a. a merchandising company but not a manufacturing company.
- b. a manufacturing company but not a merchandising company.
- c. a merchandising company and a manufacturing company.
- d. neither a manufacturing company nor a merchandising company.

10. (LO 3) A cost of goods manufactured schedule shows beginning and ending inventories for

- a. raw materials and work in process only.

- b. work in process only.
 - c. raw materials only.
 - d. raw materials, work in process, and finished goods.
- 11. (LO 3)** The calculation to determine the cost of goods manufactured is
- a. Beginning raw materials inventory + Total manufacturing costs – Ending work in process inventory.
 - b. Beginning work in process inventory + Total manufacturing costs – Ending finished goods inventory.
 - c. Beginning finished goods inventory + Total manufacturing costs – Ending finished goods inventory.
 - d. Beginning work in process inventory + Total manufacturing costs – Ending work in process inventory.
- 12. (LO 4)** After passage of the Sarbanes-Oxley Act
- a. reports prepared by managerial accountants must be audited by CPAs.
 - b. CEOs and CFOs must certify that financial statements provide a fair presentation of the company's operating results.
 - c. the audit committee, rather than top management, is responsible for the company's financial statements.
 - d. reports prepared by managerial accountants must comply with generally accepted accounting principles (GAAP).
- 13. (LO 4)** Which of the following managerial accounting techniques attempts to allocate manufacturing overhead in a more meaningful fashion?
- a. Just-in-time inventory.
 - b. Total quality management.
 - c. Balanced scorecard.
 - d. Activity-based costing.
- 14. (LO 4)** Corporate social responsibility refers to
- a. the practice by management of reviewing all business processes in an effort to increase productivity and eliminate waste.
 - b. an approach used to allocate overhead based on each product's use of activities.
 - c. the attempt by management to identify and eliminate constraints within the value chain.
 - d. efforts by companies to employ sustainable business practices with regard to employees and the environment.

Solutions

- 1. b.** Managerial accounting emphasizes special-purpose information. The other choices are incorrect because (a) financial accounting is governed by generally accepted accounting principles, (c) financial accounting pertains to the entity as a whole and is highly aggregated, and (d) cost accounting and cost data are a subset of management accounting.
- 2. b.** Planning, directing, and controlling are the broad functions performed by the management of an organization. The other choices are incorrect because (a) selling is performed by the sales group in the organization, not by management; (c) manufacturing is performed by the manufacturing group in the organization, not by management; and (d) manufacturing is performed by the manufacturing group in the organization, not by management.
- 3. b.** Direct materials are a product cost only. Therefore, choices (a), (c), and (d) are incorrect as direct materials are not manufacturing overhead or a period cost.
- 4. d.** Depreciation on testing equipment would be included in manufacturing overhead because it is indirectly associated with the finished product. The other choices are incorrect because (a) hard drives would be direct materials, (b) computer assembler wages would be direct labor, and (c) memory chips would be direct materials.
- 5. a.** The sales manager's salary is not directly or indirectly associated with the manufacture of the finished product. The other choices are incorrect because (b) the factory manager's salary, (c) the factory repairman's wages, and (d) the product inspector's salary are all elements of manufacturing overhead.
- 6. c.** Indirect labor is a product cost because it is part of the effort required to produce a product. The other choices are incorrect because (a) indirect labor is a manufacturing cost because it is part of the effort required to produce a product, (b) indirect labor is not a raw material cost because raw material costs only include direct materials and indirect materials, and (d) indirect labor is not a period cost because it is part of the effort required to produce a product.
- 7. c.** Wages paid to the CEO would be included in administrative expenses and classified as a period cost. The other choices are incorrect because (a) factory custodian wages are indirect labor, which is manufacturing overhead and a product cost; (b) production department supervisor wages are indirect labor, which is manufacturing overhead and a product cost; and (d) assembly worker wages is direct labor and is a product cost.
- 8. c.** Cost of goods sold is computed as Beginning finished goods inventory (\$200,000) + Cost of goods manufactured (\$600,000) – Ending finished goods inventory (\$250,000), or $\$200,000 + \$600,000 - \$250,000 = \$550,000$. Therefore, choices (a) \$450,000, (b) \$500,000, and (d) \$600,000 are incorrect.
- 9. c.** Both a merchandising company (periodic inventory system) and a manufacturing company use cost of goods available for sale to calculate cost of goods sold. Therefore, choices (a) only a merchandising company, (b) only a manufacturing company, and (d) neither a manufacturing company or a merchandising company are incorrect.
- 10. a.** A cost of goods manufactured schedule shows beginning and ending inventories for raw materials and work in process only. Therefore, choices (b) work in process only and (c) raw materials only are incorrect. Choice (d) is incorrect because the schedule does not include finished goods.
- 11. d.** The calculation to determine the cost of goods manufactured is Beginning work in process inventory + Total manufacturing costs – Ending work in process inventory. The other choices are incorrect because (a) raw materials inventory, (b) ending finished goods inventory, and (c) beginning finished goods inventory and ending finished goods inventory are not part of the computation.
- 12. b.** CEOs and CFOs must certify that financial statements provide a fair presentation of the company's operating results. The other choices are incorrect because (a) reports prepared by financial (not managerial) accountants must be audited by CPAs; (c) SOX clarifies that top management, not the audit committee, is responsible for the company's financial statements; and (d) reports by financial (not managerial) accountants must comply with GAAP.

13. d. Activity-based costing attempts to allocate manufacturing overhead in a more meaningful fashion. Therefore, choices (a) just-in-time inventory, (b) total quality management, and (c) balanced scorecard are incorrect.

14. d. Corporate social responsibility refers to efforts by companies to employ sustainable business practices with regard to employees and the environment. The other choices are incorrect because (a) defines lean manufacturing, (b) refers to activity-based costing, and (c) describes the theory of constraints.

Practice Brief Exercises

1. (LO 1) The following are selected data for Lopez Furniture.

Classify manufacturing costs.

Utilities for manufacturing equipment	\$120,000
Wood	850,000
Depreciation on factory building	220,000
Wages for production workers	391,000
Fabric	313,000
Delivery expense	144,000
Property taxes on factory	70,000

Using this selected data, determine total (a) direct materials, (b) direct labor, (c) manufacturing overhead, (d) product costs, and (e) period costs.

Solution

- 1. a.** Wood (\$850,000) + Fabric (\$313,000) = \$1,163,000
- b.** Wages for production workers, \$391,000
- c.** Utilities (\$120,000) + Depreciation (\$220,000) + Property taxes (\$70,000) = \$410,000
- d.** Direct materials (\$1,163,000) + Direct labor (\$391,000) + Manufacturing overhead (\$410,000) = \$1,964,000
- e.** Delivery expense, \$144,000

2. (LO 3) Cody Cellular has the following data: direct labor \$100,000, direct materials used \$90,000, total manufacturing overhead \$110,000, beginning work in process \$15,000, and ending work in process \$24,000. Compute (a) total manufacturing costs, (b) total cost of work in process, and (c) cost of goods manufactured.

Compute total manufacturing costs and total cost of work in process.

Solution

2. a. Direct materials use	\$ 90,000
Direct labor	100,000
Total manufacturing overhead	<u>110,000</u>
Total manufacturing costs	<u>\$300,000</u>
b. Beginning work in process	\$ 15,000
Total manufacturing costs	<u>300,000</u>
Total cost of work in process	<u>\$315,000</u>
c. Total cost of work in process	\$315,000
Less ending work in process	<u>(24,000)</u>
Cost of goods manufactured	<u>\$291,000</u>

Prepare current assets section.

3. (LO 3) The following are current asset items in alphabetical order for Asche Company's balance sheet at December 31, 2027. Prepare the current assets section (including a complete heading).

Accounts receivable	\$100,000
Cash	29,000
Finished goods	47,000
Prepaid expenses	20,000
Raw materials	39,000
Short-term investments	51,000
Work in process	44,000

Solution

3.

Asche Company	
Balance Sheet	
December 31, 2027	
Current assets	
Cash	\$ 29,000
Short-term investments	51,000
Accounts receivable	100,000
Inventories	
Finished goods	\$47,000
Work in process	44,000
Raw materials	<u>39,000</u>
Prepaid expenses	<u>20,000</u>
Total current assets	<u><u>\$330,000</u></u>

Practice Exercises

Determine the total amount of various types of costs.

1. (LO 2) Fredricks Company reports the following costs and expenses in May.

Factory utilities	\$ 15,600		Direct labor	\$89,100
Depreciation on factory equipment	12,650		Sales salaries	46,400
Depreciation on delivery trucks	8,800		Property taxes on factory building	2,500
Indirect factory labor	48,900		Repairs to office equipment	2,300
Indirect materials	80,800		Factory repairs	2,000
Direct materials used	137,600		Advertising	18,000
Factory manager's salary	13,000		Office supplies used	5,640

Instructions

From the information, determine the total amount of:

- a. Manufacturing overhead.
- b. Product costs.
- c. Period costs.

Solution

1. a. Factory utilities	\$ 15,600
Depreciation on factory equipment	12,650
Indirect factory labor	48,900
Indirect materials	80,800
Factory manager's salary	13,000
Property taxes on factory building	2,500
Factory repairs	<u>2,000</u>
Manufacturing overhead	<u><u>\$175,450</u></u>

b. Direct materials used	\$137,600
Direct labor	89,100
Manufacturing overhead	<u>175,450</u>
Product costs	<u>\$402,150</u>
c. Depreciation on delivery trucks	\$ 8,800
Sales salaries	46,400
Repairs to office equipment	2,300
Advertising	18,000
Office supplies used	<u>5,640</u>
Period costs	<u>\$ 81,140</u>

2. (LO 3) Tommi Corporation incurred the following costs during the year.

Compute cost of goods manufactured and sold.

Direct materials used in production	\$120,000	Advertising expense	\$45,000
Depreciation on factory	60,000	Property taxes on factory	19,000
Property taxes on store	7,500	Delivery expense	21,000
Labor costs of assembly-line workers	110,000	Sales commissions	35,000
Factory supplies used	25,000	Salaries paid to sales clerks	50,000

Work in process inventory was \$10,000 at January 1 and \$14,000 at December 31. Finished goods inventory was \$60,500 at January 1 and \$50,600 at December 31. (Assume that all raw materials used were direct materials.)

Instructions

- Compute cost of goods manufactured.
- Compute cost of goods sold.

Solution

2. a. Work in process, January 1		\$ 10,000
Direct materials used	\$120,000	
Direct labor	110,000	
Manufacturing overhead		
Depreciation on factory	\$60,000	
Factory supplies used	25,000	
Property taxes on factory	<u>19,000</u>	
Total manufacturing overhead		<u>104,000</u>
Total manufacturing costs		<u>334,000</u>
Total cost of work in process		344,000
Less: Ending work in process		<u>14,000</u>
Cost of goods manufactured		<u>\$330,000</u>
b. Finished goods inventory, January 1		\$ 60,500
Cost of goods manufactured		<u>330,000</u>
Cost of goods available for sale		390,500
Less: Finished goods inventory, December 31		<u>50,600</u>
Cost of goods sold		<u>\$339,900</u>

Practice Problem

(LO 3) Superior Company has the following cost and expense data for the year ended December 31, 2027.

Raw materials, 1/1/27	\$ 30,000	Property taxes, factory building	\$ 6,000
Raw materials, 12/31/27	20,000	Sales revenue	1,500,000
Raw materials purchases	205,000	Delivery expenses (to customers)	100,000
Work in process, 1/1/27	80,000	Sales commissions	150,000
Work in process, 12/31/27	50,000	Indirect labor	105,000

Prepare a cost of goods manufactured schedule, an income statement, and a partial balance sheet.

Finished goods, 1/1/27	110,000	Factory machinery rent	40,000
Finished goods, 12/31/27	120,000	Factory utilities	65,000
Direct labor	350,000	Depreciation, factory building	24,000
Factory manager's salary	35,000	Administrative expenses	300,000
Insurance, factory	14,000		

Instructions

- Prepare a cost of goods manufactured schedule for Superior Company for 2027. (Assume that all raw materials used were direct materials.)
- Prepare an income statement for Superior Company for 2027.
- Assume that Superior Company's accounting records show the balances of the following current asset accounts: Cash \$17,000, Accounts Receivable (net) \$120,000, Prepaid Expenses \$13,000, and Short-Term Investments \$26,000. Prepare the current assets section of the balance sheet for Superior Company as of December 31, 2027.

Solution

a.

Superior Company			
Cost of Goods Manufactured Schedule			
For the Year Ended December 31, 2027			
Work in process, January 1			\$ 80,000
Direct materials			
Raw materials inventory, January 1	\$ 30,000		
Raw materials purchases	<u>205,000</u>		
Total raw materials available for use	235,000		
Less: Raw materials inventory, December 31	<u>20,000</u>		
Direct materials used		\$215,000	
Direct labor		350,000	
Manufacturing overhead			
Indirect labor	\$105,000		
Factory utilities	65,000		
Factory machinery rent	40,000		
Factory manager's salary	35,000		
Depreciation, factory building	24,000		
Insurance, factory	14,000		
Property taxes, factory building	<u>6,000</u>		
Total manufacturing overhead		<u>289,000</u>	
Total manufacturing costs			<u>854,000</u>
Total cost of work in process			934,000
Less: Work in process, December 31			<u>50,000</u>
Cost of goods manufactured			<u>\$884,000</u>

b.

Superior Company		
Income Statement		
For the Year Ended December 31, 2027		
Sales revenue		\$1,500,000
Cost of goods sold		
Finished goods inventory, January 1	\$110,000	
Cost of goods manufactured	<u>884,000</u>	
Cost of goods available for sale	994,000	
Less: Finished goods inventory, December 31	<u>120,000</u>	
Cost of goods sold		<u>874,000</u>
Gross profit		626,000

(continues)

Operating expenses		
Administrative expenses	300,000	
Sales commissions	150,000	
Delivery expenses	<u>100,000</u>	
Total operating expenses		<u>550,000</u>
Net income		<u>\$ 76,000</u>

c.

Superior Company		
Balance Sheet (partial)		
December 31, 2027		
<hr/>		
Current assets		
Cash		\$ 17,000
Short-term investments		26,000
Accounts receivable (net)		120,000
Inventory		
Finished goods	\$120,000	
Work in process	50,000	
Raw materials	<u>20,000</u>	190,000
Prepaid expenses		<u>13,000</u>
Total current assets		<u>\$366,000</u>

End-of-Chapter Assessment

Questions

- “Managerial accounting is a field of accounting that provides economic information for all interested parties.” Is this true? Explain why or why not.
 - Joe Delong believes that managerial accounting serves only manufacturing firms. Is Joe correct? Explain.
- Distinguish between managerial and financial accounting as to (a) primary users of reports, (b) types and frequency of reports, and (c) purpose of reports.
- How do the content of reports and the verification of reports differ between managerial and financial accounting?
- Linda Olsen is studying for the next accounting mid-term examination. Summarize for Linda what she should know about management functions.
- “Decision-making is management’s most important function.” Is this true? Explain why or why not.
- Explain the primary difference between line positions and staff positions, and give examples of each.
- Jerry Lang is unclear as to the difference between the balance sheets of a merchandising company and a manufacturing company. Explain the difference to Jerry.
- How are manufacturing costs classified?
- Mel Finney claims that the distinction between direct and indirect materials is based entirely on physical association with the product. Is Mel correct? Why?
- Tina Burke is confused about the differences between a product cost and a period cost. Explain the differences to Tina.
- Identify the differences in the cost of goods sold section of an income statement between a merchandising company and a manufacturing company.
- The determination of the cost of goods manufactured involves the following factors: (A) beginning work in process inventory, (B) total manufacturing costs, and (C) ending work in process inventory. Identify the meaning of X in the following equations:
 - $A + B = X$
 - $A + B - C = X$
- Sealy Company has beginning raw materials inventory \$12,000, ending raw materials inventory \$15,000, and raw materials purchases \$170,000. What is the cost of direct materials used?
- Tate Inc. has beginning work in process \$26,000, direct materials used \$240,000, direct labor \$220,000, total manufacturing overhead \$180,000, and ending work in process \$32,000. What are the total manufacturing costs?
- Tate Inc. has beginning work in process \$26,000, direct materials used \$240,000, direct labor \$220,000, total manufacturing overhead

\$180,000, and ending work in process \$32,000. What are (a) the total cost of work in process and (b) the cost of goods manufactured?

16. In what order should manufacturing inventories be reported in a balance sheet?

17. How does the output of manufacturing operations differ from that of service operations?

18. Discuss whether the product costing techniques discussed in this chapter apply equally well to manufacturers and service companies.

19. What is the value chain? Describe, in sequence, the main components of a manufacturer's value chain.

20. What is an enterprise resource planning (ERP) system? What are its primary benefits?

21. Why is product quality important for companies that implement a just-in-time inventory system?

22. Explain what is meant by "balanced" in the balanced scorecard approach.

23. In what ways can the budgeting process create incentives for unethical behavior?

24. What rules were enacted under the Sarbanes-Oxley Act to address unethical accounting practices?

25. What is activity-based costing, and what are its potential benefits?

Brief Exercises

Distinguish between managerial and financial accounting.

BE1.1 (LO 1), C Complete the following comparison table between managerial and financial accounting.

	<u>Financial Accounting</u>	<u>Managerial Accounting</u>
Primary users of reports		
Types of reports		
Frequency of reports		
Purpose of reports		
Content of reports		
Verification process		

Identify the three management functions.

BE1.2 (LO 1), C Listed below are the three functions of the management of an organization.

1. Planning.
2. Directing.
3. Controlling.

Identify which of the following statements best describes each of the above functions.

- a. _____ requires management to look ahead and to establish objectives. A key objective of management is to add value to the business.
- b. _____ involves coordinating the diverse activities and human resources of a company to produce a smooth-running operation. This function relates to the implementation of planned objectives.
- c. _____ is the process of keeping the activities on track. Management determines whether goals are being met and what changes are necessary when there are deviations.

Classify manufacturing costs.

BE1.3 (LO 2), C Determine whether each of the following costs should be classified as direct materials (DM), direct labor (DL), or manufacturing overhead (MO).

- a. _____ Frames and tires used in manufacturing bicycles.
- b. _____ Wages paid to production workers.
- c. _____ Insurance on factory equipment and machinery.
- d. _____ Depreciation on factory equipment.

Classify manufacturing costs.

BE1.4 (LO 2), C Indicate whether each of the following costs of an automobile manufacturer would be classified as direct materials, direct labor, or manufacturing overhead.

- | | |
|---|---|
| a. _____ Windshield. | e. _____ Factory machinery lubricants. |
| b. _____ Engine. | f. _____ Tires. |
| c. _____ Wages of assembly-line worker. | g. _____ Steering wheel. |
| d. _____ Depreciation of factory machinery. | h. _____ Salary of painting supervisor. |

Identify product and period costs.

BE1.5 (LO 2), C Identify whether each of the following costs should be classified as product costs or period costs.

- | | |
|-----------------------------------|--------------------------------|
| a. _____ Manufacturing overhead. | d. _____ Advertising expenses. |
| b. _____ Selling expenses. | e. _____ Direct labor. |
| c. _____ Administrative expenses. | f. _____ Direct materials. |

BE1.6 (LO 2), C Presented here are Rook Company's monthly manufacturing cost data related to its tablet computer product.

Classify manufacturing costs.

a. Utilities for manufacturing equipment	\$116,000
b. Raw materials (CPU, chips, etc.)	85,000
c. Depreciation on manufacturing building	880,000
d. Wages for production workers	191,000

Enter each cost item in the following table, placing an "X" under the appropriate classification.

	Product Costs		
	<u>Direct Materials</u>	<u>Direct Labor</u>	<u>Manufacturing Overhead</u>
a.			
b.			
c.			
d.			

BE1.7 (LO 3), AP Francum Company has the following data: direct labor \$209,000, direct materials used \$180,000, total manufacturing overhead \$208,000, and beginning work in process \$25,000. Compute (a) total manufacturing costs and (b) total cost of work in process.

Compute total manufacturing costs and total cost of work in process.

BE1.8 (LO 3), AP In alphabetical order, here are current asset items for Roland Company's balance sheet at December 31, 2027. Prepare the current assets section (including a complete heading).

Prepare current assets section of balance sheet.

Accounts receivable	\$200,000
Cash	62,000
Finished goods	91,000
Prepaid expenses	38,000
Raw materials	83,000
Work in process	87,000

BE1.9 (LO 3), AP The following are incomplete manufacturing cost data. Determine the missing amounts for these three independent situations.

Determine missing amounts in computing total manufacturing costs.

	<u>Direct Materials Used</u>	<u>Direct Labor</u>	<u>Manufacturing Overhead</u>	<u>Total Manufacturing Costs</u>
1.	\$40,000	\$61,000	\$ 50,000	?
2.	?	\$75,000	\$140,000	\$296,000
3.	\$55,000	?	\$111,000	\$310,000

BE1.10 (LO 3), AP Use the data from BE1.9 and the data that follow. Determine the missing amounts.

Determine missing amounts in computing cost of goods manufactured.

	<u>Total Manufacturing Costs</u>	<u>Work in Process (Jan. 1)</u>	<u>Work in Process (Dec. 31)</u>	<u>Cost of Goods Manufactured</u>
1.	?	\$120,000	\$82,000	?
2.	\$296,000	?	\$98,000	\$331,000
3.	\$310,000	\$463,000	?	\$715,000

BE1.11 (LO 4), C The Sarbanes-Oxley Act (SOX) has important implications for the financial community. Explain two implications of SOX.

Identify important regulatory changes.

DO IT! Exercises

DO IT! 1.1 (LO 1), C Indicate whether the following statements are true or false. If false, indicate how to correct the statement.

Identify managerial accounting concepts.

- The board of directors has primary responsibility for daily management functions.
- Financial accounting reports pertain to subunits of the business and are very detailed.
- Managerial accounting reports must follow GAAP and are audited by CPAs.
- Managers' activities and responsibilities can be classified into three broad functions: planning, directing, and controlling.

Identify managerial cost classifications.

DO IT! 1.2 (LO 2), C A music company has these costs:

Advertising	Paper inserts for CD cases
Blank CDs	CD plastic cases
Depreciation of CD image burner	Salaries of sales representatives
Salary of factory manager	Salaries of factory maintenance employees
Factory supplies used	Salaries of employees who burn music onto CDs

Classify each cost as a period or a product cost. Within the product cost category, indicate whether the cost is part of direct materials (DM), direct labor (DL), or manufacturing overhead (MO).

Prepare cost of goods manufactured schedule.

DO IT! 1.3 (LO 3), AP The following information is available for Tomlin Company.

	<u>April 1</u>	<u>April 30</u>
Raw materials inventory	\$10,000	\$14,000
Work in process inventory	5,000	3,500
Materials purchased in April	\$ 98,000	
Direct labor in April	80,000	
Manufacturing overhead in April	160,000	

Prepare the cost of goods manufactured schedule for the month of April 2027. (Assume that all raw materials used were direct materials.)

Identify trends in managerial accounting.

DO IT! 1.4 (LO 4), C Match the descriptions that follow with the corresponding terms.

Descriptions:

- _____ Inventory system in which goods are manufactured or purchased just as they are needed for sale.
- _____ A method of allocating overhead based on each product's use of activities in making the product.
- _____ Systems that are especially important to firms adopting just-in-time inventory methods.
- _____ Part of the value chain for a manufacturing company.
- _____ The U.S. economy is trending toward this.
- _____ A performance-measurement approach that uses both financial and nonfinancial measures, tied to company objectives, to evaluate a company's operations in an integrated fashion.
- _____ Requires that top managers certify that the company maintains an adequate system of internal controls over financial reporting.

Terms:

- | | |
|--|----------------------------------|
| a. Activity-based costing. | e. Service industries. |
| b. Balanced scorecard. | f. Just-in-time (JIT) inventory. |
| c. Total quality management (TQM). | g. Sarbanes-Oxley Act (SOX). |
| d. Research and development, and product design. | |

Exercises

Identify distinguishing features of managerial accounting.

E1.1 (LO 1), C Justin Bieber has prepared the following list of statements about managerial accounting, financial accounting, and the functions of management.

- Financial accounting focuses on providing information to internal users.
- Staff positions are directly involved in the company's primary revenue-generating activities.
- Preparation of budgets is part of financial accounting.
- Managerial accounting applies only to merchandising and manufacturing companies.
- Both managerial accounting and financial accounting deal with many of the same economic events.
- Managerial accounting reports are prepared only quarterly and annually.

7. Financial accounting reports are general-purpose reports.
8. Managerial accounting reports pertain to subunits of the business.
9. Managerial accounting reports must comply with generally accepted accounting principles.
10. The company treasurer reports directly to the vice president of operations.

Instructions

Identify each statement as true or false. If false, indicate how to correct the statement.

E1.2 (LO 2), C The following is a list of costs and expenses usually incurred by Barnum Corporation, a manufacturer of furniture, in its factory.

Classify costs into three classes of manufacturing costs.

1. Salaries for product inspectors.
2. Insurance on factory machines.
3. Property taxes on the factory building.
4. Factory repairs.
5. Upholstery used in manufacturing furniture.
6. Wages paid to assembly-line workers.
7. Factory machinery depreciation.
8. Glue, nails, paint, and other small parts used in production.
9. Factory supervisors' salaries.
10. Wood used in manufacturing furniture.

Instructions

Classify these items into the following categories: (a) direct materials, (b) direct labor, and (c) manufacturing overhead.

E1.3 (LO 2), C Trak Corporation, which manufactures bicycles, incurred the following costs.

Identify types of costs and explain their accounting.

Bicycle components	\$100,000	Advertising expense	\$45,000
Depreciation on factory	60,000	Property taxes on factory	14,000
Property taxes on retail store	7,500	Customer delivery expense	21,000
Labor costs of assembly-line workers	110,000	Sales commissions	35,000
Factory supplies used	13,000	Salaries paid to sales clerks	50,000

Instructions

- a. Identify each of the above costs as direct materials, direct labor, manufacturing overhead, or period costs.
- b. Explain the basic difference in accounting for product costs and period costs.

E1.4 (LO 2), AP Excel Knight Company reports the following costs and expenses in May.

Determine the total amount of various types of costs.

Factory utilities	\$ 15,500	Direct labor	\$69,100
Depreciation on factory equipment	12,650	Sales salaries	46,400
Depreciation on delivery trucks	3,800	Property taxes on factory building	2,500
Indirect factory labor	48,900	Repairs to office equipment	1,300
Indirect materials	80,800	Factory repairs	2,000
Direct materials used	137,600	Advertising	15,000
Factory manager's salary	8,000	Office supplies used	2,640

Instructions

From the information, determine the total amount for the month of May of:

- a. Manufacturing overhead.
- b. Product costs.
- c. Period costs.

E1.5 (LO 2), C Gala Company is a manufacturer of laptop computers. Various costs and expenses associated with its operations are as follows.

Classify various costs into different cost categories.

1. Property taxes on the factory building.
2. Production superintendents' salaries.
3. Memory boards and chips used in assembling computers.

4. Depreciation on the factory equipment.
5. Salaries for quality control inspectors.
6. Sales commissions paid to sell laptop computers.
7. Electrical components used in assembling computers.
8. Wages of workers assembling laptop computers.
9. Soldering materials used on factory assembly lines.
10. Salaries for the night security guards for the factory building.

The company intends to classify these costs and expenses into the following categories: (a) direct materials, (b) direct labor, (c) manufacturing overhead, and (d) period costs.

Instructions

List the items (1) through (10). For each item, indicate the cost category to which it belongs.

Classify various costs into different cost categories.

E1.6 (LO 2), C Service The administrators of Crawford County’s Memorial Hospital are interested in identifying the various costs and expenses that are incurred in producing a patient’s X-ray. A list of such costs and expenses is presented here.

1. Salaries for the X-ray machine technicians.
2. Wages for the hospital janitorial personnel.
3. Film costs for the X-ray machines.
4. Property taxes on the hospital building.
5. Salary of the X-ray technicians’ supervisor.
6. Electricity costs for the X-ray department.
7. Maintenance and repairs on the X-ray machines.
8. X-ray department supplies.
9. Depreciation on the X-ray department equipment.
10. Depreciation on the hospital building.

The administrators want these costs and expenses classified as (a) direct materials, (b) direct labor, or (c) service overhead.

Instructions

List the items (1) through (10). For each item, indicate the cost category to which the item belongs.

Classify various costs into different cost categories.

E1.7 (LO 2), AP Service National Express reports the following costs and expenses in June 2027 for its delivery service.

Indirect materials used	\$ 6,400	Drivers’ salaries	\$16,000
Depreciation on delivery equipment	11,200	Advertising	4,600
Dispatcher’s salary	5,000	Delivery equipment repairs	300
Property taxes on office building	870	Office supplies	650
CEO’s salary	12,000	Office utilities	990
Gas and oil for delivery trucks	2,200	Repairs on office equipment	180

Instructions

Determine the total amount of (a) delivery service (product) costs and (b) period costs.

Classify various costs into different cost categories.

E1.8 (LO 2), C Evilene Company makes industrial-grade brooms. It incurs the following costs.

1. Salaries for broom inspectors.
2. Copy machine maintenance at corporate headquarters.
3. Hourly wages for assembly workers.
4. Research and development for new broom types.
5. Salary for factory manager.
6. Depreciation on broom-assembly equipment.
7. Salary for the CEO administrative assistant.
8. Wood for handles.
9. Factory cleaning supplies.
10. Lubricants for broom-assembly factory equipment.

11. Salaries for customer service representatives.
12. Salaries for factory maintenance crew.
13. Sales team golf outings with customers.
14. Salaries for the raw materials receiving department employees.
15. Advertising expenses.
16. Depreciation on the CFO company car.
17. Straw for brooms.
18. Salaries for sales personnel.
19. Shipping costs to customers.

Instructions

- a. Indicate whether each cost is direct materials, direct labor, manufacturing overhead, or nonmanufacturing.
- b. Indicate whether each cost is a product cost or a period cost.

E1.9 (LO 3), AP Lopez Corporation incurred the following costs during 2027.

Direct materials used in product	\$120,000	Advertising expense	\$45,000
Depreciation on factory	60,000	Property taxes on factory	14,000
Property taxes on store	7,500	Delivery expense	21,000
Labor costs of assembly-line workers	110,000	Sales commissions	35,000
Factory supplies used	23,000	Salaries paid to sales clerks	50,000

Compute cost of goods manufactured and sold, and discuss classification of various costs.

Work in process inventory was \$12,000 at January 1 and \$15,500 at December 31. Finished goods inventory was \$60,000 at January 1 and \$45,600 at December 31.

Instructions

- a. Compute cost of goods manufactured.
- b. Compute cost of goods sold.
- c. For those costs not included in the calculations in part (a) or part (b), explain how they would be classified and reported in the financial statements.

E1.10 (LO 3), AP An incomplete cost of goods manufactured schedule is presented here.

Determine missing amounts in cost of goods manufactured schedule.

Hobbit Company Cost of Goods Manufactured Schedule For the Year Ended December 31, 2027			
Work in process, January 1			\$210,000
Direct materials			
Raw materials inventory, January 1	\$?		
Raw materials purchases	<u>158,000</u>		
Total raw materials available for use	?		
Less: Raw materials inventory, December 31	<u>22,500</u>		
Direct materials used		\$180,000	
Direct labor		?	
Manufacturing overhead			
Indirect labor	18,000		
Factory depreciation	36,000		
Factory utilities	<u>68,000</u>		
Total manufacturing overhead		<u>122,000</u>	
Total manufacturing costs			?
Total cost of work in process			?
Less: Work in process, December 31			81,000
Cost of goods manufactured			\$540,000

Instructions

Complete the cost of goods manufactured schedule for Hobbit Company. (Assume that all raw materials used were direct materials.)

Determine the missing amount of different cost items.

E1.11 (LO 3), AN Manufacturing cost data for Copa Company are presented for 2027 as follows.

	Case A	Case B	Case C
Direct materials used	\$ (a)	\$68,400	\$130,000
Direct labor	57,000	86,000	(g)
Manufacturing overhead	46,500	81,600	102,000
Total manufacturing costs	195,650	(d)	253,700
Work in process 1/1/27	(b)	16,500	(h)
Total cost of work in process	221,500	(e)	337,000
Work in process 12/31/27	(c)	11,000	70,000
Cost of goods manufactured	185,275	(f)	(i)

Instructions

Determine the missing amount for each letter (a) through (i).

Determine the missing amount of different cost items, and prepare a condensed cost of goods manufactured schedule.

E1.12 (LO 3), AN Incomplete manufacturing cost data for Horizon Company for 2027 are presented as follows for these four independent situations.

	Direct Materials Used	Direct Labor	Manufacturing Overhead	Total Manufacturing Costs	Work in Process Jan. 1	Work in Process Dec. 31	Cost of Goods Manufactured
1.	\$117,000	\$140,000	\$ 87,000	\$ (a)	\$33,000	\$ (b)	\$360,000
2.	(c)	200,000	132,000	450,000	(d)	40,000	470,000
3.	80,000	100,000	(e)	265,000	60,000	80,000	(f)
4.	70,000	(g)	75,000	288,000	45,000	(h)	270,000

Instructions

- Determine the missing amount for each letter.
- Prepare a condensed cost of goods manufactured schedule for situation (1) for the year ended December 31, 2027.

Prepare a cost of goods manufactured schedule and a partial income statement.

E1.13 (LO 3), AP Cepeda Corporation has the following cost records for June 2027.

Indirect factory labor	\$ 4,500	Factory utilities	\$ 400
Direct materials used	20,000	Depreciation, factory equipment	1,400
Work in process, 6/1/27	3,000	Direct labor	40,000
Work in process, 6/30/27	3,800	Maintenance, factory equipment	1,800
Finished goods, 6/1/27	5,000	Indirect materials used	2,200
Finished goods, 6/30/27	7,500	Factory manager's salary	3,000

Instructions

- Prepare a cost of goods manufactured schedule for June 2027.
- Prepare an income statement through gross profit for June 2027 assuming sales revenue is \$92,100.

Classify various costs into different categories and prepare cost of services performed schedule.

E1.14 (LO 2, 3), AP Keisha Tombert, the bookkeeper for Washington Consulting, a political consulting firm, has recently completed a managerial accounting course at her local college. One of the topics covered in the course was the cost of goods manufactured schedule. Keisha wondered if such a schedule could be prepared for her firm. She realized that, as a service-oriented company, it would have no work in process inventory to consider.

Listed here are the costs her firm incurred for the month ended August 31, 2027.

Supplies used on consulting contracts	\$ 1,700
Supplies used in the administrative offices	1,500
Depreciation on equipment used for contract work	900
Depreciation on administrative office equipment	1,050
Salaries of professionals working on contracts	15,600
Salaries of administrative office personnel	7,700
Janitorial services for professional offices	700
Janitorial services for administrative offices	500
Insurance on contract operations	800
Insurance on administrative operations	900
Utilities for contract operations	1,400
Utilities for administrative offices	1,300

Instructions

- Prepare a schedule of cost of contract services performed (similar to a cost of goods manufactured schedule) for the month of August.
- List the costs not included in (a), and then explain how they would be classified and reported in the financial statements.

E1.15 (LO 3), AP The following information is available for Aikman Company.

	<u>January 1, 2027</u>	<u>2027</u>	<u>December 31, 2027</u>
Raw materials inventory	\$21,000		\$30,000
Work in process inventory	13,500		17,200
Finished goods inventory	27,000		21,000
Materials purchased		\$150,000	
Direct labor		220,000	
Manufacturing overhead		180,000	
Sales revenue		910,000	

Determine cost of goods manufactured and prepare a partial income statement.

Instructions

- Compute cost of goods manufactured for 2027. (Assume that all raw materials used were direct materials.)
- Prepare an income statement through gross profit for the year ended December 31, 2027.
- Show the presentation of the ending inventories on the December 31, 2027, balance sheet.
- How would the income statement and balance sheet of a merchandising company be different from Aikman's financial statements?

E1.16 (LO 3), C University Company produces collegiate apparel. From its accounting records, it prepares the following schedule and financial statements on a yearly basis.

- Cost of goods manufactured schedule.
- Income statement.
- Balance sheet.

Indicate in which schedule or financial statement(s) different cost items would appear.

The following items are found in the company's accounting records and accompanying data.

- | | |
|---|---|
| 1. Direct labor. | 9. Factory maintenance salaries. |
| 2. Raw materials inventory, January 1. | 10. Cost of goods manufactured. |
| 3. Work in process inventory, December 31. | 11. Depreciation expense of delivery equipment. |
| 4. Finished goods inventory, January 1. | 12. Cost of goods available for sale. |
| 5. Indirect labor. | 13. Direct materials used. |
| 6. Depreciation expense of factory machinery. | 14. Heat and electricity for factory. |
| 7. Work in process, January 1. | 15. Repairs to roof of factory building. |
| 8. Finished goods inventory, December 31. | 16. Cost of raw materials purchases. |

Instructions

List the items (1)–(16). For each item, indicate by using the appropriate letter or letters, the schedule and/or financial statement(s) in which the item would appear.

E1.17 (LO 3), AP An analysis of the accounts of Roberts Company reveals the following manufacturing cost data for the month ended June 30, 2027.

<u>Inventory</u>	<u>Beginning</u>	<u>Ending</u>
Raw materials	\$9,000	\$13,100
Work in process	5,000	7,000
Finished goods	9,000	8,000

Prepare a cost of goods manufactured schedule, and present the ending inventories on the balance sheet.

Costs incurred: raw materials purchases \$54,000, direct labor \$47,000, manufacturing overhead \$19,900. The specific overhead costs were: indirect labor \$5,500, factory insurance \$4,000, machinery depreciation \$4,000, machinery repairs \$1,800, factory utilities \$3,100, and miscellaneous factory costs \$1,500. (Assume that all raw materials used were direct materials.)

Instructions

- Prepare the cost of goods manufactured schedule for the month ended June 30, 2027.
- Show the presentation of the ending inventories on the June 30, 2027, balance sheet.

Determine the amount of cost to appear in various accounts, and indicate in which financial statements these accounts would appear.

E1.18 (LO 3), AP McQueen Motor Company manufactures automobiles. During September 2027, the company purchased 5,000 head lamps at a cost of \$15 per lamp. Fifty of these lamps were used to replace the head lamps in autos used by traveling sales staff, and 4,600 lamps were put in autos manufactured during the month.

Of the autos put into production during September 2027, 90% were completed and transferred to the company's storage lot. Of the cars completed during the month, 70% were sold by September 30.

Instructions

- a. Determine the cost of head lamps that would appear in each of the following accounts at September 30, 2027: Raw Materials, Work in Process, Finished Goods, Cost of Goods Sold, and Selling Expenses.
- b. Write a short email to the chief accountant, indicating whether and where each of the accounts in (a) would appear on the income statement or on the balance sheet at September 30, 2027.

Identify various managerial accounting practices.

E1.19 (LO 4), C The following is a list of terms related to managerial accounting practices.

- 1. Activity-based costing.
- 2. Just-in-time inventory.
- 3. Balanced scorecard.
- 4. Value chain.

Instructions

Match each of the terms with the statement below that best describes the term.

- a. _____ A performance-measurement technique that attempts to consider and evaluate all aspects of performance using financial and nonfinancial measures in an integrated fashion.
- b. _____ The group of activities associated with providing a product or performing a service.
- c. _____ An approach used to reduce the cost associated with handling and holding inventory by reducing the amount of inventory on hand.
- d. _____ A method used to allocate overhead to products based on each product's use of the activities that cause the incurrence of the overhead cost.

Problems

Classify manufacturing costs into different categories and compute the unit cost.

P1.1 (LO 2), AP Ohno Company specializes in manufacturing a unique model of bicycle helmet. The model is well accepted by consumers, and the company has enough orders to keep the factory production at 10,000 helmets per month (80% of its full capacity). Ohno's monthly manufacturing costs and other expense data are as follows.

Rent on factory equipment	\$11,000
Insurance on factory building	1,500
Raw materials used (plastics, polystyrene, etc.)	75,000
Utility costs for factory	900
Supplies used for general office	300
Wages for assembly-line workers	58,000
Depreciation on office equipment	800
Miscellaneous materials used (glue, thread, etc.)	1,100
Factory manager's salary	5,700
Property taxes on factory building	400
Advertising for helmets	14,000
Sales commissions	10,000
Depreciation on factory building	1,500

Instructions

- a. Prepare an answer sheet with the following column headings.

	Product Costs			
Cost	Direct	Direct	Manufacturing	Period
Item	Materials	Labor	Overhead	Costs

Enter each cost item on your answer sheet, placing the dollar amount under the appropriate heading. Total the dollar amounts in each of the columns.

- b. Compute the cost to produce one helmet.

a. DM	\$75,000
DL	\$58,000
MO	\$22,100
PC	\$25,100

P1.2 (LO 2), AP Bell Company has been a retailer of audio systems for the past 3 years. However, after a thorough survey of audio system markets, Bell decided to turn its retail store into an audio equipment factory. Production began October 1, 2027.

Direct materials costs for an audio system total \$74 per unit. Workers on the production lines are paid \$12 per hour. An audio system takes 5 labor hours to complete. In addition, the rent on the equipment used to assemble audio systems amounts to \$4,900 per month. Indirect materials cost \$5 per system. A supervisor was hired to oversee production; her monthly salary is \$3,000.

Factory janitorial costs are \$1,300 monthly. Advertising costs for the audio system will be \$9,500 per month. The factory building depreciation is \$7,800 per year. Property taxes on the factory building will be \$9,000 per year.

Instructions

- a. Prepare an answer sheet with the following column headings for October 2027.

Cost Item	Product Costs			Period Costs
	Direct Materials	Direct Labor	Manufacturing Overhead	

Assuming that Bell manufactures, on average, 1,500 audio systems per month, enter each cost item on your answer sheet, placing the dollar amount per month under the appropriate heading. Total the dollar amounts in each of the columns.

- b. Compute the cost to produce one audio system.

Classify manufacturing costs into different categories and compute the unit cost.

a. DM	\$111,000
DL	\$ 90,000
MO	\$ 18,100
PC	\$ 9,500

P1.3 (LO 3), AN Incomplete manufacturing costs, expenses, and selling data for two different cases for the year ended December 31, 2027, are as follows.

	Case	
	1	2
Direct materials used	\$ 9,600	\$ (g)
Direct labor	5,000	8,000
Manufacturing overhead	8,000	4,000
Total manufacturing costs	(a)	16,000
Beginning work in process inventory	1,000	(h)
Ending work in process inventory	(b)	3,000
Sales revenue	24,500	(i)
Sales discounts	2,500	1,400
Cost of goods manufactured	17,000	24,000
Beginning finished goods inventory	(c)	3,300
Cost of goods available for sale	22,000	(j)
Cost of goods sold	(d)	(k)
Ending finished goods inventory	3,400	2,500
Gross profit	(e)	7,000
Operating expenses	2,500	(l)
Net income	(f)	5,000

Determine the missing amount of different cost items, and prepare a condensed cost of goods manufactured schedule, an income statement, and a partial balance sheet.

Instructions

- a. Determine the missing amount for each letter.
 b. Prepare a condensed cost of goods manufactured schedule for Case 1.
 c. Prepare an income statement for the year ended December 31, 2027 and the current assets section of the balance sheet at December 31, 2027 for Case 1. Assume that in Case 1 the other items in the current assets section are as follows: Cash \$3,000, Accounts Receivable (net) \$15,000, Raw Materials \$600, and Prepaid Expenses \$400.

b. Ending WIP	\$ 6,600
c. Current assets	\$29,000

P1.4 (LO 3), AP Excel The following data were taken from the records of Clarkson Company for the fiscal year ended June 30, 2027.

Raw Materials Inventory 7/1/26	\$ 48,000	Accounts Receivable	\$ 27,000
Raw Materials Inventory 6/30/27	39,600	Factory Insurance	4,600
Finished Goods Inventory 7/1/26	96,000	Factory Machinery Depreciation	16,000
		Factory Utilities	27,600
		Office Utilities Expense	8,650

Prepare a cost of goods manufactured schedule, a partial income statement, and a partial balance sheet.

Finished Goods		Sales Revenue	534,000
Inventory 6/30/27	75,900	Sales Discounts	4,200
Work in Process		Factory Manager's Salary	58,000
Inventory 7/1/26	19,800	Factory Property Taxes	9,600
Work in Process		Factory Repairs	1,400
Inventory 6/30/27	18,600	Raw Materials Purchases	96,400
Direct Labor	139,250	Cash	32,000
Indirect Labor	24,460		

- a. CGM \$386,910
- b. Gross profit \$122,790
- c. Current assets \$193,100

Instructions

- a. Prepare a cost of goods manufactured schedule for the fiscal year ended June 30, 2027. (Assume that all raw materials used were direct materials.)
- b. Prepare an income statement through gross profit for the fiscal year ended June 30, 2027.
- c. Prepare the current assets section of the balance sheet at June 30, 2027.

Prepare a cost of goods manufactured schedule and a correct income statement.

P1.5 (LO 3), AN Excel Empire Company is a manufacturer of smartphones. Its controller resigned in October of 2027. An inexperienced assistant accountant has prepared the following income statement for the month ended October 31, 2027.

Empire Company		
Income Statement		
For the Month Ended October 31, 2027		
Sales revenue		\$780,000
Less: Operating expenses		
Raw materials purchases	\$264,000	
Direct labor cost	190,000	
Advertising expense	90,000	
Selling and administrative salaries	75,000	
Rent on factory facilities	60,000	
Depreciation on sales equipment	45,000	
Depreciation on factory equipment	31,000	
Indirect labor cost	28,000	
Utilities expense	12,000	
Insurance expense	<u>8,000</u>	<u>803,000</u>
Net loss		<u><u>\$ (23,000)</u></u>

Prior to October 2027, the company had been profitable every month. The company's president is concerned about the accuracy of the income statement. As her friend, you have been asked to review the income statement and make necessary corrections. After examining other manufacturing cost data, you have acquired additional information as follows.

- 1. Inventory balances at the beginning and end of October were:

	<u>October 1</u>	<u>October 31</u>
Raw materials	\$18,000	\$29,000
Work in process	20,000	14,000
Finished goods	30,000	50,000

- 2. Only 75% of the utilities expense and 60% of the insurance expense apply to factory operations. The remaining amounts should be charged to selling and administrative activities.

Instructions

- a. CGM \$581,800
 - b. NI \$2,000
- a. Prepare a schedule of cost of goods manufactured for the month ended October 31, 2027. (Assume that all raw materials used were direct materials.)
 - b. Prepare a correct income statement for the month ended October 31, 2027.

Continuing Cases

Current Designs

CD1 Excel Mike Cichanowski founded **Wenonah Canoe** and later purchased **Current Designs**, a company that designs and manufactures kayaks. The kayak-manufacturing facility is located just a few minutes from the canoe company's headquarters in Winona, Minnesota. Current Designs makes kayaks using two different processes. The rotational molding process uses high temperature to melt polyethylene powder in a closed rotating metal mold to produce a complete kayak hull and deck in a single piece. These kayaks are less labor-intensive and less expensive for the company to produce and sell.

Its other kayaks use the vacuum-bagged composite lamination process (which we will refer to as the composite process). Layers of fiberglass or Kevlar[®] are carefully placed by hand in a mold and are bonded with resin. Then, a high-pressure vacuum is used to eliminate any excess resin that would otherwise add weight and reduce the strength of the finished kayak. These kayaks require a great deal of skilled labor as each boat is individually finished. The exquisite finish of the vacuum-bagged composite kayaks gave rise to Current Designs' tag line, "A work of art, made for life."

Current Designs has the following managers:

Mike Cichanowski, CEO
 Diane Buswell, Controller
 Deb Welch, Purchasing Manager
 Bill Johnson, Sales Manager
 Dave Thill, Kayak Factory Manager
 Rick Thrune, Production Manager for Composite Kayaks

Each of the remaining chapters includes a hypothetical case featuring **Current Designs**, the company described at the beginning of this chapter. Students can also work through this case following an **Excel tutorial** available in **Wiley Course Resources**. Each chapter's tutorial focuses on a different Excel function or feature.

The company's accounting data for the most recent period is as follows.

	A	B	C			D	E
1			Product Costs				
2	Payee	Purpose	Direct Materials	Direct Labor	Manufacturing Overhead	Period Costs	Amount
3	Winona Agency	Property insurance for factory					\$ 3,200
4	Bill Johnson (sales manager)	Payroll check—payment to sales manager					1,700
5	Xcel Energy	Electricity for factory					450
6	Winona Printing	Price lists for salespeople					85
7	Jim Kaiser (sales representative)	Sales commissions					1,250
8	Dave Thill (factory manager)	Payroll check—payment to factory manager					1,450
9	Dana Schultz (kayak assembler)	Payroll check—payment to kayak assembler					760
10	Composite One	Bagging film used when kayaks are assembled; it is discarded after use					260
11	Fastenal	Shop supplies—brooms, paper towels, etc.					890
12	Ravago	Polyethylene powder which is the main ingredient for the rotational molded kayaks					3,170
13	Winona County	Property taxes on factory					5,480
14	North American Composites	Kevlar [®] fabric for composite kayaks					4,930
15	Waste Management	Trash disposal for the company office building					660
16	None	Record depreciation of manufacturing equipment					4,540

Instructions

- What are the primary information needs of each manager?
- Name one special-purpose managerial accounting report that could be designed for each manager. Include the name of the report, the information it would contain, and how frequently it should be issued.
- When Diane Buswell, controller for Current Designs, reviewed the accounting records for a recent period, she noted the cost items and amounts shown previously (amounts are assumed). Enter the amount for each item in the appropriate cost category. Then sum the amounts in each cost category column.

Waterways Corporation

The **Waterways case** starts in this chapter and continues in every remaining chapter. You will find the complete case for each chapter in **Wiley online course**.

WC1 Waterways Corporation is a private corporation formed for the purpose of providing the products and the services needed to irrigate farms, parks, commercial projects, and private lawns. It has a centrally located factory in a U.S. city that manufactures the products it markets to retail outlets across the nation. It also maintains a division that performs installation and warranty servicing in six metropolitan areas. The mission of Waterways is to manufacture quality parts that can be used for effective irrigation projects that also conserve water. Through that effort, the company hopes to satisfy its customers, perform rapid and responsible service, and serve the community and the employees who represent the company in each community.

The company has been growing rapidly, so management is considering new ideas to help the company continue its growth and maintain the high quality of its products.

Waterways was founded by Will Winkman, who is the company president and chief executive officer (CEO). Working with him from the company's inception is Will's brother, Ben, whose sprinkler designs and ideas about the installation of proper systems have been a major basis of the company's success. Ben is the vice president who oversees all aspects of design and production in the company.

The factory itself is managed by Todd Senter, who hires line managers to supervise the factory employees. The factory makes all of the parts for the irrigation systems. The purchasing department is managed by Helen Hines.

The installation and training division is overseen by vice president Henry Writer, who supervises the managers of the six local installation operations. Each of these local managers hires his or her own local service people. These service employees are trained by the home office under Henry Writer's direction because of the uniqueness of the company's products.

There is a small human resources department under the direction of Sally Fenton, a vice president who handles the employee paperwork, though hiring is actually performed by the separate departments. Teresa Totter is the vice president who heads the sales and marketing area; she oversees 10 well-trained salespeople.

The accounting and finance division of the company is run by Ann Headman, who is the chief financial officer (CFO) and a company vice president. She is a member of the Institute of Management Accountants. She has a small staff of accountants, including a controller and a treasurer, and a staff of accounting input operators who maintain the financial records.

A partial list of Waterways' accounts and their balances for the month of November follows.

Accounts Receivable	\$ 275,000
Advertising Expenses	54,000
Cash	260,000
Depreciation—Factory Equipment	16,800
Depreciation—Office Equipment	2,400
Direct Labor	42,000
Factory Utilities	27,000
Finished Goods Inventory, November 30	68,800
Finished Goods Inventory, October 31	72,550
Indirect Labor	48,000
Office Salaries	325,000
Office Supplies Expense	1,600
Other Administrative Expenses	72,000
Prepaid Expenses	41,250
Raw Materials Inventory, November 30	52,700
Raw Materials Inventory, October 31	38,000
Raw Materials Purchases	184,500
Rent—Factory Equipment	47,000
Repairs—Factory Equipment	4,500

Sales Revenue	1,350,000
Sales Commissions	40,500
Work in Process Inventory, October 31	52,700
Work in Process Inventory, November 30	42,000

Instructions

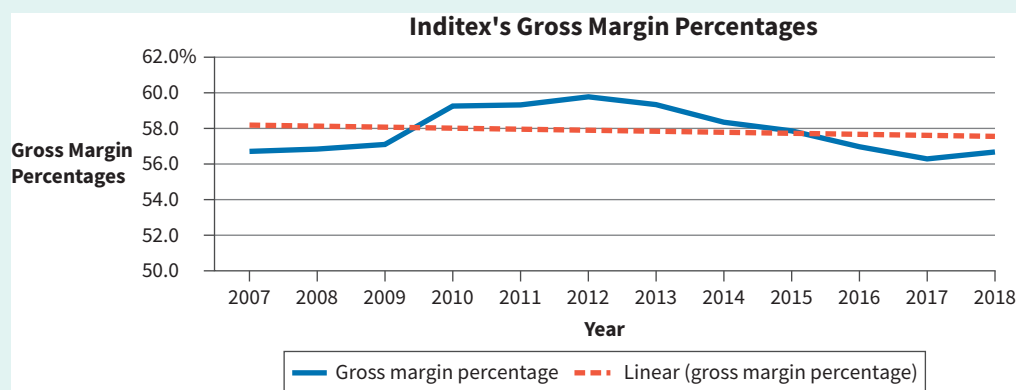
- Based on the information given, construct an organizational chart of Waterways Corporation.
- A list of accounts and their values are given above. From this information, prepare a cost of goods manufactured schedule, an income statement, and a partial balance sheet for Waterways Corporation for the month of November 2027. (Assume that all raw materials used were direct materials.)

Data Analytics in Action

Using Data Visualization to Determine Performance

DA1.1 Excel Data visualization can be used to review company results.

Example: Recall the *Management Insight* “Supplying Today’s (Not Yesterday’s) Fashion” presented in the chapter. Data analytics can help **Inditex** determine how it is performing over time. For retailers, the gross margin percentage is a good measure of how the company is doing, as it indicates what percentage of sales is available to cover selling and administration costs and generate profit. From publicly available data, we can calculate Inditex’s gross margin percentage $[(\text{Sales} - \text{Cost of goods sold}) \div \text{Sales}]$ and track it over time. What do you observe when you look at the following chart?



Hopefully, you immediately noticed that Inditex is able to maintain a high and stable gross margin over the time period shown. Management should be quite pleased with this. But another measure of success, revenue per employee, can provide management with even more insight concerning its sales. This case will require you to calculate and graph this data for Inditex, and then analyze the results.

Go to Wiley online course for complete case details and instructions.

Data Analytics at Inditex Corporation

DA1.2 Excel You are excited about your upcoming job interview at **Inditex**. You realize that you need to have a better understanding of the company so that you can have several thoughtful questions prepared to ask during the interview. For this case, you will use Inditex’s performance information to create several visualizations that will help increase your knowledge of the company’s operations.

Go to Wiley online course for complete case details and instructions.

Expand Your Critical Thinking

Decision-Making Across the Organization

CT1.1 Wendall Company specializes in producing fashion outfits. On July 31, 2027, a tornado touched down at its factory and general office. The inventories in the warehouse and the factory were completely destroyed, as was the general office nearby. However, after a careful search of the disaster site the next morning, Bill Francis, the company's controller, and Elizabeth Walton, the cost accountant, were able to recover a small part of the manufacturing cost data for the current month.

"What a horrible experience," sighed Bill. "And the worst part is that we may not have enough records to use in filing an insurance claim."

"It was terrible," replied Elizabeth. "However, I managed to recover some of the manufacturing cost data that I was working on yesterday afternoon. The data indicate that our direct labor cost in July totaled \$250,000 and that we had purchased \$365,000 of raw materials. Also, I recall that the amount of raw materials used for July was \$350,000. But I'm not sure this information will help. The rest of our records are blown away."

"Well, not exactly," said Bill. "I was working on the year-to-date income statement when the tornado warning was announced. My recollection is that our sales in July were \$1,240,000 and our gross profit ratio has been 40% of sales. Also, I can remember that our cost of goods available for sale was \$770,000 for July."

"Maybe we can work something out from this information!" exclaimed Elizabeth. "My experience tells me that our manufacturing overhead is usually 60% of direct labor."

"Hey, look what I just found," cried Elizabeth. "It's a copy of this June's balance sheet, and it shows that our inventories as of June 30 are Finished goods \$38,000, Work in process \$25,000, and Raw materials \$19,000."

"Super," yelled Bill. "Let's go work something out."

In order to file an insurance claim, Wendall Company needs to determine the amount of its inventories as of July 31, 2027, the date of the tornado touchdown.

Instructions

With the class divided into groups, determine the amount of cost in the Raw Materials, Work in Process, and Finished Goods inventory accounts as of the date of the tornado touchdown. (Assume that all raw materials used were direct materials.)

Managerial Analysis

CT1.2 Tenrack is a fairly large manufacturing company located in the southern United States. The company manufactures tennis rackets, tennis balls, tennis clothing, and tennis shoes, all bearing the company's distinctive logo, a large green question mark on a white flocked tennis ball. The company's sales have been increasing over the past 10 years.

The tennis racket division has recently implemented several advanced manufacturing techniques. Robot arms hold the tennis rackets in place while glue dries, and machine vision systems check for defects. The engineering and design team uses computerized drafting and testing of new products. The following managers work in the tennis racket division:

Jason Dennis, Sales Manager (supervises all sales representatives)

Peggy Groneman, Technical Specialist (supervises computer programmers)

Dave Marley, Cost Accounting Manager (supervises cost accountants)

Kevin Carson, Production Supervisor (supervises all manufacturing employees)

Sally Renner, Engineer (supervises all new-product design teams)

Instructions

- What are the primary information needs of each manager?
- Which, if any, financial accounting report(s) is each likely to use?
- Name one special-purpose managerial accounting report that could be designed for each manager. Include the name of the report, the information it would contain, and how frequently it should be issued.

Real-World Focus

CT1.3 The **Institute of Management Accountants** (IMA) is an organization dedicated to excellence in the practice of managerial accounting and financial management.

Instructions

Go to the IMA's website to locate the answers to the following questions.

- How many members does the IMA have, and what are their job titles?
- What are some of the benefits of joining the IMA as a student?
- Use the chapter locator function to locate the IMA chapter nearest you, and find the name of the chapter president.

Communication Activity

CT1.4 Refer to P1.5 and add the following requirement.

Write an email to the president of the company, Shelly Phillips, describing the changes you made. Explain clearly why net income is different after the changes. Keep the following points in mind as you compose your email.

- The president of the company is your friend. The style of your email should be generally formal, but you may relax some requirements. For example, you may call the president by her first name.
- Executives are very busy. Your email should tell the president your main results first (for example, the amount of net income).
- You should include brief explanations so that the president can understand the changes you made in the calculations.

Ethics Case

CT1.5 Steve Morgan, controller for Newton Industries, was reviewing production cost reports for the year. One amount in these reports continued to bother him—advertising. During the year, the company had instituted an expensive advertising campaign to sell some of its slower-moving products. It was still too early to tell whether the advertising campaign was successful.

There had been much internal debate as how to report advertising cost. The vice president of finance argued that advertising cost should be reported as a cost of production, just like direct materials and direct labor. He therefore recommended that this cost be identified as manufacturing overhead and reported as part of inventory costs until sold. Others disagreed. Morgan believed that this cost should be reported as an expense of the current period, so as not to overstate net income. Others argued that it should be reported as prepaid advertising and reported as a current asset.

The president finally had to decide the issue. He argued that advertising cost should be reported as inventory. His arguments were practical ones. He noted that the company was experiencing financial difficulty and that expensing this amount in the current period might jeopardize a planned bond offering. Also, by reporting the advertising cost as inventory rather than as prepaid advertising, less attention would be directed to it by the financial community.

Instructions

- Who are the stakeholders in this situation?
- What are the ethical issues involved in this situation?
- What would you do if you were Steve Morgan?

All About You

CT1.6 The primary purpose of managerial accounting is to provide information useful for management decisions. Many of the managerial accounting techniques that you will learn will be useful for decisions you make in your everyday life.

Instructions

For each of the following managerial accounting techniques, read the definition provided and then provide an example of a personal situation that would benefit from use of this technique.

- Break-even point (Chapter 5).
- Budget (Chapter 9 and 10).
- Balanced scorecard (Chapter 11).
- Capital budgeting (Chapter 12).

Considering Your Costs and Benefits

CT1.7 Because of global competition, companies have become increasingly focused on reducing costs. To reduce costs and remain competitive, many companies are turning to outsourcing. Outsourcing means hiring an outside supplier to provide elements of a product or service rather than producing them internally.

Suppose you are the managing partner in a CPA firm with 30 full-time staff members. Larger firms in your community have begun to outsource basic tax-return preparation work to India. Should you outsource your basic tax-return work to India as well? You estimate that you would have to lay off six staff members if you outsource the work. The basic arguments for and against are as follows.

- YES:** The wages paid to Indian accountants are very low relative to U.S. wages. You will not be able to compete unless you outsource.
- NO:** Tax-return data are highly sensitive. Many customers will be upset to learn that their data are being emailed around the world.

Instructions

Write a response indicating your position regarding this situation. Provide support for your view.

Answers to Insight and Accounting Across the Organization Questions

Does a Company Need a CEO? **Q:** What are some of the advantages cited by companies that choose a structure that lacks a CEO? **A:** Companies that replace the CEO with a management committee do so because they believe that it enhances decision-making, improves collaboration, and increases management continuity by avoiding the disruptions associated with replacing a CEO.

Low Fares but Decent Profits **Q:** What are some of the line items that would appear in the cost of services performed schedule of an airline? **A:** Some of the line items that would appear in the cost of services performed schedule of an airline would be fuel, flight crew salaries, maintenance wages, depreciation on equipment, airport gate fees, and food-service costs.

Supplying Today's (Not Yesterday's) Fashions **Q:** What steps has Inditex taken that make its value chain unique? **A:** Inditex has taken numerous steps to make its supply chain more efficient and responsive. It employs an open workspace facility, where designers and commercial staff sit together and take calls regarding product ideas directly from sales employees. Production facilities are primarily located within a reasonably close distance, so management can direct and monitor production. Goods are shipped directly to stores, rather than warehouses, thus saving time and ensuring that goods are shipped to their intended targets.

People Matter **Q:** What are some of the common problems for many clothing factories in developing countries? **A:** Some of the common problems for many clothing factories in developing countries would be pressure to produce goods faster, lack of training for workers, unsafe buildings, substandard work conditions, and wage and labor violations. These problems can be exacerbated by the fact that many young women in developing countries are willing to accept low wages and working conditions that Americans consider unsafe because factory jobs offer them an opportunity to have a life that is better than that available in their villages.

Using Data in Its Own World **Q:** What is behavioral analytics, and how does Disney use it to minimize lines at its theme parks? **A:** Behavioral analytics is the use of data to predict and influence customer behavior. To minimize wait lines, and thus improve its customers' experiences, Disney uses data collected from its visitors' "MagicBands" to determine what incentives to provide to encourage customers to shift their itineraries to underutilized activities.