Managerial Accounting Concepts and Principles

Dan Donegan, guitarist for the rock band *Disturbed*, entertains millions of fans each year playing his guitar. His guitar was built by quality craftsmen at *Washburn Guitars* in Chicago. Washburn Guitars is well-known in the music industry and has been in business for over 120 years.

Staying in business for 120 years requires a thorough understanding of how to manufacture high-quality guitars. In addition, it requires knowledge of how to account for the costs of making guitars. For example, Washburn needs cost information to answer the following questions:

- How much should be charged for its guitars?
- How many guitars does it have to sell in a year to cover its costs and earn a profit?
- How many employees should the company have working on each stage of the manufacturing process?
- How would purchasing automated equipment affect the costs of its guitars?

This chapter introduces managerial accounting concepts that are useful in addressing the preceding questions.

This chapter begins by describing managerial accounting and its relationship to financial accounting. Following this overview, the management process is described along with the role of managerial accounting in this process. Finally, characteristics of managerial accounting reports, managerial accounting terms, and uses of managerial accounting information are described and illustrated.
Describe managerial accounting and the role of managerial accounting in a business.

Managerial Accounting

Managers make numerous decisions during the day-to-day operations of a business and in planning for the future. Managerial accounting provides much of the information used for these decisions.

Some examples of managerial accounting information along with the chapter in which it is described and illustrated are listed below.

1. Classifying manufacturing and other costs and reporting them in the financial statements (Chapter 16)
2. Determining the cost of manufacturing a product or providing a service (Chapters 17 and 18)
3. Estimating the behavior of costs for various levels of activity and assessing cost-volume-profit relationships (Chapter 19)
4. Analyzing changes in operating income (Chapter 20)
5. Planning for the future by preparing budgets (Chapter 21)
6. Evaluating manufacturing costs by comparing actual with expected results (Chapter 22)
7. Evaluating decentralized operations by comparing actual and budgeted costs as well as computing various measures of profitability (Chapter 23)
8. Evaluating special decision-making situations by comparing differential revenues and costs (Chapter 24)
9. Evaluating alternative proposals for long-term investments in fixed assets (Chapter 25)
10. Evaluating the impact of cost allocation on pricing of products and services (Chapter 26)
11. Planning operations using just-in-time concepts (Chapter 27)
Differences Between Managerial and Financial Accounting

Accounting information is often divided into two types: financial and managerial. Exhibit 1 shows the relationship between financial accounting and managerial accounting.

**Exhibit 1**

Financial Accounting and Managerial Accounting

<table>
<thead>
<tr>
<th>FINANCIAL ACCOUNTING</th>
<th>MANAGERIAL ACCOUNTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income Statement</td>
<td>Management Reports</td>
</tr>
<tr>
<td>Retained Earnings Statement</td>
<td></td>
</tr>
<tr>
<td>Balance Sheet</td>
<td>Management</td>
</tr>
<tr>
<td>Statement of Cash Flows</td>
<td></td>
</tr>
</tbody>
</table>

**Users:**

- **External Users and Management:**
  - Objective
  - Prepared according to GAAP
  - Prepared at fixed intervals
  - Company as a whole

- **Management:**
  - Objective and subjective
  - Prepared according to management needs
  - Prepared at fixed intervals, or as needed
  - Company as a whole or segment

**Financial accounting** information is reported at fixed intervals (monthly, quarterly, yearly) in general-purpose financial statements. These financial statements—the income statement, retained earnings statement, balance sheet, and statement of cash flows—are prepared according to generally accepted accounting principles (GAAP). These statements are used by external users such as the following:

1. Shareholders
2. Creditors
3. Government agencies
4. The general public

Managers of a company also use general-purpose financial statements. For example, in planning future operations, managers often begin by evaluating the current income statement and statement of cash flows.

**Managerial accounting** information is designed to meet the specific needs of a company’s management. This information includes the following:

1. Historical data, which provide *objective measures* of past operations
2. Estimated data, which provide *subjective estimates* about future decisions
Management uses both types of information in directing daily operations, planning future operations, and developing business strategies. Unlike the financial statements prepared in financial accounting, managerial accounting reports do not always have to be:

1. Prepared according to generally accepted accounting principles. This is because only the company’s management uses the information. Also, in many cases, GAAP are not relevant to the specific decision-making needs of management.
2. Prepared at fixed intervals (monthly, quarterly, yearly). Although some management reports are prepared at fixed intervals, most reports are prepared as management needs the information.
3. Prepared for the business as a whole. Most management reports are prepared for products, projects, sales territories, or other segments of the company.

The Management Accountant in the Organization

In most companies, departments or similar organizational units are assigned responsibilities for specific functions or activities. The operating structure of a company can be shown in an organization chart.

Exhibit 2 is a partial organization chart for Callaway Golf Company, the manufacturer and distributor of Hyper X® golf clubs.

Exhibit 2

Partial Organizational Chart for Callaway Golf Company

The departments in a company can be viewed as having either of the following:

1. Line responsibilities
2. Staff responsibilities

A line department is directly involved in providing goods or services to the customers of the company. For Callaway Golf (shown in Exhibit 2), the following occupy line positions:

1. Senior Vice President—Equipment
2. Plant Manager—Chicopee, MA Plant
3. Senior Vice President—Callaway Brand
4. Managing Director, Callaway Golf Europe

The preceding occupy line positions because they are responsible for manufacturing and selling Callaway’s products.
A staff department provides services, assistance, and advice to the departments with line or other staff responsibilities. A staff department has no direct authority over a line department. For Callaway Golf (shown in Exhibit 2), the following occupy staff positions:

1. Senior Vice President—Chief Administrative Officer
2. Vice President, Human Resources
3. Chief Financial Officer
4. Controller

As shown above, the chief financial officer (CFO) and the controller occupy staff positions. In most companies, the controller is the chief management accountant. The controller’s staff consists of a variety of other accountants who are responsible for specialized accounting functions such as the following:

1. Systems and procedures
2. General accounting
3. Budgets and budget analysis
4. Special reports and analysis
5. Taxes
6. Cost accounting

Experience in managerial accounting is often an excellent training ground for senior management positions. This is not surprising, since accounting touches all phases of a company’s operations.

Managerial Accounting in the Management Process

As a staff department, managerial accounting supports management and the management process. The management process has the following five basic phases as shown in Exhibit 3.

1. Planning
2. Directing
3. Controlling
4. Improving
5. Decision making

As Exhibit 3 illustrates, the five phases interact with each other.
Planning. Management uses planning in developing the company’s objectives (goals) and translating these objectives into courses of action. For example, a company may set an objective to increase market share by 15 percent by introducing three new products. The actions to achieve this objective might be as follows:

1. Increase the advertising budget
2. Open a new sales territory
3. Increase the research and development budget

Planning may be classified as follows:

1. **Strategic planning**, which is developing long-term actions to achieve the company’s objectives. These long-term actions are called strategies, which often involve periods of 5 to 10 years.
2. **Operational planning**, which develops short-term actions for managing the day-to-day operations of the company.

Directing. The process by which managers run day-to-day operations is called directing. An example of directing is a production supervisor’s efforts to keep the production line moving without interruption (downtime). A credit manager’s development of guidelines for assessing the ability of potential customers to pay their bills is also an example of directing.

Controlling. Monitoring operating results and comparing actual results with the expected results is controlling. This feedback allows management to isolate areas for further investigation and possible remedial action. It may also lead to revising future plans. This philosophy of controlling by comparing actual and expected results is called management by exception.

Improving. Feedback is also used by managers to support continuous process improvement. Continuous process improvement is the philosophy of continually improving employees, business processes, and products. The objective of continuous improvement is to eliminate the source of problems in a process. In this way, the right products (services) are delivered in the right quantities at the right time.

Decision Making. Inherent in each of the preceding management processes is decision making. In managing a company, management must continually decide among alternative actions. For example, in directing operations, managers must decide on an operating structure, training procedures, and staffing of day-to-day operations.

Managerial accounting supports managers in all phases of the management process. For example, accounting reports comparing actual and expected operating results aid managers in planning and improving current operations. Such a report might compare the actual and expected costs of defective materials. If the cost of defective materials is unusually high, management might decide to change suppliers.

### Example Exercise 16-1 Management Process

<table>
<thead>
<tr>
<th>Phase of management process</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning</td>
<td>a. Monitoring the operating results of implemented plans and comparing the actual results with expected results.</td>
</tr>
<tr>
<td></td>
<td>b. Rejects solving individual problems with temporary solutions that fail to address the root cause of the problem.</td>
</tr>
<tr>
<td></td>
<td>c. Used by management to develop the company’s objectives.</td>
</tr>
<tr>
<td>Controlling</td>
<td></td>
</tr>
<tr>
<td>Improving</td>
<td></td>
</tr>
</tbody>
</table>

(continued)
The operations of a business can be classified as service, merchandising, or manufacturing. The accounting for service and merchandising businesses has been described and illustrated in earlier chapters. For this reason, the remaining chapters of this text focus primarily on manufacturing businesses. Most of the managerial accounting concepts discussed, however, also apply to service and merchandising businesses.

As a basis for illustration of manufacturing operations, a guitar manufacturer, Legend Guitars, is used. Exhibit 4 is an overview of Legend’s guitar manufacturing operations.
Legend’s guitar making process begins when a customer places an order for a guitar. Once the order is accepted, the manufacturing process begins by obtaining the necessary materials. An employee then cuts the body and neck of the guitar out of raw lumber. Once the wood is cut, the body and neck of the guitar are assembled. When the assembly is complete, the guitar is painted and finished.

**Direct and Indirect Costs**

A cost is a payment of cash or the commitment to pay cash in the future for the purpose of generating revenues. For example, cash (or credit) used to purchase equipment is the cost of the equipment. If equipment is purchased by exchanging assets other than cash, the current market value of the assets given up is the cost of the equipment purchased.

In managerial accounting, costs are classified according to the decision-making needs of management. For example, costs are often classified by their relationship to a segment of operations, called a cost object. A cost object may be a product, a sales territory, a department, or an activity, such as research and development. Costs identified with cost objects are either direct costs or indirect costs.

**Direct costs** are identified with and can be traced to a cost object. For example, the cost of wood (materials) used by Legend Guitars in manufacturing a guitar is a direct cost of the guitar.

**Indirect costs** cannot be identified with or traced to a cost object. For example, the salaries of the Legend Guitars production supervisors are indirect costs of producing a guitar. While the production supervisors contribute to the production of a guitar, their salaries cannot be identified with or traced to any individual guitar.

Depending on the cost object, a cost may be either a direct or an indirect cost. For example, the salaries of production supervisors are indirect costs when the cost object is an individual guitar. If, however, the cost object is Legend Guitars’ overall production process, then the salaries of production supervisors are direct costs.
Manufacturing Costs

The cost of a manufactured product includes the cost of materials used in making the product. In addition, the cost of a manufactured product includes the cost of converting the materials into a finished product. For example, Legend Guitars uses employees and machines to convert wood (and other supplies) into finished guitars. Thus, the cost of a finished guitar (the cost object) includes the following:

1. Direct materials cost
2. Direct labor cost
3. Factory overhead cost

**Direct Materials Cost** Manufactured products begin with raw materials that are converted into finished products. The cost of any material that is an integral part of the finished product is classified as a direct materials cost. For Legend Guitars, direct materials cost includes the cost of the wood used in producing each guitar. Other examples of direct materials costs include the cost of electronic components for a television, silicon wafers for microcomputer chips, and tires for an automobile.

To be classified as a direct materials cost, the cost must be both of the following:

1. An integral part of the finished product
2. A significant portion of the total cost of the product

For Legend Guitars, the cost of the guitar strings is not a direct materials cost. This is because the cost of guitar strings is an insignificant part of the total cost of each guitar. Instead, the cost of guitar string is classified as a factory overhead cost, which is discussed later.
Direct Labor Cost  Most manufacturing processes use employees to convert materials into finished products. The cost of employee wages that is an integral part of the finished product is classified as **direct labor cost**. For Legend Guitars, direct labor cost includes the wages of the employees who cut each guitar out of raw lumber and assemble it. Other examples of direct labor costs include mechanics’ wages for repairing an automobile, machine operators’ wages for manufacturing tools, and assemblers’ wages for assembling a laptop computer.

Like a direct materials cost, a direct labor cost must be both of the following:

1. An integral part of the finished product
2. A significant portion of the total cost of the product

For Legend Guitars, the wages of the janitors who clean the factory are not a direct labor cost. This is because janitorial costs are not an integral part or a significant cost of each guitar. Instead, janitorial costs are classified as a factory overhead cost, which is discussed next.

Factory Overhead Cost  Costs other than direct materials cost and direct labor cost that are incurred in the manufacturing process are combined and classified as **factory overhead cost**. Factory overhead is sometimes called **manufacturing overhead** or **factory burden**.

All factory overhead costs are indirect costs of the product. Some factory overhead costs include the following:

1. Heating and lighting the factory
2. Repairing and maintaining factory equipment
3. Property taxes on factory buildings and land
4. Insurance on factory buildings
5. Depreciation on factory plant and equipment

Factory overhead cost also includes materials and labor costs that do not enter directly into the finished product. Examples include the cost of oil used to lubricate machinery and the wages of janitorial and supervisory employees. Also, if the costs of direct materials or direct labor are not a significant portion of the total product cost, these costs may be classified as factory overhead costs.

For Legend Guitars, the costs of guitar strings and janitorial wages are factory overhead costs. Additional factory overhead costs of making guitars are as follows:

1. Sandpaper
2. Buffing compound
3. Glue
4. Power (electricity) to run the machines
5. Depreciation of the machines and building
6. Salaries of production supervisors

As manufacturing processes have become more automated, direct labor costs have become so small that they are often included as part of factory overhead.

**Example Exercise 16-2**  **Direct Materials, Direct Labor, and Factory Overhead**

Identify the following costs as direct materials (DM), direct labor (DL), or factory overhead (FO) for a baseball glove manufacturer.

a. Leather used to make a baseball glove
b. Coolants for machines that sew baseball gloves
c. Wages of assembly line employees
d. Ink used to print a player’s autograph on a baseball glove

**Follow My Example 16-2**

a. DM  
b. FO  
c. DL  
d. FO

For Practice: PE 16-2A, PE 16-2B
Prime Costs and Conversion Costs Direct materials, direct labor, and factory overhead costs may be grouped together for analysis and reporting. Two such common groupings are as follows:
1. **Prime costs**, which consist of direct materials and direct labor costs
2. **Conversion costs**, which consist of direct labor and factory overhead costs

Conversion costs are the costs of converting the materials into a finished product. Direct labor is both a prime cost and a conversion cost, as shown in Exhibit 6.

**Example Exercise 16-3 Prime and Conversion Costs**

Identify the following costs as a prime cost (P), conversion cost (C), or both (B) for a baseball glove manufacturer.

- a. Leather used to make a baseball glove
- b. Coolants for machines that sew baseball gloves
- c. Wages of assembly line employees
- d. Ink used to print a player’s autograph on a baseball glove

**Follow My Example 16-3**

- a. P
- b. C
- c. B
- d. C

**Product Costs and Period Costs** For financial reporting purposes, costs are classified as product costs or period costs.

1. **Product costs** consist of manufacturing costs: direct materials, direct labor, and factory overhead.
2. **Period costs** consist of selling and administrative expenses. Selling expenses are incurred in marketing the product and delivering the product to customers. Administrative expenses are incurred in managing the company and are not directly related to the manufacturing or selling functions.

   Examples of product costs and period costs for Legend Guitars are presented in Exhibit 7.
To facilitate control, selling and administrative expenses may be reported by level of responsibility. For example, selling expenses may be reported by products, salespersons, departments, divisions, or territories. Likewise, administrative expenses may be reported by areas such as human resources, computer services, legal, accounting, or finance.

The impact on the financial statements of product and period costs is summarized in Exhibit 8. As product costs are incurred, they are recorded and reported on the balance sheet as inventory. When the inventory is sold, the cost of the manufactured product sold is
reported as cost of goods sold on the income statement. Period costs are reported as expenses on the income statement in the period in which they are incurred and, thus, never appear on the balance sheet.

Example Exercise 16-4 Product and Period Costs

Identify the following costs as a product cost or a period cost for a baseball glove manufacturer.

a. Leather used to make a baseball glove
b. Cost of endorsement from a professional baseball player
c. Office supplies used at the company headquarters
d. Ink used to print a player’s autograph on the baseball glove

Follow My Example 16-4

a. Product cost
b. Period cost
c. Period cost
d. Product cost

Financial Statements for a Manufacturing Business

The retained earnings and cash flow statements for a manufacturing business are similar to those illustrated in earlier chapters for service and merchandising businesses. However, the balance sheet and income statement for a manufacturing business are more complex. This is because a manufacturer makes the products that it sells and, thus, must record and report product costs. The reporting of product costs primarily affects the balance sheet and the income statement.

Balance Sheet for a Manufacturing Business

A manufacturing business reports three types of inventory on its balance sheet as follows:

1. Materials inventory (sometimes called raw materials inventory). This inventory consists of the costs of the direct and indirect materials that have not entered the manufacturing process.

   Examples for Legend Guitars: Wood, guitar strings, glue, sandpaper

2. Work in process inventory. This inventory consists of the direct materials, direct labor, and factory overhead costs for products that have entered the manufacturing process, but are not yet completed (in process).

   Example for Legend Guitars: Unfinished (partially assembled) guitars

3. Finished goods inventory. This inventory consists of completed (or finished) products that have not been sold.

   Example for Legend Guitars: Unsold guitars

Exhibit 9 illustrates the reporting of inventory on the balance sheet for a merchandising and a manufacturing business. MusicLand Stores, Inc., a retailer of musical instruments, reports only Merchandise Inventory. In contrast, Legend
Income Statement for a Manufacturing Company

The income statements for merchandising and manufacturing businesses differ primarily in the reporting of the cost of merchandise (goods) available for sale and sold during the period. These differences are shown below.

A merchandising business purchases merchandise ready for resale to customers. The total cost of the merchandise available for sale during the period is determined by adding the beginning merchandise inventory to the net purchases. The cost of merchandise sold is determined by subtracting the ending merchandise inventory from the cost of merchandise available for sale.
A manufacturer makes the products it sells, using direct materials, direct labor, and factory overhead. The total cost of making products that are available for sale during the period is called the cost of goods manufactured. The cost of finished goods available for sale is determined by adding the beginning finished goods inventory to the cost of goods manufactured during the period. The cost of goods sold is determined by subtracting the ending finished goods inventory from the cost of finished goods available for sale.

Cost of goods manufactured is required to determine the cost of goods sold, and thus to prepare the income statement. The cost of goods manufactured is often determined by preparing a statement of cost of goods manufactured. This statement summarizes the cost of goods manufactured during the period as shown below.

### Statement of Cost of Goods Manufactured

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning work in process inventory</td>
<td>$XXX</td>
</tr>
<tr>
<td>Direct materials:</td>
<td></td>
</tr>
<tr>
<td>Beginning materials inventory</td>
<td>$XXX</td>
</tr>
<tr>
<td>Purchases</td>
<td>XXX</td>
</tr>
<tr>
<td>Cost of materials available for use</td>
<td>$XXX</td>
</tr>
<tr>
<td>Less ending materials inventory</td>
<td>XXX</td>
</tr>
<tr>
<td>Cost of direct materials used</td>
<td>$XXX</td>
</tr>
<tr>
<td>Direct labor</td>
<td>XXX</td>
</tr>
<tr>
<td>Factory overhead</td>
<td>XXX</td>
</tr>
<tr>
<td>Total manufacturing costs incurred</td>
<td>XXX</td>
</tr>
<tr>
<td>Total manufacturing costs</td>
<td>$XXX</td>
</tr>
<tr>
<td>Less ending work in process inventory</td>
<td>XXX</td>
</tr>
<tr>
<td><strong>Cost of goods manufactured</strong></td>
<td>$XXX</td>
</tr>
</tbody>
</table>

To illustrate, the following data for Legend Guitars are used:

<table>
<thead>
<tr>
<th>Description</th>
<th>Jan. 1, 2010</th>
<th>Dec. 31, 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventories:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials</td>
<td>$65,000</td>
<td>$35,000</td>
</tr>
<tr>
<td>Work in process</td>
<td>30,000</td>
<td>24,000</td>
</tr>
<tr>
<td>Finished goods</td>
<td>60,000</td>
<td>62,500</td>
</tr>
<tr>
<td>Total inventories</td>
<td>$155,000</td>
<td>$121,500</td>
</tr>
<tr>
<td>Manufacturing costs incurred during 2010:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials purchased</td>
<td></td>
<td>$100,000</td>
</tr>
<tr>
<td>Direct labor</td>
<td></td>
<td>110,000</td>
</tr>
<tr>
<td>Factory overhead:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indirect labor</td>
<td>$24,000</td>
<td></td>
</tr>
<tr>
<td>Depreciation on factory equipment</td>
<td>10,000</td>
<td></td>
</tr>
<tr>
<td>Factory supplies and utility costs</td>
<td>10,000</td>
<td>44,000</td>
</tr>
<tr>
<td>Total</td>
<td>$254,000</td>
<td></td>
</tr>
<tr>
<td>Sales</td>
<td>$366,000</td>
<td></td>
</tr>
<tr>
<td>Selling expenses</td>
<td>20,000</td>
<td></td>
</tr>
<tr>
<td>Administrative expenses</td>
<td>15,000</td>
<td></td>
</tr>
</tbody>
</table>

1 Chapters 17 and 18 describe and illustrate the use of job order and process cost systems. As will be discussed, these systems do not require a statement of cost of goods manufactured.
Chapter 16    Managerial Accounting Concepts and Principles

The statement of cost of goods manufactured is prepared using the following three steps:

Step 1. Determine the cost of materials used.
Step 2. Determine the total manufacturing costs incurred
Step 3. Determine the cost of goods manufactured.

Using the preceding data for Legend Guitars, the preparation of the statement of cost of goods manufactured is illustrated below.

Step 1. The cost of materials used in production is determined as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials inventory, January 1, 2010</td>
<td>$65,000</td>
</tr>
<tr>
<td>Add materials purchased</td>
<td>$100,000</td>
</tr>
<tr>
<td>Cost of materials available for use</td>
<td>$165,000</td>
</tr>
<tr>
<td>Less materials inventory, December 31, 2010</td>
<td>$35,000</td>
</tr>
<tr>
<td>Cost of direct materials used</td>
<td>$130,000</td>
</tr>
</tbody>
</table>

The January 1, 2010 (beginning) materials inventory of $65,000 is added to the cost of materials purchased of $100,000 to yield the total cost of materials that are available for use during 2010 of $165,000. Deducting the December 31, 2010 (ending) materials inventory of $35,000 yields the cost of direct materials used in production of $130,000.

Step 2. The total manufacturing costs incurred is determined as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct materials used in production (Step 1)</td>
<td>$130,000</td>
</tr>
<tr>
<td>Direct labor</td>
<td>$110,000</td>
</tr>
<tr>
<td>Factory overhead</td>
<td>$44,000</td>
</tr>
<tr>
<td>Total manufacturing costs incurred</td>
<td>$284,000</td>
</tr>
</tbody>
</table>

The total manufacturing costs incurred in 2010 of $284,000 are determined by adding the direct materials used in production (Step 1), the direct labor cost, and the factory overhead costs.

Step 3. The cost of goods manufactured is determined as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work in process inventory, January 1, 2010</td>
<td>$30,000</td>
</tr>
<tr>
<td>Total manufacturing costs incurred (Step 2)</td>
<td>$284,000</td>
</tr>
<tr>
<td>Total manufacturing costs</td>
<td>$314,000</td>
</tr>
<tr>
<td>Less work in process inventory, December 31, 2010</td>
<td>$24,000</td>
</tr>
<tr>
<td>Cost of goods manufactured</td>
<td>$290,000</td>
</tr>
</tbody>
</table>

The cost of goods manufactured of $290,000 is determined by adding the total manufacturing costs incurred (Step 2) to the January 1, 2010 (beginning), work in process inventory of $30,000. This yields total manufacturing costs of $314,000. The December 31, 2010 (ending), work in process of $24,000 is then deducted to determine the cost of goods manufactured of $290,000.

The income statement and statement of cost of goods manufactured for Legend Guitars is shown in Exhibit 10.

Exhibit 11, on page 746, summarizes how manufacturing costs flow to the income statement and balance sheet of a manufacturing business.

Uses of Managerial Accounting

As mentioned earlier, managerial accounting provides information and reports for managers to use in operating a business. Some examples of how managerial accounting could be used by Legend Guitars include the following:

1. The cost of manufacturing each guitar could be used to determine its selling price.
2. Comparing the costs of guitars over time can be used to monitor and control the cost of direct materials, direct labor, and factory overhead.
3. Performance reports could be used to identify any large amounts of scrap or employee downtime. For example, large amounts of unusable wood (scrap) after the cutting process should be investigated to determine the underlying cause. Such scrap may be caused by saws that have not been properly maintained.

4. A report could analyze the potential efficiencies and dollar savings of purchasing a new computerized saw to speed up the production process.

5. A report could analyze how many guitars need to be sold to cover operating costs and expenses. Such information could be used to set monthly selling targets and bonuses for sales personnel.
Example Exercise 16-5  **Cost of Goods Sold, Cost of Goods Manufactured**

Gauntlet Company has the following information for January:

- Direct materials used in production: $25,000
- Direct labor: $35,000
- Factory overhead: $20,000
- Work in process inventory, January 1: $30,000
- Work in process inventory, January 31: $25,000
- Finished goods inventory, January 1: $15,000
- Finished goods inventory, January 31: $12,000

For January, determine (a) the cost of goods manufactured and (b) the cost of goods sold.

**Follow My Example 16-5**

**a.**

- Work in process inventory, January 1: $30,000
- Cost of direct materials used in production: $25,000
- Direct labor: $35,000
- Factory overhead: $20,000
- Total manufacturing costs incurred during January: $80,000
- Total manufacturing costs: $110,000
- Less work in process inventory, January 31: $25,000
- Cost of goods manufactured: $85,000

**b.**

- Finished goods inventory, January 1: $15,000
- Cost of goods manufactured: $85,000
- Cost of finished goods available for sale: $100,000
- Less finished goods inventory, January 31: $12,000
- Cost of goods sold: $88,000

As the prior examples illustrate, managerial accounting information can be used for a variety of purposes. In the remaining chapters of this text, we examine these and other areas of managerial accounting.
Dell Inc. follows a build-to-order manufacturing process, where each computer is manufactured based on a specific customer order. In a build-to-order manufacturing process like this, customers select the features they want on their computer from the company’s Web site. Once the order is submitted, the manufacturing process begins. The parts required for each feature are removed from inventory, and the computer is manufactured and shipped within days of the order. Inventory items are scanned as they are removed from inventory to keep accurate track of inventory levels and help the manufacturer determine when to reorder.

But calculating the amount of materials to reorder is not the only use of these data. Data on which parts are included in each order are placed in the company’s database. This information can then be used to track manufacturing patterns such as the type of features that are frequently ordered together and seasonal changes in the features that are ordered.

In recent years, information systems have become more sophisticated, making it easier and less expensive for companies to gather large amounts of data on their manufacturing processes and customers. If used effectively, these new data sources can help a business like Dell decide what features to offer for its products, what features to discontinue, and how to combine features into a package. For example, manufacturing data might indicate that the demand for DVD drives on computers increases significantly each summer right before school starts. A build-to-order manufacturer like Dell might use this information to realign the manufacturing process during that time of year, or to offer certain packages of features in July and August.

However, the ability to generate value from this information depends on a company’s ability to merge these new data with existing accounting information in a meaningful manner. The managerial accountant must now be prepared to analyze and evaluate a broader set of information and determine how it will affect a company’s operational performance and profitability.

# Describing and Illustrating Costs

## Key Points

Manufacturing companies use machinery and labor to convert materials into a finished product. A direct cost can be directly traced to a finished product, while an indirect cost cannot. The cost of a finished product is made up of three components: (1) direct materials, (2) direct labor, and (3) factory overhead.

These three manufacturing costs can be categorized into prime costs (direct material and direct labor) or conversion costs (direct labor and factory overhead). Product costs consist of the elements of manufacturing cost—direct materials, direct labor, and factory overhead—while period costs consist of selling and administrative expenses.

## Key Learning Outcomes

<table>
<thead>
<tr>
<th>Example Exercises</th>
<th>Practice Exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Describe a cost object.</strong></td>
<td>16-2, 16-2A, 16-2B</td>
</tr>
<tr>
<td><strong>Classify a cost as a direct or indirect cost for a cost object.</strong></td>
<td>16-2, 16-2A, 16-2B</td>
</tr>
<tr>
<td><strong>Describe direct materials cost.</strong></td>
<td>16-2</td>
</tr>
<tr>
<td><strong>Describe direct labor cost.</strong></td>
<td>16-2</td>
</tr>
<tr>
<td><strong>Describe factory overhead cost.</strong></td>
<td>16-2, 16-2A, 16-2B</td>
</tr>
<tr>
<td><strong>Describe prime costs and conversion costs.</strong></td>
<td>16-3, 16-3A, 16-3B</td>
</tr>
<tr>
<td><strong>Describe product costs and period costs.</strong></td>
<td>16-4, 16-4A, 16-4B</td>
</tr>
</tbody>
</table>

## Describing and Illustrating Statements

## Key Points

The financial statements of manufacturing companies differ from those of merchandising companies. Manufacturing company balance sheets report three types of inventory: materials, work in process, and finished goods. The income statement of manufacturing companies reports cost of goods sold, which is the total manufacturing cost of the goods sold. The income statement is supported by the statement of cost of goods manufactured, which provides the details of the cost of goods manufactured during the period.

## Key Learning Outcomes

<table>
<thead>
<tr>
<th>Example Exercises</th>
<th>Practice Exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Describe materials inventory.</strong></td>
<td>16-5, 16-5A, 16-5B</td>
</tr>
<tr>
<td><strong>Describe work in process inventory.</strong></td>
<td>16-5, 16-5A, 16-5B</td>
</tr>
<tr>
<td><strong>Describe finished goods inventory.</strong></td>
<td>16-5, 16-5A, 16-5B</td>
</tr>
<tr>
<td><strong>Describe the differences between merchandising and manufacturing company balance sheets.</strong></td>
<td>16-5, 16-5A, 16-5B</td>
</tr>
<tr>
<td><strong>Prepare a statement of cost of goods manufactured.</strong></td>
<td>16-5, 16-5A, 16-5B</td>
</tr>
<tr>
<td><strong>Prepare an income statement for a manufacturing company.</strong></td>
<td>16-5, 16-5A, 16-5B</td>
</tr>
</tbody>
</table>
Describe the uses of managerial accounting information.

Key Points
Managers need information to guide their decision making. Managerial accounting provides a variety of information and reports that help managers run the operations of their business.

Key Terms
- continuous process improvement (734)
- controller (733)
- controlling (734)
- conversion costs (739)
- cost (736)
- cost object (736)
- cost of finished goods available for sale (743)
- cost of goods manufactured (743)
- cost of goods sold (743)
- cost of merchandise sold (742)
- decision making (734)
- direct costs (736)
- direct labor cost (738)
- direct materials cost (737)
- directing (734)
- factory burden (738)
- factory overhead cost (738)
- feedback (734)
- financial accounting (731)
- finished goods inventory (741)
- indirect costs (736)
- line department (732)
- management by exception (734)
- management process (733)
- managerial accounting (731)
- manufacturing overhead (738)
- materials inventory (741)
- merchandise available for sale (742)
- objectives (goals) (734)
- operational planning (734)
- period costs (739)
- planning (734)
- prime costs (739)
- product costs (739)
- staff department (733)
- statement of cost of goods manufactured (743)
- strategic planning (734)
- strategies (734)
- work in process inventory (741)

Illustrative Problem
The following is a list of costs that were incurred in producing this textbook:

a. Insurance on the factory building and equipment
b. Salary of the vice president of finance
c. Hourly wages of printing press operators during production
d. Straight-line depreciation on the printing presses used to manufacture the text
e. Electricity used to run the presses during the printing of the text
f. Sales commissions paid to textbook representatives for each text sold
g. Paper on which the text is printed
h. Book covers used to bind the pages
i. Straight-line depreciation on an office building
j. Salaries of staff used to develop artwork for the text
k. Glue used to bind pages to cover

Instructions
With respect to the manufacture and sale of this text, classify each cost as either a product cost or a period cost. Indicate whether each product cost is a direct materials cost, a
direct labor cost, or a factory overhead cost. Indicate whether each period cost is a selling expense or an administrative expense.

Solution

<table>
<thead>
<tr>
<th>Cost</th>
<th>Product Cost</th>
<th>Period Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct Materials Cost</td>
<td>Direct Labor Cost</td>
</tr>
<tr>
<td>a.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>c.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>g.</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>h.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>i.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>j.</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>k.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Self-Examination Questions (Answers at End of Chapter)

1. Which of the following best describes the difference between financial and managerial accounting?
   A. Managerial accounting provides information to support decisions, while financial accounting does not.
   B. Managerial accounting is not restricted to generally accepted accounting principles, while financial accounting is restricted to GAAP.
   C. Managerial accounting does not result in financial reports, while financial accounting does result in financial reports.
   D. Managerial accounting is concerned solely with the future and does not record events from the past, while financial accounting records only events from past transactions.

2. Which of the following is not one of the five basic phases of the management process?
   A. Planning
   B. Controlling
   C. Decision making
   D. Operating

3. Which of the following costs would be included as part of the factory overhead costs of a microcomputer manufacturer?
   A. The cost of memory chips
   B. Depreciation of testing equipment
   C. Wages of microcomputer assemblers
   D. The cost of disk drives

4. Which of the following costs is not considered a cost of manufacturing a product?
   A. Direct materials cost
   B. Factory overhead cost
   C. Sales salaries
   D. Direct labor cost

5. For the month of May, Latter Company has beginning finished goods inventory of $50,000, ending finished goods inventory of $35,000, and cost of goods manufactured of $125,000. What is the cost of goods sold for May?
   A. $90,000
   B. $110,000
   C. $140,000
   D. $170,000

Eye Openers

1. What are the major differences between managerial accounting and financial accounting?
2. a. Differentiate between a department with line responsibility and a department with staff responsibility.
   b. In an organization that has a Sales Department and a Personnel Department, among others, which of the two departments has (1) line responsibility and (2) staff responsibility?
3. a. What is the role of the controller in a business organization?
   b. Does the controller have a line or staff responsibility?
4. What are the five basic phases of the management process?
5. What is the term for a plan that encompasses a period ranging from five or more years and that serves as a basis for long-range actions?
6. What is the process by which management runs day-to-day operations?
7. What is the process by which management assesses how well a plan is working?
8. Describe what is meant by management by exception.
9. What term describes a payment in cash or the commitment to pay cash in the future for the purpose of generating revenues?
10. For a company that produces desktop computers, would memory chips be considered a direct or an indirect cost of each microcomputer produced?
11. What three costs make up the cost of manufacturing a product?
12. What manufacturing cost term is used to describe the cost of materials that are an integral part of the manufactured end product?
13. If the cost of wages paid to employees who are directly involved in converting raw materials into a manufactured end product is not a significant portion of the total product cost, how would the wages cost be classified as to type of manufacturing cost?
14. Distinguish between prime costs and conversion costs.
15. What is the difference between a product cost and a period cost?
16. Name the three inventory accounts for a manufacturing business, and describe what each balance represents at the end of an accounting period.
17. In what order should the three inventories of a manufacturing business be presented on the balance sheet?
18. What are the three categories of manufacturing costs included in the cost of finished goods and the cost of work in process?
19. For a manufacturer, what is the description of the amount that is comparable to a merchandising business’s cost of merchandise sold?
20. For June, Fosina Company had beginning materials inventory of $50,000, ending materials inventory of $60,000, and materials purchases of $280,000. What is the cost of direct materials used in production?
21. How does the Cost of Goods Sold section of the income statement differ between merchandising and manufacturing companies?
22. Describe how an automobile manufacturer might use managerial accounting information to (a) evaluate the performance of the company and (b) make strategic decisions.
Identify the following costs as direct materials (DM), direct labor (DL), or factory overhead (FO) for an automobile manufacturer.

a. Oil used for assembly line machinery
b. Wages of the plant manager
c. Wages of employees that operate painting equipment
d. Steel

Identify the following costs as direct materials (DM), direct labor (DL), or factory overhead (FO) for a textbook publisher.

a. Wages of printing machine employees
b. Maintenance on printing machines
c. Paper used to make a textbook
d. Glue used to bind books

Identify the following costs as a prime cost (P), conversion cost (C), or both (B) for an automobile manufacturer.

a. Oil used for assembly line machinery
b. Wages of employees that operate painting equipment
c. Steel
d. Wages of the plant manager

Identify the following costs as a prime cost (P), conversion cost (C), or both (B) for a textbook publisher.

a. Glue used to bind books
b. Maintenance on printing machines
c. Paper used to make a textbook
d. Wages of printing machine employees

Identify the following costs as a product cost or a period cost for an automobile manufacturer.

a. Rent on office building
b. Accounting staff salaries
c. Steel
d. Wages of employees that operate painting equipment

Identify the following costs as a product cost or a period cost for a textbook publisher.

a. Paper used to make a textbook
b. Depreciation expense—corporate headquarters
c. Sales salaries
d. Maintenance on printing machines

Siler Company has the following information for February:

- Cost of direct materials used in production: $9,000
- Direct labor: $27,000
- Factory overhead: $18,000
- Work in process inventory, February 1: $25,000
- Work in process inventory, February 28: $26,000
- Finished goods inventory, February 1: $11,000
- Finished goods inventory, February 28: $13,000

For February, determine (a) the cost of goods manufactured and (b) the cost of goods sold.
Davidson Company has the following information for August:

- Cost of direct materials used in production: $60,000
- Direct labor: $90,000
- Factory overhead: $44,000
- Work in process inventory, August 1: $20,000
- Work in process inventory, August 31: $16,000
- Finished goods inventory, August 1: $36,000
- Finished goods inventory, August 31: $20,000

For August, determine (a) the cost of goods manufactured and (b) the cost of goods sold.

---

**Exercises**

**EX 16-1**

Indicate whether each of the following costs of an airplane manufacturer would be classified as direct materials cost, direct labor cost, or factory overhead cost:

- a. Controls for flight deck
- b. Aircraft engines
- c. Depreciation of welding equipment
- d. Welding machinery lubricants
- e. Salary of test pilot
- f. Steel used in landing gear
- g. Wages of assembly line worker
- h. Tires

**EX 16-2**

Indicate whether the following costs of Colgate-Palmolive Company would be classified as direct materials cost, direct labor cost, or factory overhead cost:

- a. Wages paid to Packaging Department employees
- b. Maintenance supplies
- c. Plant manager salary for the Morristown, Tennessee, toothpaste plant
- d. Packaging materials
- e. Depreciation on production machinery
- f. Salary of process engineers
- g. Depreciation on the Clarksville, Indiana, soap plant
- h. Resins for soap and shampoo products
- i. Scents and fragrances
- j. Wages of production line employees

**EX 16-3**

Which of the following items are properly classified as part of factory overhead for Caterpillar?

- a. Factory supplies used in the Morganton, North Carolina, engine parts plant
- b. Amortization of patents on new assembly process
- c. Steel plate
- d. Vice president of finance’s salary
- e. Sales incentive fees to dealers
- f. Depreciation on Peoria, Illinois, headquarters building
- g. Interest expense on debt
- h. Plant manager’s salary at Aurora, Illinois, manufacturing plant
- i. Consultant fees for a study of production line employee productivity
- j. Property taxes on the Danville, Kentucky, tractor tread plant
EX 16-4  
Classifying costs as product or period costs  
obj. 2

For apparel manufacturer Ann Taylor, Inc., classify each of the following costs as either a product cost or a period cost:

a. Travel costs of salespersons  
b. Fabric used during production  
c. Salaries of distribution center personnel  
d. Factory janitorial supplies  
e. Repairs and maintenance costs for sewing machines  
f. Corporate controller’s salary  
g. Depreciation on office equipment  
h. Advertising expenses  
i. Utility costs for office building  
j. Depreciation on sewing machines  
k. Property taxes on factory building and equipment  
l. Research and development costs  
m. Sales commissions  
n. Oil used to lubricate sewing machines  
o. Factory supervisors’ salaries  
p. Wages of sewing machine operators  
q. Salary of production quality control supervisor

EX 16-5  
Concepts and terminology  
objs. 1, 2

From the choices presented in parentheses, choose the appropriate term for completing each of the following sentences:

a. Payments of cash or the commitment to pay cash in the future for the purpose of generating revenues are (costs, expenses).

b. The implementation of automatic, robotic factory equipment normally (increases, decreases) the direct labor component of product costs.

c. Feedback is often used to (improve, direct) operations.

d. A product, sales territory, department, or activity to which costs are traced is called a (direct cost, cost object).

e. The balance sheet of a manufacturer would include an account for (cost of goods sold, work in process inventory).

f. Factory overhead costs combined with direct labor costs are called (prime, conversion) costs.

g. Advertising costs are usually viewed as (period, product) costs.

EX 16-6  
Concepts and terminology  
objs. 1, 2

From the choices presented in parentheses, choose the appropriate term for completing each of the following sentences:

a. Short-term plans are called (strategic, operational) plans.

b. The plant manager’s salary would be considered (direct, indirect) to the product.

c. The phase of the management process that uses process information to eliminate the source of problems in a process so that the process delivers the correct product in the correct quantities is called (directing, improving).

d. The wages of an assembly worker are normally considered a (period, product) cost.

e. Materials for use in production are called (supplies, materials inventory).

f. Direct materials costs combined with direct labor costs are called (prime, conversion) costs.

g. An example of factory overhead is (sales office depreciation, plant depreciation).

EX 16-7  
Classifying costs in a service company  
obj. 2

A partial list of the costs for Mountain Lakes Railroad, a short hauler of freight, is provided below. Classify each cost as either indirect or direct. For purposes of classifying each cost as direct or indirect, use the train as the cost object.

a. Wages of switch and classification yard personnel  
b. Cost to lease (rent) railroad cars  
c. Depreciation of terminal facilities  
d. Payroll clerk salaries  
e. Salaries of dispatching and communications personnel
f. Safety training costs

The following report was prepared for evaluating the performance of the plant manager of Second Hand Inc. Evaluate and correct this report.

Second Hand Inc.
Manufacturing Costs
For the Quarter Ended March 31, 2010

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials used in production (including $50,000 of indirect materials)</td>
<td>$540,000</td>
</tr>
<tr>
<td>Direct labor (including $75,000 maintenance salaries)</td>
<td>$500,000</td>
</tr>
<tr>
<td>Factory overhead:</td>
<td></td>
</tr>
<tr>
<td>Supervisor salaries</td>
<td>$460,000</td>
</tr>
<tr>
<td>Heat, light, and power</td>
<td>$125,000</td>
</tr>
<tr>
<td>Sales salaries</td>
<td>$310,000</td>
</tr>
<tr>
<td>Promotional expenses</td>
<td>$280,000</td>
</tr>
<tr>
<td>Insurance and property taxes—plant</td>
<td>$135,000</td>
</tr>
<tr>
<td>Insurance and property taxes—corporate offices</td>
<td>$195,000</td>
</tr>
<tr>
<td>Depreciation—plant and equipment</td>
<td>$110,000</td>
</tr>
<tr>
<td>Depreciation—corporate offices</td>
<td>$80,000</td>
</tr>
<tr>
<td>Total</td>
<td>$2,735,000</td>
</tr>
</tbody>
</table>

EX 16-10
Manufacturing company balance sheet

Monterey Manufacturing Company reported the following materials data for the month ending October 31, 2010:

- Materials purchased: $160,000
- Materials inventory, October 1: 50,000
- Materials inventory, October 31: 42,000

Determine the cost of direct materials used in production by Monterey during the month ended October 31, 2010.
Two items are omitted from each of the following three lists of cost of goods manufactured statement data. Determine the amounts of the missing items, identifying them by letter.

EX 16-12
Cost of goods manufactured for a manufacturing company

<table>
<thead>
<tr>
<th></th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>e</th>
<th>f</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work in process inventory, December 1</td>
<td>$2,000</td>
<td>$12,000</td>
<td>(e)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total manufacturing costs incurred during December</td>
<td>$14,000</td>
<td>(c)</td>
<td>$70,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total manufacturing costs</td>
<td>(a)</td>
<td>$140,000</td>
<td>$76,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work in process inventory, December 31</td>
<td>$3,000</td>
<td>$30,000</td>
<td>(f)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost of goods manufactured</td>
<td>(b)</td>
<td>(d)</td>
<td>$62,000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EX 16-13
The following information is available for O’Neal Manufacturing Company for the month ending January 31, 2010:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of direct materials used in production</td>
<td>$132,000</td>
<td></td>
</tr>
<tr>
<td>Direct labor</td>
<td>158,000</td>
<td></td>
</tr>
<tr>
<td>Work in process inventory, January 1</td>
<td>60,000</td>
<td></td>
</tr>
<tr>
<td>Work in process inventory, January 31</td>
<td>80,000</td>
<td></td>
</tr>
<tr>
<td>Total factory overhead</td>
<td>72,000</td>
<td></td>
</tr>
</tbody>
</table>

Determine O’Neal’s cost of goods manufactured for the month ended January 31, 2010.

EX 16-14
Income statement for a manufacturing company

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Finished goods inventory, November 1</td>
<td>$60,000</td>
</tr>
<tr>
<td>Cost of goods manufactured</td>
<td>300,000</td>
</tr>
<tr>
<td>Cost of finished goods available for sale</td>
<td>(a)</td>
</tr>
<tr>
<td>Finished goods inventory, November 30</td>
<td>70,000</td>
</tr>
<tr>
<td>Cost of goods sold</td>
<td>(b)</td>
</tr>
</tbody>
</table>

EX 16-15
Statement of cost of goods manufactured for a manufacturing company

Cost data for F. Mills Manufacturing Company for the month ending April 30, 2010, are as follows:

<table>
<thead>
<tr>
<th></th>
<th>April 1</th>
<th>April 30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials</td>
<td>$175,000</td>
<td>$154,000</td>
</tr>
<tr>
<td>Work in process</td>
<td>119,000</td>
<td>133,000</td>
</tr>
<tr>
<td>Finished goods</td>
<td>91,000</td>
<td>105,000</td>
</tr>
<tr>
<td>Direct labor</td>
<td>$315,000</td>
<td></td>
</tr>
<tr>
<td>Materials purchased during April</td>
<td>336,000</td>
<td></td>
</tr>
<tr>
<td>Factory overhead incurred during April:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indirect labor</td>
<td>33,600</td>
<td></td>
</tr>
<tr>
<td>Machinery depreciation</td>
<td>20,000</td>
<td></td>
</tr>
<tr>
<td>Heat, light, and power</td>
<td>7,000</td>
<td></td>
</tr>
<tr>
<td>Supplies</td>
<td>5,600</td>
<td></td>
</tr>
<tr>
<td>Property taxes</td>
<td>4,900</td>
<td></td>
</tr>
<tr>
<td>Miscellaneous cost</td>
<td>9,100</td>
<td></td>
</tr>
</tbody>
</table>

b. Determine the cost of goods sold for April 2010.

c. Cost of goods sold, profit margin, and net income for a manufacturing company

The following information is available for Gonzalez Manufacturing Company for the month ending March 31, 2010:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of goods manufactured</td>
<td>$240,000</td>
</tr>
<tr>
<td>Selling expenses</td>
<td>76,500</td>
</tr>
<tr>
<td>Administrative expenses</td>
<td>40,500</td>
</tr>
<tr>
<td>Sales</td>
<td>486,000</td>
</tr>
<tr>
<td>Finished goods inventory, March 1</td>
<td>54,000</td>
</tr>
<tr>
<td>Finished goods inventory, March 31</td>
<td>50,000</td>
</tr>
</tbody>
</table>

For the month ended March 31, 2010, determine Gonzalez’s (a) cost of goods sold, (b) gross profit, and (c) net income.
EX 16-17
Cost flow relationships

The following information is available for the first month of operations of Zahorik Company, a manufacturer of mechanical pencils:

- Sales: $360,000
- Gross profit: $210,000
- Cost of goods manufactured: $180,000
- Indirect labor: $78,000
- Factory depreciation: $12,000
- Materials purchased: $111,000
- Total manufacturing costs for the period: $207,000
- Materials inventory: $15,000

Using the above information, determine the following missing amounts:

a. Cost of goods sold
b. Finished goods inventory
c. Direct materials cost
d. Direct labor cost
e. Work in process inventory

EX 16-17
Cost flow relationships

The following information is available for the first month of operations of Zahorik Company, a manufacturer of mechanical pencils:

- Sales: $360,000
- Gross profit: $210,000
- Cost of goods manufactured: $180,000
- Indirect labor: $78,000
- Factory depreciation: $12,000
- Materials purchased: $111,000
- Total manufacturing costs for the period: $207,000
- Materials inventory: $15,000

Using the above information, determine the following missing amounts:

a. Cost of goods sold
b. Finished goods inventory
c. Direct materials cost
d. Direct labor cost
e. Work in process inventory

**Problems Series A**

**PR 16-1A Classifying costs**

The following is a list of costs that were incurred in the production and sale of lawn mowers:

a. Attorney fees for drafting a new lease for headquarters offices.
b. Commissions paid to sales representatives, based on the number of lawn mowers sold.
c. Property taxes on the factory building and equipment.
d. Hourly wages of operators of robotic machinery used in production.
e. Salary of vice president of marketing.
f. Gasoline engines used for lawn mowers.
g. Factory cafeteria cashier’s wages.
h. Electricity used to run the robotic machinery.
i. Maintenance costs for new robotic factory equipment, based on hours of usage.
j. License fees for use of patent for lawn mower blade, based on the number of lawn mowers produced.
k. Salary of factory supervisor.
l. Steel used in producing the lawn mowers.
m. Telephone charges for company controller’s office.
n. Paint used to coat the lawn mowers.
o. Straight-line depreciation on the robotic machinery used to manufacture the lawn mowers.
p. Tires for lawn mowers.
q. Engine oil used in mower engines prior to shipment.
r. Cash paid to outside firm for janitorial services for factory.
s. Cost of advertising in a national magazine.
t. Salary of quality control supervisor who inspects each lawn mower before it is shipped.
u. Plastic for outside housing of lawn mowers.
w. Steering wheels for lawn mowers.
x. Filter for spray gun used to paint the lawn mowers.
y. Cost of boxes used in packaging lawn mowers.
z. Payroll taxes on hourly assembly line employees.

**Instructions**

Classify each cost as either a product cost or a period cost. Indicate whether each product cost is a direct materials cost, a direct labor cost, or a factory overhead cost. Indicate whether each period cost is a selling expense or an administrative expense.
Use the following tabular headings for your answer, placing an “X” in the appropriate column.

<table>
<thead>
<tr>
<th></th>
<th>Product Costs</th>
<th>Period Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct Materials Cost</td>
<td>Direct Labor Cost</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PR 16-2A**

**Classifying costs**

**obj. 2**

The following is a list of costs incurred by several businesses:

a. Costs for television advertisement.
b. Disk drives for a microcomputer manufacturer.
c. Executive bonus for vice president of marketing.
d. Packing supplies for products sold.
e. Protective glasses for factory machine operators.
f. Cost of telephone operators for a toll-free hotline to help customers operate products.
g. Entertainment expenses for sales representatives.
h. Wages of a machine operator on the production line.
i. Seed for grain farmer.
j. Tires for an automobile manufacturer.
k. Costs of operating a research laboratory.
l. Paper used by Computer Department in processing various managerial reports.
m. Hourly wages of warehouse laborers.
n. Wages of company controller’s secretary.
o. Factory operating supplies.
p. First-aid supplies for factory workers.
q. Depreciation of factory equipment.
r. Salary of quality control supervisor.
s. Sales commissions.
t. Paper used by commercial printer.
u. Lumber used by furniture manufacturer.
v. Health insurance premiums paid for factory workers.
w. Cost of hogs for meat processor.
x. Maintenance and repair costs for factory equipment.

**Instructions**

Classify each of the preceding costs as a product cost or period cost. Indicate whether each product cost is a direct materials cost, a direct labor cost, or a factory overhead cost. Indicate whether each period cost is a selling expense or an administrative expense. Use the following tabular headings for preparing your answer. Place an “X” in the appropriate column.

<table>
<thead>
<tr>
<th></th>
<th>Product Costs</th>
<th>Period Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct Materials Cost</td>
<td>Direct Labor Cost</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PR 16-3A**

**Cost classifications—service company**

**obj. 2**

A partial list of Frend Hotel’s costs is provided below.

a. Champagne for guests.
b. Cost to mail a customer survey.
c. Training for hotel restaurant servers.
d. Cost to replace lobby furniture.
e. Cost of soaps and shampoos for rooms.
f. Cost of food.
g. Wages of desk clerks.
h. Cost to paint lobby.
i. Cost of advertising in local newspaper.
j. Cost of laundering towels and bedding.
k. Wages of kitchen employees.
l. Guest room telephone costs for long-distance calls.
m. Cost of room mini-bar supplies.
Instructions

1. What would be Frend’s most logical definition for the final cost object?
2. Identify whether each of the costs is to be classified as direct or indirect. Define direct costs in terms of a hotel guest as the cost object.

Several items are omitted from each of the following income statement and cost of goods manufactured statement data for the month of December 2010:

<table>
<thead>
<tr>
<th></th>
<th>Grant Company</th>
<th>McClellan Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials inventory, December 1</td>
<td>$78,000</td>
<td>$102,000</td>
</tr>
<tr>
<td>Materials inventory, December 31</td>
<td>(a)</td>
<td>115,000</td>
</tr>
<tr>
<td>Materials purchased</td>
<td>198,000</td>
<td>230,000</td>
</tr>
<tr>
<td>Cost of direct materials used in production</td>
<td>209,000</td>
<td>(a)</td>
</tr>
<tr>
<td>Direct labor</td>
<td>294,000</td>
<td>(b)</td>
</tr>
<tr>
<td>Factory overhead</td>
<td>91,000</td>
<td>114,000</td>
</tr>
<tr>
<td>Total manufacturing costs incurred during December</td>
<td>(b)</td>
<td>660,000</td>
</tr>
<tr>
<td>Total manufacturing costs</td>
<td>744,000</td>
<td>906,000</td>
</tr>
<tr>
<td>Work in process inventory, December 1</td>
<td>150,000</td>
<td>246,000</td>
</tr>
<tr>
<td>Work in process inventory, December 31</td>
<td>126,000</td>
<td>(c)</td>
</tr>
<tr>
<td>Cost of goods manufactured</td>
<td>(c)</td>
<td>654,000</td>
</tr>
<tr>
<td>Finished goods inventory, December 1</td>
<td>132,000</td>
<td>114,000</td>
</tr>
<tr>
<td>Finished goods inventory, December 31</td>
<td>138,000</td>
<td>(d)</td>
</tr>
<tr>
<td>Sales</td>
<td>1,150,000</td>
<td>1,020,000</td>
</tr>
<tr>
<td>Cost of goods sold</td>
<td>(d)</td>
<td>660,000</td>
</tr>
<tr>
<td>Gross profit</td>
<td>(e)</td>
<td>(e)</td>
</tr>
<tr>
<td>Operating expenses</td>
<td>150,000</td>
<td>(f)</td>
</tr>
<tr>
<td>Net income</td>
<td>(f)</td>
<td>226,000</td>
</tr>
</tbody>
</table>

Instructions

1. Determine the amounts of the missing items, identifying them by letter.
2. Prepare a statement of cost of goods manufactured for McClellan Company.
3. Prepare an income statement for McClellan Company.

The following information is available for Deutsch Corporation for 2010:

<table>
<thead>
<tr>
<th>Invenories</th>
<th>January 1</th>
<th>December 31</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials</td>
<td>$225,000</td>
<td>$280,000</td>
</tr>
<tr>
<td>Work in process</td>
<td>405,000</td>
<td>380,000</td>
</tr>
<tr>
<td>Finished goods</td>
<td>390,000</td>
<td>380,000</td>
</tr>
<tr>
<td>Advertising expense</td>
<td>$190,000</td>
<td></td>
</tr>
<tr>
<td>Depreciation expense—office equipment</td>
<td>27,000</td>
<td></td>
</tr>
<tr>
<td>Depreciation expense—factory equipment</td>
<td>36,000</td>
<td></td>
</tr>
<tr>
<td>Direct labor</td>
<td>430,000</td>
<td></td>
</tr>
<tr>
<td>Heat, light, and power—factory</td>
<td>14,400</td>
<td></td>
</tr>
<tr>
<td>Indirect labor</td>
<td>50,400</td>
<td></td>
</tr>
<tr>
<td>Materials purchased</td>
<td>423,000</td>
<td></td>
</tr>
<tr>
<td>Office salaries expense</td>
<td>147,000</td>
<td></td>
</tr>
<tr>
<td>Property taxes—factory</td>
<td>11,700</td>
<td></td>
</tr>
<tr>
<td>Property taxes—office building</td>
<td>24,300</td>
<td></td>
</tr>
<tr>
<td>Rent expense—factory</td>
<td>19,800</td>
<td></td>
</tr>
<tr>
<td>Sales</td>
<td>1,980,000</td>
<td></td>
</tr>
<tr>
<td>Sales salaries expense</td>
<td>243,000</td>
<td></td>
</tr>
<tr>
<td>Supplies—factory</td>
<td>9,900</td>
<td></td>
</tr>
<tr>
<td>Miscellaneous cost—factory</td>
<td>6,120</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 16    Managerial Accounting Concepts and Principles

Instructions
1. Prepare the 2010 statement of cost of goods manufactured.
2. Prepare the 2010 income statement.

Problems Series B

PR 16-1B
Classifying costs
obj. 2

The following is a list of costs that were incurred in the production and sale of boats:

a. Cost of electrical wiring for boats.
b. Commissions to sales representatives, based upon the number of boats sold.
c. Salary of shop supervisor.
d. Salary of president of company.
e. Cost of boat for “grand prize” promotion in local bass tournament.
f. Power used by sanding equipment.
g. Hourly wages of assembly line workers.
h. Boat chairs.
i. Legal department costs for the year.
k. Cost of normal scrap from defective hulls.
l. Fiberglass for producing the boat hull.
m. Decals for boat hull.
n. Annual fee to pro-fisherman Jim Bo Wilks to promote the boats.
o. Yearly cost maintenance contract for robotic equipment.
p. Annual bonus paid to top executives of the company.
q. Masks for use by sanders in smoothing boat hulls.
r. Special advertising campaign in Bass World.
s. Cost of metal hardware for boats, such as ornaments and tie-down grasps.
t. Straight-line depreciation on factory equipment.
u. Oil to lubricate factory equipment.
v. Salary of chief financial officer.
w. Canvas top for boats.
x. Wood paneling for use in interior boat trim.
y. Cost of paving the headquarters employee parking lot.
z. Steering wheels.

Instructions
Classify each cost as either a product cost or a period cost. Indicate whether each product cost is a direct materials cost, a direct labor cost, or a factory overhead cost. Indicate whether each period cost is a selling expense or an administrative expense. Use the following tabular headings for your answer, placing an “X” in the appropriate column.

<table>
<thead>
<tr>
<th>Product Costs</th>
<th>Period Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Materials Cost</td>
<td>Direct Labor Cost</td>
</tr>
</tbody>
</table>

PR 16-2B
Classifying costs
obj. 2

The following is a list of costs incurred by several businesses:

a. Charitable contribution to United Fund.
b. Fees charged by collection agency on past-due customer accounts.
c. Maintenance costs for factory equipment.
d. Cost of fabric used by clothing manufacturer.
e. Salary of the vice president of manufacturing logistics.
f. Rent for a warehouse used to store finished products.
g. Wages of a machine operator on the production line.
h. Depreciation of tools used in production.
i. Travel costs of marketing executives to annual sales meeting.

j. Cost of sewing machine needles used by a shirt manufacturer.

k. Depreciation of microcomputers used in the factory to coordinate and monitor the production schedules.

l. Maintenance and repair costs for factory equipment.

m. Wages of production quality control personnel.

n. Depreciation of robot used to assemble a product.

o. Cost of a 30-second television commercial.

p. Pens, paper, and other supplies used by the Accounting Department in preparing various managerial reports.

q. Electricity used to operate factory machinery.

r. Factory janitorial supplies.

s. Oil lubricants for factory plant and equipment.

t. Cost of plastic for a telephone being manufactured.

u. Fees paid to lawn service for office grounds upkeep.

v. Telephone charges by president’s office.

w. Surgeon’s fee for knee replacement.

x. Depreciation of copying machines used by the Marketing Department.

Instructions

Classify each of the preceding costs as a product cost or period cost. Indicate whether each product cost is a direct materials cost, a direct labor cost, or a factory overhead cost. Indicate whether each period cost is a selling expense or an administrative expense. Use the following tabular headings for preparing your answer, placing an “X” in the appropriate column.

<table>
<thead>
<tr>
<th>Product Costs</th>
<th>Period Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Cost</td>
<td>Direct Cost</td>
</tr>
<tr>
<td>Materials</td>
<td>Labor</td>
</tr>
<tr>
<td></td>
<td>Overhead</td>
</tr>
<tr>
<td></td>
<td>Selling</td>
</tr>
<tr>
<td></td>
<td>Administrative</td>
</tr>
</tbody>
</table>

A partial list of Gaelic Medical Center’s costs is provided below.

a. Operating room supplies used on patients (catheters, sutures, etc.).

b. Utility costs of the hospital.

c. Training costs for nurses.

d. Cost of maintaining the staff and visitors’ cafeteria.

e. Cost of intravenous solutions.

f. Cost of blood tests.

g. Cost of improvements on the employee parking lot.

h. Salary of the nutritionist.

i. General maintenance of the hospital.

j. Cost of patient meals.

k. Cost of laundry services for operating room personnel.

l. Depreciation on patient rooms.

m. Depreciation of X-ray equipment.

n. Cost of drugs used for patients.

o. Doctor’s fee.

p. Nurses’ salaries.

q. Overtime incurred in the Records Department due to a computer failure.

r. Salary of intensive care personnel.

s. Cost of X-ray test.

t. Cost of new heart wing.

u. Cost of advertising hospital services on television.

Instructions

1. What would be Gaelic’s most logical definition for the final cost object?

2. Identify whether each of the costs is to be classified as direct or indirect. Define direct costs in terms of a patient as a cost object.
Several items are omitted from each of the following income statement and cost of goods manufactured statement data for the month of December 2010:

<table>
<thead>
<tr>
<th></th>
<th>McCain Company</th>
<th>Buffet Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials inventory, December 1</td>
<td>$ 35,000</td>
<td>$ 45,000</td>
</tr>
<tr>
<td>Materials inventory, December 31</td>
<td>(a)</td>
<td></td>
</tr>
<tr>
<td>Materials purchased</td>
<td>150,000</td>
<td>(a)</td>
</tr>
<tr>
<td>Cost of direct materials used in production</td>
<td>168,000</td>
<td>21,000</td>
</tr>
<tr>
<td>Direct labor</td>
<td>205,000</td>
<td>133,000</td>
</tr>
<tr>
<td>Factory overhead</td>
<td>78,000</td>
<td>59,000</td>
</tr>
<tr>
<td>Total manufacturing costs incurred in December</td>
<td>(b)</td>
<td>350,000</td>
</tr>
<tr>
<td>Total manufacturing costs</td>
<td>514,000</td>
<td>398,000</td>
</tr>
<tr>
<td>Work in process inventory, December 1</td>
<td>63,000</td>
<td>48,000</td>
</tr>
<tr>
<td>Work in process inventory, December 31</td>
<td>91,000</td>
<td>(c)</td>
</tr>
<tr>
<td>Cost of goods manufactured</td>
<td>(c)</td>
<td>353,000</td>
</tr>
<tr>
<td>Finished goods inventory, December 1</td>
<td>118,000</td>
<td>62,000</td>
</tr>
<tr>
<td>Finished goods inventory, December 31</td>
<td>104,000</td>
<td>(d)</td>
</tr>
<tr>
<td>Sales</td>
<td>595,000</td>
<td>448,000</td>
</tr>
<tr>
<td>Cost of goods sold</td>
<td>(d)</td>
<td>356,000</td>
</tr>
<tr>
<td>Gross profit</td>
<td>(e)</td>
<td>(e)</td>
</tr>
<tr>
<td>Operating expenses</td>
<td>62,000</td>
<td>(f)</td>
</tr>
<tr>
<td>Net income</td>
<td>(f)</td>
<td>38,000</td>
</tr>
</tbody>
</table>

**Instructions**
1. Determine the amounts of the missing items, identifying them by letter.
2. Prepare a statement of cost of goods manufactured for McCain Company.
3. Prepare an income statement for McCain Company.

The following information is available for Rosetta Company for 2010:

<table>
<thead>
<tr>
<th>Inventories</th>
<th>January 1</th>
<th>December 31</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials</td>
<td>$59,500</td>
<td>$73,500</td>
</tr>
<tr>
<td>Work in process</td>
<td>84,000</td>
<td>73,500</td>
</tr>
<tr>
<td>Finished goods</td>
<td>87,500</td>
<td>77,000</td>
</tr>
<tr>
<td>Advertising expense</td>
<td></td>
<td>$ 52,500</td>
</tr>
<tr>
<td>Depreciation expense—office equipment</td>
<td>17,500</td>
<td></td>
</tr>
<tr>
<td>Depreciation expense—factory equipment</td>
<td>11,200</td>
<td></td>
</tr>
<tr>
<td>Direct labor</td>
<td>143,500</td>
<td></td>
</tr>
<tr>
<td>Heat, light, and power—factory</td>
<td>4,500</td>
<td></td>
</tr>
<tr>
<td>Indirect labor</td>
<td>18,200</td>
<td></td>
</tr>
<tr>
<td>Materials purchased</td>
<td>96,000</td>
<td></td>
</tr>
<tr>
<td>Office salaries expense</td>
<td>59,500</td>
<td></td>
</tr>
<tr>
<td>Property taxes—factory</td>
<td>3,150</td>
<td></td>
</tr>
<tr>
<td>Property taxes—headquarters building</td>
<td>10,500</td>
<td></td>
</tr>
<tr>
<td>Rent expense—factory</td>
<td>5,250</td>
<td></td>
</tr>
<tr>
<td>Sales</td>
<td>665,000</td>
<td></td>
</tr>
<tr>
<td>Sales salaries expense</td>
<td>105,000</td>
<td></td>
</tr>
<tr>
<td>Supplies—factory</td>
<td>2,500</td>
<td></td>
</tr>
<tr>
<td>Miscellaneous cost—factory</td>
<td>3,400</td>
<td></td>
</tr>
</tbody>
</table>

**Instructions**
1. Prepare the 2010 statement of cost of goods manufactured.
2. Prepare the 2010 income statement.

**Special Activities**

Earnhart Manufacturing Company allows employees to purchase, at cost, manufacturing materials, such as metal and lumber, for personal use. To purchase materials for personal use, an employee must complete a materials requisition form, which must then be approved by the employee’s immediate supervisor. Gretchen MacCauley, an assistant cost accountant, charges the employee an amount based on Earnhart’s net purchase cost.
Gretchen MacCauley is in the process of replacing a deck on her home and has requisitioned lumber for personal use, which has been approved in accordance with company policy. In computing the cost of the lumber, Gretchen reviewed all the purchase invoices for the past year. She then used the lowest price to compute the amount due the company for the lumber.

Discuss whether Gretchen behaved in an ethical manner.

The following statement was made by the vice president of finance of Orville Inc.: “The managers of a company should use the same information as the shareholders of the firm. When managers use the same information in guiding their internal operations as shareholders use in evaluating their investments, the managers will be aligned with the stockholders’ profit objectives.”

Respond to the vice president’s statement.

For each of the following managers, describe how managerial accounting could be used to satisfy strategic or operational objectives:

1. The vice president of the Information Systems Division of a bank.
2. A hospital administrator.
3. The chief executive officer of a food company. The food company is divided into three divisions: Nonalcoholic Beverages, Snack Foods, and Fast Food Restaurants.
4. The manager of the local campus copy shop.

The Nerd Squad provides computer repair services for the community. Jane Doe’s computer was not working, and she called The Nerd Squad for a home repair visit. The Nerd Squad’s technician arrived at 2:00 P.M. to begin work. By 4:00 P.M. the problem was diagnosed as a failed circuit board. Unfortunately, the technician did not have a new circuit board in the truck, since the technician’s previous customer had the same problem, and a board was used on that visit. Replacement boards were available back at The Nerd Squad’s shop. Therefore, the technician drove back to the shop to retrieve a replacement board. From 4:00 to 5:00 P.M., The Nerd Squad’s technician drove the round trip to retrieve the replacement board from the shop.

At 5:00 P.M. the technician was back on the job at Jane’s home. The replacement procedure is somewhat complex, since a variety of tests must be performed once the board is installed. The job was completed at 6:00 P.M.

Jane’s repair bill showed the following:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circuit board</td>
<td>$60</td>
</tr>
<tr>
<td>Labor charges</td>
<td>255</td>
</tr>
<tr>
<td>Total</td>
<td>$315</td>
</tr>
</tbody>
</table>

Jane was surprised at the size of the bill and asked for some greater detail supporting the calculations. The Nerd Squad responded with the following explanations:

Cost of materials:
- Purchase price of circuit board: $45
- Markup on purchase price to cover storage and handling: 15
- Total materials charge: $60

The labor charge per hour is detailed as follows:

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Labor Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:00–3:00 P.M.</td>
<td>$55</td>
</tr>
<tr>
<td>3:00–4:00 P.M.</td>
<td>45</td>
</tr>
<tr>
<td>4:00–5:00 P.M.</td>
<td>65</td>
</tr>
<tr>
<td>5:00–6:00 P.M.</td>
<td>90</td>
</tr>
<tr>
<td>Total labor charge</td>
<td>$255</td>
</tr>
</tbody>
</table>
Further explanations in the differences in the hourly rates are as follows:

First hour:
- Base labor rate: $25
- Fringe benefits: 10
- Overhead (other than storage and handling): 10
- Total base labor rate: $45
- Additional charge for first hour of any job to cover the cost of vehicle depreciation, fuel, and employee time in transit. A 30-minute transit time is assumed: 10
- Total: $55

Third hour:
- Base labor rate: $45
- The trip back to the shop includes vehicle depreciation and fuel; therefore, a charge was added to the hourly rate to cover these costs. The round trip took an hour: 20
- Total: $65

Fourth hour:
- Base labor rate: $45
- Overtime premium for time worked in excess of an eight-hour day (starting at 5:00 P.M.) is equal to the base rate: 45
- Total: $90

1. If you were in Jane’s position, how would you respond to the bill? Are there parts of the bill that appear incorrect to you? If so, what argument would you employ to convince The Nerd Squad that the bill is too high?

2. Use the headings below to construct a table. Fill in the table by first listing the costs identified in the activity in the left-hand column. For each cost, place a check mark in the appropriate column identifying the correct cost classification. Assume that each service call is a job.

<table>
<thead>
<tr>
<th>Cost</th>
<th>Direct Materials</th>
<th>Direct Labor</th>
<th>Overhead</th>
</tr>
</thead>
</table>

The following situations describe decision scenarios that could use managerial accounting information:

1. The manager of Burger Barn wishes to determine the price to charge for various lunch plates.
2. By evaluating the cost of leftover materials, the plant manager of a precision machining facility wishes to determine how effectively the plant is being run.
3. The division controller needs to determine the cost of products left in inventory.
4. The manager of the Maintenance Department wishes to plan next year’s anticipated expenditures.

For each situation, discuss how managerial accounting information could be used.

With a group of students, visit a local copy and graphics shop or a pizza restaurant. As you observe the operation, consider the costs associated with running the business. As a group, identify as many costs as you can and classify them according to the following table headings:

<table>
<thead>
<tr>
<th>Cost</th>
<th>Direct Materials</th>
<th>Direct Labor</th>
<th>Overhead</th>
<th>Selling Expenses</th>
</tr>
</thead>
</table>

Group Project
Answers to Self-Examination Questions

1. **B** Managerial accounting is not restricted to generally accepted accounting principles, as is financial accounting (answer B). Both financial and managerial accounting support decision making (answer A). Financial accounting is mostly concerned with the decision making of external users, while managerial accounting supports decision making of management. Both financial and managerial accounting can result in financial reports (answer C). Managerial accounting reports are developed for internal use by managers at various levels in the organization. Both managerial and financial accounting record events from the past (answer D); however, managerial accounting can also include information about the future in the form of budgets and cash flow projections.

2. **D** The five basic phases of the management process are planning (answer A), directing (not listed), controlling (answer B), improving (not listed), and decision making (answer C). Operating (answer D) is not one of the five basic phases, but operations are the object of managers’ attention.

3. **C** Sales salaries (answer C) is a selling expense and is not considered a cost of manufacturing a product. Direct materials cost (answer A), factory overhead cost (answer B), and direct labor cost (answer D) are costs of manufacturing a product.

4. **B** Depreciation of testing equipment (answer B) is included as part of the factory overhead costs of the microcomputer manufacturer. The cost of memory chips (answer A) and the cost of disk drives (answer D) are both considered a part of direct materials cost. The wages of microcomputer assemblers (answer C) are part of direct labor costs.

5. **C** Cost of goods sold is calculated as follows:

\[
\text{Beginning finished goods inventory} \quad \$ 50,000 \\
\text{Add: Cost of goods manufactured} \quad 125,000 \\
\text{Less: Ending finished goods inventory} \quad (35,000) \\
\text{Cost of goods sold} \quad \$140,000
\]