

# CHAPTER 10

## An Introduction to Managerial Accounting

### LEARNING OBJECTIVES

After you have mastered the material in this chapter, you will be able to:

- 1 Distinguish between managerial and financial accounting.
- 2 Identify the cost components of a product made by a manufacturing company: the cost of materials, labor, and overhead.
- 3 Explain the effects on financial statements of product costs versus general, selling, and administrative costs.
- 4 Prepare a schedule of cost of goods manufactured and sold.
- 5 Distinguish product costs from upstream and downstream costs.
- 6 Explain how product costing differs in service, merchandising, and manufacturing companies.
- 7 Show how just-in-time inventory can increase profitability.
- 8 Identify and explain the standards contained in IMA's Statement of Ethical Professional Practice.
- 9 Identify emerging trends in accounting (Appendix A).

### CHAPTER OPENING

Andy Grove, Senior Advisor to Executive Management of [Intel Corporation](#), is credited with the motto “Only the paranoid survive.” Mr. Grove describes a wide variety of concerns that make him paranoid. Specifically, he declares:

*I worry about products getting screwed up, and I worry about products getting introduced prematurely. I worry about factories not performing well, and I worry about having too many factories. I worry about*

*hiring the right people, and I worry about morale slacking off. And, of course, I worry about competitors. I worry about other people figuring out how to do what we do better or cheaper, and displacing us with our customers.*

Do Intel's historically based financial statements contain the information Mr. Grove needs? No. **Financial accounting** is not designed to satisfy all the information needs of business managers. Its scope is limited to the needs of external users such as investors and creditors. The field of accounting designed to meet the needs of internal users is called **managerial accounting**.

## The Curious Accountant

In the first course of accounting, you learned how retailers, such as **Sears**, account for the cost of equipment that lasts more than one year. Recall that the equipment was recorded as an asset when purchased, and then it was depreciated over its expected useful life. The depreciation charge reduced the company's assets and increased its expenses. This approach was justified under the matching principle, which seeks to recognize costs as expenses in the same period that the cost (resource) is used to generate revenue.

Is depreciation always shown as an expense on the income statement? The answer may surprise you. Consider the following scenario. **Schwinn** manufactures the bicycles that it sells to Sears. In order to produce the bicycles, Schwinn had to purchase a robotic machine that it expects can be used to produce 50,000 bicycles.

Do you think Schwinn should account for depreciation on its manufacturing equipment the same way Sears accounts for depreciation on its registers at the checkout counters? If not, how should Schwinn account for its depreciation? Remember the matching principle when thinking of your answer. (Answer on page 368.)



## DIFFERENCES BETWEEN MANAGERIAL AND FINANCIAL ACCOUNTING

**LO 1**

Distinguish between managerial and financial accounting.

While the information needs of internal and external users overlap, the needs of managers generally differ from those of investors or creditors. Some distinguishing characteristics are discussed in the following section.

### Users and Types of Information

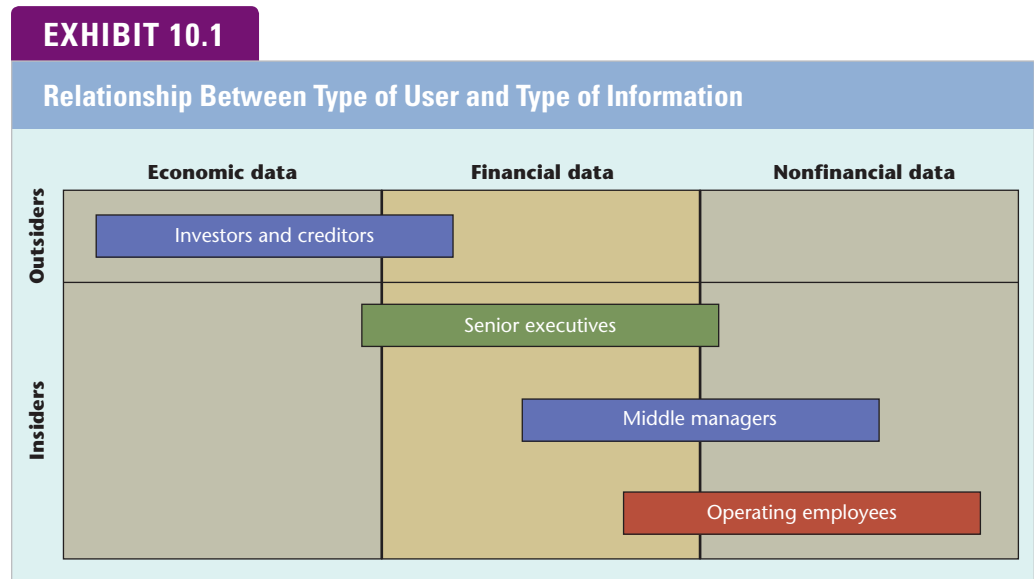
Financial accounting provides information used primarily by investors, creditors, and others *outside* a business. In contrast, managerial accounting focuses on information used by executives, managers, and employees who work *inside* the business. These two user groups need different types of information.

Internal users need information to *plan, direct, and control* business operations. The nature of information needed is related to an employee’s job level. Lower level employees use nonfinancial information such as work schedules, store hours, and customer service policies. Moving up the organizational ladder, financial information becomes increasingly important. Middle managers use a blend of financial and nonfinancial information, while senior executives concentrate on financial data. To a lesser degree, senior executives also use general economic data and nonfinancial operating information. For example, an executive may consider the growth rate of the economy before deciding to expand the company’s workforce.

External users (investors and creditors) have greater needs for general economic information than do internal users. For example, an investor debating whether to purchase stock versus bond securities might be more interested in government tax policy than financial statement data. Exhibit 10.1 summarizes the information needs of different user groups.

### Level of Aggregation

External users generally desire *global information* that reflects the performance of a company as a whole. For example, an investor is not so much interested in the performance of a particular Sears store as she is in the performance of **Sears Roebuck Company** versus that of **JC Penney Company**. In contrast, internal users focus on detailed information about specific subunits of the company. To meet the needs of the different user groups, financial accounting data are more aggregated than managerial accounting data.



## Regulation

As previously discussed, the information in financial statements is highly regulated to protect the public interest.

Beyond financial statement data, much of the information generated by management accounting systems is proprietary information not available to the public. Because this information is not distributed to the public, it need not be regulated to protect the public interest. Management accounting is restricted only by the **value-added principle**. Management accountants are free to engage in any information gathering and reporting activity so long as the activity adds value in excess of its cost. For example, management accountants are free to provide forecasted information to internal users. In contrast, financial accounting as prescribed by GAAP does not permit forecasting.

## Information Characteristics

While financial accounting is characterized by its objectivity, reliability, consistency, and historical nature, managerial accounting is more concerned with relevance and timeliness. Managerial accounting uses more estimates and fewer facts than financial accounting. Financial accounting reports what happened yesterday; managerial accounting reports what is expected to happen tomorrow.

## Time Horizon and Reporting Frequency

Financial accounting information is reported periodically, normally at the end of a year. Management cannot wait until the end of the year to discover problems. Planning, controlling, and directing require immediate attention. Managerial accounting information is delivered on a continuous basis.

# FOCUS ON INTERNATIONAL ISSUES

## FINANCIAL ACCOUNTING VERSUS MANAGERIAL ACCOUNTING—AN INTERNATIONAL PERSPECTIVE

This chapter has already explained some of the conceptual differences between financial and managerial accounting, but these differences have implications for international businesses as well. With respect to financial accounting, publicly traded companies in most countries must follow the generally accepted accounting principles (GAAP) for their country, but these rules can vary from country to country. Generally, companies that are audited under the auditing standards of the United States follow the standards established by the Financial Accounting Standards Board. Most companies located outside of the United States follow the standards established by the International Accounting Standards Board. For example, the United States is one of very few countries whose GAAP allow the use of the LIFO inventory cost flow assumption.

Conversely, most of the managerial accounting concepts introduced in this course can be used by businesses in any country. For example, *activity-based management (ABM)* is a topic addressed in the appendix to this chapter and is used by many companies in the United States. Meanwhile, a study published in *Accountancy Ireland*\* found that approximately one-third of the companies surveyed in Ireland, the United Kingdom, and New Zealand were also either using ABM, or were considering adopting it.

\*Bernard Pierce, "Activity-Based Costing; the Irish Experience: True Innovation or Passing Fad?" *Accountancy Ireland*, October 2004, pp. 28–31.



**EXHIBIT 10.2**

**Comparative Features of Managerial versus Financial Accounting Information**

Features	Managerial Accounting	Financial Accounting
Users	Insiders including executives, managers, and operators	Outsiders including investors, creditors, government agencies, analysts, and reporters
Information type	Economic and physical data as well as financial data	Financial data
Level of aggregation	Local information on subunits of the organization	Global information on the company as a whole
Regulation	No regulation, limited only by the value-added principle	Regulation by SEC, FASB, and other determiners of GAAP
Information characteristics	Estimates that promote relevance and enable timeliness	Factual information that is characterized by objectivity, reliability, consistency, and accuracy
Time horizon	Past, present, and future	Past only, historically based
Reporting frequency	Continuous reporting	Delayed with emphasis on annual reports

Exhibit 10.2 summarizes significant differences between financial and managerial accounting.

**PRODUCT COSTING IN MANUFACTURING COMPANIES**

**LO 2**

Identify the cost components of a product made by a manufacturing company: the cost of materials, labor, and overhead.

A major focus for managerial accountants is determining **product cost**.<sup>1</sup> Managers need to know the cost of their products for a variety of reasons. For example, **cost-plus pricing** is a common business practice.<sup>2</sup> **Product costing** is also used to control business operations. It is useful in answering questions such as: Are costs higher or lower than expected? Who is responsible for the variances between expected and actual costs? What actions can be taken to control the variances?

The cost of making products includes the cost of materials, labor, and other resources (usually called **overhead**). To understand how these costs affect financial statements, consider the example of Tabor Manufacturing Company.

**Tabor Manufacturing Company**

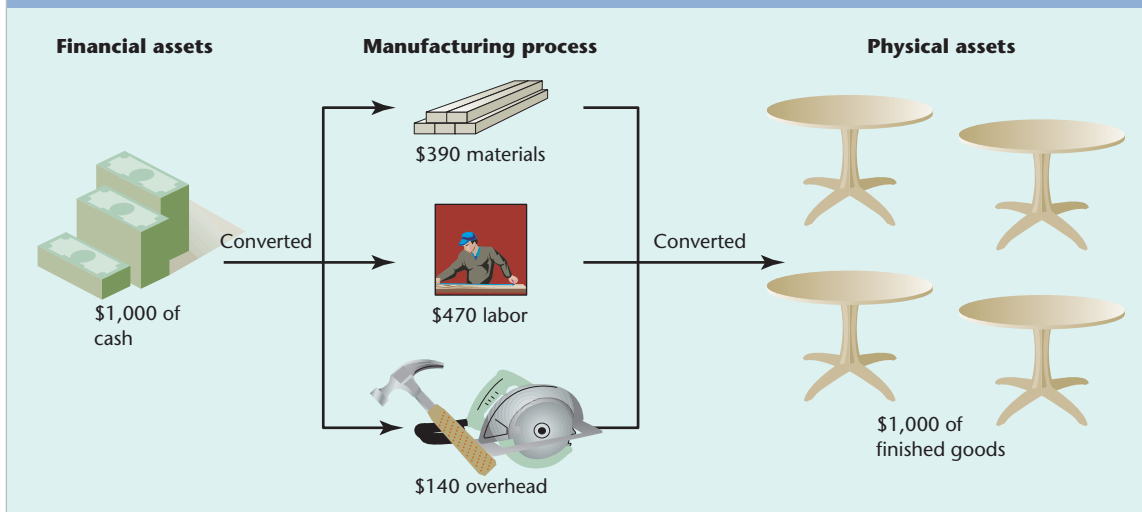
Tabor Manufacturing Company makes wooden tables. The company spent \$1,000 cash to build four tables: \$390 for materials, \$470 for a carpenter’s labor, and \$140 for tools used in making the tables. How much is Tabor’s expense? The answer is zero. The \$1,000 cash has been converted into products (four tables). The cash payments for materials, labor, and tools (overhead) were *asset exchange* transactions. One asset (cash) decreased while another asset (tables) increased. Tabor will not recognize any expense until the tables are sold; in the meantime, the cost of the tables is held in an asset account called **Finished Goods Inventory**. Exhibit 10.3 illustrates how cash is transformed into inventory.

**Average Cost per Unit**

How much did each table made by Tabor cost? The *actual* cost of each of the four tables likely differs. The carpenter probably spent a little more time on some of the tables than

<sup>1</sup>This text uses the term *product* in a generic sense to mean both goods and services.

<sup>2</sup>Other pricing strategies will be introduced in subsequent chapters.

**EXHIBIT 10.3****Transforming the Asset Cash Into the Asset Finished Goods Inventory**

others. Material and tool usage probably varied from table to table. Determining the exact cost of each table is virtually impossible. Minute details such as a second of labor time cannot be effectively measured. Even if Tabor could determine the exact cost of each table, the information would be of little use. Minor differences in the cost per table would make no difference in pricing or other decisions management needs to make. Accountants therefore normally calculate cost per unit as an *average*. In the case of Tabor Manufacturing, the **average cost** per table is \$250 ( $\$1,000 \div 4$  units). Unless otherwise stated, assume *cost per unit* means *average cost per unit*.

### CHECK YOURSELF 10.1

All boxes of **General Mills'** Total Raisin Bran cereal are priced at exactly the same amount in your local grocery store. Does this mean that the actual cost of making each box of cereal was exactly the same?

**Answer** No, making each box would not cost exactly the same amount. For example, some boxes contain slightly more or less cereal than other boxes. Accordingly, some boxes cost slightly more or less to make than others do. General Mills uses average cost rather than actual cost to develop its pricing strategy.

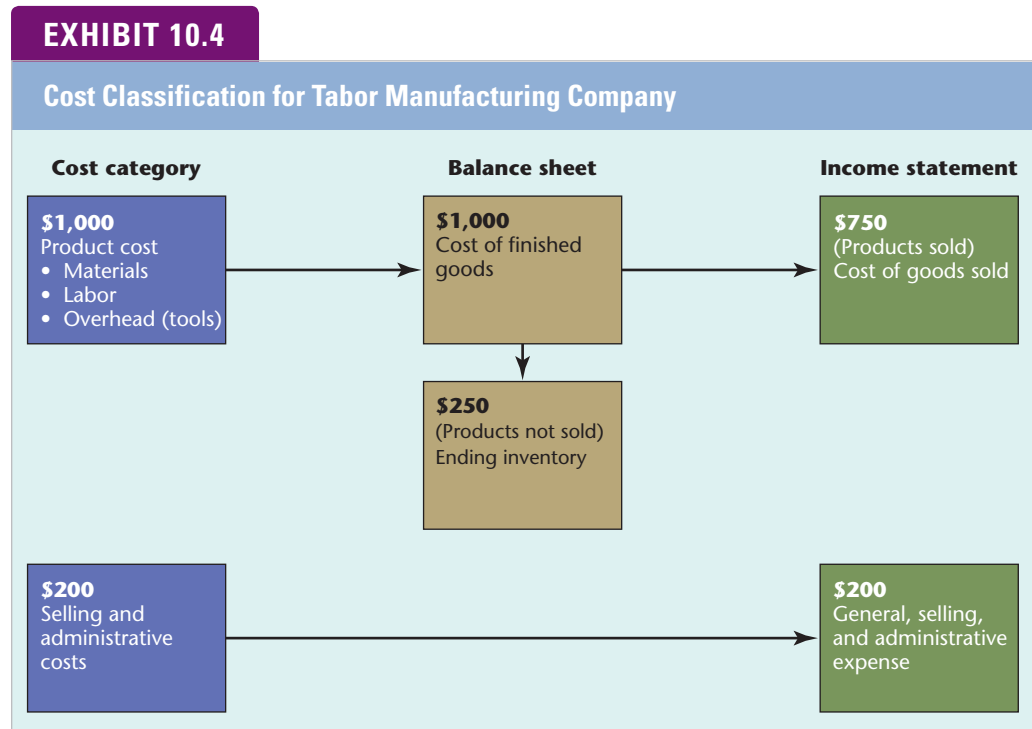
### Costs Can Be Assets or Expenses

It might seem odd that wages earned by production workers are recorded as inventory instead of being expensed. Remember, however, that expenses are assets used in the process of *earning revenue*. The cash paid to production workers is not used to produce revenue. Instead, the cash is used to produce inventory. Revenue will be earned when the inventory is used (sold). So long as the inventory remains on hand, all product costs (materials, labor, and overhead) remain in an inventory account.

When a table is sold, the average cost of the table is transferred from the Inventory account to the Cost of Goods Sold (expense) account. If some tables remain unsold at the end of the accounting period, part of the *product costs* is reported as an asset (inventory) on the balance sheet while the other part is reported as an expense (cost of goods sold) on the income statement.

Costs that are not classified as product costs are normally expensed in the period in which they are incurred. These costs include *general operating costs, selling and administrative costs, interest costs, and the cost of income taxes.*

To illustrate, return to the Tabor Manufacturing example. Recall that Tabor made four tables at an average cost per unit of \$250. Assume Tabor pays an employee who sells three of the tables at a \$200 sales commission. The sales commission is expensed immediately. The total product cost for the three tables (3 tables × \$250 each = \$750) is expensed on the income statement as cost of goods sold. The portion of the total product cost remaining in inventory is \$250 (1 table × \$250). Exhibit 10.4 shows the relationship between the costs incurred and the expenses recognized for Tabor Manufacturing Company.



## EFFECT OF PRODUCT COSTS ON FINANCIAL STATEMENTS

**LO 3**

Explain the effects on financial statements of product costs versus general, selling, and administrative costs.

We illustrate accounting for product costs in manufacturing companies with Patillo Manufacturing Company, a producer of ceramic pottery. Patillo, started on January 1, 2012, experienced the following accounting events during its first year of operations.<sup>3</sup> Assume that all transactions except 6, 8, and 10 are cash transactions.

1. Acquired \$15,000 cash by issuing common stock.
2. Paid \$2,000 for materials that were used to make products. All products started were completed during the period.
3. Paid \$1,200 for salaries of selling and administrative employees.
4. Paid \$3,000 for wages of production workers.
5. Paid \$2,800 for furniture used in selling and administrative offices.

<sup>3</sup>This illustration assumes that all inventory started during the period was completed during the period. Patillo therefore uses only one inventory account, Finished Goods Inventory. Many manufacturing companies normally have three categories of inventory on hand at the end of an accounting period: Raw Materials Inventory, Work in Process Inventory (inventory of partially completed units), and Finished Goods Inventory.

6. Recognized depreciation on the office furniture purchased in Event 5. The furniture was acquired on January 1, had a \$400 estimated salvage value, and a four-year useful life. The annual depreciation charge is \$600  $[(\$2,800 - \$400) \div 4]$ .
7. Paid \$4,500 for manufacturing equipment.
8. Recognized depreciation on the equipment purchased in Event 7. The equipment was acquired on January 1, had a \$1,500 estimated salvage value, and a three-year useful life. The annual depreciation charge is \$1,000  $[(\$4,500 - \$1,500) \div 3]$ .
9. Sold inventory to customers for \$7,500 cash.
10. The inventory sold in Event 9 cost \$4,000 to make.

The effects of these transactions on the balance sheet, income statement, and statement of cash flows are shown in Exhibit 10.5. Study each row in this exhibit, paying particular attention to how similar costs such as salaries for selling and administrative personnel and wages for production workers have radically different effects on the financial statements. The example illustrates the three elements of product costs, materials (Event 2), labor (Event 4), and overhead (Event 8). These events are discussed in more detail below.

## EXHIBIT 10.5

### Effect of Product versus Selling and Administrative Costs on Financial Statements

Event No.	Assets					Equity		Rev.	-	Exp.	=	Net Inc.	Cash Flow							
	Cash	+	Inventory	+	Office Furn.*	+	Manuf. Equip.*							=	Com. Stk.	+	Ret. Earn.			
1	15,000							=	15,000				15,000	FA						
2	(2,000)	+	2,000										(2,000)	OA						
3	(1,200)							=		(1,200)			(1,200)	OA						
4	(3,000)	+	3,000										(3,000)	OA						
5	(2,800)	+		2,800									(2,800)	IA						
6				(600)				=		(600)			(600)							
7	(4,500)	+				4,500							(4,500)	IA						
8			1,000	+		(1,000)														
9	7,500							=	7,500			7,500	7,500	OA						
10			(4,000)					=		(4,000)			(4,000)							
Totals	9,000	+	2,000	+	2,200	+	3,500	=	15,000	+	1,700		7,500	-	5,800	=	1,700		9,000	NC

\*Negative amounts in these columns represent accumulated depreciation.

## Materials Costs (Event 2)

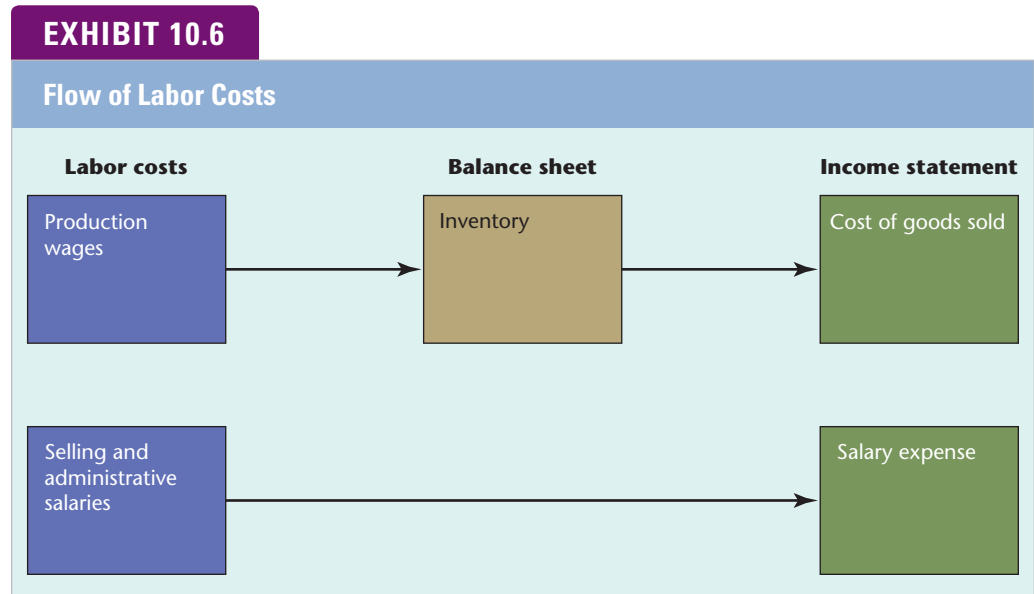
Materials used to make products are usually called **raw materials**. The cost of raw materials is first recorded in an asset account (Inventory). The cost is then transferred from the Inventory account to the Cost of Goods Sold account at the time the goods are sold. Remember that materials cost is only one component of total manufacturing costs. When inventory is sold, the combined cost of materials, labor, and overhead is expensed as *cost of goods sold*. The costs of materials that can be easily and conveniently traced to products are called **direct raw materials** costs.

## Labor Costs (Event 4)

The salaries paid to selling and administrative employees (Event 3) and the wages paid to production workers (Event 4) are accounted for differently. Salaries paid to selling and administrative employees are expensed immediately, but the cost of

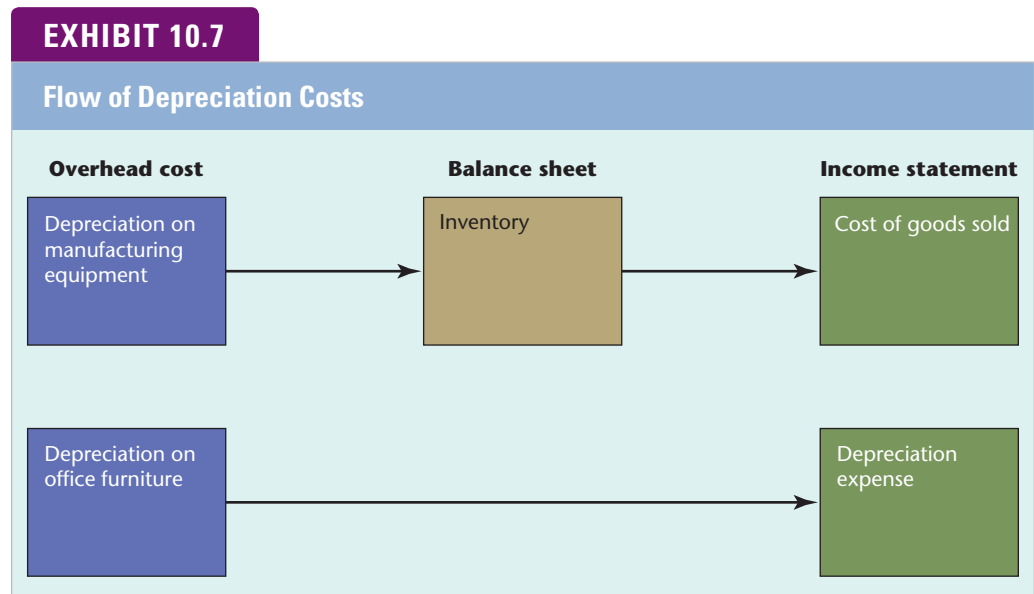


production wages is added to inventory. Production wages are expensed as part of cost of goods sold at the time the inventory is sold. Labor costs that can be easily and conveniently traced to products are called **direct labor** costs. The cost flow of wages for production employees versus salaries for selling and administrative personnel is shown in Exhibit 10.6.



**Overhead Costs (Event 8)**

Although depreciation cost totaled \$1,600 (\$600 on office furniture and \$1,000 on manufacturing equipment), only the \$600 of depreciation on the office furniture is expensed directly on the income statement. The depreciation on the manufacturing equipment is split between the income statement (cost of goods sold) and the balance sheet (inventory). The depreciation cost flow for the manufacturing equipment versus the office furniture is shown in Exhibit 10.7.



**Total Product Cost**

A summary of Patillo Manufacturing’s total product cost is shown in Exhibit 10.8.

**EXHIBIT 10.8****Schedule of Inventory Costs**

Materials	\$2,000
Labor	3,000
Manufacturing overhead*	<u>1,000</u>
Total product costs	6,000
Less: Cost of goods sold	<u>(4,000)</u>
Ending inventory balance	<u>\$2,000</u>

\*Depreciation  $([\$4,500 - \$1,500] \div 3)$

**General, Selling, and Administrative Costs**

**General, selling, and administrative costs (G,S,&A)** are normally expensed *in the period* in which they are incurred. Because of this recognition pattern, nonproduct expenses are sometimes called **period costs**. In Patillo's case, the salaries expense for selling and administrative employees and the depreciation on office furniture are period costs reported directly on the income statement.

The income statement, balance sheet, and statement of cash flows for Patillo Manufacturing are displayed in Exhibit 10.9.

The \$4,000 cost of goods sold reported on the income statement includes a portion of the materials, labor, and overhead costs incurred by Patillo during the year. Similarly, the \$2,000 of finished goods inventory on the balance sheet includes materials, labor, and overhead costs. These product costs will be recognized as expense in the next accounting period when the goods are sold. Initially classifying a cost as a product cost delays, but does not eliminate, its recognition as an expense. All product costs are ultimately recognized as expense (cost of goods sold). Cost classification does not affect cash flow. Cash inflows and outflows are recognized in the period that cash is collected or paid regardless of whether the cost is recorded as an asset or expensed on the income statement.

**Overhead Costs: A Closer Look**

Costs such as depreciation on manufacturing equipment cannot be easily traced to products. Suppose that Patillo Manufacturing makes both tables and chairs. What part of the depreciation is caused by manufacturing tables versus manufacturing chairs? Similarly, suppose a production supervisor oversees employees who work on both tables and chairs. How much of the supervisor's salary relates to tables and how much to chairs? Likewise, the cost of glue used in the production department would be difficult to trace to tables versus chairs. You could count the drops of glue used on each product, but the information would not be useful enough to merit the time and money spent collecting the data.

**EXHIBIT 10.9****PATILLO MANUFACTURING COMPANY**

## Financial Statements

## Income Statement for 2012

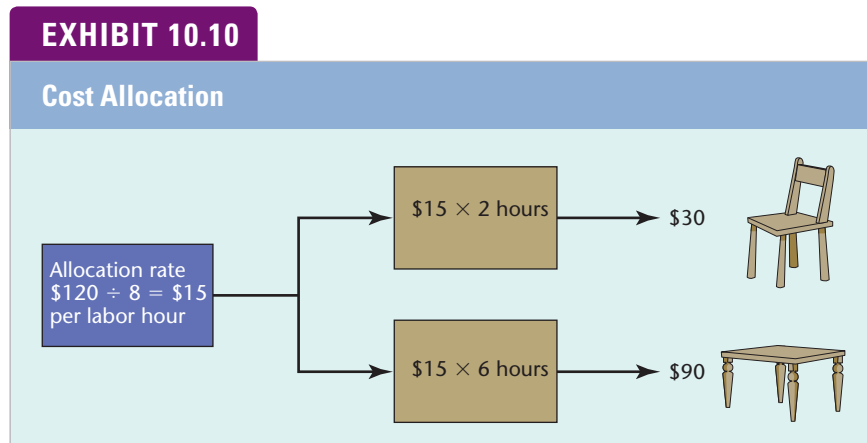
Sales revenue	\$ 7,500
Cost of goods sold	<u>(4,000)</u>
Gross margin	3,500
G, S, & A expenses	
Salaries expense	(1,200)
Depreciation expense—office furniture	<u>(600)</u>
Net income	<u>\$ 1,700</u>

## Balance Sheet as of December 31, 2012

Cash		\$ 9,000
Finished goods inventory		2,000
Office furniture	\$2,800	
Accumulated depreciation	<u>(600)</u>	
Book value		2,200
Manufacturing equipment	4,500	
Accumulated depreciation	<u>(1,000)</u>	
Book value		3,500
Total assets		<u>\$16,700</u>
Stockholders' equity		
Common stock		\$15,000
Retained earnings		<u>1,700</u>
Total stockholders' equity		<u>\$16,700</u>

## Statement of Cash Flows for 2012

<b>Operating Activities</b>		
Inflow from revenue		\$ 7,500
Outflow for inventory		(5,000)
Outflow for S&A salaries		<u>(1,200)</u>
Net inflow from operating activities		1,300
<b>Investing Activities</b>		
Outflow for equipment and furniture		(7,300)
<b>Financing Activities</b>		
Inflow from stock issue		<u>15,000</u>
Net change in cash		9,000
Beginning cash balance		<u>-0-</u>
Ending cash balance		<u>\$ 9,000</u>



Costs that cannot be traced to products and services in a *cost-effective* manner are called **indirect costs**. The indirect costs incurred to make products are called **manufacturing overhead**. Some of the items commonly included in manufacturing overhead are indirect materials, indirect labor, factory utilities, rent of manufacturing facilities, and depreciation on manufacturing assets.

Because indirect costs cannot be effectively traced to products, they are normally assigned to products using **cost allocation**, a process of dividing a total cost into parts and assigning the parts to relevant cost objects. To illustrate, suppose that production workers spend an eight-hour day making a chair and a table. The chair requires two hours to complete and the table requires six hours. Now suppose that \$120 of utilities cost is consumed during the day. How much of the \$120 should be assigned to each piece of furniture? The utility cost cannot be directly traced to each specific piece of furniture, but the piece of furniture that required more labor also likely consumed more of the utility cost. Using this line of reasoning, it is rational to allocate the utility cost to the two pieces of furniture based on *direct labor hours* at a rate of \$15 per hour ( $\$120 \div 8 \text{ hours}$ ). The chair would be assigned \$30 ( $\$15 \text{ per hour} \times 2 \text{ hours}$ ) of the utility cost and the table would be assigned the remaining \$90 ( $\$15 \times 6 \text{ hours}$ ) of utility cost. The allocation of the utility cost is shown in Exhibit 10.10.

We discuss the details of cost allocation in a later chapter. For now, recognize that overhead costs are normally allocated to products rather than traced directly to them.

## Answers to The Curious Accountant

As you have seen, accounting for depreciation related to manufacturing assets is different from accounting for depreciation for nonmanufacturing assets. Depreciation on the checkout equipment at **Sears** is recorded as depreciation expense. Depreciation on manufacturing equipment at **Schwinn** is considered a product cost. It is included first as a part of the cost of inventory and eventually as a part of the expense, cost of goods sold. Recording depreciation on manufacturing equipment as an inventory cost is simply another example of the matching principle, because the cost does not become an expense until revenue from the product sale is recognized.

## Manufacturing Product Cost Summary

As explained, the cost of a product made by a manufacturing company is normally composed of three categories: direct materials, direct labor, and manufacturing overhead. Relevant information about these three cost components is summarized in Exhibit 10.11.

### EXHIBIT 10.11

#### Components of Manufacturing Product Cost

##### Component 1—Direct Materials

Sometimes called *raw materials*. In addition to basic resources such as wood or metals, it can include manufactured parts. For example, engines, glass, and car tires can be considered as raw materials for an automotive manufacturer. If the amount of a material in a product is known, it can usually be classified as a direct material. The cost of direct materials can be easily traced to specific products.

##### Component 2—Direct Labor

The cost of wages paid to factory workers involved in hands-on contact with the products being manufactured. If the amount of time employees worked on a product can be determined, this cost can usually be classified as direct labor. Like direct materials, labor costs must be easily traced to a specific product in order to be classified as a direct cost.

##### Component 3—Manufacturing Overhead

Costs that cannot be easily traced to specific products. Accordingly, these costs are called indirect costs. They can include but are not limited to the following:

1. Indirect materials such as glue, nails, paper, and oil. Indeed, note that indirect materials used in the production process may not appear in the finished product. An example is a chemical solvent used to clean products during the production process but not a component material found in the final product.
2. Indirect labor such as the cost of salaries paid to production supervisors, inspectors, and maintenance personnel.
3. Rental cost for manufacturing facilities and equipment.
4. Utility costs.
5. Depreciation.
6. Security.
7. The cost of preparing equipment for the manufacturing process (i.e., setup costs).
8. Maintenance cost for the manufacturing facility and equipment.



### CHECK YOURSELF 10.2

Lawson Manufacturing Company paid production workers wages of \$100,000. It incurred materials costs of \$120,000 and manufacturing overhead costs of \$160,000. Selling and administrative salaries were \$80,000. Lawson started and completed 1,000 units of product and sold 800 of these units. The company sets sales prices at \$220 above the average per unit production cost. Based on this information alone, determine the amount of gross margin and net income. What is Lawson's pricing strategy called?

**Answer** Total product cost is \$380,000 (\$100,000 labor + \$120,000 materials + \$160,000 overhead). Cost per unit is \$380 (\$380,000 ÷ 1,000 units). The sales price per unit is \$600 (\$380 + \$220). Cost of goods sold is \$304,000 (\$380 × 800 units). Sales revenue is \$480,000 (\$600 × 800 units). Gross margin is \$176,000 (\$480,000 revenue – \$304,000 cost of goods sold). Net income is \$96,000 (\$176,000 gross margin – \$80,000 selling and administrative salaries). Lawson's pricing strategy is called *cost-plus* pricing.

## SCHEDULE OF COST OF GOODS MANUFACTURED AND SOLD

**LO 4**

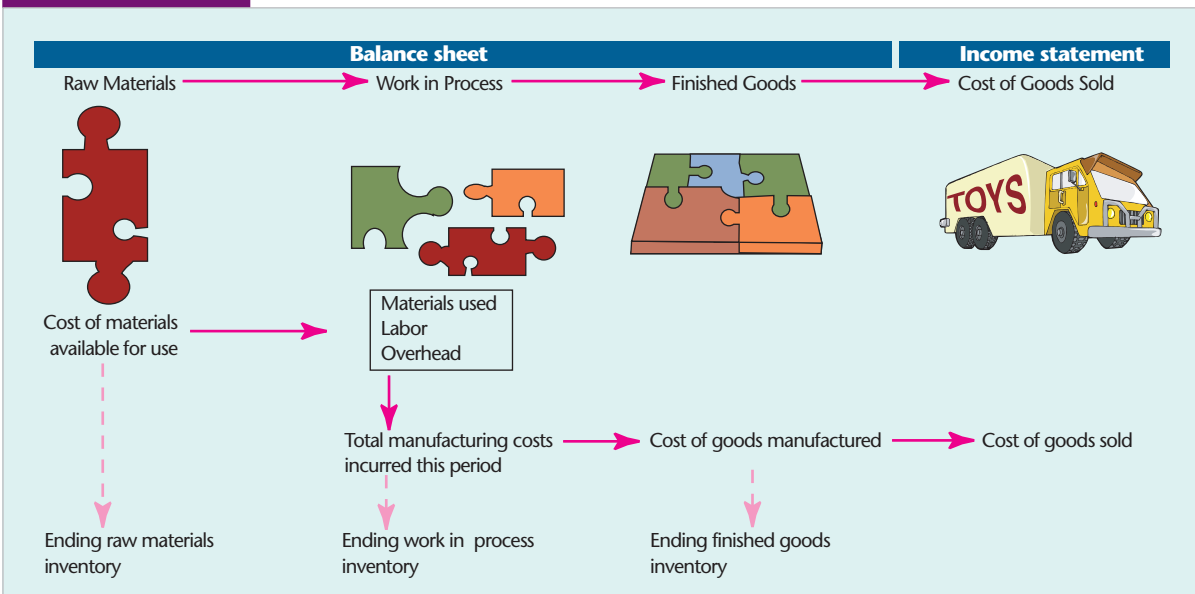
Prepare a schedule of cost of goods manufactured and sold.

To this point, we assumed all inventory started during an accounting period was also completed during that accounting period. All product costs (materials, labor, and manufacturing overhead) were either in inventory or expensed as cost of goods sold. At the end of an accounting period, however, most real-world companies have raw materials on hand, and manufacturing companies are likely to have in inventory items that have been started but are not completed. Most manufacturing companies accumulate product costs in three distinct inventory accounts: (1) **Raw Materials Inventory**, which includes lumber, metals, paints, and chemicals that will be used to make the company’s products; (2) **Work in Process Inventory**, which includes partially completed products; and (3) **Finished Goods Inventory**, which includes completed products that are ready for sale.

The cost of materials is first recorded in the Raw Materials Inventory account. The cost of materials placed in production is then transferred from the Raw Materials Inventory account to the Work in Process Inventory account. The costs of labor and overhead are added to the Work in Process Inventory account. The cost of the goods completed during the period is transferred from the Work in Process Inventory account to the Finished Goods Inventory account. The cost of the goods that are sold during the accounting period is transferred from the Finished Goods Inventory account to the Cost of Goods Sold account. The balances that remain in the Raw Materials, Work in Process, and Finished Goods Inventory accounts are reported on the balance sheet. The amount of product cost transferred to the Cost of Goods Sold account is expensed on the income statement. Exhibit 10.12 shows the flow of manufacturing costs through the accounting records.

To help managers analyze manufacturing costs, companies frequently summarize product cost information in a report called a **schedule of cost of goods manufactured and sold**. To illustrate, assume that in 2013 Patillo Manufacturing Company purchased \$37,950 of raw materials inventory. During 2013 Patillo used \$37,000 of raw materials, incurred \$34,600 of labor costs, and \$26,700 of overhead costs in the process of making inventory. Also, during 2013 the company completed work on products that cost \$94,600. Recall that Patillo had zero balances in its Raw Materials and Work in Process Inventory accounts at the end of 2012. It had a \$2,000 balance in its Finished Goods Inventory account at the end of 2012. The 2012 ending balance becomes the

**EXHIBIT 10.12**



**EXHIBIT 10.13****PATILLO MANUFACTURING COMPANY**Schedule of Cost of Goods Manufactured and Sold  
For the Year Ended December 31, 2013

Beginning raw materials Inventory	\$ 0
Plus: Raw materials purchases	37,950
Less: Ending raw materials inventory	(950)
Raw materials used	37,000
Labor	34,600
Overhead	26,700
Total manufacturing costs	98,300
Plus: Beginning work in process inventory	0
Total work in process inventory	98,300
Less: Ending work in process inventory	(3,700)
Cost of goods manufactured	94,600
Plus: Beginning finished goods inventory	2,000
Cost of goods available for sale	96,600
Less: Ending finished goods inventory	(3,200)
Cost of goods sold	<u>\$93,400</u>

2013 beginning balance for finished goods. The 2013 ending balances for the inventory accounts were as follows: Raw Materials Inventory, \$950; Work in Process Inventory, \$3,700; Finished Goods Inventory, \$3,200. Finally, during 2013 Patillo had sales revenue of \$153,000. Patillo's schedule of cost of goods manufactured and sold for 2013 is shown in Exhibit 10.13

The \$93,400 of cost of goods sold would appear on Patillo's 2013 income statement. A partial income statement for Patillo is shown in Exhibit 10.14

**EXHIBIT 10.14****PATILLO MANUFACTURING COMPANY**

## Income Statement

## For the Year Ended December 31, 2013

Sales revenue	\$153,000
Cost of goods sold	(93,400)
Gross margin	<u>\$ 59,600</u>

**UPSTREAM AND DOWNSTREAM COSTS**

Most companies incur product-related costs before and after, as well as during, the manufacturing process. For example, **Ford Motor Company** incurs significant research and development costs prior to mass producing a new car model. These **upstream costs** occur before the manufacturing process begins. Similarly, companies normally incur significant costs after the manufacturing process is complete. Examples of **downstream costs** include transportation, advertising, sales commissions, and bad debts. While upstream and downstream costs are not considered to be product costs for financial reporting purposes, profitability analysis requires that they be considered in cost-plus pricing decisions. To be profitable, a company must recover the total cost of developing, producing, and delivering its products to customers.

**PRODUCT COSTING IN SERVICE AND MERCHANDISING COMPANIES**

Companies are frequently classified as being service, merchandising, or manufacturing businesses. As the name implies, service organizations provide services, rather than physical products, to consumers. For example, **St. Jude Children's Hospital** provides treatment programs aimed at healing patient diseases. Other common service providers include

**LO 5**

Distinguish product costs from upstream and downstream costs.

**LO 6**

Explain how product costing differs in service, merchandising, and manufacturing companies.

public accountants, lawyers, restaurants, dry cleaning establishments, and lawn care companies. Merchandising businesses are sometimes called retail or wholesale companies; they sell goods other companies make. **The Home Depot, Inc.**, **Costco Wholesale Corporation**, and **Best Buy Co., Inc.**, are merchandising companies. Manufacturing companies make the goods they sell to their customers. **Toyota Motor Corporation**, **Texaco, Inc.**, and **American Standard Companies, Inc.**, are manufacturing businesses.

How do manufacturing companies differ from service and merchandising businesses? Do service and merchandising companies incur materials, labor, and overhead costs? Yes. For example, **Ernst & Young**, a large accounting firm, must pay employees (labor costs), use office supplies (material costs), and incur utilities, depreciation, and so on (overhead costs) in the process of conducting audits. *The primary difference between manufacturing entities and service companies is that the products provided by service companies are consumed immediately.* In contrast, products made by manufacturing companies can be held in the form of inventory until they are sold to consumers. Similarly, most labor and overhead costs incurred by merchandising companies result from providing assistance to customers. These costs are normally treated as general, selling, and administrative expenses rather than accumulated in inventory accounts. Indeed, merchandising companies are often viewed as service companies rather than considered a separate business category.

The important point to remember is that all business managers are expected to control costs, improve quality, and increase productivity. Like managers of manufacturing companies, managers of service and merchandising businesses can benefit from the analysis of the cost of satisfying their customers. For example, **Wendy's**, a service company, can benefit from knowing how much a hamburger costs in the same manner that **Bayer Corporation**, a manufacturing company, benefits from knowing the cost of a bottle of aspirin.



### CHECK YOURSELF 10.3

The cost of making a **Burger King** hamburger includes the cost of materials, labor, and overhead. Does this mean that Burger King is a manufacturing company?

**Answer** No, Burger King is not a manufacturing company. It is a service company because its products are consumed immediately. In contrast, there may be a considerable delay between the time the product of a manufacturing company is made and the time it is consumed. For example, it could be several months between the time **Ford Motor Company** makes an Explorer and the time the Explorer is ultimately sold to a customer. The primary difference between service and manufacturing companies is that manufacturing companies have inventories of products and service companies do not.

## LO 7

Show how just-in-time inventory can increase profitability.

## JUST-IN-TIME INVENTORY

Companies attempt to minimize the amount of inventory they maintain because of the high cost of holding it. Many **inventory holding costs** are obvious: financing, warehouse space, supervision, theft, damage, and obsolescence. Other costs are hidden: diminished motivation, sloppy work, inattentive attitudes, and increased production time.

Many businesses have been able to simultaneously reduce their inventory holding costs and increase customer satisfaction by making products available **just in time (JIT)** for customer consumption. For example, hamburgers that are cooked to order are fresher and more individualized than those that are prepared in advance and stored until a customer orders one. Many fast-food restaurants have discovered that JIT systems lead not only to greater customer satisfaction but also to lower costs through reduced waste.

### Just-in-Time Illustration

To illustrate the benefits of a JIT system, consider Paula Elliot, a student at a large urban university. She helps support herself by selling flowers. Three days each week, Paula drives to a florist, purchases 25 single-stem roses, returns to the school, and sells

the flowers to individuals from a location on a local street corner. She pays \$2 per rose and sells each one for \$3. Some days she does not have enough flowers to meet customer demand. Other days, she must discard one or two unsold flowers; she believes quality is important and refuses to sell flowers that are not fresh. During May, she purchased 300 roses and sold 280. She calculated her driving cost to be \$45. Exhibit 10.15 displays Paula's May income statement.

After studying just-in-time inventory systems in her managerial accounting class, Paula decided to apply the concepts to her small business. She *reengineered* her distribution system by purchasing her flowers from a florist within walking distance of her sales location. She had considered purchasing from this florist earlier but had rejected the idea because the florist's regular selling price of \$2.25 per rose was too high. After learning about *most-favored customer status*, she developed a strategy to get a price reduction. By guaranteeing that she would buy at least 30 roses per week, she was able to convince the local florist to match her current cost of \$2.00 per rose. The local florist agreed that she could make purchases in batches of any size so long as the total amounted to at least 30 per week. Under this arrangement, Paula was able to buy roses *just in time* to meet customer demand. Each day she purchased a small number of flowers. When she ran out, she simply returned to the florist for additional ones.

The JIT system also enabled Paula to eliminate the cost of the *nonvalue-added activity* of driving to her former florist. Customer satisfaction actually improved because no one was ever turned away because of the lack of inventory. In June, Paula was able to buy and sell 310 roses with no waste and no driving expense. The June income statement is shown in Exhibit 10.16.

Paula was ecstatic about her \$115 increase in profitability (\$310 in June – \$195 in May = \$115 increase), but she was puzzled about the exact reasons for the change. She had saved \$40 (20 flowers × \$2 each) by avoiding waste and eliminated \$45 of driving expenses. These two factors explained only \$85 (\$40 waste + \$45 driving expense) of the \$115 increase. What had caused the remaining \$30 (\$115 – \$85) increase in profitability? Paula asked her accounting professor to help her identify the remaining \$30 difference.

The professor explained that May sales had suffered from *lost opportunities*. Recall that under the earlier inventory system, Paula had to turn away some prospective customers because she sold out of flowers before all customers were served. Sales increased from 280 roses in May to 310 roses in June. A likely explanation for the 30 unit difference (310 – 280) is that customers who would have purchased flowers in May were unable to do so because of a lack of availability. May's sales suffered from the lost opportunity to earn a gross margin of \$1 per flower on 30 roses, a \$30 **opportunity cost**. This opportunity cost is the missing link in explaining the profitability difference between May and June. The total \$115 difference consists of (1) \$40 savings from waste elimination, (2) \$45 savings from eliminating driving expense, and (3) opportunity cost of \$30. The subject of opportunity cost has widespread application and is discussed in more depth in subsequent chapters of the text.

### EXHIBIT 10.15

#### Income Statement for May

Sales revenue (280 units × \$3 per unit)	\$840
Cost of goods sold (280 units × \$2 per unit)	(560)
Gross margin	280
Driving expense	(45)
Waste (20 units × \$2 per unit)	(40)
Net income	<u>\$195</u>

### EXHIBIT 10.16

#### Income Statement for June

Sales revenue (310 units × \$3 per unit)	\$930
Cost of goods sold (310 units × \$2 per unit)	(620)
Gross margin	310
Driving expense	0
Net income	<u>\$310</u>



### CHECK YOURSELF 10.4

A strike at a **General Motors** brake plant caused an almost immediate shutdown of many of the company's assembly plants. What could have caused such a rapid and widespread shutdown?

**Answer** A rapid and widespread shutdown could have occurred because General Motors uses a just-in-time inventory system. With a just-in-time inventory system, there is no stockpile of inventory to draw on when strikes or other forces disrupt inventory deliveries. This illustrates a potential negative effect of using a just-in-time inventory system.



## LO 8

Identify and explain the standards contained in IMA's Statement of Ethical Professional Practice.

## STATEMENT OF ETHICAL PROFESSIONAL PRACTICE

Management accountants must be prepared not only to make difficult choices between legitimate alternatives but also to face conflicts of a more troubling nature, such as pressure to

1. Undertake duties they have not been trained to perform competently.
2. Disclose confidential information.
3. Compromise their integrity through falsification, embezzlement, bribery, and so on.
4. Issue biased, misleading, or incomplete reports.

In Chapter 4 we explained how the American Institute of Certified Public Accountants' Code of Professional Conduct provides guidance for CPAs to avoid unethical behavior. To provide Certified Management Accountants (CMAs) with guidance for ethical conduct the Institute of Management Accountants (IMA) issued a *Statement of Ethical Professional Practice*, which is shown in Exhibit 10.17. Management accountants are also frequently required to abide by organizational codes of ethics. Failure to adhere to professional and organizational ethical standards can lead to personal disgrace, loss of employment, or imprisonment.

### EXHIBIT 10.17

#### Statement of Ethical Professional Practice

Members of IMA shall behave ethically. A commitment to ethical professional practice includes overarching principles that express our values, and standards that guide our conduct. IMA's overarching ethical principles include: Honesty, Fairness, Objectivity, and Responsibility. Members shall act in accordance with these principles and shall encourage others within their organizations to adhere to them. A member's failure to comply with the following standards may result in disciplinary action.

**Competence** Each member has a responsibility to

- Maintain an appropriate level of professional expertise by continually developing knowledge and skills.
- Perform professional duties in accordance with relevant laws, regulations, and technical standards.
- Provide decision support information and recommendations that are accurate, clear, concise, and timely.
- Recognize and communicate professional limitations or other constraints that would preclude responsible judgment or successful performance of an activity.

**Confidentiality** Each member has a responsibility to

- Keep information confidential except when disclosure is authorized or legally required.
- Inform all relevant parties regarding appropriate use of confidential information. Monitor subordinates' activities to ensure compliance.
- Refrain from using confidential information for unethical or illegal advantage.

**Integrity** Each member has a responsibility to

- Mitigate actual conflicts of interest and avoid apparent conflicts of interest. Advise all parties of any potential conflicts.
- Refrain from engaging in any conduct that would prejudice carrying out duties ethically.
- Abstain from engaging in or supporting any activity that might discredit the profession.

**Credibility** Each member has a responsibility to

- Communicate information fairly and objectively.
- Disclose all relevant information that could reasonably be expected to influence an intended user's understanding of the reports, analyses, or recommendations.
- Disclose delays or deficiencies in information, timeliness, processing, or internal controls in conformance with organization policy and/or applicable law.

**Resolution of Ethical Conflict** In applying these standards, you may encounter problems identifying unethical behavior or resolving an ethical conflict. When faced with ethical issues, follow your organization's established policies on the resolution of such conflict. If these policies do not resolve the ethical conflict, consider the following courses of action.

- Discuss the issue with your immediate supervisor except when it appears that the supervisor is involved. In that case, present the issue to the next level. If you cannot achieve a satisfactory resolution, submit the issue to the next management level. Communication of such problems to authorities or individuals not employed or engaged by the organization is not considered appropriate, unless you believe there is a clear violation of the law.
- Clarify relevant ethical issues by initiating a confidential discussion with an IMA Ethics Counselor or other impartial advisor to obtain a better understanding of possible courses of action.
- Consult your own attorney as to legal obligations and rights concerning the ethical conflict.

## REALITY BYTES

Unethical behavior occurs in all types of organizations. In its *2007 National Government Ethics Survey*, the Ethics Resource Center reported its findings on the occurrences and reporting of unethical behavior in local, state, and federal governments.

Fifty-seven percent of those surveyed reported having observed unethical conduct during the past year. Unethical conduct was reported most often by those in local governments (63%) and least often at the federal level (52%). The definition of ethical misconduct used in the study was quite broad, ranging from behavior such as an individual putting his or her personal interest ahead of the interest of the organization, to sexual harassment, to taking bribes. The more egregious offences, such as discrimination or taking bribes, were reported much less often than activities such as lying to customers, vendors, or the public.

Once observed, unethical behavior often was not reported. For example, only 25 percent of observed incidents of the alteration of financial records were reported to supervisors or whistleblower hotlines, and only 54 percent of observed bribes were reported.

The survey also found that only 18 percent of government entities have ethics and compliance programs in place that could be considered well-implemented. However, where well-implemented programs do exist, observed unethical misconduct is less likely to occur and more likely to be reported. In these entities only 36 percent of respondents said they had observed misconduct (compared to 57 percent overall), and when they did observe misconduct, 75 percent said they reported it.

For the complete *2007 National Government Ethics Survey*, go to [www.ethics.org](http://www.ethics.org).



## A Look Back



*Managerial accounting* focuses on the information needs of *internal* users, while *financial accounting* focuses on the information needs of *external* users. Managerial accounting uses economic, operating, and nonfinancial, as well as financial, data. Managerial accounting information is local (pertains to the company's subunits), is limited by cost/benefit considerations, is more concerned with relevance and timeliness, and is future oriented. Financial accounting information, on the other hand, is more global than managerial accounting information. It supplies information that applies to the whole company. Financial accounting is regulated by numerous authorities, is characterized by objectivity, is focused on reliability and accuracy, and is historical in nature.

Both managerial and financial accounting are concerned with product costing. Financial accountants need product cost information to determine the amount of inventory reported on the balance sheet and the amount of cost of goods sold reported on the income statement. Managerial accountants need to know the cost of products for pricing decisions and for control and evaluation purposes. When determining unit product costs, managers use the average cost per unit. Determining the actual cost of each product requires an unreasonable amount of time and record keeping and it makes no difference in product pricing and product cost control decisions.

*Product costs* are the costs incurred to make products: the costs of direct materials, direct labor, and overhead. *Overhead costs* are product costs that cannot be cost effectively traced to a product; therefore, they are assigned to products using *cost allocation*. Overhead costs include indirect materials, indirect labor, depreciation, rent, and utilities for manufacturing facilities. Product costs are first accumulated in an asset account (Inventory). They are expensed as cost of goods sold in the period the

inventory is sold. The difference between sales revenue and cost of goods sold is called *gross margin*.

*General, selling, and administrative costs* are classified separately from product costs. They are subtracted from gross margin to determine net income. General, selling, and administrative costs can be divided into two categories. Costs incurred before the manufacturing process begins (research and development costs) are *upstream costs*. Costs incurred after manufacturing is complete (transportation) are *downstream costs*. Service companies, like manufacturing companies, incur materials, labor, and overhead costs, but the products provided by service companies are consumed immediately. Therefore, service company product costs are not accumulated in an Inventory account.

A code of ethical conduct is needed in the accounting profession because accountants hold positions of trust and face conflicts of interest. In recognition of the temptations that accountants face, the IMA has issued a *Statement of Ethical Professional Practice*, which provides accountants guidance in resisting temptations and in making difficult decisions.

Emerging trends such as *just-in-time inventory* and *activity-based management* are methods that many companies have used to reengineer their production and delivery systems to eliminate waste, reduce errors, and minimize costs. Activity-based management seeks to eliminate or reduce *nonvalue-added activities* and to create new *value-added activities*. Just-in-time inventory seeks to reduce inventory holding costs and to lower prices for customers by making inventory available just in time for customer consumption.

## A Look Forward

In addition to distinguishing costs by product versus G, S, & A classification, other classifications can be used to facilitate managerial decision making. In the next chapter, costs are classified according to the *behavior* they exhibit when the number of units of product increases or decreases (volume of activity changes). You will learn to distinguish between costs that vary with activity volume changes versus costs that remain fixed with activity volume changes. You will learn not only to recognize *cost behavior* but also how to use such recognition to evaluate business risk and opportunity.

## APPENDIX A

### LO 9

Identify emerging trends in accounting.

### Emerging Trends in Managerial Accounting

Global competition has forced many companies to reengineer their production and delivery systems to eliminate waste, reduce errors, and minimize costs. A key ingredient of successful **reengineering** is benchmarking. **Benchmarking** involves identifying the **best practices** used by world-class competitors. By studying and mimicking these practices, a company uses benchmarking to implement highly effective and efficient operating methods. Best practices employed by world-class companies include total quality management (TQM), activity-based management (ABM), and value-added assessment.

#### *Total Quality Management*

To promote effective and efficient operations, many companies practice **total quality management (TQM)**. TQM is a two-dimensional management philosophy using (1) a systematic problem-solving philosophy that encourages frontline workers to achieve *zero defects* and (2) an organizational commitment to achieving *customer satisfaction*. A key component of TQM is **continuous improvement**, an ongoing process through which employees strive to eliminate waste, reduce response time, minimize defects, and simplify the design and delivery of products and services to customers.

### Activity-Based Management

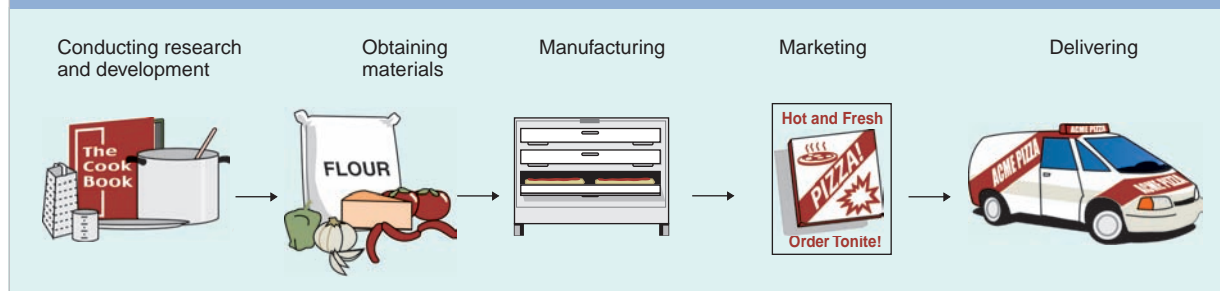
Simple changes in perspective can have dramatic results. For example, imagine how realizing the world is round instead of flat changed the nature of travel. A recent change in perspective developing in management accounting is the realization that an organization cannot manage *costs*. Instead, it manages the *activities* that cause costs to be incurred. **Activities** represent the measures an organization takes to accomplish its goals.

The primary goal of all organizations is to provide products (goods and services) their customers *value*. The sequence of activities used to provide products is called a **value chain**. **Activity-based management** assesses the value chain to create new or refine existing **value-added activities** and to eliminate or reduce *nonvalue-added activities*. A value-added activity is any unit of work that contributes to a product's ability to satisfy customer needs. For example, cooking is an activity that adds value to food served to a hungry customer. **Nonvalue-added activities** are tasks undertaken that do not contribute to a product's ability to satisfy customer needs. Waiting for the oven to preheat so that food can be cooked does not add value. Most customers value cooked food, but they do not value waiting for it.

To illustrate, consider the value-added activities undertaken by a pizza restaurant. Begin with a customer who is hungry for pizza; certain activities must occur to satisfy that hunger. These activities are pictured in Exhibit 10.18. At a minimum, the restaurant must conduct research and development (devise a recipe), obtain raw materials (acquire the ingredients), manufacture the product (combine and bake the ingredients), market the product (advertise its availability), and deliver the product (transfer the pizza to the customer).

#### EXHIBIT 10.18

##### Value Chain



Businesses gain competitive advantages by adding activities that satisfy customer needs. For example, **Domino's Pizza** grew briskly by recognizing the value customers placed on the convenience of home pizza delivery. Alternatively, **Little Caesar's** has been highly successful by satisfying customers who value low prices. Other restaurants capitalize on customer values pertaining to taste, ambience, or location. Businesses can also gain competitive advantages by identifying and eliminating nonvalue-added activities, providing products of comparable quality at lower cost than competitors.

### Value Chain Analysis Across Companies

Comprehensive value chain analysis extends from obtaining raw materials to the ultimate disposition of finished products. It encompasses the activities performed not only by a particular organization but also by that organization's suppliers and those who service its finished products. For example, **PepsiCo** must be concerned with the activities of the company that supplies the containers for its soft drinks as well as the retail companies that sell its products. If cans of Pepsi fail to open properly, the customer is more likely to blame PepsiCo than the supplier of the cans. Comprehensive

value chain analysis can lead to identifying and eliminating nonvalue-added activities that occur between companies. For example, container producers could be encouraged to build manufacturing facilities near Pepsi's bottling factories, eliminating the nonvalue-added activity of transporting empty containers from the manufacturer to the bottling facility. The resulting cost savings benefits customers by reducing costs without affecting quality.



A step-by-step audio-narrated series of slides is provided on the text website at [www.mhhe.com/edmondssurvey3e](http://www.mhhe.com/edmondssurvey3e).



### SELF-STUDY REVIEW PROBLEM

Tuscan Manufacturing Company makes a unique headset for use with mobile phones. The company had the following amounts in its accounts at the beginning of 2012: Cash, \$795,000; Raw Materials Inventory, \$5,000; Work in process Inventory, \$11,000; Finished Goods Inventory, \$39,000; Common Stock, \$650,000; and Retained Earnings, \$200,000. Tuscan experienced the following accounting events during 2012. Other than the adjusting entries for depreciation, assume that all transactions are cash transactions.

1. Paid \$50,000 of research and development costs to create the headset.
2. Paid \$139,000 for raw materials will be used to make headsets.
3. Placed \$141,000 of the raw materials cost into the process of manufacturing headsets.
4. Paid \$82,200 for salaries of selling and administrative employees.
5. Paid \$224,000 for wages of production workers.
6. Paid \$48,000 to purchase furniture used in selling and administrative offices.
7. Recognized depreciation on the office furniture. The furniture was acquired January 1, 2012. It has an \$8,000 salvage value and a four-year useful life. The amount of depreciation is computed as  $[(\text{cost} - \text{salvage}) \div \text{useful life}]$ . Specifically,  $(\$48,000 - \$8,000) \div 4 = \$10,000$ .
8. Paid \$65,000 to purchase manufacturing equipment.
9. Recognized depreciation on the manufacturing equipment. The equipment was acquired January 1, 2012. It has a \$5,000 salvage value and a three-year useful life. The amount of depreciation is computed as  $[(\text{cost} - \text{salvage}) \div \text{useful life}]$ . Specifically,  $(\$65,000 - \$5,000) \div 3 = \$20,000$ .
10. Paid \$136,000 for rent and utility costs on the manufacturing facility.
11. Paid \$41,000 for inventory holding expenses for completed headsets (rental of warehouse space, salaries of warehouse personnel, and other general storage costs.)
12. Completed and transferred headsets that had a total cost of \$520,000 from work in process inventory to finished goods.
13. Sold headsets for \$738,200.
14. It cost Tuscan \$517,400 to make the headsets sold in Event 13.

#### Required

- a. Show how these events affect the balance sheet, income statement, and statement of cash flows by recording them in a horizontal financial statement model.
- b. Explain why Tuscan's recognition of cost of goods sold expense had no impact on cash flow.
- c. Prepare a schedule of costs of goods manufactured and sold, an income statement, and a balance sheet.
- d. Distinguish between the product costs and the upstream and downstream costs that Tuscan incurred.

**Solution to Requirement a**

Event No.	Assets								=	Equity		Rev.	-	Exp.	=	Net Inc.	Cash Flow		
	Cash	+	Raw Mat. Inv.	+	WIP Inv.	+	Finished Goods Inv.	+	Office Furn.*	+	Manuf. Equip.*							=	Com. Stk.
	795,000		5,000		11,000		39,000					=	650,000		200,000		=		
1	(50,000)											=			(50,000)		=	(50,000) OA	
2	(139,000)		139,000									=					=	(139,000) OA	
3			(141,000)		141,000							=					=		
4	(82,200)											=			(82,200)		=	(82,200) OA	
5	(224,000)				224,000							=					=	(224,000) OA	
6	(48,000)							48,000				=					=	(48,000) IA	
7								(10,000)				=			(10,000)		=	(10,000) IA	
8	(65,000)								65,000			=					=	(65,000) IA	
9					20,000					(20,000)		=					=		
10	(136,000)				136,000							=					=	(136,000) OA	
11	(41,000)											=			(41,000)		=	(41,000) OA	
12					(520,000)		520,000					=					=		
13	738,200											=			738,200		=	738,200 OA	
14							(517,400)					=			(517,400)		=	(517,400) IA	
Totals	748,000	+	3,000	+	12,000	+	41,600	+	38,000	+	45,000	=	650,000	+	237,600		=	738,200 - 700,600 = 37,600	(47,000) NC

\*Negative amounts in these columns represent accumulated depreciation.

**Solution to Requirement b**

Tuscan does not recognize a cash outflow at the time the goods are sold because the cash is paid when the materials, labor, and overhead are acquired.

**Solution to Requirement c****TUSCAN MANUFACTURING COMPANY**

Schedule of Cost of Goods Manufactured and Sold  
For the Year Ended December 31, 2012

Beginning raw materials inventory	\$ 5,000
Plus: Raw materials purchases	139,000
Less: Ending raw materials inventory	<u>(3,000)</u>
Raw materials used	141,000
Labor	224,000
Overhead	<u>156,000</u>
Total manufacturing costs	521,000
Plus: Beginning work in process inventory	<u>11,000</u>
Total work in process inventory	532,000
Less: Ending work in process inventory	<u>(12,000)</u>
Cost of goods manufactured	520,000
Plus: Beginning finished goods inventory	<u>39,000</u>
Cost of goods available for sale	559,000
Less: Ending finished goods inventory	<u>(41,600)</u>
Cost of goods sold	<u>\$517,400</u>

### TUSCAN MANUFACTURING COMPANY

#### Income Statement

For the Year Ended December 31, 2012

Sales revenue	\$738,200
Cost of goods sold	<u>(517,400)</u>
Gross margin	220,800
Research and development expenses	(50,000)
Selling and administrative salary expense	(82,200)
Selling and administrative depreciation expense	(10,000)
Inventory holding expenses	<u>(41,000)</u>
Net Income	<u>\$ 37,600</u>

### TUSCAN MANUFACTURING COMPANY

#### Balance Sheet

As of December 31, 2012

<b>Assets</b>	
Cash	\$748,000
Raw materials inventory	3,000
Work in process inventory	12,000
Finished goods inventory	41,600
Manufacturing equipment less accumulated depreciation	45,000
Office furniture less accumulated depreciation	<u>38,000</u>
Total assets	<u>\$887,600</u>
<b>Equity</b>	
Common stock	\$650,000
Retained earnings	<u>237,600</u>
Total stockholders' equity	<u>\$887,600</u>

#### Solution to Requirement d

Inventory product costs for manufacturing companies focus on the costs necessary to make the product. The cost of research and development (Event 1) occurs before the inventory is made and is therefore an upstream cost, not an inventory (product) cost. The inventory holding costs (Event 11) are incurred after the inventory has been made and are therefore downstream costs, not product costs. Selling costs (included in Events 4 and 7) are normally incurred after products have been made and are therefore usually classified as downstream costs. Administrative costs (also included in Events 4 and 7) are not related to making products and are therefore not classified as product costs. Administrative costs may be incurred before, during, or after products are made, so they may be classified as either upstream or downstream costs. Only the costs of materials, labor, and overhead that are actually incurred for the purpose of making goods (Events 3, 5, 9, and 10) are classified as product costs.

#### KEY TERMS

Activities 377	Cost allocation 368	General, selling, and administrative costs 367
Activity-based management (ABM) 377	Cost-plus pricing 362	Indirect costs 368
Average cost 363	Direct labor 366	Inventory holding costs 372
Benchmarking 376	Direct raw materials 365	Just in time (JIT) 372
Best practices 376	Downstream costs 371	Managerial accounting 359
Continuous improvement 376	Financial accounting 359	Manufacturing overhead 368
	Finished Goods Inventory 370	

Nonvalue-added activities 377	Raw Materials Inventory 370	Value-added activity 377
Opportunity cost 373	Reengineering 376	Value-added principle 361
Overhead 362	Schedule of cost of goods	Value chain 377
Period costs 367	manufactured and sold 370	Work in Process Inventory 370
Product costs 362	Total quality management	
Product costing 362	(TQM) 376	
Raw materials 365	Upstream costs 371	

## QUESTIONS

1. What are some differences between financial and managerial accounting?
2. What does the value-added principle mean as it applies to managerial accounting information? Give an example of value-added information that may be included in managerial accounting reports but is not shown in publicly reported financial statements.
3. How does product costing used in financial accounting differ from product costing used in managerial accounting?
4. What does the statement “costs can be assets or expenses” mean?
5. Why are the salaries of production workers accumulated in an inventory account instead of being directly expensed on the income statement?
6. How do product costs affect the financial statements? How does the classification of product cost (as an asset vs. an expense) affect net income?
7. What is an indirect cost? Provide examples of product costs that would be classified as indirect.
8. How does a product cost differ from a general, selling, and administrative cost? Give examples of each.
9. Why is cost classification important to managers?
10. What is cost allocation? Give an example of a cost that needs to be allocated.
11. What are some of the common ethical conflicts that accountants encounter?
12. What costs should be considered in determining the sales price of a product?
13. What is a just-in-time (JIT) inventory system? Name some inventory costs that can be eliminated or reduced by its use.
14. What are the two dimensions of a total quality management (TQM) program? Why is TQM being used in business practice? (Appendix)
15. What does the term *reengineering* mean? Name some reengineering practices. (Appendix)
16. How has the Institute of Management Accountants responded to the need for high standards of ethical conduct in the accounting profession? (Appendix)
17. What does the term *activity-based management* mean? (Appendix)
18. What is a value chain? (Appendix)
19. What do the terms *value-added activity* and *nonvalue-added activity* mean? Provide an example of each type of activity. (Appendix)



## MULTIPLE-CHOICE QUESTIONS

Multiple-choice questions are provided on the text website at [www.mhhe.com/edmondssurvey3e](http://www.mhhe.com/edmondssurvey3e).

## EXERCISES

All applicable Exercises are available with McGraw-Hill's *Connect Accounting*.

### Exercise 10-1 Identifying financial versus managerial accounting characteristics

#### Required

Indicate whether each of the following is representative of managerial or of financial accounting.

- a. Information is factual and is characterized by objectivity, reliability, consistency, and accuracy.
- b. Information is reported continuously and has a current or future orientation.



 **connect**  
ACCOUNTING

**LO 1**



- c. Information is provided to outsiders including investors, creditors, government agencies, analysts, and reporters.
- d. Information is regulated by the SEC, FASB, and other sources of GAAP.
- e. Information is based on estimates that are bounded by relevance and timeliness.
- f. Information is historically based and usually reported annually.
- g. Information is local and pertains to subunits of the organization.
- h. Information includes economic and nonfinancial data as well as financial data.
- i. Information is global and pertains to the company as a whole.
- j. Information is provided to insiders including executives, managers, and operators.

**LO 2****Exercise 10-2** *Identifying product versus general, selling, and administrative costs***Required**

Indicate whether each of the following costs should be classified as a product cost or as a general, selling, and administrative cost.

- a. Direct materials used in a manufacturing company.
- b. Indirect materials used in a manufacturing company.
- c. Salaries of employees working in the accounting department.
- d. Commissions paid to sales staff.
- e. Interest on the mortgage for the company's corporate headquarters.
- f. Indirect labor used to manufacture inventory.
- g. Attorney's fees paid to protect the company from frivolous lawsuits.
- h. Research and development costs incurred to create new drugs for a pharmaceutical company.
- i. The cost of secretarial supplies used in a doctor's office.
- j. Depreciation on the office furniture of the company president.

**LO 2****Exercise 10-3** *Classifying costs: product or G, S, & A/asset or expense***Required**

Use the following format to classify each cost as a product cost or a general, selling, and administrative (G, S, & A) cost. Also indicate whether the cost would be recorded as an asset or an expense. The first item is shown as an example.

<b>Cost Category</b>	<b>Product/ G, S, &amp; A</b>	<b>Asset/ Expense</b>
Research and development costs	G, S, & A	Expense
Cost to set up manufacturing facility		
Utilities used in factory		
Cars for sales staff		
Distributions to stockholders		
General office supplies		
Raw materials used in the manufacturing process		
Cost to rent office equipment		
Wages of production workers		
Advertising costs		
Promotion costs		
Production supplies		
Depreciation on administration building		
Depreciation on manufacturing equipment		

**Exercise 10-4** *Identifying effect of product versus general, selling, and administrative costs on financial statements*

**LO 2, 3**

**Required**

Nailry Industries recognized accrued compensation cost. Use the following model to show how this event would affect the company’s financial statement under the following two assumptions: (1) the compensation is for office personnel and (2) the compensation is for production workers. Use pluses or minuses to show the effect on each element. If an element is not affected, indicate so by placing the letters NA under the appropriate heading.

	Assets = Liab. + Equity			Rev. – Exp. = Net Inc.			Cash Flow
1.							
2.							

**Exercise 10-5** *Identify effect of product versus general, selling, and administrative costs on financial statements*

**LO 2, 3**

**Required**

Milby Industries recognized the annual cost of depreciation on its December 31 financial statement. Using the following horizontal financial statements model, indicate how this event affected the company’s financial statements under the following two assumptions: (1) the depreciation was on office furniture and (2) the depreciation was on manufacturing equipment. Indicate whether the event increases (I), decreases (D), or has no affect (NA) on each element of the financial statements. Also, in the Cash Flow column, indicate whether the cash flow is for operating activities (OA), investing activities (IA), or financing activities (FA). (Note: Show accumulated depreciation as a decrease in the book value of the appropriate asset account.)

Event No.	Assets					Equity			Rev. – Exp. = Net Inc.	Cash Flow	
	Cash	+	Inventory	+	Manuf. Equip.	+	Office Furn.	=			Com. Stk.
1.											
2.											

**Exercise 10-6** *Identifying product costs in a manufacturing company*

**LO 2**

Tiffany Crissler was talking to another accounting student, Bill Tyrone. Upon discovering that the accounting department offered an upper-level course in cost measurement, Tiffany remarked to Bill, “How difficult can it be? My parents own a toy store. All you have to do to figure out how much something costs is look at the invoice. Surely you don’t need an entire course to teach you how to read an invoice.”

**Required**

- Identify the three main components of product cost for a manufacturing entity.
- Explain why measuring product cost for a manufacturing entity is more complex than measuring product cost for a retail toy store.
- Assume that Tiffany’s parents rent a store for \$7,500 per month. Different types of toys use different amounts of store space. For example, displaying a bicycle requires more store space than displaying a deck of cards. Also, some toys remain on the shelf longer than others. Fad toys sell quickly, but traditional toys sell more slowly. Under these circumstances, how would you determine the amount of rental cost required to display each type of toy? Identify two other costs incurred by a toy store that may be difficult to allocate to individual toys.

**LO 2, 3**

**Exercise 10-7** *Identifying product versus general, selling, and administrative costs*

A review of the accounting records of Rayford Manufacturing indicated that the company incurred the following payroll costs during the month of August.

1. Salary of the company president—\$32,000.
2. Salary of the vice president of manufacturing—\$16,000.
3. Salary of the chief financial officer—\$18,800.
4. Salary of the vice president of marketing—\$15,600.
5. Salaries of middle managers (department heads, production supervisors) in manufacturing plant—\$196,000.
6. Wages of production workers—\$938,000.
7. Salaries of administrative secretaries—\$112,000.
8. Salaries of engineers and other personnel responsible for maintaining production equipment—\$178,000.
9. Commissions paid to sales staff—\$252,000.

**Required**

- a. What amount of payroll cost would be classified as general, selling, and administrative expense?
- b. Assuming that Rayford made 4,000 units of product and sold 3,600 of them during the month of August, determine the amount of payroll cost that would be included in cost of goods sold.

**LO 2, 3**

**Exercise 10-8** *Recording product versus general, selling, and administrative costs in a financial statements model*

Pappas Manufacturing experienced the following events during its first accounting period.

1. Recognized depreciation on manufacturing equipment.
2. Recognized depreciation on office furniture.
3. Recognized revenue from cash sale of products.
4. Recognized cost of goods sold from sale referenced in Event 3.
5. Acquired cash by issuing common stock.
6. Paid cash to purchase raw materials that were used to make products.
7. Paid wages to production workers.
8. Paid salaries to administrative staff.

**Required**

Use the following horizontal financial statements model to show how each event affects the balance sheet, income statement, and statement of cash flows. Indicate whether the event increases (I), decreases (D), or has no effect (NA) on each element of the financial statements. In the Cash Flow column, indicate whether the cash flow is for operating activities (OA), investing activities (IA), or financing activities (FA). The first transaction has been recorded as an example. (*Note:* Show accumulated depreciation as decrease in the book value of the appropriate asset account.)

Event No.	Assets					Equity					Cash Flow							
	Cash	+	Inventory	+	Manuf. Equip.	+	Office Furn.	=	Com. Stk.	+		Ret. Earn.	Rev.	-	Exp.	=	Net Inc.	
1.	NA		I		D		NA		NA		NA	NA		NA		NA		NA

**LO 2, 3**

**Exercise 10-9** *Allocating product costs between ending inventory and cost of goods sold*

Howle Manufacturing Company began operations on January 1. During the year, it started and completed 1,700 units of product. The company incurred the following costs.

1. Raw materials purchased and used—\$3,150.
2. Wages of production workers—\$3,530.

3. Salaries of administrative and sales personnel—\$1,995.
4. Depreciation on manufacturing equipment—\$4,370.
5. Depreciation on administrative equipment—\$1,835.

Howle sold 1,020 units of product.

### Required

- a. Determine the total product cost for the year.
- b. Determine the total cost of the ending inventory.
- c. Determine the total of cost of goods sold.

### Exercise 10-10 *Financial statement effects for manufacturing versus service organizations*

**LO 6**

The following financial statements model shows the effects of recognizing depreciation in two different circumstances. One circumstance represents recognizing depreciation on a machine used in a factory. The other circumstance recognizes depreciation on computers used in a consulting firm. The effects of each event have been recorded using the letter (I) to represent increase, (D) for decrease, and (NA) for no effect.

Event No.	Assets					Equity		Rev.	-	Exp.	=	Net Inc.	Cash Flow
	Cash	+	Inventory	+	Equip.	=	Com. Stk.						
1.	NA		NA		D		NA			I		D	NA
2.	NA		I		D		NA			NA		NA	NA

### Required

- a. Identify the event that represents depreciation on the computers.
- b. Explain why recognizing depreciation on equipment used in a manufacturing company affects financial statements differently from recognizing depreciation on equipment used in a service organization.

### Exercise 10-11 *Identifying the effect of product versus general, selling, and administrative cost on the income statement and statement of cash flows*

**LO 3**

Each of the following events describes acquiring an asset that requires a year-end adjusting entry. December 31st is the end of year.

1. Paid \$14,000 cash on January 1 to purchase printers to be used for administrative purposes. The printers had an estimated useful life of four years and a \$2,000 salvage value.
2. Paid \$14,000 cash on January 1 to purchase manufacturing equipment. The equipment had an estimated useful life of four years and a \$2,000 salvage value.
3. Paid \$12,000 cash in advance on May 1 for a one-year rental contract on administrative offices.
4. Paid \$12,000 cash in advance on May 1 for a one-year rental contract on manufacturing facilities.
5. Paid \$2,000 cash to purchase supplies to be used by the marketing department. At the end of the year, \$400 of supplies were still on hand.
6. Paid \$2,000 cash to purchase supplies to be used in the manufacturing process. At the end of the year, \$400 of supplies were still on hand.

### Required

Explain how acquiring the asset and making the adjusting entry affect the amount of net income and the cash flow reported on the year-end financial statements. Also, in the Cash Flow column, indicate whether the cash flow is for operating activities (OA), investing activities (IA), or financing activities (FA). Use (NA) for no effect. Assume a December 31 annual closing date.

The first event has been recorded as an example. Assume that any products that have been made have not been sold.

Event No.	Net Income	Cash Flow
	Amount of Change	Amount of Change
1. Purchase of printers	NA	(14,000) IA
1. Make adjusting entry	(3,000)	NA

**LO 4** **Exercise 10-12** *Missing information in a schedule of cost of goods manufactured*

**Required**

Supply the missing information on the following schedule of cost of goods manufactured.

<b>DEWBERRY CORPORATION</b>		
Schedule of Cost of Goods Manufactured		
For the Year Ended December 31, 2011		
Raw materials		
Beginning inventory	\$ ?	
Plus: Purchases	<u>120,000</u>	
Raw materials available for use	\$148,000	
Minus: Ending raw materials inventory	<u>?</u>	
Cost of direct raw materials used		\$124,000
Direct labor		?
Manufacturing overhead		<u>24,000</u>
Total manufacturing costs		310,000
Plus: Beginning work in process inventory		<u>?</u>
Total work in process		?
Minus: Ending work in process inventory		<u>46,000</u>
Cost of goods manufactured		<u>\$306,000</u>

**LO 4** **Exercise 10-13** *Cost of goods manufactured and sold*

The following information pertains to Pandey Manufacturing Company for March 2012. Assume actual overhead equaled applied overhead.

<b>March 1</b>	
Inventory balances	
Raw materials	\$125,000
Work in process	120,000
Finished goods	78,000
<b>March 31</b>	
Inventory balances	
Raw materials	\$ 85,000
Work in process	145,000
Finished goods	80,000
<b>During March</b>	
Costs of raw materials purchased	\$120,000
Costs of direct labor	100,000
Costs of manufacturing overhead	63,000
Sales revenues	350,000

**Required**

- Prepare a schedule of cost of goods manufactured and sold.
- Calculate the amount of gross margin on the income statement.

**Exercise 10-14** *Upstream and downstream costs***LO 5**

During 2011, Gallo Manufacturing Company incurred \$90,000,000 of research and development (R&D) costs to create a long-life battery to use in computers. In accordance with FASB standards, the entire R&D cost was recognized as an expense in 2011. Manufacturing costs (direct materials, direct labor, and overhead) were expected to be \$260 per unit. Packaging, shipping, and sales commissions were expected to be \$50 per unit. Gallo expected to sell 2,000,000 batteries before new research renders the battery design technologically obsolete. During 2011, Gallo made 440,000 batteries and sold 400,000 of them.

**Required**

- Identify the upstream and downstream costs.
- Determine the 2011 amount of cost of goods sold and the ending inventory balance.
- Determine the sales price assuming that Gallo desired to earn a profit margin equal to 25 percent of the *total cost* of developing, making, and distributing the batteries.
- Prepare an income statement for 2011. Use the sales price determined in Requirement *c*.
- Why would Gallo price the batteries at a level that would generate a loss for the 2011 accounting period?

**Exercise 10-15** *Statement of Ethical Professional Practice***LO 8**

In February 2006 former senator Warren Rudman of New Hampshire completed a 17-month investigation of an \$11 billion accounting scandal at Fannie Mae (a major enterprise involved in home mortgage financing). The Rudman investigation concluded that Fannie Mae's CFO and controller used an accounting gimmick to manipulate financial statements in order to meet earnings-per-share (EPS) targets. Meeting the EPS targets triggered bonus payments for the executives. Fannie Mae's problems continued after 2006, and on September 8, 2008, it went into conservatorship under the control of the Federal Housing Financing Agency. The primary executives at the time of the Rudman investigation were replaced, and the enterprise reported a \$59.8 billion loss in 2008.

**Required**

Review the principles of ethical professional practice shown in Exhibit 10.17. Identify and comment on which of the ethical principles the CFO and controller violated.

**Exercise 10-16** *Using JIT to minimize waste and lost opportunity***LO 7**

Ann Kyser, a teacher at Hewitt Middle School, is in charge of ordering the T-shirts to be sold for the school's annual fund-raising project. The T-shirts are printed with a special Hewitt School logo. In some years, the supply of T-shirts has been insufficient to satisfy the number of sales orders. In other years, T-shirts have been left over. Excess T-shirts are normally donated to some charitable organization. T-shirts cost the school \$8 each and are normally sold for \$14 each. Ms. Kyser has decided to order 800 shirts.

**Required**

- If the school receives actual sales orders for 725 shirts, what amount of profit will the school earn? What is the cost of waste due to excess inventory?
- If the school receives actual sales orders for 825 shirts, what amount of profit will the school earn? What amount of opportunity cost will the school incur?
- Explain how a JIT inventory system could maximize profitability by eliminating waste and opportunity cost.

**Exercise 10-17** *Using JIT to minimize holding costs***LO 7**

Lee Pet Supplies purchases its inventory from a variety of suppliers, some of which require a six-week lead time before delivery. To ensure that she has a sufficient supply of goods on hand, Ms. Polk, the owner, must maintain a large supply of inventory. The cost of this inventory averages \$21,000. She usually finances the purchase of inventory and pays a 9 percent annual finance charge. Ms. Polk's accountant has suggested that she should establish a relationship with a single large distributor who can satisfy all of her orders within a two-week time period. Given this quick turnaround time, she will be able to reduce her average inventory balance to \$4,000.

Ms. Polk also believes that she could save \$2,500 per year by reducing phone bills, insurance, and warehouse rental space costs associated with ordering and maintaining the larger level of inventory.

### Required

- Is the new inventory system available to Ms. Polk a pure or approximate just-in-time system?
- Based on the information provided, how much of Ms. Polk's inventory holding cost could be eliminated by taking the accountant's advice?

### LO 9



### Exercise 10-18 Value chain analysis (Appendix)

Sonic Company manufactures and sells high-quality audio speakers. The speakers are encased in solid walnut cabinets supplied by Moore Cabinet Inc. Moore packages the speakers in durable moisture-proof boxes and ships them by truck to Sonic's manufacturing facility, which is located 50 miles from the cabinet factory.

### Required

Identify the nonvalue-added activities that occur between the companies described in the above scenario. Explain how these nonvalue-added activities could be eliminated.

## PROBLEMS

All applicable Problems are available with McGraw-Hill's *Connect Accounting*.



### LO 2, 3

#### CHECK FIGURES

- Average Cost per Unit: \$8.40
- \$90,400

### Problem 10-19 Product versus general, selling, and administrative costs

Jolly Manufacturing Company was started on January 1, 2011, when it acquired \$90,000 cash by issuing common stock. Jolly immediately purchased office furniture and manufacturing equipment costing \$10,000 and \$28,000, respectively. The office furniture had a five-year useful life and a zero salvage value. The manufacturing equipment had a \$4,000 salvage value and an expected useful life of three years. The company paid \$12,000 for salaries of administrative personnel and \$16,000 for wages to production personnel. Finally, the company paid \$18,000 for raw materials that were used to make inventory. All inventory was started and completed during the year. Jolly completed production on 5,000 units of product and sold 4,000 units at a price of \$12 each in 2011. (Assume all transactions are cash transactions.)

### Required

- Determine the total product cost and the average cost per unit of the inventory produced in 2011.
- Determine the amount of cost of goods sold that would appear on the 2011 income statement.
- Determine the amount of the ending inventory balance that would appear on the December 31, 2011, balance sheet.
- Determine the amount of net income that would appear on the 2011 income statement.
- Determine the amount of retained earnings that would appear on the December 31, 2011, balance sheet.
- Determine the amount of total assets that would appear on the December 31, 2011, balance sheet.
- Determine the amount of net cash flow from operating activities that would appear on the 2011 statement of cash flows.
- Determine the amount of net cash flow from investing activities that would appear on the 2011 statement of cash flows.

### LO 3



### Problem 10-20 Effect of product versus period costs on financial statements

Hoehn Manufacturing Company experienced the following accounting events during its first year of operation. With the exception of the adjusting entries for depreciation, all transactions are cash transactions.

- Acquired \$50,000 cash by issuing common stock.
- Paid \$8,000 for the materials used to make products, all of which were started and completed during the year.

#### CHECK FIGURES

Cash balance: \$33,000  
Net income: \$4,600

3. Paid salaries of \$4,400 to selling and administrative employees.
4. Paid wages of \$7,000 to production workers.
5. Paid \$9,600 for furniture used in selling and administrative offices. The furniture was acquired on January 1. It had a \$1,600 estimated salvage value and a four-year useful life.
6. Paid \$13,000 for manufacturing equipment. The equipment was acquired on January 1. It had a \$1,000 estimated salvage value and a three-year useful life.
7. Sold inventory to customers for \$25,000 that had cost \$14,000 to make.

**Required**

Explain how these events would affect the balance sheet, income statement, and statement of cash flows by recording them in a horizontal financial statements model as indicated here. The first event is recorded as an example. In the Cash Flow column, indicate whether the amounts represent financing activities (FA), investing activities (IA), or operating activities (OA).

Event No.	Assets					Equity		Rev.	-	Exp.	=	Net Inc.	Cash Flow	
	Cash	+	Inventory	+	Manuf. Equip.*	+	Office Furn.*							=
1	50,000												50,000	FA

\*Record accumulated depreciation as negative amounts in these columns.

**Problem 10-21** *Product versus general, selling, and administrative costs*

**LO 3**

The following transactions pertain to 2012, the first year operations of Hall Company. All inventory was started and completed during 2012. Assume that all transactions are cash transactions.

**CHECK FIGURES**

Net income: \$36  
Total assets: \$4,036

1. Acquired \$4,000 cash by issuing common stock.
2. Paid \$720 for materials used to produce inventory.
3. Paid \$1,800 to production workers.
4. Paid \$540 rental fee for production equipment.
5. Paid \$180 to administrative employees.
6. Paid \$144 rental fee for administrative office equipment.
7. Produced 300 units of inventory of which 200 units were sold at a price of \$12 each.

**Required**

Prepare an income statement, balance sheet, and statement of cash flows.

**Problem 10-22** *Schedule of cost of goods manufactured and sold*

**LO 4**

Kirsoff Company makes eBook readers. The company had the following amounts at the beginning of 2011: Cash, \$660,000; Raw Materials Inventory, \$51,000; Work in Process Inventory, \$18,000; Finished Goods Inventory, \$43,000; Common Stock, \$583,000; and Retained Earnings, \$189,000. Kirsoff experienced the following accounting events during 2011. Other than the adjusting entries for depreciation, assume that all transactions are cash transactions.

1. Paid \$23,000 of research and development costs.
2. Paid \$47,000 for raw materials that will be used to make eBook readers.
3. Placed \$83,000 of the raw materials cost into the process of manufacturing eBook readers.
4. Paid \$60,000 for salaries of selling and administrative employees.
5. Paid \$91,000 for wages of production workers.
6. Paid \$90,000 to purchase equipment used in selling and administrative offices.
7. Recognized depreciation on the office equipment. The equipment was acquired on January 1, 2011. It has a \$10,000 salvage value and a five-year life. The amount of depreciation is computed as [(Cost – salvage) ÷ useful life]. Specifically,  $(\$90,000 - \$10,000) \div 5 = \$16,000$ .



8. Paid \$165,000 to purchase manufacturing equipment.
9. Recognized depreciation on the manufacturing equipment. The equipment was acquired on January 1, 2011. It has a \$25,000 salvage value and a seven-year life. The amount of depreciation is computed as  $[(\text{Cost} - \text{salvage}) \div \text{useful life}]$ . Specifically,  $(\$165,000 - \$25,000) \div 7 = \$20,000$ .
10. Paid \$45,000 for rent and utility costs on the manufacturing facility.
11. Paid \$70,000 for inventory holding expenses for completed eBook readers (rental of warehouse space, salaries of warehouse personnel, and other general storage cost).
12. Completed and transferred eBook readers that had total cost of \$240,000 from work in process inventory to finished goods.
13. Sold 1,000 eBook readers for \$420,000.
14. It cost Kirsoff \$220,000 to make the eBook readers sold in Event 13.

### Required

- a. Show how these events affect the balance sheet, income statement, and statement of cash flows by recording them in a horizontal financial statements model.
- b. Explain why Kirsoff's recognition of cost of goods sold had no impact on cash flow.
- c. Prepare a schedule of cost of goods manufactured and sold, a formal income statement, and a balance sheet for the year.
- d. Distinguish between the product costs and the upstream costs that Kirsoff incurred.
- e. The company president believes that Kirsoff could save money by buying the inventory that it currently makes. The warehouse manager said that would not be a good idea because the purchase price of \$230 per unit was above the \$220 average cost per unit of making the product. Assuming the purchased inventory would be available on demand, explain how the company could be correct and why the production manager could be biased in his assessment of the option to buy the inventory.

### LO 3, 6

**excel**



### CHECK FIGURES

- a. Net loss: \$20,000
- b. Total assets: \$55,000
- c. Net income: \$11,000

### Problem 10-23 Service versus manufacturing companies

Goree Company began operations on January 1, 2011, by issuing common stock for \$30,000 cash. During 2011, Goree received \$40,000 cash from revenue and incurred costs that required \$60,000 of cash payments.

### Required

Prepare an income statement, balance sheet, and statement of cash flows for Goree Company for 2011, under each of the following independent scenarios.

- a. Goree is a promoter of rock concerts. The \$60,000 was paid to provide a rock concert that produced the revenue.
- b. Goree is in the car rental business. The \$60,000 was paid to purchase automobiles. The automobiles were purchased on January 1, 2011, had four-year useful lives and no expected salvage value. Goree uses straight-line depreciation. The revenue was generated by leasing the automobiles.
- c. Goree is a manufacturing company. The \$60,000 was paid to purchase the following items.
  - (1) Paid \$8,000 cash to purchase materials that were used to make products during the year.
  - (2) Paid \$20,000 cash for wages of factory workers who made products during the year.
  - (3) Paid \$2,000 cash for salaries of sales and administrative employees.
  - (4) Paid \$30,000 cash to purchase manufacturing equipment. The equipment was used solely to make products. It had a three-year life and a \$6,000 salvage value. The company uses straight-line depreciation.
  - (5) During 2011, Goree started and completed 2,000 units of product. The revenue was earned when Goree sold 1,500 units of product to its customers.
- d. Refer to Requirement c. Could Goree determine the actual cost of making the 90th unit of product? How likely is it that the actual cost of the 90th unit of product was exactly the same as the cost of producing the 408th unit of product? Explain why management may be more interested in average cost than in actual cost.

**Problem 10-24** *Importance of cost classification and ethics*

Cooke Manufacturing Company (CMC) was started when it acquired \$40,000 by issuing common stock. During the first year of operations, the company incurred specifically identifiable product costs (materials, labor, and overhead) amounting to \$24,000. CMC also incurred \$16,000 of engineering design and planning costs. There was a debate regarding how the design and planning costs should be classified. Advocates of Option 1 believe that the costs should be classified as upstream general, selling, and administrative costs. Advocates of Option 2 believe it is more appropriate to classify the design and planning costs as product costs. During the year, CMC made 4,000 units of product and sold 3,000 units at a price of \$24 each. All transactions were cash transactions.

**Required**

- Prepare an income statement, balance sheet, and statement of cash flows under each of the two options.
- Identify the option that results in financial statements that are more likely to leave a favorable impression on investors and creditors.
- Assume that CMC provides an incentive bonus to the CFO who is a CMA. The bonus is equal to 13 percent of net income. Compute the amount of the bonus under each of the two options. Identify the option that provides the CFO with the higher bonus.
- Assume the CFO knows that the design and planning costs are upstream costs that must be recognized as general, selling, and administrative expenses (Option 1). Even so, the CFO convinces management to classify the upstream costs as product cost in order to increase his bonus. Identify two principles in the Statement of Ethical Professional Practice that are violated by the CFO's behavior.
- Comment on the conflict of interest between the company president as determined in Requirement *c* and owners of the company as indicated in Requirement *d*. Describe an incentive compensation plan that would avoid a conflict of interest between the president and the owners.

**Problem 10-25** *Using JIT to reduce inventory holding costs*

Burt Manufacturing Company obtains its raw materials from a variety of suppliers. Burt's strategy is to obtain the best price by letting the suppliers know that it buys from the lowest bidder. Approximately four years ago, unexpected increase in demand resulted in materials shortages. Burt was unable to find the materials it needed even though it was willing to pay premium prices. Because of the lack of raw materials, Burt was forced to close its manufacturing facility for two weeks. Its president vowed that her company would never again be at the mercy of its suppliers. She immediately ordered her purchasing agent to perpetually maintain a one-month supply of raw materials. Compliance with the president's orders resulted in a raw materials inventory amounting to approximately \$1,600,000. Warehouse rental and personnel costs to maintain the inventory amounted to \$8,000 per month. Burt has a line of credit with a local bank that calls for a 12 percent annual rate of interest. Assume that Burt finances the raw materials inventory with the line of credit.

**Required**

- Based on the information provided, determine the annual holding cost of the raw materials inventory.
- Explain how a JIT system could reduce Burt's inventory holding cost.
- Explain how most-favored customer status could enable Burt to establish a JIT inventory system without risking the raw materials shortages experienced in the past.

**Problem 10-26** *Using JIT to minimize waste and lost opportunity*

CMA Review Inc. provides review courses for students studying to take the CMA exam. The cost of textbooks is included in the registration fee. Text material requires constant updating and is useful for only one course. To minimize printing costs and ensure availability of books

**LO 3, 5, 8****CHECK FIGURES**

- Option 1: NI = \$38,000  
Option 2: Total Assets = \$82,000

**LO 7****CHECK FIGURE**

- \$288,000

**LO 7****eXcel**

**CHECK FIGURES**

- a. \$900
- b. \$3,700

on the first day of class, CMA Review has books printed and delivered to its offices two weeks in advance of the first class. To ensure that enough books are available, CMA Review normally orders 10 percent more than expected enrollment. Usually there is an oversupply of books that is thrown away. However, demand occasionally exceeds expectations by more than 10 percent and there are too few books available for student use. CMA Review had been forced to turn away students because of lack of textbooks. CMA Review expects to enroll approximately 100 students per course. The tuition fee is \$800 per student. The cost of teachers is \$25,000 per course, textbooks cost \$60 each, and other operating expenses are estimated to be \$35,000 per course.

**Required**

- a. Prepare an income statement, assuming that 95 students enroll in a course. Determine the cost of waste associated with unused books.
- b. Prepare an income statement, assuming that 115 students attempt to enroll in the course. Note that five students are turned away because of too few textbooks. Determine the amount of lost profit resulting from the inability to serve the five additional students.
- c. Suppose that textbooks can be produced through a high-speed copying process that permits delivery *just in time* for class to start. The cost of books made using this process, however, is \$65 each. Assume that all books must be made using the same production process. In other words, CMA Review cannot order some of the books using the regular copy process and the rest using the high-speed process. Prepare an income statement under the JIT system assuming that 95 students enroll in a course. Compare the income statement under JIT with the income statement prepared in Requirement *a*. Comment on how the JIT system would affect profitability.
- d. Assume the same facts as in Requirement *c* with respect to a JIT system that enables immediate delivery of books at a cost of \$65 each. Prepare an income statement under the JIT system, assuming that 115 students enroll in a course. Compare the income statement under JIT with the income statement prepared in Requirement *b*. Comment on how the JIT system would affect profitability.
- e. Discuss the possible effect of the JIT system on the level of customer satisfaction.

**LO 9****Problem 10-27 Value chain analysis (Appendix)**

Jensen Company invented a new process for manufacturing ice cream. The ingredients are mixed in high-tech machinery that forms the product into small round beads. Like a bag of balls, the ice cream beads are surrounded by air pockets in packages. This design has numerous advantages. First, each bite of ice cream melts quickly in a person's mouth, creating a more flavorful sensation when compared to ordinary ice cream. Also, the air pockets mean that a typical serving includes a smaller amount of ice cream. This not only reduces materials cost but also provides the consumer with a low-calorie snack. A cup appears full of ice cream, but it is really half full of air. The consumer eats only half the ingredients that are contained in a typical cup of blended ice cream. Finally, the texture of the ice cream makes scooping it out of a large container easy. The frustration of trying to get a spoon into a rock-solid package of blended ice cream has been eliminated. Jensen Company named the new product Sonic Cream.

Like many other ice cream producers, Jensen Company purchases its raw materials from a food wholesaler. The ingredients are mixed in Jensen's manufacturing plant. The packages of finished product are distributed to privately owned franchise ice cream shops that sell Sonic Cream directly to the public.

Jensen provides national advertising and is responsible for all research and development costs associated with making new flavors of Sonic Cream.

**Required**

- a. Based on the information provided, draw a comprehensive value chain for Jensen Company that includes its suppliers and customers.
- b. Identify the place in the chain where Jensen Company is exercising its opportunity to create added value beyond that currently being provided by its competitors.

**ANALYZE, THINK, COMMUNICATE****ATC 10-1 Business Applications Case** *Financial versus managerial accounting*

The following information was taken from the 2008 and 2009 Form 10-Ks for **Dell, Inc.**



	<b>Fiscal Year Ended</b>	
	<b>January 30, 2009</b>	<b>February 1, 2008</b>
Number of regular employees	76,500	82,700
Number of temporary employees	2,400	5,500
Revenues (in millions)	\$61,101	\$61,133
Properties owned or leased in the U.S.	7.4 million square feet	8.2 million square feet
Properties owned or leased outside the U.S.	9.4 million square feet	9.7 million square feet
Total assets (in millions)	\$26,500	\$27,561
Gross margin (in millions)	\$10,957	\$11,671

**Required**

- Explain whether each line of information in the table above would best be described as being primarily financial accounting or managerial accounting in nature.
- Provide some additional examples of managerial and financial accounting information that could apply to Dell.
- If you analyze only the data you identified as financial in nature, does it appear that Dell's 2009 fiscal year was better or worse than its 2008 fiscal year? Explain.
- If you analyze only the data you identified as managerial in nature, does it appear that Dell's 2009 fiscal year was better or worse than its 2008 fiscal year? Explain.

**ATC 10-2 Group Assignment** *Product versus upstream and downstream costs*

Victor Holt, the accounting manager of Sexton Inc., gathered the following information for 2011. Some of it can be used to construct an income statement for 2011. Ignore items that do not appear on an income statement. Some computations may be required. For example, the cost of manufacturing equipment would not appear on the income statement. However, the cost of manufacturing equipment is needed to compute the amount of depreciation. All units of product were started and completed in 2011.



- Issued \$864,000 of common stock.
- Paid engineers in the product design department \$10,000 for salaries that were accrued at the end of the previous year.
- Incurred advertising expenses of \$70,000.
- Paid \$720,000 for materials used to manufacture the company's product.
- Incurred utility costs of \$160,000. These costs were allocated to different departments on the basis of square footage of floor space. Mr. Holt identified three departments and determined the square footage of floor space for each department to be as shown in the table below.

<b>Department</b>	<b>Square Footage</b>
Research and development	10,000
Manufacturing	60,000
Selling and administrative	30,000
Total	<u>100,000</u>

- Paid \$880,000 for wages of production workers.
- Paid cash of \$658,000 for salaries of administrative personnel. There was \$16,000 of accrued salaries owed to administrative personnel at the end of 2011. There was no beginning balance in the Salaries Payable account for administrative personnel.
- Purchased manufacturing equipment two years ago at a cost of \$10,000,000. The equipment had an eight-year useful life and a \$2,000,000 salvage value.

9. Paid \$390,000 cash to engineers in the product design department.
10. Paid a \$258,000 cash dividend to owners.
11. Paid \$80,000 to set up manufacturing equipment for production.
12. Paid a one-time \$186,000 restructuring cost to redesign the production process to implement a just-in-time inventory system.
13. Prepaid the premium on a new insurance policy covering nonmanufacturing employees. The policy cost \$72,000 and had a one-year term with an effective starting date of May 1. Four employees work in the research and development department and eight employees in the selling and administrative department. Assume a December 31 closing date.
14. Made 69,400 units of product and sold 60,000 units at a price of \$70 each.

### Required

- a. Divide the class into groups of four or five students per group, and then organize the groups into three sections. Assign Task 1 to the first section of groups, Task 2 to the second section of groups, and Task 3 to the third section of groups.

### Group Tasks

- (1) Identify the items that are classified as product costs and determine the amount of cost of goods sold reported on the 2011 income statement.
  - (2) Identify the items that are classified as upstream costs and determine the amount of upstream cost expensed on the 2011 income statement.
  - (3) Identify the items that are classified as downstream costs and determine the amount of downstream cost expensed on the 2011 income statement.
- b. Have the class construct an income statement in the following manner. Select a member of one of the groups assigned the first group task identifying the product costs. Have that person go to the board and list the costs included in the determination of cost of goods sold. Anyone in the other groups who disagrees with one of the classifications provided by the person at the board should voice an objection and explain why the item should be classified differently. The instructor should lead the class to a consensus on the disputed items. After the amount of cost of goods sold is determined, the student at the board constructs the part of the income statement showing the determination of gross margin. The exercise continues in a similar fashion with representatives from the other sections explaining the composition of the upstream and downstream costs. These items are added to the income statement started by the first group representative. The final result is a completed income statement.

### ATC 10-3 Research Assignment *Identifying product costs at Snap-on, Inc.*



Use the 2008 Form 10-K for [Snap-on, Inc.](http://www.snapon.com), to complete the requirements below. To obtain the Form 10-K you can use the EDGAR system following the instructions in Appendix A, or it can be found under “Corporate Information” on the company’s corporate website: [www.snapon.com](http://www.snapon.com). Read carefully the following portions of the document.

- “Products and Services” on page 5.
- “Consolidated Statement of Earnings” on page 55.
- The following parts of Note 1 on page 60:
  - “Shipping and handling”
  - “Advertising and promotion”
- “Note 4: Inventories” on page 66.

### Required

- a. Does the level of detail that Snap-on provides regarding costs incurred to manufacture its products suggest the company’s financial statements are designed primarily to meet the needs of external or internal users?
- b. Does Snap-on treat shipping and handling costs as product or nonproduct costs?
- c. Does Snap-on treat advertising and promotion costs as product or nonproduct costs?
- d. In Chapter 3 you learned about a class of inventory called merchandise inventory. What categories of inventory does Snap-on report in its annual report?

### ATC 10-4 Writing Assignment *Emerging practices in managerial accounting*

An annual report of the **Maytag Corporation** contained the following excerpt:

*The Company announced the restructuring of its major appliance operations in an effort to strengthen its position in the industry and to deliver improved performance to both customers and shareowners. This included the consolidation of two separate organizational units into a single operation responsible for all activities associated with the manufacture and distribution of the Company's brands of major appliances and the closing of a cooking products plant in Indianapolis, Indiana, with transfer of that production to an existing plant in Cleveland, Tennessee.*

The restructuring cost Maytag \$40 million and disrupted the lives of many of the company's employees.

#### Required

Assume that you are Maytag's vice president of human relations. Write a letter to the employees who are affected by the restructuring. The letter should explain why it was necessary for the company to undertake the restructuring. Your explanation should refer to the ideas discussed in the section "Emerging Trends in Managerial Accounting" of this chapter (see Appendix A).



### ATC 10-5 Ethical Dilemma *Product cost versus selling and administrative expense*

Emma Emerson is a proud woman with a problem. Her daughter has been accepted into a prestigious law school. While Ms. Emerson beams with pride, she is worried sick about how to pay for the school; she is a single parent who has to support herself and her three children. She had to go heavily into debt to finance her own education. Even though she now has a good job, family needs have continued to outpace her income and her debt burden is staggering. She knows she will be unable to borrow the money needed for her daughter's law school.

Ms. Emerson is the chief financial officer (CFO) of a small manufacturing company. She has just accepted a new job offer. She has not yet told her employer that she will be leaving in a month. She is concerned that her year-end incentive bonus may be affected if her boss learns of her plans to leave. She plans to inform the company immediately after receiving the bonus. She knows her behavior is less than honorable, but she believes that she has been underpaid for a long time. Her boss, a relative of the company's owner, makes twice what she makes and does half the work. Why should she care about leaving with a little extra cash? Indeed, she is considering an opportunity to boost the bonus.

Ms. Emerson's bonus is based on a percentage of net income. Her company recently introduced a new product line that required substantial production start-up costs. Ms. Emerson is fully aware that GAAP requires these costs to be expensed in the current accounting period, but no one else in the company has the technical expertise to know exactly how the costs should be treated. She is considering misclassifying the start-up costs as product costs. If the costs are misclassified, net income will be significantly higher, resulting in a nice boost in her incentive bonus. By the time the auditors discover the misclassification, Ms. Emerson will have moved on to her new job. If the matter is brought to the attention of her new employer, she will simply plead ignorance. Considering her daughter's needs, Ms. Emerson decides to classify the start-up costs as product costs.

#### Required

- Based on this information, indicate whether Ms. Emerson believes the number of units of product sold will be equal to, less than, or greater than the number of units made. Write a brief paragraph explaining the logic that supports your answer.
- Explain how the misclassification could mislead an investor or creditor regarding the company's financial condition.
- Explain how the misclassification could affect income taxes.
- Identify the specific components of the fraud triangle that were present in this case.
- Review the Statement of Ethical Professional Practice shown in Exhibit 10.14 and identify at least two principles that Ms. Emerson's misclassification of the start-up costs violated.
- Describe the maximum penalty that could be imposed under the Sarbanes-Oxley Act for the actions Ms. Emerson has taken.

