

# 2

## BASIC MANAGERIAL ACCOUNTING CONCEPTS

### DISCUSSION QUESTIONS

1. Cost is the amount of cash or cash equivalent sacrificed for goods and/or services that are expected to bring a current or future benefit to the organization. An expense is an expired cost; the benefit has been used up.
2. Accumulating costs is the way that costs are measured and recorded. Assigning costs is linking costs to some cost object. For example, a company accumulates or tracks costs by entering them into the general ledger accounts. Direct materials would be entered into the materials account; direct labor would be entered into the direct labor account. Then, these costs are assigned to units of product.
3. A cost object is something for which you want to know the cost. For example, a cost object may be the human resources department of a company. The costs related to that cost object might include salaries of employees of that department, telephone costs for that department, and depreciation on office equipment. Another example is a customer group of a company. Atlantic City and Las Vegas casinos routinely treat heavy gamblers to free rooms, food, and drink. The casino owners know the benefits yielded by these high rollers and need to know the costs of keeping them happy, such as the opportunity cost of lost revenue from the rooms, the cost of the food, and so on.
4. A direct cost is one that can be traced to the cost object, typically by physical observation. An indirect cost cannot be traced easily and accurately to the cost object. The same cost can be direct for one purpose and indirect for another. For example, the salaries paid to purchasing department employees in a factory are a direct cost to the purchasing department but an indirect cost (overhead) to units of product.
5. Allocation means that an indirect cost is assigned to a cost object using a reasonable and convenient method. Since no causal relationship exists, allocating indirect costs is based on convenience or some assumed linkage.
6. A product is tangible in that you can see, feel, and take it with you. Examples of products include a tube of toothpaste, a car, or an orange. A service is a task or an activity performed for a customer. For example, the dental hygienist who cleans your teeth provides a service.
7. Manufacturing overhead includes all product costs other than direct materials and direct labor. It is because the remaining manufacturing (product) costs are gathered into one category that overhead is often thought of as a "catchall."
8. Direct materials purchases are first entered into the materials inventory. They may or may not be used during the month. Only when the materials are withdrawn from inventory for use in production are they known as "direct materials."
9. Prime cost is the sum of direct materials and direct labor. Conversion cost is the sum of direct labor and overhead. Total product cost consists of direct materials, direct labor, and overhead. This is not equal to the sum of prime cost and conversion cost because then direct labor would be double counted.

10. A period cost is one that is expensed immediately, rather than being inventoried like a product cost.
11. Selling cost is the cost of selling and delivering products and services. Examples include free samples, advertising, sponsorship of sporting events, commissions on sales, and the depreciation on delivery trucks (such as Coca-Cola or Pepsi trucks).
12. The cost of goods manufactured is the sum of direct materials, direct labor, and overhead used in producing the units completed during the current period and transferred to finished goods inventory.
13. The cost of goods manufactured is the cost of direct materials, direct labor, and overhead for the units produced (completed) during a time period. The cost of goods sold is the cost of direct materials, direct labor, and overhead for the units sold during a time period. The number of units produced is not necessarily equal to the number of units sold during a period. For example, a company may produce 1,000 pairs of jeans in a month but sell only 900 pairs.
14. The income statement for a manufacturing firm includes the cost of goods sold, which is the sum of direct materials, direct labor, and manufacturing overhead. The income statement for a service firm contains no cost of goods sold because there is no product to purchase or to manufacture and, thus, there is no inventory account to expense as cost of goods sold. In addition, because there is no cost of goods sold on the income statement of a service firm, there is no gross margin, unlike a manufacturing firm.
15. The percentage column on the income statement gives some insight into the relative spending on the various expense categories. These percentages can then be compared with those of other firms in the same industry to see if the company's spending appears to be in line or out of line with the experiences of others. These percentages can also be compared to prior periods of the company for variance analysis.

**MULTIPLE-CHOICE QUESTIONS**

- 2-1. c
- 2-2. d
- 2-3. b     **Conversion Cost per Unit = \$6 + \$19 = \$25**
- 2-4. b     **Sales = \$75 × 2,000 units = \$150,000**  
**Production Cost per Unit = \$15 + \$6 + \$19 = \$40**  
**Cost of Goods Sold = \$40 × 2,000 = \$80,000**  
**Gross Margin = \$150,000 – \$80,000 = \$70,000**
- 2-5. e
- 2-6. d
- 2-7. c
- 2-8. d
- 2-9. b
- 2-10. a
- 2-11. e     **Prime Cost per Unit = \$8.65 + \$1.10 = \$9.75**
- 2-12. b
- 2-13. a     **Total Prime Cost = \$50,000 + \$20,000 = \$70,000**  
**Prime Cost per Unit = \$70,000/10,000 units = \$7.00**
- 2-14. c     **Total Conversion Cost = \$20,000 + \$130,000 = \$150,000**  
**Conversion Cost per Unit = \$150,000/10,000 units = \$15.00**
- 2-15. b     **Cost of Goods Sold = \$50,000 + \$20,000 + \$130,000 = \$200,000**  
**Cost of Goods Sold per Unit = \$200,000/10,000 units = \$20.00**
- 2-16. b     **Sales = \$31 × 10,000 = \$310,000**  
**Gross Margin = \$310,000 – \$200,000 = \$110,000**  
**Gross Margin per Unit = \$110,000/10,000 units = \$11.00**
- 2-17. c     **Period Expense = \$40,000 + \$36,000 = \$76,000**
- 2-18. a     **Operating Income = \$310,000 – \$200,000 – \$76,000 = \$34,000**

**BRIEF EXERCISES: SET A****BE 2-19**

1. Direct materials.....	\$ 32,000
Direct labor.....	28,000
Manufacturing overhead.....	60,000
Total product cost.....	<u>\$120,000</u>

2. Per-Unit Product Cost =  $\frac{\$120,000}{500 \text{ units}}$  = \$240

Therefore, one hockey stick costs \$240 to produce.

**BE 2-20**

1. Direct materials.....	\$32,000
Direct labor.....	28,000
Total prime cost.....	<u>\$60,000</u>

2. Per-Unit Prime Cost =  $\frac{\$60,000}{500 \text{ units}}$  = \$120

3. Direct labor.....	\$28,000
Manufacturing overhead.....	60,000
Total conversion cost.....	<u>\$88,000</u>

4. Per-Unit Conversion Cost =  $\frac{\$88,000}{500 \text{ units}}$  = \$176

**BE 2-21**

Materials inventory, June 1.....	\$ 48,000
Purchases.....	132,000
Materials inventory, June 30.....	(45,000)
Direct materials used in production.....	<u>\$135,000</u>

**BE 2-22**

1. Direct materials*	\$135,000
Direct labor	113,000
Manufacturing overhead	187,000
Total manufacturing cost for June	<u>\$435,000</u>
Work in process, June 1	65,000
Work in process, June 30	(63,000)
Cost of goods manufactured	<u><u>\$437,000</u></u>

\* Direct Materials = \$48,000 + \$132,000 – \$45,000 = \$135,000

[This was calculated in Brief Exercise 2-21.]

2. Per-Unit Cost of Goods Manufactured =  $\frac{\$437,000}{1,900 \text{ units}}$  = \$230

**BE 2-23**

1.	<b>Slapshot Company</b> <b>Cost of Goods Sold Statement</b> <b>For the Month of June</b>	
	Cost of goods manufactured	\$437,000
	Finished goods inventory, June 1	80,000
	Finished goods inventory, June 30	(84,000)
	Cost of goods sold	<u><u>\$433,000</u></u>
2.	Number of units sold:	
	Finished goods inventory, June 1	350
	Units finished during June	1,900
	Finished goods inventory, June 30	(370)
	Units sold during June	<u><u>1,880</u></u>

**BE 2-24**

Slapshot Company Income Statement For the Month of June		
Sales revenue (1,880 × \$400).....		\$752,000
Cost of goods sold .....		<u>433,000</u>
Gross margin.....		\$319,000
Less:		
Selling expense:		
Commissions (0.10 × \$752,000).....	\$75,200	
Fixed selling expense .....	<u>65,000</u>	140,200
Administrative expense .....		<u>53,800</u>
Operating income.....		<u><u>\$125,000</u></u>

**BE 2-25**

Slapshot Company Income Statement For the Month of June			Percent*
Sales revenue (1,880 × \$400).....	\$752,000		100.0
Cost of goods sold .....	<u>433,000</u>		<u>57.6</u>
Gross margin.....	\$319,000		42.4
Less:			
Selling expense:			
Variable commissions (0.10 × \$752,000)....	\$75,200		
Fixed selling expense.....	<u>65,000</u>	140,200	18.6
Administrative expense.....		<u>53,800</u>	<u>7.2</u>
Operating income.....		<u><u>\$125,000</u></u>	<u><u>16.6</u></u>

\* Steps in calculating the percentages (the percentages are rounded):

1. Sales Revenue Percent =  $\$752,000/\$752,000 = 1.00$ , or 100% (sales revenue is always 100% of sales revenue)
2. Cost of Goods Sold Percent =  $\$433,000/\$752,000 = 0.576$ , or 57.6%
3. Gross Margin Percent =  $\$319,000/\$752,000 = 0.424$ , or 42.4%
4. Selling Expense Percent =  $\$140,200/\$752,000 = 0.186$ , or 18.6%
5. Administrative Expense Percent =  $\$53,800/\$752,000 = 0.072$ , or 7.2%
6. Operating Income Percent =  $\$125,000/\$752,000 = 0.166$ , or 16.6%

**BE 2-26**

1.

<b>Allstar Exposure Income Statement For the Past Month</b>		
Sales revenues.....		<b>\$410,000</b>
Less operating expenses:		
Sales commissions.....	<b>\$ 50,000</b>	
Technology.....	<b>75,000</b>	
Research and development.....	<b>200,000</b>	
Selling expenses.....	<b>10,000</b>	
Administrative expenses .....	<b>35,000</b>	<b>370,000</b>
Operating income.....		<b><u>\$ 40,000</u></b>

2. Allstar has no cost of goods sold line item because the company is a service provider, rather than a manufacturer. Therefore, as a service provider, Allstar has no inventory costs (raw materials, work in process, or finished goods) to flow through to cost of goods sold when it recognizes its sales revenue. Instead, all of the costs it incurs in providing advertising services appear as operating expenses on the income statement.

**BRIEF EXERCISES: SET B****BE 2-27**

1. Direct materials.....	\$100,000
Direct labor.....	18,000
Manufacturing overhead.....	50,000
Total product cost.....	<u>\$168,000</u>

2. Per-Unit Product Cost =  $\frac{\$168,000}{2,000 \text{ units}} = \$84$

Therefore, one coffee maker costs \$84 to produce.

**BE 2-28**

1. Direct materials.....	\$100,000
Direct labor.....	18,000
Total prime cost.....	<u>\$118,000</u>

2. Per-Unit Prime Cost =  $\frac{\$118,000}{2,000 \text{ units}} = \$59$

3. Direct labor.....	\$18,000
Manufacturing overhead.....	50,000
Total conversion cost.....	<u>\$68,000</u>

4. Per-Unit Conversion Cost =  $\frac{\$68,000}{2,000 \text{ units}} = \$34$

**BE 2-29**

Materials inventory, March 1.....	\$ 25,000
Purchases.....	350,000
Materials inventory, March 31.....	<u>(40,000)</u>
Direct materials used in production.....	<u>\$335,000</u>



**BE 2-30**

1. Direct materials*	\$335,000
Direct labor	74,000
Manufacturing overhead	190,000
Total manufacturing cost for March	<u>\$599,000</u>
Work in process, March 1	55,000
Work in process, March 31	(46,500)
Cost of goods manufactured	<u><u>\$607,500</u></u>

\* Direct Materials = \$25,000 + \$350,000 – \$40,000 = \$335,000

[This was calculated in Brief Exercise 2-29.]

2. Per-Unit Cost of Goods Manufactured =  $\frac{\$607,500}{8,100 \text{ units}}$  = \$75

**BE 2-31**

1.	<b>Morning Smiles Coffee Company</b> <b>Cost of Goods Sold Statement</b> <b>For the Month of March</b>	
	Cost of goods manufactured	\$607,500
	Finished goods inventory, March 1	70,000
	Finished goods inventory, March 31	(65,000)
	Cost of goods sold	<u><u>\$612,500</u></u>
2.	Number of units sold:	
	Finished goods inventory, March 1	1,000
	Units finished during March	8,100
	Finished goods inventory, March 31	(1,100)
	Units sold during March	<u><u>8,000</u></u>

## BE 2-32

Morning Smiles Coffee Company Income Statement For the Month of March		
Sales revenue (8,000 × \$100).....		\$800,000
Cost of goods sold .....		<u>612,500</u>
Gross margin.....		\$187,500
Less:		
Selling expense:		
Variable commissions (0.05 × \$800,000).....	\$40,000	
Fixed selling expense .....	<u>45,000</u>	85,000
Administrative expense .....		<u>47,500</u>
Operating income.....		<u>\$ 55,000</u>

## BE 2-33

Morning Smiles Coffee Company Income Statement For the Month of March			Percent*
Sales revenue (8,000 × \$100).....	\$800,000		100.0
Cost of goods sold .....	<u>612,500</u>		<u>76.6</u>
Gross margin.....	\$187,500		23.4
Less:			
Selling expense:			
Variable commissions (0.05 × \$800,000)....	\$40,000		
Fixed selling expense.....	<u>45,000</u>	85,000	10.6
Administrative expense.....		<u>47,500</u>	<u>5.9</u>
Operating income.....		<u>\$ 55,000</u>	<u>6.9</u>

\* Steps in calculating the percentages (the percentages are rounded):

1. Sales Revenue Percent =  $\$800,000/\$800,000 = 1.00$ , or 100% (sales revenue is always 100% of sales revenue)
2. Cost of Goods Sold Percent =  $\$612,500/\$800,000 = 0.766$ , or 76.6%
3. Gross Margin Percent =  $\$187,500/\$800,000 = 0.234$ , or 23.4%
4. Selling Expense Percent =  $\$85,000/\$800,000 = 0.106$ , or 10.6%
5. Administrative Expense Percent =  $\$47,500/\$800,000 = 0.059$ , or 5.9%
6. Operating Income Percent =  $\$55,000/\$800,000 = 0.069$ , or 6.9%

**BE 2-34**

1.

<b>Healing Hands Massage Hut Income Statement For the Past Month</b>		
Sales revenues.....		<b>\$200,000</b>
Less operating expenses:		
Technology.....	<b>\$ 10,000</b>	
Wages expense.....	<b>100,000</b>	
Rent expense.....	<b>15,000</b>	
Selling (advertising) expenses.....	<b>5,000</b>	
Administrative expenses .....	<b>20,000</b>	<b>150,000</b>
Operating income.....		<b><u>\$ 50,000</u></b>

2. Healing Hands has no cost of goods sold line item because the company is a service provider (i.e., of massage therapy activities), rather than a manufacturer. Therefore, as a service provider, Healing Hands has no inventory costs (raw materials, work in process, or finished goods) to flow through to cost of goods sold when it recognizes its sales revenue. Instead, all of the costs it incurs in providing massage and other beauty services appear as operating expenses on the income statement.

## EXERCISES

## E 2-35

1.	<u>Cost</u>	<u>Salaries</u>	<u>Commissions</u>
	Derek.....	\$25,000	\$6,000
	Lawanna.....	30,000	1,500
	Total.....	<u>\$55,000</u>	<u>\$7,500</u>

2. All of Derek's time is spent selling, so all of his salary cost is selling cost. Lawanna spends two-thirds of her time selling, so \$20,000 ( $\$30,000 \times 2/3$ ) of her salary is selling cost. The remainder is administrative cost. All commissions are selling costs.

	<u>Cost</u>	<u>Selling Costs</u>	<u>Administrative Costs</u>
Derek's salary.....	\$25,000	—	—
Lawanna's salary.....	20,000	\$10,000	—
Derek's commissions.....	6,000	—	—
Lawanna's commissions.....	1,500	—	—
Total.....	<u>\$52,500</u>	<u>\$10,000</u>	<u>—</u>

## E 2-36

- The two products that Holmes sells are playhouses and the installation of playhouses. The playhouse itself is a product, and the installation is a service.
- Holmes could assign the costs to production and to installation, but if the installation is a minor part of its business, it probably does not go to the trouble.
- The opportunity cost of the installation process is the loss of the playhouses that could have been built by the two workers who were pulled off the production line.

**E 2-37**

- a. Salary of cell supervisor—Direct
- b. Power to heat and cool the plant in which the cell is located—Indirect
- c. Materials used to produce the motors—Direct
- d. Maintenance for the cell's equipment—Indirect
- e. Labor used to produce motors—Direct
- f. Cafeteria that services the plant's employees—Indirect
- g. Depreciation on the plant—Indirect
- h. Depreciation on equipment used to produce the motors—Direct
- i. Ordering costs for materials used in production—Indirect
- j. Engineering support—Indirect
- k. Cost of maintaining the plant and grounds—Indirect
- l. Cost of the plant's personnel office—Indirect
- m. Property tax on the plant and land—Indirect

**E 2-38**

- 1. Direct materials—Product cost
- Direct labor—Product cost
- Manufacturing overhead—Product cost
- Selling expense—Period cost

2. Direct materials.....	\$ 7,000
Direct labor.....	3,000
Manufacturing overhead.....	2,000
Total product cost.....	<u>\$12,000</u>

3. Unit Product Cost =  $\frac{\$12,000}{4,000 \text{ units}}$  = \$3.00

## E 2-39

1.	Costs	Product Cost			Period Cost	
		Direct Materials	Direct Labor	Manufact. Overhead	Selling Expense	Administrative Expense
	Direct materials.....	\$216,000				
	Factory rent.....			\$ 24,000		
	Direct labor.....		\$120,000			
	Factory utilities.....			6,300		
	Supervision in the factory.....			50,000		
	Indirect labor in the factory.....			30,000		
	Depreciation on factory equipment.....			9,000		
	Sales commissions.....				\$ 27,000	
	Sales salaries.....				65,000	
	Advertising.....				37,000	
	Depreciation on the headquarters building.....					\$ 10,000
	Salary of the corporate receptionist.....					30,000
	Other administrative costs.....					175,000
	Salary of the factory receptionist.....			28,000		
	Totals.....	\$216,000	\$120,000	\$147,300	\$129,000	\$215,000
2.	Direct materials.....					\$216,000
	Direct labor.....					120,000
	Manufacturing overhead.....					147,300
	Total product cost.....					<u>\$483,300</u>
3.	Total Period Cost =	\$129,000 + \$215,000 = \$344,000				
4.	Unit Product Cost =	$\frac{\$483,300}{30,000 \text{ units}} = \$16.11$				

## E 2-40

Costs	Direct Materials	Direct Labor	Manufact. Overhead
Jars.....	X		
Sugar.....	X		
Fruit.....	X		
Pectin.....	X		
Boxes.....	X		
Depreciation on the factory building.....			X
Cooking equipment operators' wages.....		X	
Filling equipment operators' wages.....		X	
Packers' wages.....		X	
Janitors' wages.....			X
Receptionist's wages.....			X
Telephone.....			X
Utilities.....			X
Rental of Santa Claus suit.....			X
Supervisory labor salaries.....			X
Insurance on factory building.....			X
Depreciation on factory equipment.....			X
Oil to lubricate filling equipment.....			X

## E 2-41

- |                             |                  |
|-----------------------------|------------------|
| Direct materials.....       | \$400,000        |
| Direct labor.....           | 80,000           |
| Manufacturing overhead..... | 320,000          |
| Total product cost.....     | <u>\$800,000</u> |
- $$\text{Product Cost per Unit} = \frac{\text{Total Product Cost}}{\text{Number of Units}}$$

$$= \frac{\$800,000}{4,000 \text{ units}} = \$200.00$$

**E 2-42**

- |    |                       |                  |
|----|-----------------------|------------------|
| 1. | Direct materials..... | \$400,000        |
|    | Direct labor.....     | 80,000           |
|    | Total prime cost..... | <u>\$480,000</u> |
- 
- |    |                     |   |  |
|----|---------------------|---|--|
| 2. | Prime Cost per Unit | = | $\frac{\text{Total Prime Cost}}{\text{Number of Units}}$ |
|    |                     | = | $\frac{\$480,000}{4,000 \text{ units}}$                  |
|    |                     | = | \$120.00   |
- 
- |    |                             |                  |
|----|-----------------------------|------------------|
| 3. | Direct labor.....           | \$ 80,000        |
|    | Manufacturing overhead..... | 320,000          |
|    | Total conversion cost.....  | <u>\$400,000</u> |
- 
- |    |                          |   |   |
|----|--------------------------|---|---|
| 4. | Conversion Cost per Unit | = | $\frac{\text{Total Conversion Cost}}{\text{Number of Units}}$ |
|    |                          | = | $\frac{\$400,000}{4,000 \text{ units}}$                       |
|    |                          | = | \$100.00  |

**E 2-43**

- |    |                                    |                 |
|----|------------------------------------|-----------------|
| 1. | Materials inventory, June 1.....   | \$ 3,700        |
|    | Materials purchases in June.....   | 15,500          |
|    | Materials inventory, June 30.....  | <u>(1,600)</u>  |
|    | Direct materials used in June..... | <u>\$17,600</u> |
- 
2. As shown in the exercise, the cost of direct materials purchased in June is \$15,500. Also, as calculated in response to Requirement 1, the cost of direct materials used in production in June is \$17,600. Therefore, in this case, the cost of direct materials used is greater than the cost of direct material purchased, which means that—for whatever reason—Hannah Banana Bakers decided to let its ending inventory (of \$1,600) drop below its beginning inventory (of \$3,700). The difference in beginning and ending inventories (\$3,700 – \$1,600 = \$2,100) accounts for the difference between the cost of direct materials purchased and the cost of direct materials used in production (also \$2,100; or \$17,600 – \$15,500). Hannah might have elected to let its ending materials inventory drop in order to save cash for purchases other than buying materials inventory. Also, it might have elected to do so to reduce its materials inventory holding costs (e.g., inspection, handling, insurance, etc.). Furthermore, Hannah might have reduced its ending materials inventory because it foresaw that demand in July would be lower than in June and did not want to be left holding additional inventory at the end of July. Alternately, Hannah might have experienced stronger than expected sales in June and used more direct materials in production than it had anticipated when purchasing materials. Regardless of the reason, it is helpful for students to understand the relationship between the cost of materials purchased versus the cost of materials used in production in a given period.



**E 2-44**

1. Finished goods inventory, January 1.....	6,800
Units completed during the year.....	94,000
Finished goods inventory, December 31.....	(7,200)
Units sold.....	<u>93,600</u>
2. Units sold.....	93,600
× Unit cost.....	\$2,200
Cost of goods sold.....	<u>\$205,920,000</u>

**E 2-45**

1. Materials inventory, September 1.....	\$ 120,000
Materials purchases in September.....	200,000
Materials inventory, September 30.....	(130,000)
Direct materials used in September.....	<u>\$ 190,000</u>
2. Direct materials.....	\$190,000
Direct labor.....	120,000
Manufacturing overhead.....	325,000
Total manufacturing cost.....	<u>\$635,000</u>
3. Total manufacturing cost.....	\$635,000
Add: Work in process, September 1.....	80,000
Less: Work in process, September 30.....	(90,000)
Cost of goods manufactured.....	<u>\$625,000</u>

**E 2-46**

Cost of goods manufactured*.....	\$625,000
Finished goods, September 1.....	70,000
Finished goods, September 30.....	(65,000)
Cost of goods sold.....	<u>\$630,000</u>

\* See solution to Exercise 2-45.

**E 2-47**

Direct materials.....	\$180,000
Direct labor.....	505,000
Manufacturing overhead.....	110,000
Cost of goods sold.....	<u>\$795,000</u>

**Note:** Because there were no beginning or ending work-in-process or finished goods inventories, there is no difference here between cost of goods sold and cost of goods manufactured, so no interim calculations for them are necessary.

**E 2-48**

1. **Sales Revenue** = **Number of Units Sold × Selling Price**  
 = 280,000 units × \$12  
 = \$3,360,000

2.

Jasper Company Income Statement For the Last Year	
Sales revenue.....	\$3,360,000
Cost of goods sold*.....	795,000
Gross profit.....	<u>\$2,565,000</u>
Less:	
Selling expense.....	437,000
Administrative expense.....	854,000
Operating income.....	<u><u>\$1,274,000</u></u>

\* Calculated in E2-47

Direct materials.....	\$180,000
Direct labor.....	505,000
Manufacturing overhead.....	110,000
Cost of goods sold.....	<u><u>\$795,000</u></u>

**E 2-49**

1.

Jasper Company Income Statement For the Last Year		
	Sales & Expenses	Percent of Sales
Sales revenue.....	\$3,360,000	100.0 <sup>a</sup>
Cost of goods sold*.....	795,000	23.7 <sup>b</sup>
Gross profit.....	<u>\$2,565,000</u>	<u>76.3</u> <sup>c</sup>
Less:		
Selling expense.....	437,000	13.0 <sup>d</sup>
Administrative expense.....	854,000	25.4 <sup>e</sup>
Operating income.....	<u><u>\$1,274,000</u></u>	<u><u>37.9</u></u> <sup>f</sup>

\* See solution to Exercise 2-48, Requirement 2.

<sup>a</sup> Sales revenue: \$3,360,000/\$3,360,000 = 1.00, or 100%<sup>b</sup> Cost of goods sold: \$795,000/\$3,360,000 = 0.237, or 23.7%<sup>c</sup> Gross profit: \$2,565,000/\$3,360,000 = 0.763, or 76.3%<sup>d</sup> Selling expense: \$437,000/\$3,360,000 = 0.130, or 13.0%<sup>e</sup> Administrative expense: \$854,000/\$3,360,000 = 0.254, or 25.4%<sup>f</sup> Operating income: \$1,274,000/\$3,360,000 = 0.379, or 37.9%

**E 2-49 (Concluded)**

2. The income statement showing each account as a percentage of sales helps focus managerial attention on those expenses that are relatively high. For Jasper, it appears as though administrative expense is twice as large as selling expense. Perhaps management could explain ways to reduce certain administrative expenses, such as research and development or fees incurred for general counsel (e.g., size of Jasper's legal staff).

**E 2-50**

**a (Direct Materials Used in Production) = Beginning Inventory Direct Materials + Purchases – Ending Inventory Direct Materials**

$$\begin{aligned} a &= \$10,000 + \$45,000 - \$15,000 \\ &= \$40,000 \end{aligned}$$

---

To find b, one can rearrange the Cost of Goods Manufactured equation to solve for Direct Labor Used in Production (i.e., the unknown, or b):

**b (Direct Labor Used in Production) = Cost of Goods Manufactured – Direct Materials Used in Production – Manufacturing Overhead Costs Used in Production – Beginning WIP Inventory + Ending WIP Inventory**

$$b = \text{COGM} - \$40,000 \text{ (from a)} - \$80,000 - \$17,000 + \$14,000$$

Thus, in order to find b, we first need to calculate Cost of Goods Manufactured as follows:

**Cost of Goods Manufactured = Cost of Goods Sold – Beginning Finished Goods Inventory + Ending Finished Goods Inventory**

$$\begin{aligned} \text{COGM} &= \$169,000 - \$8,000 + \$7,000 \\ &= \$168,000 \end{aligned}$$

Finally, inserting Cost of Goods Manufactured into the earlier equation:

$$\begin{aligned} b &= \$168,000 - \$40,000 - \$80,000 - \$17,000 + \$14,000 \\ &= \$45,000 \end{aligned}$$

---

**c (Direct Materials Beginning Inventory for Year 2) = Direct Materials Ending Inventory for Year 1 = \$15,000**

---

**d (Direct Materials Purchases for Year 2) = Direct Materials Used in Production – Direct Materials Beginning Inventory + Direct Materials Ending Inventory**

$$\begin{aligned} d &= \$50,000 - \$15,000 + \$17,000 \\ &= \$52,000 \end{aligned}$$

---

**e (Cost of Goods Sold for Year 2) = Beginning Finished Goods Inventory + Cost of Goods Manufactured – Ending Finished Goods Inventory**

**e = \$7,000 + COGM – \$11,000; therefore, we must first calculate COGM to be able to calculate COGS.**

**E 2-50 (Concluded)**

**So, COGM = Direct Materials Used in Production + Direct Labor Used in Production +  
MOH Costs Used in Production + Beginning WIP Inventory – Ending WIP Inventory**

$$\begin{aligned}\text{COGM} &= \$50,000 + \$53,000 + \$76,000 + \$14,000 - \$19,000 \\ &= \$174,000\end{aligned}$$

$$\begin{aligned}\text{Therefore, e} &= \$7,000 + \$174,000 - \$11,000 \\ &= \$170,000\end{aligned}$$

## PROBLEMS

### P 2-51

1.	Cost	Direct Materials	Direct Labor	Manufact. Overhead	Selling and Administrative
	Hamburger meat.....	\$4,500			
	Buns, lettuce, pickles, and onions.....	800			
	Frozen potato strips.....	1,250			
	Wrappers, bags, and condiment packages.....	600			
	Other ingredients.....	660			
	Part-time employees' wages.....		\$7,250		
	John Peterson's salary.....				\$3,000
	Utilities.....			\$1,500	
	Rent.....			1,800	
	Depreciation, cooking equipment and fixtures.....			600	
	Advertising.....				500
	Janitor's wages.....			520	
	Janitorial supplies.....			150	
	Accounting fees.....				1,500
	Taxes.....				4,250
	Totals.....	\$7,810	\$7,250	\$4,570	\$9,250

### *Explanation of Classification*

Direct materials include all the food items that go into a burger bag, as well as the condiment packages and the wrappers and bags themselves. These materials go “out the door” in the final product. “Other ingredients” might include the oil to fry the potato strips and grease the frying surface for the hamburgers and the salt for the fries. They are direct materials but could also be classified as overhead because of cost and convenience.

Direct labor consists of the part-time employees who cook food and fill orders.

Manufacturing overhead consists of all indirect costs associated with the production process. These are the utilities, rent for the building, depreciation on the equipment and register, and cost of janitorial fees and supplies.

Selling and administrative expense includes John Peterson's salary, advertising, accounting fees, and taxes.

**P 2-51 (Concluded)**

2.

Pop's Drive-Thru Burger Heaven Income Statement For the Month of December		
Sales (\$3.50 × 10,000).....		\$35,000
Less cost of goods sold:		
Direct materials.....	\$7,810	
Direct labor.....	7,250	
Manufacturing overhead.....	4,570	19,630
Gross margin.....		\$15,370
Less: Selling and administrative expense.....		9,250
Net income.....		<u>\$ 6,120</u>

3. Elena's simplifying assumptions were:

- (1) all part-time employees are production workers,
- (2) John Peterson's salary is for selling and administrative functions,
- (3) all building-related expense as well as depreciation on cooking equipment and fixtures are for production, and
- (4) all taxes are administrative expense.

These make it easy to classify 100% of each expense as product cost or selling and administrative cost. The result is that she does not have to perform studies of the time spent by each employee on producing versus selling burger bags. In addition, it is likely that John Peterson pitches in to help fry burgers or assemble burger bags when things get hectic. Of course, during those times, he is engaged in production—not selling or administration. The cost of determining just exactly how many minutes of each employee's day is spent in production versus selling is probably not worth it. (Remember, accountants charge by the number of hours spent—the more time Elena spends separating costs into categories, the higher her fees.)

For this small business, there is little problem with misclassifying Pop's expenses. Pop's Drive-Thru Burger Heaven is not a publicly traded company, and its income statements do not have to conform to GAAP. Outside use of the statements is confined to government taxing authorities and a bank (if a loan or line of credit is necessary). Elena's accounting works well for those purposes. In addition, and perhaps more importantly, the analysis of Pop's results is not likely to change dramatically based on these assumptions and therefore, the decisions that Pop's makes based on these statements would not be affected.

**P 2-52**

$$1. \text{ Cost per Page for Black Ink} = \frac{\$25.50}{850 \text{ pages}} = \$0.03$$

Total Owed to Harry by Mary =  $\$0.03 \times 500 \text{ pages} = \$15$

Total Owed to Harry by Natalie =  $\$0.03 \times 1,000 \text{ pages} = \$30$

$$2. \text{ Cost per Sheet for Paper} = \frac{\$2.50}{500 \text{ sheets}} = \$0.005$$

Total Cost for Mary =  $500 \text{ pages} \times (\$0.03 + \$0.005) = \$17.50$

Total Cost for Natalie =  $1,000 \text{ pages} \times (\$0.03 + \$0.005) = \$35$

$$3. \text{ Cost per Page for Color Ink} = \frac{\$31}{310 \text{ pages}} = \$0.10$$

Number of Black Ink Pages for Natalie =  $1,000 \times 0.80 = 800$

Number of Color Ink Pages for Natalie =  $1,000 \times 0.20 = 200$

Total Owed to Harry by Natalie =  $(\$0.03 \times 800 \text{ pages}) + (\$0.10 \times 200) = \$44$

Total Cost to Natalie =  $[(\$0.03 + \$0.005) \times 800 \text{ pages}] + [(\$0.10 + \$0.005) \times 200 \text{ pages}] = \$49$

**P 2-53**

$$1. \text{ Direct Materials} = \$40,000 + \$64,000 - \$19,800 = \$84,200$$

2. Direct materials used.....	\$ 84,200
Direct labor.....	43,500
Manufacturing overhead.....	108,750
Total manufacturing cost for July.....	\$236,450
Work in process, July 1.....	21,000
Work in process, July 31.....	(32,500)
Cost of goods manufactured.....	\$224,950
3. Cost of goods manufactured.....	\$224,950
Finished goods inventory, July 1.....	23,200
Finished good inventory, July 31.....	(22,100)
Cost of goods sold.....	\$226,050

**P 2-54**

1. Direct materials.....	\$18
Direct labor.....	12
Manufacturing overhead.....	16
Unit product cost.....	<u>\$46</u>

Total Product Cost = \$46 × 200,000 units = \$9,200,000

Laworld Inc. Income Statement For Last Year	
Sales revenue (\$60 × 200,000).....	\$12,000,000
Cost of goods sold.....	<u>9,200,000</u>
Gross margin.....	\$ 2,800,000
Less:	
Commissions (\$2 × 200,000).....	\$ 400,000
Fixed selling expense.....	100,000
Administrative expense.....	<u>300,000</u>
Operating income.....	<u>\$ 2,000,000</u>

No, we do not need to prepare a statement of cost of goods manufactured because there were no beginning or ending inventories of work in process. As a result, total manufacturing cost is equal to the cost of goods manufactured.

3. The 10,000 tents in beginning finished goods inventory have a cost of \$40, and that is lower than the year's unit product cost of \$46. The FIFO assumption says that beginning inventory is sold before current year production. Therefore, the cost of goods sold will be lower than it would be if there were no beginning inventory. This can be seen in the following statement of cost of goods sold.

Cost of goods manufactured (\$46 × 200,000).....	\$9,200,000
Beginning finished goods inventory (\$40 × 10,000).....	400,000
Ending finished goods inventory (\$46 × 10,000).....	<u>(460,000)</u>
Cost of goods sold.....	<u>\$9,140,000</u>



## P 2-54 (Concluded)

Laworld Inc. Revised Income Statement For Last Year	
Sales revenue (\$60 × 200,000).....	\$12,000,000
Cost of goods sold.....	9,140,000
Gross margin.....	<u>\$ 2,860,000</u>
Less:	
Commissions (\$2 × 200,000).....	\$ 400,000
Fixed selling expense.....	100,000
Administrative expense.....	300,000
Operating income.....	<u><u>\$ 2,060,000</u></u>

## P 2-55

1. Direct Materials = \$3,475 + \$15,000 – \$9,500 = \$8,975

Hayward Company Statement of Cost of Goods Manufactured For the Month of May	
Direct materials used.....	\$ 8,975
Direct labor.....	10,500
Manufacturing overhead:	
Factory supplies.....	\$ 675
Factory insurance.....	350
Factory supervision.....	2,225
Material handling.....	3,750
	<u>7,000</u>
Total manufacturing cost for May.....	\$ 26,475
Work in process, May 1.....	12,500
Work in process, May 31.....	<u>(14,250)</u>
Cost of goods manufactured.....	<u><u>\$ 24,725</u></u>

- 2.

Hayward Company Statement of Cost of Goods Sold For the Month of May	
Cost of goods manufactured.....	\$24,725
Finished goods inventory, May 1.....	6,685
Finished goods inventory, May 31.....	<u>(4,250)</u>
Cost of goods sold.....	<u><u>\$27,160</u></u>

**P 2-56**

1. c. These costs include direct materials, direct labor, and manufacturing overhead. The total of these three types of costs equals product cost.
2. a. If Linda returns to school, she will need to quit her job. The lost salary is the opportunity cost of returning to school.
3. b. If Randy were engaged in manufacturing a product, his salary would be a product cost. Instead, the product has been manufactured. It is in the finished goods warehouse waiting to be sold. This is a period cost.
4. j. Jamie is working at company headquarters, and her salary is part of administrative cost.
5. i. All factory costs other than direct materials and direct labor are, by definition, overhead.
6. d. The design engineer is estimating the total number of labor hours required to complete the manufacturing of a product. This total will be used to compute direct labor cost.
7. h. This is direct materials cost.
8. g. The sum of direct materials and direct labor is, by definition, prime cost.
9. f. The cost of converting direct materials into finished product is the sum of direct labor and manufacturing overhead. This is conversion cost.
10. e. The depreciation on the delivery trucks is part of selling cost, the cost of selling and delivering product.

**P 2-57**

1. Before COGM can be calculated, Direct Materials Used in Production must first be calculated as:

$$\begin{aligned}\text{Direct Materials Used in Production} &= \text{Beginning Direct Materials Inventory} + \\ &\text{Direct Materials Purchases} - \text{Ending Direct Materials Inventory} \\ &= \$20,000 + \$40,000 - \$10,000 \\ &= \$50,000\end{aligned}$$

Now,

$$\begin{aligned}\text{COGM} &= \text{Direct Materials Used in Production} + \text{Direct Labor Costs Used in} \\ &\text{Production} + \text{Manufacturing Overhead Costs Used in Production} + \text{Beginning} \\ &\text{WIP Inventory} - \text{Ending WIP Inventory} \\ &= \$50,000 + \$800,000 + \$100,000 + \$60,000 - \$100,000 \\ &= \$910,000\end{aligned}$$

2.  $\text{COGS} = \text{Beginning Finished Goods Inventory} + \text{COGM} - \text{Ending Finished Goods Inventory}$   
 $= \$300,000 + \$910,000 - \$280,000$   
 $= \$930,000$

**P 2-57 (Concluded)**

3.

<b>Berry Company Income Statement For Last Year</b>		
Sales (\$2,100 × 700).....		\$1,470,000
Cost of goods sold.....		<u>930,000</u>
Gross margin.....		\$ 540,000
Less:		
Selling expense.....		60,000
Administrative expense.....		<u>150,000</u>
Operating income.....		<u>\$ 330,000</u>

4. The dominant cost is direct labor cost of \$800,000. Direct labor is the dominant cost because Berry's core business is creating building plans, which is a labor-intensive process requiring expensive, well-trained architects. The materials used to create building plans are relatively inexpensive.

**P 2-58**

1.

<b>W. W. Phillips Company Statement of Cost of Goods Manufactured For Last Year</b>		
Direct materials* .....		\$300,000
Direct labor.....		200,000
Manufacturing overhead:		
Indirect labor.....	\$40,000	
Rent, factory building.....	42,000	
Depreciation, factory equipment.....	60,000	
Utilities, factory.....	<u>11,900</u>	<u>153,900</u>
Total cost of product.....		\$653,900
Beginning work in process.....		13,040
Ending work in process.....		<u>(14,940)</u>
Cost of goods manufactured.....		<u>\$652,000</u>

\* Beg. Inventory + Purchases – Ending Inventory = Direct Materials Used

Direct Materials Used = \$46,800 + \$320,000 – \$66,800 = \$300,000

**P 2-58 (Concluded)**

$$2. \text{ Average Cost of One Unit of Product} = \frac{\$652,000}{4,000} = \$163$$

3.

W. W. Phillips Company Income Statement For Last Year		
Sales (\$400 × 3,800*).....		\$1,520,000
Cost of goods sold**.....		<u>617,900</u>
Gross margin.....		\$ 902,100
Less:		
Selling expense:		
Sales supervisor's salary.....	\$ 90,000	
Commissions.....	<u>180,000</u>	270,000
General administration expense.....		<u>300,000</u>
Operating income.....		<u><u>\$ 332,100</u></u>

\* Units Sold = 4,000 + 500 – 700 = 3,800

\*\* Cost of Goods Sold = \$652,000 + \$80,000 – \$114,100 = \$617,900

**P 2-59**

1. The Internet payment of \$40 is an expense that would appear on the income statement. This is because the Internet services are used up each month—Luisa cannot “save” any unused Internet time for the next month.
2. The opportunity cost is the \$100 that Luisa would have made if she had been able to accept the movie role. It is an opportunity cost because it is the cost of the next best alternative to dog walking.
3. The price is \$250 per month per dog. (Note: The price is charged by Luisa to her clients; it is not her cost.)

$$\text{Total Revenue for a Month} = \$250 \times 12 \text{ dogs} = \$3,000$$

**P 2-60**

<b>1. Direct materials:</b>		
Magazine (5,000 × \$0.40).....	\$2,000	
Brochure (10,000 × \$0.08).....	800	\$2,800
<b>Direct labor:</b>		
Magazine (5,000/20 × \$10).....	\$2,500	
Brochure (10,000/100 × \$10).....	1,000	3,500
<b>Manufacturing overhead:</b>		
Rent.....	\$1,400	
Depreciation (\$40,000/20,000 × 350*).....	700	
Setups.....	600	
Insurance.....	140	
Power.....	350	3,190
<b>Cost of goods manufactured.....</b>		<b>\$9,490</b>

\* Production is 20 units per printing hour for magazines and 100 units per printing hour for brochures, yielding monthly machine hours of 350 [(5,000/20) + (10,000/100)]. This is also monthly labor hours as machine labor only operates the presses.

<b>2. Direct materials.....</b>	<b>\$2,800</b>	
<b>Direct labor.....</b>	<b>3,500</b>	
<b>Total prime costs.....</b>	<b>\$6,300</b>	
<b>Magazine:</b>		
Direct materials.....	\$2,000	
Direct labor.....	2,500	
<b>Total prime costs.....</b>	<b>\$4,500</b>	
<b>Brochure:</b>		
Direct materials.....	\$ 800	
Direct labor.....	1,000	
<b>Total prime costs.....</b>	<b>\$1,800</b>	
<b>3. Total monthly conversion cost:</b>		
Direct labor.....	\$3,500	
Manufacturing overhead.....	3,190	
<b>Total.....</b>	<b>\$6,690</b>	
<b>Magazine:</b>		
Direct labor.....		\$2,500
<b>Manufacturing overhead:</b>		
Power (\$1 × 250).....	\$ 250	
Depreciation (\$2 × 250).....	500	
Setups (2/3 × \$600).....	400	
Rent and insurance (\$4.40 × 250 DLH)*.....	1,100	2,250
<b>Total .....</b>		<b>\$4,750</b>

**P 2-60 (Concluded)****Brochures:**

Direct labor.....		<b>\$1,000</b>
Manufacturing overhead:		
Power (\$1 × 100).....	<b>\$100</b>	
Depreciation (\$2 × 100).....	<b>200</b>	
Setups (1/3 × \$600).....	<b>200</b>	
Rent and insurance (\$4.40 × 100 DLH)*.....	<b>440</b>	<b>940</b>
Total .....		<b><u>\$1,940</u></b>

\* Rent and insurance cannot be traced to each product so the costs are assigned using direct labor hours:  $\$1,540/350 \text{ DLH} = \$4.40$  per direct labor hour. The other overhead costs are traced according to their usage. Depreciation and power are assigned by using machine hours (250 for magazines and 100 for brochures);  $\$350/350 = \$1.00$  per machine hour for power and  $\$40,000/20,000 = \$2.00$  per machine hour for depreciation. Setups are assigned according to the time required. Since magazines use twice as much time, they receive twice the cost: Letting  $X =$  the proportion of setup time used for brochures,  $2X + X = 1$  implies a cost assignment ratio of 2/3 for magazines and 1/3 for brochures.

4. Sales [(5,000 × \$1.80) + (10,000 × \$0.45)].....		<b>\$13,500</b>
Less cost of goods sold.....		<b><u>9,490</u></b>
Gross margin.....		<b>\$ 4,010</b>
Less operating expenses:		
Selling .....	<b>\$ 500 **</b>	
Administrative .....	<b><u>1,500 ***</u></b>	<b><u>2,000</u></b>
Operating income.....		<b><u>\$ 2,010</u></b>

\*\* Distribution of goods is a selling expense.

\*\*\* A case could be made for assigning part of her salary to production. However, since she is responsible for coordinating and managing all business functions, an administrative classification is more convincing.

**P 2-61**

1. The costs of the tent sales are accounted for as selling expense. The tent sales are designed to sell outdated or remanufactured products. They are not the main reason that Kicker is in business. In fact, an important objective is simply to increase awareness of the Kicker brand. As a result, these related costs are selling expense.

2. Revenue.....	\$ 20,000
Cost of goods sold.....	(7,000)
Tent sale expense.....	(14,300)
Tent sale loss.....	<u>\$ (1,300)</u>

A couple of actions could be taken. First, it could look for a more appropriate venue. The outer parking lot of a shopping center, or even a large grocery store, would enable Kicker employees to easily load purchased product into customer cars. Second, the disc jockey could be dispensed with; instead, music could be played from CDs over the audio system in the truck. Third, Kicker could spend a year or so raising brand awareness in the Austin market before attempting another tent sale.



## CASES

### Case 2-62

1. <u>Production</u>	<u>Selling</u>	<u>Administrative</u>
(DL) Machine operators	Sales salaries	Utilities
(DL) Other direct labor	Advertising	Rent
(OH) Supervisory salaries		CPA fees
(DM) Pipe		Adm. salaries
(OH) Tires and fuel		
(OH) Depreciation, equipment		
(OH) Salaries of mechanics		

### 2. Traceable costs using equipment hours:

Machine operators.....	\$ 218,000
Other direct labor.....	265,700
Pipe.....	1,401,340
Tires and fuel.....	418,600
Depreciation, equipment.....	198,000
Salaries of mechanics.....	50,000
Total.....	<u>\$2,551,640</u>

Machine operators, tires and fuel, and depreciation are all directly caused by equipment usage, which is measured by equipment hours. One can also argue that the amount of mechanic time required is also a function of equipment hours and so the salaries of mechanics can be assigned using equipment hours. Pipe and other direct labor can be assigned using equipment hours because their usage should be highly correlated with equipment hours. That is, equipment hours increase because there is more pipe being laid. As hours increase, so does the pipe usage. A similar argument can be made for other direct labor. Actually, it is not necessary to use equipment hours to assign pipe or other direct labor because these two costs are directly traceable to jobs.

$$\begin{aligned}
 \text{Traceable Cost per Equipment Hour} &= \frac{\$2,551,640}{18,200 \text{ hours}} \\
 &= \$140.20 \text{ per hour}
 \end{aligned}$$

**Case 2-63**

1. **Leroy should politely and firmly decline the offer. The offer includes an implicit request to use confidential information to help Jean win the bid. Use of such information for personal advantage is wrong. Leroy has a professional and personal obligation to his current employer. This obligation must take precedence over the opportunity for personal financial gain.**

**Corporate codes of conduct emphasize honesty and integrity. Leroy has a responsibility to act on behalf of his company, and clearly, disclosing confidential information acquired in the course of his work to a competitor would be prohibited. In addition, codes of corporate conduct also require employees to avoid conflicts of interest and to refuse any gift, favor, or hospitality that would influence employee actions inappropriately.**

2. **If Leroy agrees to review the bid, he will likely use his knowledge of his current employer's position to help Jean win the bid. In fact, agreement to help probably would reflect a desire for the bonus and new job with the associated salary increase. Helping would likely ensure that Jean would win the bid. Leroy was concerned about the political fallout and subsequent investigation revealing his involvement—especially if he sent up a red flag by switching to his friend's firm. An investigation may reveal the up-front bonus and increase the suspicion about Leroy's involvement. There is a real possibility that Leroy could be implicated. Whether this would lead to any legal difficulties is another issue. At the very least, some tarnishing of his professional reputation and personal character is possible. Some risk to Leroy exists. The amount of risk, though, should not be a factor in Leroy's decision. What is right should be the central issue, not the likelihood of getting caught.**