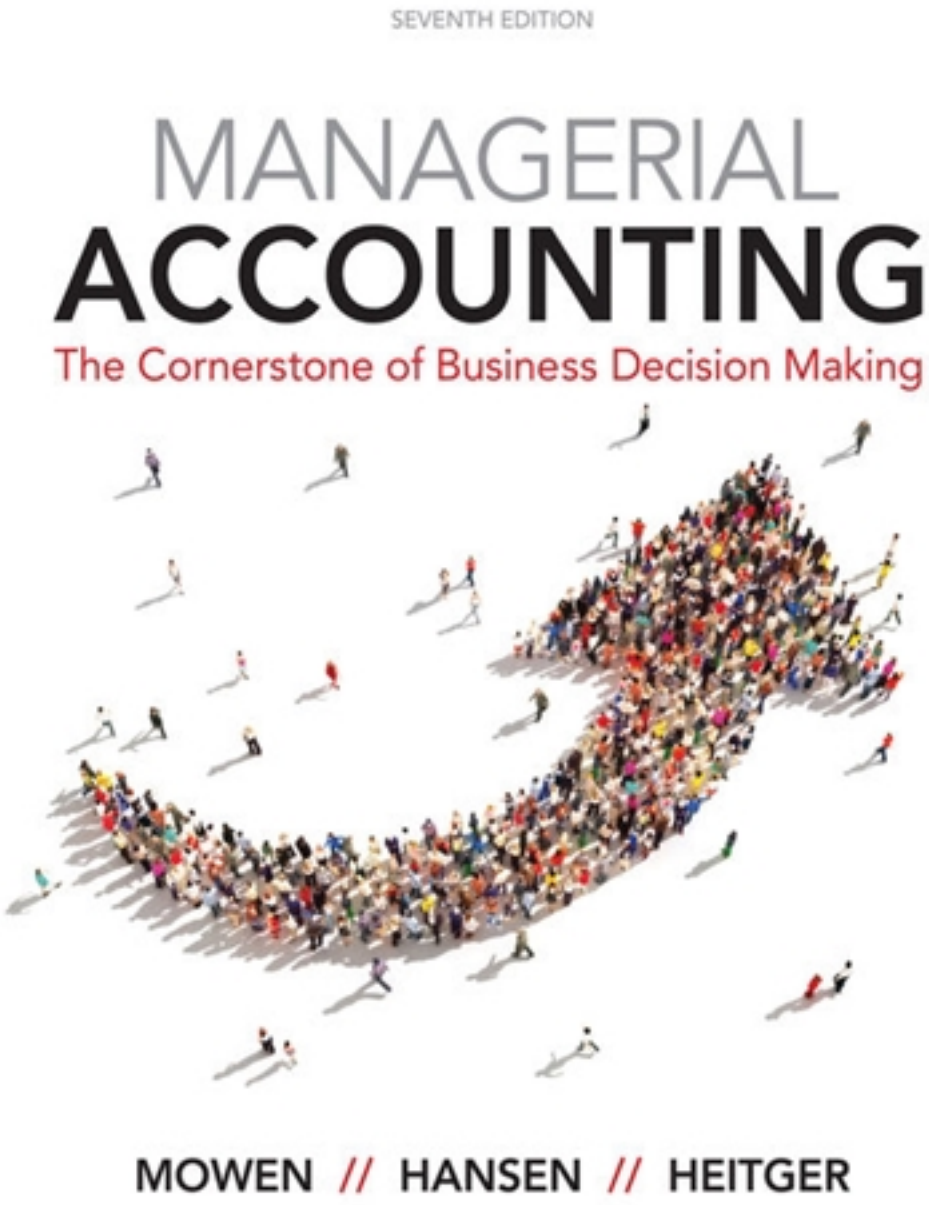
Solutions for Managerial Accounting 7th Edition by Mowen



Solutions

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	$120,000

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	$60,000

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

3.	Direct labor	$28,000
	Manufacturing overhead	60,000
	Total conversion cost	$88,000

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	$135,000

BE 2-22

1.

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

* 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.

Slapshot Company Cost of Goods Sold Statement For the Month of June	
Cost of goods manufactured	$437,000
Finished goods inventory, June 1	80,000
Finished goods inventory, June 30	(84,000)
Cost of goods sold	$433,000

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	1,880

BE 2-24

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

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		433,000	57.6
Gross margin		$319,000	42.4
Less:			
Selling expense:			
Variable commissions (0.10 × $752,000)	$75,200		
Fixed selling expense	65,000	140,200	18.6
Administrative expense		53,800	7.2
Operating income		$125,000	16.6

* 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.

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

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	$168,000

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	$118,000

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	$68,000

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	(40,000)
Direct materials used in production	$335,000

BE 2-30

1.

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

* 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.

Morning Smiles Coffee Company Cost of Goods Sold Statement For the Month of March	
Cost of goods manufactured	$607,500
Finished goods inventory, March 1	70,000
Finished goods inventory, March 31	(65,000)
Cost of goods sold	$612,500

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	8,000

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		612,500
Gross margin		$187,500
Less:		
Selling expense:		
Variable commissions (0.05 × $800,000)	$40,000	
Fixed selling expense	45,000	85,000
Administrative expense		47,500
Operating income		$ 55,000

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		612,500	76.6
Gross margin		$187,500	23.4
Less:			
Selling expense:			
Variable commissions (0.05 × $800,000)	$40,000		
Fixed selling expense	45,000	85,000	10.6
Administrative expense		47,500	5.9
Operating income		$ 55,000	6.9

* 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.

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

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.

Cost	Salaries	Commissions
Derek	$25,000	$6,000
Lawanna	30,000	1,500
Total	$55,000	$7,500

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 × 2/3) of her salary is selling cost. The remainder is administrative cost. All commissions are selling costs.

Cost	Selling Costs	Administrative Costs
Derek's salary	$25,000	—
Lawanna's salary	20,000	$10,000
Derek's commissions	6,000	—
Lawanna's commissions	1,500	—
Total	$52,500	$10,000

E 2-36

1. 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.

2. 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.

3. 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	**$12,000**

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	$483,300

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

1.

Direct materials	$400,000
Direct labor	80,000
Manufacturing overhead	320,000
Total product cost	$800,000

2.

$$\text{Product Cost per Unit} = \frac{\text{Total Product Cost}}{\text{Number of Units}}$$

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

E 2-42

1.

Direct materials	$400,000
Direct labor	80,000
Total prime cost	$480,000

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	$400,000

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	(1,600)
Direct materials used in June	$17,600

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	93,600
2.	Units sold	93,600
	× Unit cost	$2,200
	Cost of goods sold	$205,920,000

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	$ 190,000
2.	Direct materials	$190,000
	Direct labor	120,000
	Manufacturing overhead	325,000
	Total manufacturing cost	$635,000
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	$625,000

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	$630,000

* 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	$795,000

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	$2,565,000
Less:	
Selling expense	437,000
Administrative expense	854,000
Operating income	$1,274,000

* Calculated in E2-47

Direct materials	$180,000
Direct labor	505,000
Manufacturing overhead	110,000
Cost of goods sold	$795,000

E 2-49

1.

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

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

[a] Sales revenue: $3,360,000/$3,360,000 = 1.00, or 100%

[b] Cost of goods sold: $795,000/$3,360,000 = 0.237, or 23.7%

[c] Gross profit: $2,565,000/$3,360,000 = 0.763, or 76.3%

[d] Selling expense: $437,000/$3,360,000 = 0.130, or 13.0%

[e] Administrative expense: $854,000/$3,360,000 = 0.254, or 25.4%

[f] 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

a = $10,000 + $45,000 – $15,000
= $40,000

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 = COGM – $40,000 (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

COGM = $169,000 – $8,000 + $7,000
= $168,000

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

b = $168,000 – $40,000 – $80,000 – $17,000 + $14,000
= $45,000

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

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

d = $50,000 – $15,000 + $17,000
= $52,000

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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

COGM = $50,000 + $53,000 + $76,000 + $14,000 – $19,000
= $174,000

Therefore, e = $7,000 + $174,000 – $11,000
= $170,000

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		$ 6,120

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

   Total Owed to Harry by Mary = $0.03 × 500 pages = $15
   Total Owed to Harry by Natalie = $0.03 × 1,000 pages = $30

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

   Total Cost for Mary = 500 pages × ($0.03 + $0.005) = $17.50
   Total Cost for Natalie = 1,000 pages × ($0.03 + $0.005) = $35

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

   Number of Black Ink Pages for Natalie = 1,000 × 0.80 = 800

   Number of Color Ink Pages for Natalie = 1,000 × 0.20 = 200

   Total Owed to Harry by Natalie = ($0.03 × 800 pages) + ($0.10 × 200) = $44

   Total Cost to Natalie = [($0.03 + $0.005) × 800 pages] + [($0.10 + $0.005) × 200 pages] = $49

P 2-53

1. 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	$46

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

2.

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

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)	(460,000)
Cost of goods sold	$9,140,000

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	$ 2,860,000
Less:	
Commissions ($2 × 200,000)	$ 400,000
Fixed selling expense	100,000
Administrative expense	300,000
Operating income	$ 2,060,000

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	7,000
Total manufacturing cost for May		$ 26,475
Work in process, May 1		12,500
Work in process, May 31		(14,250)
Cost of goods manufactured		$ 24,725

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	(4,250)
Cost of goods sold	$27,160

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:

Direct Materials Used in Production = Beginning Direct Materials Inventory + Direct Materials Purchases – Ending Direct Materials Inventory

= $20,000 + $40,000 – $10,000
= $50,000

Now,

COGM = Direct Materials Used in Production + Direct Labor Costs Used in Production + Manufacturing Overhead Costs Used in Production + Beginning WIP Inventory – Ending WIP Inventory

= $50,000 + $800,000 + $100,000 + $60,000 – $100,000
= $910,000

2. COGS = Beginning Finished Goods Inventory + COGM – Ending Finished Goods Inventory

= $300,000 + $910,000 – $280,000
= $930,000

P 2-57 (Concluded)

3.

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

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.

W. W. Phillips Company Statement of Cost of Goods Manufactured For Last Year		
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	11,900	153,900
Total cost of product		$653,900
Beginning work in process		13,040
Ending work in process		(14,940)
Cost of goods manufactured		$652,000

* Beg. Inventory + Purchases – Ending Inventory = Direct Materials Used
Direct Materials Used = $46,800 + $320,000 – $66,800 = $300,000

P 2-58 (Concluded)

2. 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**		617,900
Gross margin		$ 902,100
Less:		
Selling expense:		
Sales supervisor's salary	$ 90,000	
Commissions	180,000	270,000
General administration expense		300,000
Operating income		$ 332,100

* 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.)

   Total Revenue for a Month = $250 × 12 dogs = $3,000

P 2-60

1. Direct materials:

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

* 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.

2.

Direct materials	$2,800
Direct labor	3,500
Total prime costs	$6,300
Magazine:	
Direct materials	$2,000
Direct labor	2,500
Total prime costs	$4,500
Brochure:	
Direct materials	$ 800
Direct labor	1,000
Total prime costs	$1,800

3.

Total monthly conversion cost:		
Direct labor	$3,500	
Manufacturing overhead	3,190	
Total	$6,690	
Magazine:		
Direct labor		$2,500
Manufacturing overhead:		
Power ($1 × 250)	$ 250	
Depreciation ($2 × 250)	500	
Setups (2/3 × $600)	400	
Rent and insurance ($4.40 × 250 DLH)*	1,100	2,250
Total		$4,750

P 2-60 (Concluded)

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

*** Rent and insurance cannot be traced to each product so the costs are assigned using direct labor hours: $1,540/350 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)]		**$13,500**
Less cost of goods sold		**9,490**
Gross margin		**$ 4,010**
Less operating expenses:		
Selling	**$ 500 ****	
Administrative	**1,500 *****	**2,000**
Operating income		**$ 2,010**

**** 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	**$ (1,300)**

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.

Production	Selling	Administrative
(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	$2,551,640

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.

$$\text{Traceable Cost per Equipment Hour} = \frac{\$2,551,640}{18,200 \text{ hours}}$$

$$= \$140.20 \text{ per hour}$$

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.**

Examples of Managerial Accounting

Seventh Edition

MOWEN / HANSEN / HEITGER

Chapter 2

Basic Managerial Accounting Concepts

CENGAGE

Learning Objectives

1. Explain the meaning of cost and how costs are assigned to products and services
2. Define the various costs of manufacturing products and providing services as well as the costs of selling and administration
3. Prepare income statements for manufacturing and service organizations

The Meaning and Uses of Cost (1 of 2)

- Determine the cost of products, services, customers, and other items to managers
- **Cost** is the amount of cash or cash equivalent sacrificed for goods and/or services that bring a current or future benefit to the organization
- As costs are used up in the production of revenues, they are said to expire. Expired costs are called **expenses**
- On the income statement, expenses are deducted from revenues to determine income (profit)

The Meaning and Uses of Cost (2 of 2)

- We can look more closely at the relationship between cost and revenue by focusing on the units sold. The revenue per unit is called **price**

Here's How It's Used: IN YOUR LIFE (1 of 5)

Making financially sound decisions requires that the costs associated with those decisions be clearly identified and accurately estimated. The exact purpose, or decision, for which the costs are being estimated must be determined—this purpose is referred to as a "cost object." Individuals, as well as businesses, must understand cost objects for various personal decisions. For example, as a prospective college student, Hannah wanted to know how much it costs to obtain a college education. Therefore, Hannah asked this question to her parents, her friends, and a family friend who works in a bank.

Here's How It's Used: IN YOUR LIFE (2 of 5)

However, she soon learned that this question was much more complicated than she had realized. Every time she asked this exact same question, she received a very different answer. Hannah quickly became concerned as she wondered if she could afford college. So she went back and asked everyone for a specific breakdown of the costs that went into their estimates.

Here's How It's Used: IN YOUR LIFE (3 of 5)

Hannah heard many specific costs including tuition, food, dormitory housing, gas for driving home on weekends, books and online access licenses, apartment utilities, plane fare for spring break vacations, clothes, scholarship offsets, computer, bar money, and weekend entertainment funds. Hannah realized that everyone had made very different assumptions. Some people assumed an out-of-state university, others used an in-state university, and yet others, an online education.

Here's How It's Used: IN YOUR LIFE (4 of 5)

In addition, some people assumed that Hannah wanted a total cost analysis for food, gas, and all living expenses, while others assumed she wanted an incremental cost analysis for costs that she would incur only if she pursued college (e.g., tuition, fees). Finally, her banking friend also included the opportunity cost of college, or the wages she would give up by not being able to work a full-time job while in college. This experience taught her the importance of understanding cost objects.

Here's How It's Used: IN YOUR LIFE (5 of 5)

Hannah now feels much better about her college selection process, including the steps she should take to prepare financially and enjoy her college experience!

Accumulating Costs

- **Accumulating costs** is the way that costs are measured and recorded

Recorded

- Phone Bill
- Accounts Payable & Telephone Expense Account

Assigning Costs

- **Assigning costs** is the way that a cost is linked to some cost object
- What is the cost object for the phone call?
  - To support Manufacturing?
  - To support Selling the Product?

Cost Objects

- Managerial accounting systems are structured to measure and assign costs
- A **cost object** is any item such as a product, customer, department, project, geographic region or plant, for which costs are measured and assigned

Assigning Costs to Cost Objects

- Costs can be assigned to cost objects in a number of ways
- The choice of a method depends on a number of factors, such as the need for accuracy
- The objective is to measure and assign costs as well as possible, given management objectives

Here's How it's Used: AT DELTA (1 of 6)

For Which Business Activities Do We Need an Estimate of Cost?

You are the chief financial officer for **Delta Air Lines**. Managing the company's numerous costs is critically important in the fiercely competitive airline industry. Therefore, one of your major tasks is deciding which costs to manage in order to achieve the company's profitability targets. In other words, you must identify the airline's most important cost objects to track, measure, and control.

Here's How it's Used: AT DELTA (2 of 6)

Which cost objects would you select as critical to the company's success?

Certain airline cost objects are obvious, such as the cost of operating a flight, which includes jet fuel (Delta spends over $10 billion annually for jet fuel) and labor costs for pilots, flight crews, and maintenance staffs. However, even the costs of these obvious cost objects can become challenging.

Here's How it's Used: AT DELTA (3 of 6)

For example, when an airline operates multiple types of aircraft, it incurs additional costs to train workers and store spare parts for each aircraft type (i.e., the total cost of training and maintaining 100 aircrafts of two different types is greater than the same number of aircraft all of one type). Airlines might be even more specific with certain cost objects, such as, when they focus on the cost per available seat mile (or CASM, as industry experts refer to it), which typically falls in the 6 to 10 cent range for most airlines.

Here's How it's Used: AT DELTA (4 of 6)

Other airline cost objects are even more challenging. For example, you likely did not include the cost of managing crises as an important cost object. However, according to the International Air Transit Association, the airline industry took an estimated $1.7 billion hit from disrupted airline travel resulting from the volcanic ash cloud caused by the eruption of the Icelandic volcano Eyjafjallajokull.

Here's How it's Used: AT DELTA (5 of 6)

Finally, you might consider the cost object of processing customers, such as boarding and deboarding passengers and loading and unloading their baggage. For example, airlines have charged fees for using curbside check-in services, consuming soft drinks during flight, using pillows and blankets while onboard, selecting seats prior to the day of the flight, and checking bags. **Spirit Airlines** raised many customer (and even regulator) eyebrows by being the first airline to charge passengers ($45) for their carry-on bags.

Here's How it's Used: AT DELTA (6 of 6)

Like any company, an airline can identify and manage any cost objects it so desires. Sometimes the most difficult part of effective cost management is the first step—deciding on the exact items for which one needs to understand the cost. Mistakes in selecting the cost objects almost always lead to poor decisions and subpar performance.

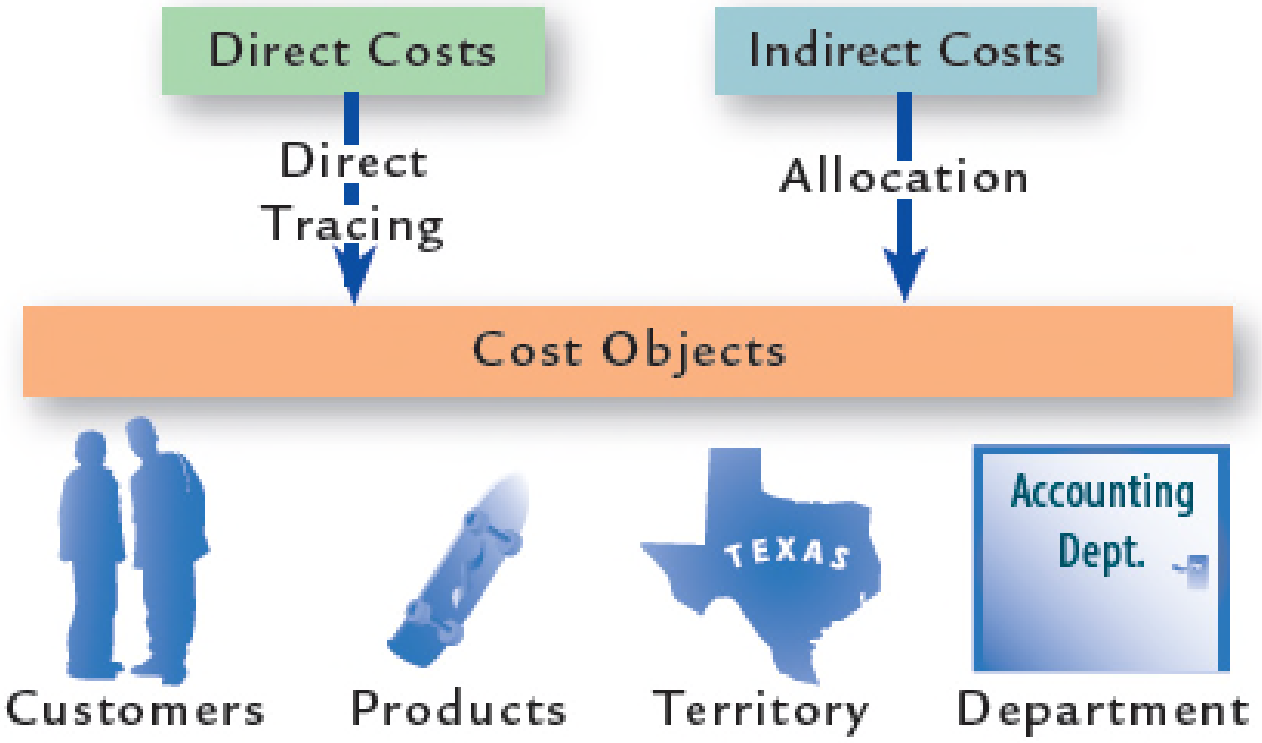
Direct Costs

- **Direct costs** are costs that can be easily and accurately traced to a cost object
- When a cost is easy to trace, we mean that the relationship between the cost and the object can be physically observed, is easy to track, and results in more accurate cost assignments

Indirect Costs

- **Indirect costs** are costs that cannot be easily and accurately traced to a cost object
- **Allocation** means that an indirect cost is assigned to a cost object by using a reasonable and convenient method
- Allocating indirect costs is based on convenience

Object Costing



Here's How it's Used: At LITTLE GUYS HOME ELECTRONICS (1 of 2)

Returning briefly to the **Little Guys Home Electronics** business from the chapter opening, the prices set by Little Guys management are heavily dependent on understanding the company's costs, both traced direct and allocated indirect, for each product. The more difficult costs to estimate and use appropriately in setting prices are the indirect, or overhead, costs. According to David, a partner in Little Guys, the most difficult part of pricing is deciding how accurately the indirect costs—such as inventory warehousing, support role employee labor, store insurance, delivery truck maintenance

Here's How it's Used: AT LITTLE GUYS HOME ELECTRONICS (2 of 2)

and rental (when the store owned trucks are in the shop for repair), and health care—have been allocated to each home electronics product. For example, if management believes that too few indirect costs have been allocated to a set of Klipsch speakers, then the speaker cost is marked up by a greater percentage than if the correct amount of indirect costs has been assigned. Therefore, accurately tracing direct costs and allocating indirect costs to products and services are important for many management decisions.

Other Categories of Cost

- Costs can be direct or indirect, and are analyzed with respect to their behavior patterns, or the way in which a cost changes when the level of the output changes.
  - **Variable cost**: A variable cost is one that increases in total as output increases and decreases in total as output decreases
  - **Fixed cost**: A fixed cost is a cost that does not increase in total as output increases and does not decrease in total as output decreases
  - **Opportunity cost**: An opportunity cost is the benefit given up or sacrificed when one alternative is chosen over another

Product Costs

- Output represents one of the most important cost objects
- There are two types of output: products and services
- **Products** are goods produced by converting raw materials through the use of labor and indirect manufacturing resources, such as the manufacturing plant, land, and machinery
  - Televisions, hamburgers, automobiles, computers, clothes, and furniture are examples of products

Service Costs (1 of 2)

- **Services** are tasks or activities performed for a customer or an activity performed using an organization's products or facilities
  - Medical care, teaching, dental care, spa activities, insurance coverage, and accounting are examples of service activities
  - Car rental, video rental, and skiing are examples of services where the customer uses an organization's products or facilities

Service Costs (2 of 2)

- Services differ from products in many ways
  - Services are intangible
  - Services are perishable
  - Services require direct contact between providers and buyers

Here's How it's Used: AT KICKER (1 of 2)

Kicker collects and analyzes many types of costs and breaks cost information into a series of accounts that helps Kicker's management in budgeting and decision making. The sales function, for example, is broken down into three areas: selling, customer service, and marketing. Consider the marketing department, which is responsible for advertising, promotions, and tent shows. Tent shows are small-scale affairs held several times a year in the central and south-central United States. Kicker brings its semitrailer full of products and sound equipment as well as a couple of show trucks.

Here's How it's Used: AT KICKER (2 of 2)

Then, a large tent is set up to sell Kicker merchandise, explain products, showcase new models, and sell the previous year's models at greatly reduced prices. The cost of each tent show is carefully tracked and compared with that show's revenue. Sites that don't provide sales revenue greater than cost are not booked for the coming year.

Like many of today's companies, Kicker tracks costs carefully for use in decision making. The general cost categories discussed in this chapter help the company to organize cost information and relate it to decision making.

Providing Cost Information (1 of 2)

- Managerial accountants must decide:
  - what types of managerial accounting information to provide to managers
  - how to measure such information
  - when and to whom to communicate the information
- Managers rely on managerial accounting information that is prepared and they believe that it provides the best analysis for the decision at hand

Providing Cost Information (2 of 2)

- There is one major exception
- Managerial accountants must follow specific external reporting rules (i.e., generally accepted accounting principles)
  - When providing outside parties with cost information about the amount of ending inventory on the balance sheet and the cost of goods sold on the income statement
  - To calculate these two amounts, managerial accountants must subdivide costs into functional categories: production and period (i.e., nonproduction)

Determining Product Cost (1 of 2)

- **Product (manufacturing) costs** are costs, both direct and indirect, of producing a product in a manufacturing firm or of acquiring a product in a merchandising firm and preparing it for sale
  - Only costs in the production section of the value chain are included in product costs

Determining Product Cost (2 of 2)

- Product costs are inventoried
- Product costs initially are added to an inventory account and remain in inventory until they are sold, at which time they are transferred to cost of goods
- Product costs are classified as direct materials, direct labor, and manufacturing overhead
- Product Cost
  - Direct Materials
  - Direct Labor
  - Overhead

Direct Materials

- **Direct materials** are materials that are a part of the final product and can be directly traced to the goods being produced
- Materials cost can be directly charged to products because physical observation can be used to measure the quantity used by each product
- Materials that become part of a product usually are classified as direct materials

Direct Labor

- **Direct labor** is the labor that can be directly traced to the goods being produced
  - Physical observation can be used to measure the amount of labor used to produce a product
  - Those employees who convert direct materials into a product are classified as direct labor
- A company can also have indirect labor costs
  - Indirect labor is included in overhead and, therefore, is an indirect cost rather than a direct cost

Manufacturing Overhead (1 of 2)

- All product costs other than direct materials and direct labor are considered **manufacturing overhead**
- **Manufacturing overhead** also is known as **factory burden, support**, or **indirect manufacturing costs**
- Costs are included as manufacturing overhead if they cannot be traced to the cost object of interest (e.g., unit of product)

Manufacturing Overhead (2 of 2)

- Manufacturing overhead cost category includes a variety of items
  - Examples: depreciation on plant buildings and equipment, janitorial and maintenance labor, plant supervision, materials handling, power for plant utilities, and plant property taxes

Calculating Total Product Cost (1 of 2)

- The total product cost equals the sum of direct materials, direct labor, and manufacturing overhead:

Total Product Cost = Direct Materials + Direct Labor + Manufacturing Overhead

- The unit product cost equals total product cost divided by the number of units produced:

$$\text{Per - Unit Product Cost} = \frac{\text{Total Product Cost}}{\text{Number of units Produced}}$$

Calculating Total Product Cost (2 of 2)

- Product costs are essential to management control and decision making
- Managers use product costs to create budgets and analyses
- Product costs within manufacturing can then be contrasted with period costs incurred outside of manufacturing

Example 2.1: How to Calculate Product Cost in Total and Per Unit (1 of 2)

BlueDenim Company makes blue jeans. Last week, direct materials (denim, thread, zippers, and rivets) costing $48,000 were put into production. Direct labor of $30,000 (50 workers×40 hours×$15 per hour) was incurred. Manufacturing overhead equaled $72,000. By the end of the week, BlueDenim had manufactured 30,000 pairs of jeans.

Required:

1. Calculate the total product cost for last week.
2. Calculate the cost of one pair of jeans that was produced last week.

Example 2.1: How to Calculate Product Cost in Total and Per Unit (2 of 2)

1. Direct materials	$ 48,000
Direct labor	30,000
Manufacturing overhead	72,000
Total product cost	$150,000

2. Per-Unit Product Cost=$150,000/30,000=$5

Prime and Conversion Costs

- Product costs of direct materials, direct labor, and manufacturing overhead can be grouped into **prime cost** and **conversion cost**:
- Prime cost is the sum of direct materials cost and direct labor cost:
  - Prime Cost = Direct Materials + Direct Labor
- Conversion cost is the sum of direct labor cost and manufacturing overhead cost:
  - Conversion Cost = Direct Labor + Manufacturing Overhead

Example 2.2: How to Calculate Prime Cost and Conversion Cost in Total and Per Unit (1 of 3)

BlueDenim Company makes blue jeans. Last week, direct materials (denim, thread, zippers, and rivets) costing $48,000 were put into production. Direct labor of $30,000 (50 workers×40 hours×$15 per hour) was incurred. Manufacturing overhead equaled $72,000. By the end of the week, BlueDenim had manufactured 30,000 pairs of jeans.

Refer to the information in Example 2.1 (p.40) for BlueDenim Company.

Example 2.2: How to Calculate Prime Cost and Conversion Cost in Total and Per Unit (2 of 3)

Required:

1. Calculate the total prime cost for last week.
2. Calculate the per-unit prime cost.
3. Calculate the total conversion cost for last week.
4. Calculate the per-unit conversion cost.

Solution:

1. Direct materials	$48,000
Direct labor	30,000
Total prime cost	$78,000

Example 2.2: How to Calculate Prime Cost and Conversion Cost in Total and Per Unit (3 of 3)

2. Per-Unit Prime Cost=$78,000/30,000=$2.60

3. Direct labor	$ 30,000
Manufacturing overhead	72,000
Total conversion cost	$ 102,000

4. Per-Unit Conversion Cost =$102,000/30,000 units=$3.40

Note: Remember that prime cost and conversion cost do NOT equal total product cost. This is because direct labor is part of BOTH prime cost and conversion cost.

Period Costs (1 of 4)

- Costs of production are assets that are carried in inventories until the goods are sold
- Other costs, such as **period costs**, are not carried in inventory
  - Period costs are all costs that are not product costs (i.e., all areas of the value chain except for production)

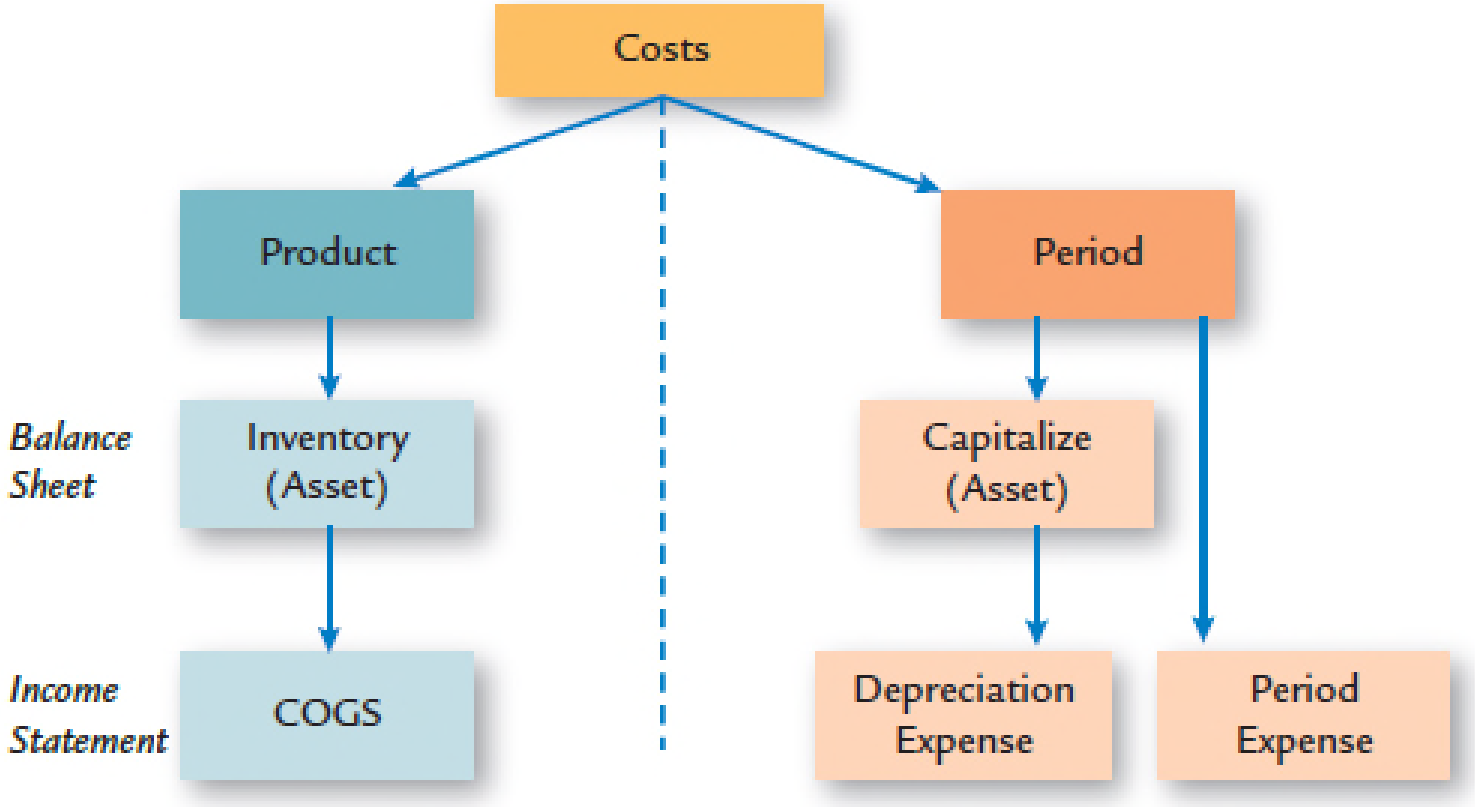
Period Costs (2 of 4)

- Examples of period costs: Office supplies, research and development activities, the CEO's salary, and advertising
- The level of period costs can be significant and controlling them may bring greater cost savings than the same effort exercised in controlling production costs

Period Costs (3 of 4)

- Period costs typically are expensed in the period in which they are incurred
- If a period cost is expected to provide an economic benefit (i.e., revenues) beyond the next year, then it is recorded as an asset (i.e., capitalized) and allocated to expense through depreciation throughout its useful life

Period Costs (4 of 4)



Selling Costs

- Those costs necessary to market, distribute, and service a product or service are **selling costs**
- Order-getting

EXAMPLES

Sales personnel Salaries & Commissions Advertising

- Order-Filling

EXAMPLES

Warehousing

Shipping

Customer Service

Administrative Costs (1 of 2)

- **Administrative costs** include research, development, and general administration of the organization and cannot be assigned to either selling or production
- General administration ensures that the various activities of the organization are integrated so that the overall mission of the firm is realized

Administrative Costs (2 of 2)

- Examples of general administrative costs are executive salaries, legal fees, printing the annual report, and general accounting
- Research and development costs are the costs associated with designing and developing new products and must be expensed in the period incurred

Direct and Indirect Period Costs (1 of 2)

- Distinguishing between direct period costs and indirect period costs
- Indirect labor is included in overhead
- **Service companies**: distinguishing between direct period costs and indirect period costs
- These costs do not affect the calculation of inventories or COGS for service companies
- Correct classification affects decisions, planning and control activities for managers

Direct and Indirect Period Costs (2 of 2)

- EXAMPLE: Restaurant
  - Direct Period Cost: Chef Salary
  - Indirect Period Cost: Disposable Napkins

Here's How it's Used: DATA ANALYTICS (1 of 3)

Increasingly, accountants use data analytics tools to help define, access, and utilize industry benchmark data for evaluating their own performance against that of other key competitors and industry leaders. Specifically, benchmarking allows managerial accountants to help management better understand how the organization's accounting performance metrics, ratios, and results compare to the performance of similar companies (e.g., operate in the same industry, are of comparable size, face common risks such as regulatory scrutiny, etc.).

Here's How it's Used: DATA ANALYTICS (2 of 3)

With the rapid growth in data analytics, managerial accountants can access larger quantities of benchmarking data from a much wider set of data sources (e.g., domestic vs. multinational organizations) at a considerably lower investment of time and money. As a result, trends and patterns in how the organization's performance compares to that of other important benchmarked organizations can be more quickly and accurately detected and, most importantly, the associated management decisions can be made to improve performance to stay ahead of (or catch up to) the competition.

Here's How it's Used: DATA ANALYTICS (3 of 3)

For example, **Twitter** can use data analytics to gauge how its expenses as a relatively young and publicly traded technology company compare to other companies in the technology industry, such as **Facebook** and **LinkedIn**. Twitter can choose to adjust its spending on research and development (R&D) if the various analytics it performs show that various trends in its R&D expenses—both in total and as a percentage of sales revenue—become vastly different from that of its key comparison companies.

Preparing Income Statements: Cost of Goods Manufactured (1 of 3)

- The **cost of goods manufactured** represents the total product cost of goods completed during the current period and transferred to finished goods inventory
- The cost of direct materials used in production can be derived using the following formula:

Beginning Inventory of Materials + Purchases - Direct Materials Used in Production = Ending Inventory of Materials

Preparing Income Statements: Cost of Goods Manufactured (2 of 3)

- The direct materials are then used to calculate the cost of goods manufactured as follows:

Direct materials + Direct labor + Manufacturing overhead costs + Beginning WIP inventory − Ending WIP inventory = Cost of goods manufactured

Preparing Income Statements: Cost of Goods Manufactured (3 of 3)

- The primary use of calculating the direct materials used in production is to serve as the first number in calculating the cost of goods manufactured
- Direct materials used in production also show managers the difference between the amount of materials purchased and the amount of materials used in manufacturing for the period

Example 2.3: How to Calculate the Direct Materials Used in Production (1 of 2)

BlueDenim Company makes blue jeans. On May 1, BlueDenim had $68,000 of materials in inventory. During the month of May, BlueDenim purchased $210,000 of materials. On May 31, materials inventory equaled $22,000.

Required:

Calculate the cost of direct materials used in production for the month of May.

Example 2.3: How to Calculate the Direct Materials Used in Production (2 of 2)

Solution:

Materials inventory, May 1	$ 68,000
Purchases	210,000
Materials inventory, May 31	(22,000)
Direct materials used in production	$256,000

Work-in-Process (1 of 2)

- Once the direct materials are calculated, the direct labor and manufacturing overhead for the period are added to get the total manufacturing cost for the period
- The second type of **inventory—work in process (WIP)** is the cost of the partially completed goods that are still on the factory floor at the end of a time period

Work-in-Process (2 of 2)

- WIP units are units that have been started, but are not finished; they have some value, but not as much as they will when they are completed; and there are beginning and ending inventories of WIP
- We must adjust the total manufacturing cost for the time period for the inventories of WIP
- After this adjustment, we will have the total cost of the goods that were completed and transferred from work-in-process inventory to finished goods inventory during the current time period which is the cost of goods manufactured

Example 2.4: How to Calculate Cost of Goods Manufacture (1 of 2)

BlueDenim Company makes blue jeans. During the month of May, BlueDenim purchased $210,000 of materials and incurred direct labor cost of $135,000 and manufacturing overhead of $150,000. On May 31, materials inventory equaled $22,000. Inventory information is as follows:

	May 1	**May 31**
Materials	$68,000	$22,000
Work in process	50,000	16,000

Example 2.4: How to Calculate Cost of Goods Manufacture (2 of 2)

Required:

Calculate the cost of goods manufactured for the month of May.

Solution:

Direct materials used in production*	$256,000
Direct labor	135,000
Manufacturing overhead	150,000
Total manufacturing cost for May	$541,000
WIP, May 1	50,000
WIP, May 31	(16,000)
Cost of goods manufactured	$575,000

*Direct Materials = $68,000 + $210,000 − $22,000 = $256,000

Cost of Goods Sold (1 of 3)

- To meet external reporting requirements, costs must be classified into three categories:
  - production
  - selling
  - administration

Cost of Goods Sold (2 of 3)

- **Cost of goods sold** represents the cost of goods that were sold during the period and then transferred from finished goods inventory on the balance sheet to cost of goods sold on the income statement (i.e., as an inventory expense). Cost of goods sold is calculated as:

Beginning finished goods inventory + Cost of goods manufactured − Ending finished goods inventory = Cost of goods sold

Cost of Goods Sold (3 of 3)

- The primary use for the statement of cost of goods sold is for external financial reporting. It is a critical input to the income statement

Example 2.5: How to Calculate Cost of Goods Sold (1 of 2)

BlueDenim Company makes blue jeans. During the month of May, 115,000 pairs of jeans were completed at a cost of goods manufactured of $575,000. Suppose that on May 1, BlueDenim had 10,000 units in the finished goods inventory costing $50,000 and on May 31, the company had 26,000 units in the finished goods inventory costing $130,000.

Required:

1. Prepare a cost of goods sold statement for the month of May.
2. Calculate the number of pairs of jeans that were sold during May.

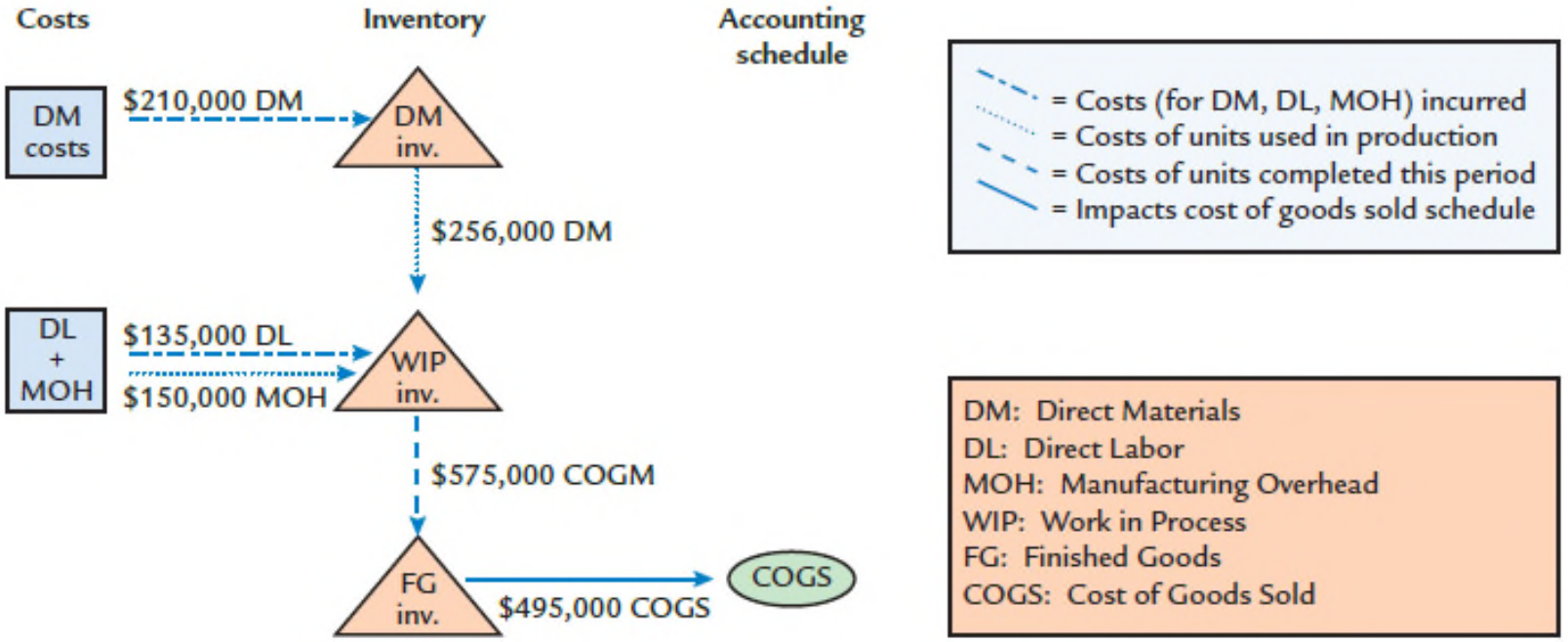
Example 2.5: How to Calculate Cost of Goods Sold (2 of 2)

BlueDenim Company
Cost of Goods Sold Statement
For the Month of May

Cost of goods manufactured	$ 575,000
Finished goods inventory, May 1	50,000
Finished goods inventory, May 31	(130,000)
Cost of goods sold	$ 495,000

Number of units sold:	
Finished goods inventory, May 1	10,000
Units finished during May	115,000
Finished goods inventory, May 31	(26,000)
Units sold during May	99,000

Relationship Between Flow of Costs, Inventories, and Cost of Goods Sold



Income Statement: Manufacturing Firm (1 of 3)

- It is important that all sales revenue and expenses attached to a time period appear on the income statement
- In the example 2.6, notice that the heading of the financial statement tells us what type of statement it is—Income Statement; for what firm—BlueDenim Company; and for what period of time—For the Month of May

Income Statement: Manufacturing Firm (2 of 3)

- Also note that in the income statement, expenses are separated into three categories: production (cost of goods sold), selling, and administrative
- Sales revenue is calculated as:

Sales Revenue = Price × Units Sold

Income Statement: Manufacturing Firm (3 of 3)

- The primary use for the income statement is for external financial reporting. Investors and outside parties use it to determine the financial health of a firm, including the calculation of various important financial ratios

Example 2.6: How to Prepare an Income Statement for a Manufacturing Firm (1 of 2)

Recall that BlueDenim Company sold 99,000 pairs of jeans during the month of May at a total cost of $495,000. Each pair sold at a price of $8. BlueDenim also incurred two types of selling costs: commissions equal to 10% of the sales price and fixed selling expense of $120,000. Administrative expense totaled $85,000.

Required:

Prepare an income statement for BlueDenim for the month of May.

Example 2.6: How to Prepare an Income Statement for a Manufacturing Firm (2 of 2)

Solution:

BlueDenim Company
Income Statement
For the Month of May

Sales revenue (99,000 × $8)		$792,000
Cost of goods sold		495,000
Gross margin		$297,000
Less:		
Selling expenses		
Commissions ($792,000 × 0.10)	$ 79,200	
Fixed selling expenses	120,000	199,200
Administrative expenses		85,000
Operating income		$ 12,800

Income Statement: Manufacturing Firm (1 of 2)

- Gross margin is the difference between sales revenue and cost of goods sold:

Gross Margin = Sales Revenue − Cost of Goods Sold

- It shows how much the firm is making over and above the cost of the units sold

Income Statement: Manufacturing Firm (2 of 2)

- Gross margin does not equal operating income or profit as it is computed without subtracting selling and administrative expenses
- If gross margin is positive, the firm will charge prices that cover the product cost

Gross Margin Percentage (1 of 2)

- A company can compare gross margin percentage with the average for its industry to see if its experience is within the ballpark range for other firms in the industry
- Gross margin percentage varies significantly by industry.
- Gross margin percentage is calculated as:

$$\text{Gross Margin Percentage} = \frac{\text{Gross Margin}}{\text{Sales Revenue}}$$

Gross Margin Percentage (2 of 2)

- Calculating the percentage of revenue for each line on the income statement informs managers of the size of each income statement line item relative to sales revenue. This calculation also enables comparisons between fiscal periods (i.e., trend analysis) and with other firms in the industry (i.e., competitor benchmarking)

Example 2.7: How to Calculate the Percentage of Sales Revenue for Each Line on the Income Statement (1 of 2)

BlueDenim Company
Income Statement
For the Month of May

Sales revenue (99,000 × $8)		$792,000
Cost of goods sold		495,000
Gross margin		$297,000
Less:		
Selling expenses		
Commissions ($792,000 × 0.10)	$ 79,200	
Fixed selling expenses	120,000	199,200
Administrative expenses		85,000
Operating income		$ 12,800

Refer to the income statement for BlueDenim Company in Example 2.6

Required:

Calculate the percentage of sales revenue represented by each line of the income statement.

Example 2.7: How to Calculate the Percentage of Sales Revenue for Each Line on the Income Statement (2 of 2)

Solution:

BlueDenim Company
Income Statement
For the Month of May

			Percent*
Sales revenue (99,000 × $8)		$792,000	100.0
Cost of goods sold		495,000	62.5
Gross margin		$297,000	37.5
Less:			
Selling expenses			
Commissions ($792,000 × 0.10)	$ 79,200		
Fixed selling expenses	120,000	199,200	25.2
Administrative expenses		85,000	10.7
Operating income		$ 12,800	1.6

*Steps in calculating the percentages:
1. Sales Revenue Percent = $792,000/$792,000 = 1.00 or 100% (sales revenue is always 100% of itself)
2. Cost of Goods Sold Percent = $495,000/$792,000 = 0.625, or 62.5%
3. Gross Margin Percent = $297,000/$792,000 = 0.375, or 37.5%
4. Selling Expenses Percent = $199,200/$792,000 = 0.252, or 25.2% (rounded)
5. Administrative Expenses Percent = $85,000/$792,000 = 0.107, or 10.7% (rounded)
6. Operating Income Percent = $12,800/$792,000 = 0.016, or 1.6% (rounded)

Operating Income

- As you saw in Example 2.7, selling and administrative expenses for the period are subtracted from gross margin to arrive at operating income

Operating Income = Gross Margin − Selling and Administrative Expenses

- Operating income is the key figure from the income statement; it is profit, and shows how much the owners are actually earning from the company

Here's How it's Used: SUSTAINABILITY (1 of 3)

As noted earlier, service organizations, such as **UPS**, do not show a cost of goods sold on their income statement because they make money by providing services rather than manufacturing physical products. In essence, UPS makes money by delivering packages (approximately 5 billion packages annually!) all over the globe on a schedule that meets its 10 million consumers' constantly changing business needs. As a result, UPS's "license to operate"—to sustain itself as an organization—involves the emission of considerable amounts of costly greenhouse gases (GHG) into the atmosphere from its

Here's How it's Used: SUSTAINABILITY (2 of 3)

gigantic fleet of trucks and aircraft. Not surprisingly, UPS's income statement contains an extremely large fuel expense—typically around $4 billion in total and oftentimes larger than its net income! While UPS faced vastly different sustainability challenges during its 1907 founding, its management today increasingly must understand how best to measure and manage its fuel consumption and GHG emissions. Various external parties can look to UPS's income statement to evaluate management's ability to maintain the company's license to operate with regulators and to produce acceptable

Here's How it's Used: SUSTAINABILITY (3 of 3)

financial returns to shareholders. In addition, UPS issues a global Statement Report that provides numerous performance metrics involving its environmental footprint, such as its switch to alternative fuel vehicles and the increase in its natural gas-powered vehicle fleet.

Income Statement: Service Firm (1 of 2)

- In a **service organization**, there is no product to purchase, like in a merchandising or manufacturing operation
- There are no beginning or ending inventories and no cost of goods sold and gross margin on the income statement
- The cost of providing services appears along with the other operating expenses of the company

Income Statement: Service Firm (2 of 2)

- The primary use for the income statement is for external financial reporting. Investors and outside parties use it to determine the financial health of a firm. Cost of goods sold typically does not exist on the income statement of service organizations because such organizations generate sales by providing services rather than selling products
- Therefore, the income statement for a service provider is important because it showcases how the major expenses incurred to provide key services compare to the organization's overall sales revenue

Example 2.8: How to Prepare an Income Statement for a Service Organization (1 of 2)

Komala Information Systems designs and installs human resources software for small companies. Last month, Komala had software licensing costs of $5,000, service technicians' costs of $35,000, and research and development costs of $55,000. Selling expenses were $5,000, and administrative expenses equaled $7,000. Sales totaled $130,000.

Required:

Prepare an income statement for Komala Information Systems for the past month.

Example 2.8: How to Prepare an Income Statement for a Service Organization (2 of 2)

Solution:

Komala Information Systems
Income Statement
For the Past Month

Sales revenues:		$130,000
Less operating expenses:		
Software licensing	$ 5,000	
Service technicians	35,000	
Research and development	55,000	
Selling expenses	5,000	
Administrative expenses	7,000	107,000
Operating income		$ 23,000