

# CHAPTER 2

## BASIC MANAGERIAL ACCOUNTING CONCEPTS

### DISCUSSION QUESTIONS

1. 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.
2. Accumulating costs is the way that costs are measured and tracked. Assigning costs is linking costs to some cost object. For example, a company accumulates or tracks costs by entering them into the accounting records. Direct materials would be entered into the materials account; direct labour would be entered into the direct labour account. Then, these costs are assigned to units of product.
3. A direct cost is one that can be traced to the cost object, typically by physical observation. An indirect cost cannot be traced 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.
4. The cost of goods manufactured is the sum of direct materials, direct labour, and overhead used in producing the units completed in a factory.
5. Prime cost is the sum of direct materials and direct labour. Conversion cost is the sum of direct labour and overhead. Total product cost consists of direct materials, direct labour, and overhead. This is not equal to the sum of prime cost and conversion cost because then direct labour would be double counted.
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 activity performed for a customer. For example, the dental hygienist who cleans your teeth provides a service.
7. 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.
8. A period cost is one that is expensed immediately, rather than being inventoried like a product cost.
9. 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.
10. Manufacturing overhead includes all product costs other than direct materials and direct labour. It is because the remaining manufacturing (product) costs are gathered into one category that overhead is often thought of as a "catchall."
11. 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."
12. 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.
13. The income statement for a manufacturing firm includes the cost of goods sold, which is the sum of direct materials, direct labour, and overhead. The income statement for a service firm includes the cost of services sold. There

are no beginning or ending inventories in a service organization.

14. Selling costs are the costs 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).
15. The cost of goods manufactured is the cost of direct materials, direct labour, and overhead

for the units produced (completed) during a time period. The cost of goods sold is the cost of direct materials, direct labour, 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.

## CORNERSTONE EXERCISES

### Cornerstone Exercise 2–1

Direct materials	\$ 48,000
Direct labour	80,000
Manufacturing overhead	<u>112,000</u>
Total product cost	<u>\$240,000</u>

$$\text{Per-unit product cost} = \frac{\$240,000}{8,000} = \$30$$

Therefore, one hockey stick costs \$30 to produce.

### Cornerstone Exercise 2–2

Direct materials	\$ 48,000
Direct labour	<u>80,000</u>
Total prime cost	<u>\$128,000</u>

$$\text{Per-unit prime cost} = \frac{\$128,000}{8,000} = \$16$$

Direct labour	\$ 80,000
Manufacturing overhead	<u>112,000</u>
Total conversion cost	<u>\$192,000</u>

$$\text{Per-unit conversion cost} = \frac{\$192,000}{8,000} = \$24$$

### Cornerstone Exercise 2–3

Materials inventory, June 1	\$ 42,000
Purchases	180,000
Materials inventory, June 30	<u>(51,000)</u>
Direct materials used in production	<u>\$171,000</u>

### Cornerstone Exercise 2–4

Direct materials*	\$171,000
Direct labour	165,000
Manufacturing overhead	<u>215,000</u>
Total manufacturing cost for June	551,000
WIP, June 1	60,000
WIP, June 30	<u>(71,000)</u>
Cost of Goods Manufactured	<u>\$540,000</u>

\*Direct materials = \$42,000 + \$180,000 – \$51,000 = \$171,000  
[This was calculated in Cornerstone Exercise 2–3.]

Per-unit cost of goods manufactured =  $\frac{\$540,000}{18,000 \text{ units}} = \$30$

### Cornerstone Exercise 2–5

**Slapshot Company**  
**Cost of Goods Sold Statement**  
**For the Month of June**

Cost of goods manufactured .....	\$ 540,000
Finished goods inventory, June 1 .....	160,000
Finished goods inventory, June 30 .....	<u>(215,000)</u>
Cost of goods sold .....	<u>\$ 485,000</u>
Number of units sold:	
Finished goods inventory, June 1 .....	5,000
Units finished during June .....	18,000
Finished goods inventory, June 30 .....	<u>(7,000)</u>
Units sold during June .....	<u>16,000</u>

## Cornerstone Exercise 2–6

### Slapshot Company Income Statement For the Month of June

Sales revenue (16,000 × \$90).....		\$1,440,000
Cost of goods sold.....		<u>485,000</u>
Gross margin.....		955,000
Less:		
Selling expense:		
Commissions (0.15 × \$1,440,000) .....	\$216,000	
Fixed selling expense.....	<u>200,000</u>	416,000
Administrative expense.....		<u>115,000</u>
Operating income.....		<u>\$ 424,000</u>

## Cornerstone Exercise 2–7

### Slapshot Company Income Statement For the Month of June

		Percent*
Sales revenue (16,000 × \$90).....	\$1,440,000	100.0
Cost of goods sold.....	<u>485,000</u>	<u>33.7</u>
Gross margin.....	955,000	66.3
Less:		
Selling expense:		
Commissions (0.15 × \$1,440,000) .....	\$216,000	
Fixed selling expense.....	<u>200,000</u>	416,000
Administrative expense.....		<u>115,000</u>
Operating income.....	<u>\$ 424,000</u>	<u>29.4</u>

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

1. Sales revenue percent =  $\frac{\$1,440,000}{\$1,440,000} = 1.00$  or 100% (sales revenue is always 100% of sales revenue)
2. Cost of goods sold percent =  $\frac{\$485,000}{\$1,440,000} = 0.337$  or 33.7%
3. Gross margin percent =  $\frac{\$955,000}{\$1,440,000} = 0.663$  or 66.3%

### Cornerstone Exercise 2–7 (Concluded)

4. Selling expense percent =  $\frac{\$416,000}{\$1,440,000} = 0.289$  or 28.9%
5. Administrative expense percent =  $\frac{\$115,000}{\$1,440,000} = 0.0799$  or 8.0%
6. Operating income percent =  $\frac{\$424,000}{\$1,440,000} = 0.294$  or 29.4%

### Cornerstone Exercise 2–8

#### 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.....	<u>35,000</u>	<u>370,000</u>
Operating income .....		<u>\$ 40,000</u>

## EXERCISES

### Exercise 2–9

1.

<u>Costs</u>	<u>Salaries</u>	<u>Commissions</u>
Derek.....	\$25,000	\$6,000
Lauren.....	<u>30,000</u>	<u>1,500</u>
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. Lauren 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>Selling Costs</u>	<u>Administrative Costs</u>
Derek's salary .....	\$25,000	
Lauren's salary.....	20,000	\$10,000
Derek's commissions .....	6,000	
Lauren's commissions .....	<u>1,500</u>	
Total.....	<u>\$52,500</u>	<u>\$10,000</u>

## Exercise 2–10

- 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. Labour 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

## Exercise 2–11

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

2. Direct materials	\$ 17,000
Direct labour	13,000
Manufacturing overhead	<u>12,000</u>
Total product cost	<u>\$42,000</u>

3. Unit product cost =  $\frac{\$42,000}{6,000} = \$7.00$



## Exercise 2–12

Costs	Product Cost			Period Cost	
	Direct Materials	Direct Labour	Factory Overhead	Selling Expense	Administrative Expense
Direct materials	\$324,000				
Factory rent			\$ 36,000		
Direct labour		\$180,000			
Factory utilities			9,450		
Supervision in the factory			75,000		
Indirect labour in the factory			45,000		
Depreciation on factory equipment			13,500		
Sales commissions				\$ 40,500	
Sales salaries				97,500	
Advertising				55,500	
Depreciation on the headquarters building					\$ 15,000
Salary of the corporate receptionist					45,000
Other administrative costs					262,500
Salary of the factory receptionist			42,000		
<b>Totals</b>	<b>\$324,000</b>	<b>\$180,000</b>	<b>\$220,950</b>	<b>\$193,500</b>	<b>\$322,500</b>

2. Direct materials	\$324,000
Direct labour	180,000
Manufacturing overhead	<u>220,950</u>
Total product cost	<u>\$724,950</u>

3. Total period cost = \$193,500 + \$322,500 = \$516,000

4. Unit product cost =  $\frac{\$724,950}{30,000} = \$24.165$

### Exercise 2–12 (Concluded)

5. Costs directly associated with the manufacturing process are part of product costs. All other costs are treated as period costs.

### Exercise 2–13

Costs	Direct Materials	Direct Labour	Factory 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 labour salaries			X
Insurance on factory building			X
Depreciation on factory equipment			X
Oil to lubricate filling equipment			X

### Exercise 2–14

- |                        |                    |
|------------------------|--------------------|
| 1. Direct materials    | \$1,200,000        |
| Direct labour          | 240,000            |
| Manufacturing overhead | <u>960,000</u>     |
| Total product cost     | <u>\$2,400,000</u> |
2. Product cost per unit =  $\frac{\text{Total product cost}}{\text{Number of units}}$
- $$= \frac{\$2,400,000}{19,200} = \$125.00$$

### Exercise 2–15

- |                     |                    |
|---------------------|--------------------|
| 1. Direct materials | \$1,200,000        |
| Direct labour       | <u>240,000</u>     |
| Total prime cost    | <u>\$1,440,000</u> |
2. Prime cost per unit =  $\frac{\text{Total prime cost}}{\text{Number of units}}$
- $$= \frac{\$1,440,000}{19,200} = \$75.00$$
- 
- |                        |                    |
|------------------------|--------------------|
| 3. Direct labour       | \$240,000          |
| Manufacturing overhead | <u>960,000</u>     |
| Total conversion cost  | <u>\$1,200,000</u> |
4. Conversion cost per unit =  $\frac{\text{Total conversion cost}}{\text{Number of units}}$
- $$= \frac{\$1,200,000}{19,200} = \$62.50$$

### Exercise 2–16

Materials inventory, June 1	\$ 9,250
Materials purchases in June	38,750
Materials inventory, June 30	<u>(4,000)</u>
Direct materials used in June	<u>\$44,000</u>

### Exercise 2–17

1. Finished goods inventory, January 1	2,100
Units completed during the year	54,000
Finished goods inventory, December 31	<u>(2,750)</u>
Units sold	<u>53,350</u>
2. Units sold	53,350
× Unit cost	× \$1,125
Cost of goods sold	<u>\$60,018,750</u>

### Exercise 2–18

1. Materials inventory, March 1	\$ 8,600
Materials purchases in March	14,000
Materials inventory, March 31	<u>(2,300)</u>
Direct materials used in March	<u>\$20,300</u>
2. Direct materials	\$20,300
Direct labour	20,000
Manufacturing overhead	<u>36,000</u>
Total manufacturing cost	<u>\$76,300</u>
3. Total manufacturing cost	\$76,300
Add: Work in process, March 1	1,700
Less: Work in process, March 31	<u>(9,000)</u>
Cost of goods manufactured	<u>\$69,000</u>

### Exercise 2–19

Cost of goods manufactured	\$69,000*
Add: Finished goods, March 1	7,000
Less: Finished goods, March 31	<u>(6,500)</u>
Cost of goods sold	<u>\$69,500</u>

\*See solution to Exercise 2–18.

Cost of goods sold is different than cost of goods manufactured because cost of goods sold is determined after taking both beginning and ending finished goods inventory into account.

## Exercise 2–20

Direct materials	\$150,000
Direct labour	325,000
Manufacturing overhead	<u>215,000</u>
Cost of goods sold	<u>\$690,000</u>

**Note:** Because there were no beginning nor ending work-in-process or finished goods inventories, no adjustments were made for them in this calculation.

## Exercise 2–21

1. Sales revenue = Number of units sold × Selling price  
= 300,000 × \$9  
= \$2,700,000

2. 

**Jasper Company  
Income Statement  
For the Past Year**

Sales revenue.....	\$2,700,000	100.0%
Cost of goods sold .....	<u>690,000*</u>	25.6%
Gross profit .....	\$2,010,000	74.4%
Less:		
Selling expense .....	437,000	16.2%
Administrative expense .....	<u>854,000</u>	31.6%
Operating income .....	<u>\$719,000</u>	26.6%
*Direct materials	\$150,000	
Direct labour	325,000	
Manufacturing overhead	<u>215,000</u>	
Cost of goods sold	<u>\$690,000</u>	

3. It is useful to calculate the percentage of each cost as a percentage of sales to allow identification of trends within the company, to allow comparison to other different size companies, or to compare to industry statistics.

## PROBLEMS

### Problem 2–22

1.

Cost	Direct Materials	Direct Labour	Factory 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		
Andrew Gallant'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.

## Problem 2–22 (Concluded)

Direct labour 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 utilities, the rent for the building, the depreciation on the equipment and fixtures, and the cost of janitorial wages and supplies.

Selling and administrative expense includes Andrew Gallant's salary, advertising, accounting fees, and taxes.

2. **Pop's Drive-Thru Burger Haven**  
**Income Statement**  
**For the Month of December**

Sales ( $\$3.50 \times 10,000$ ) .....		<b>\$35,000</b>
Less cost of goods sold:		
Direct materials.....	<b>\$7,810</b>	
Direct labour .....	<b>7,250</b>	
Manufacturing overhead .....	<b><u>4,570</u></b>	<b><u>19,630</u></b>
Gross margin.....		<b>15,370</b>
Less: Selling and administrative expense .....		<b><u>9,250</u></b>
Net income .....		<b><u>\$ 6,120</u></b>

3. Elena's simplifying assumptions were: (1) all part-time employees are production workers, (2) Andrew Gallant'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 Andrew Gallant 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 these expenses. The net income would be identical, although the gross profit would differ. Pop's Drive-Thru Burger Haven 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.

### Problem 2–23

1. 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 Katerina =  $\$0.03 \times 1,000 \text{ pages} = \$30$

2. 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 Katerina =  $1,000 \text{ pages} \times (\$0.03 + \$0.005) = \$35.00$

3. Cost per page for colour ink =  $\frac{\$31}{310 \text{ pages}} = \$0.10$

Number of black ink pages for Katerina =  $1,000 \times 0.8 = 800$

Number of colour ink pages for Katerina =  $1,000 \times 0.2 = 200$

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

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

### Problem 2–24

1. Direct materials =  $\$120,000 + \$192,000 - \$59,400 = \$252,600$

2. Direct materials used	\$252,600
Direct labour	130,500
Manufacturing overhead	<u>326,250</u>
Total manufacturing cost for July	709,350
Work in process, July 1	63,000
Work in process, July 31	<u>(97,500)</u>
Cost of goods manufactured	<u>\$674,850</u>

3. Cost of goods manufactured	\$674,850
Finished goods inventory, July 1	69,600
Finished good inventory, July 31	<u>(66,300)</u>
Cost of goods sold	<u>\$678,150</u>



## Problem 2–25

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

Total product cost =  $\$46 \times 200,000 = \$9,200,000$

2. **Infinity Inc.  
Income Statement  
For Last Year**

Sales ( $\$60 \times 200,000$ ) .....	\$12,000,000
Cost of goods sold .....	<u>9,200,000</u>
Gross margin.....	2,800,000
Less:	
Commissions ( $\$2 \times 200,000$ ).....	400,000
Advertising expense .....	100,000
Administrative expenses .....	<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.

### Problem 2–25 (Concluded)

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 ( $\$46 \times 200,000$ )	\$9,200,000
Add: Beginning inventory finished goods ( $\$40 \times 10,000$ )	400,000
Less: Ending inventory finished goods ( $\$46 \times 10,000$ )	<u>(460,000)</u>
Cost of goods sold	<u>\$9,140,000</u>

#### Infinity Inc. Revised Income Statement For Last Year

Sales ( $\$60 \times 200,000$ ) .....	\$12,000,000
Cost of goods sold .....	<u>9,140,000</u>
Gross margin.....	2,860,000
Less:	
Commissions ( $\$2 \times 200,000$ ).....	400,000
Selling expense .....	100,000
Administrative expense .....	<u>300,000</u>
Operating income .....	<u>\$ 2,060,000</u>

### Problem 2–26

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 labour.....		10,500
Manufacturing overhead:		
Factory supplies .....	\$ 675	
Factory insurance.....	350	
Factory supervision .....	2,225	
Materials handling .....	<u>3,750</u>	<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>\$ 24,725</u>

## Problem 2–26 (Concluded)

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>\$27,160</u>

## Problem 2–27

1. c. These costs include direct materials, direct labour, 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 or direct labour are, by definition, overhead.
6. d. The design engineer is estimating the total number of labour hours required to complete the manufacturing of a product. This total will be used to compute direct labour cost.
7. h. This is direct materials cost.
8. g. The sum of direct materials and direct labour is, by definition, prime cost.
9. f. The cost of converting direct materials into finished product is the sum of direct labour 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.

**Conceptual Connection:** There are different definitions of cost because they are used for many different purposes and the purpose will determine how we must define costs.

## Problem 2–28

1. Before the cost of services sold can be calculated, the cost of direct materials must be determined.

Cost of direct materials = \$20,000 + \$40,000 – \$0 = \$60,000

Direct materials used	\$ 60,000
Direct labour	800,000
Manufacturing overhead	<u>100,000</u>
Total cost of production last year	960,000
Beginning inventory of designs in process	60,000
Ending inventory of designs in process	<u>(100,000)</u>
Cost of services sold	<u>\$920,000</u>

2. 

**Berry Company**  
**Income Statement**  
**For Last Year**

Sales (\$2,100 × 700) .....	\$1,470,000
Cost of services sold .....	<u>920,000</u>
Gross margin .....	550,000
Selling expense .....	60,000
Administrative expense .....	<u>150,000</u>
Operating income .....	<u>\$ 340,000</u>

3. The dominant cost in the cost of services sold is direct labour. This cost is often the largest cost in a service company, especially when what is sold is professional time and expertise. Law and accounting firms also would show direct labour as the largest cost in the cost of services. It is possible for a service firm to show manufacturing overhead as the largest cost. For example, a free-standing radiology clinic may have overhead as the dominant cost, since the depreciation on equipment (e.g., x-ray machines, MRIs) would be very high.
4. Berry Company prepares custom building plans to order. That is, Berry does not start to design a project until a client contracts with it to do so. If Berry began to prepare plans on speculation, it would design the building first and then have a stock of finished plans ready to sell. In that case, there could well be an inventory of finished plans.

## Problem 2–29

1.

### W. W. Phillips Company Statement of Cost of Goods Manufactured For Last Year

Direct materials .....		\$300,000*
Direct labour .....		200,000
Manufacturing overhead:		
Indirect labour .....	\$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>

\*Direct materials used = \$46,800 + \$320,000 – \$66,800 = \$300,000

2. Average cost of one unit of product manufactured =  $\frac{\$652,000}{4,000} = \$163$

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
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>\$ 332,100</u>

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

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

## Problem 2–30

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

## Problem 2–31

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

\*Production is 20 units per printing hour for magazines and 100 units per printing hour for brochures, yielding monthly machine hours of  $350 \left( \frac{5,000}{20} + \frac{10,000}{100} \right)$ . This is also monthly labour hours as machine labour only operates the presses.

## Problem 2–31 (Continued)

2. Direct materials .....	\$2,800	
Direct labour .....	<u>3,500</u>	
Total prime costs .....	<u>\$6,300</u>	
Magazine:		
Direct materials .....	\$2,000	
Direct labour .....	<u>2,500</u>	
Total prime costs .....	<u>\$4,500</u>	
Brochure:		
Direct materials .....	\$ 800	
Direct labour .....	<u>1,000</u>	
Total prime costs .....	<u>\$1,800</u>	
3. Total monthly conversion cost:		
Direct labour .....	\$3,500	
Manufacturing overhead .....	<u>3,190</u>	
Total .....	<u>\$6,690</u>	
Magazine:		
Direct labour .....		\$2,500
Manufacturing overhead:		
Power (\$1 × 250) .....	\$ 250	
Depreciation (\$2 × 250) .....	500	
Setups (2/3 × \$600) .....	400	
Rent and insurance (\$4.40 × 250 DLH)* ....	<u>1,100</u>	<u>2,250</u>
Total .....		<u>\$4,750</u>
Brochures:		
Direct labour .....		\$1,000
Manufacturing overhead:		
Power (\$1 × 100) .....	100	
Depreciation (\$2 × 100) .....	200	
Setups (1/3 × \$600) .....	200	
Rent and insurance (\$4.40 × 100 DLH)* ....	<u>440</u>	<u>940</u>
Total .....		<u>\$1,940</u>

\*Rent and insurance cannot be traced to each product so the costs are assigned using direct labour hours:  $\frac{\$1,540}{350 \text{ DLH}} = \$4.40$  per direct labour 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):  $\frac{\$350}{350} = \$1.00$  per machine hour for power and  $\frac{\$40,000}{20,000} =$

\$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.

### Problem 2–31 (Concluded)

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

<sup>a</sup>Distribution of goods is a selling expense.

<sup>b</sup>A case could be made for assigning part of his salary to production. However, since he is responsible for coordinating and managing all business functions, an administrative classification is more convincing.

### Problem 2–32

1. The costs of the tent sales are accounted for as selling expense. The tent sales are designed to sell products and promote brand awareness. In fact, the most important objective is simply to increase awareness of the Stampede brand. As a result, these related costs are selling expense. The tent sales affect revenue and selling expense on the income statement of Stampede.

2. Revenue	\$ 20,000
Cost of goods sold	(7,000)
Tent sale expense	<u>(14,300)</u>
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 centre, or even a large grocery store, would enable Stampede employees to easily load purchased product into customer cars. Second, the deejay could be dispensed with; instead, music could be played from CDs over the audio system in the truck. Third, Stampede could spend a year or so raising brand awareness in the Edmonton market before attempting another tent sale.



## Problem 2–33

1. **Quadrant Corporation**  
**Statement of Cost of Goods Manufactured**  
**For Year Ended September 30, 2015**

Direct materials .....	\$ 36,392*
Direct labour.....	45,772
Manufacturing overhead .....	<u>27,556</u>
Total cost of product .....	109,720
Beginning work in process .....	9,624
Ending work in process .....	<u>(10,007)</u>
Cost of goods manufactured.....	<u>\$109,337</u>

\*Direct materials used = \$2,685 + \$36,699 – \$2,992 = \$36,392

2. **Quadrant Corporation**  
**Income Statement**  
**For Year Ended September 30, 2015.**

Sales .....	\$296,844	100.0%
Cost of goods sold .....	<u>107,117**</u>	36.1%
Gross margin.....	189,727	63.9%
Selling expenses.....	76,251	25.7%
Administration expenses .....	68,728	23.2%
Corporate overhead.....	<u>11,785</u>	4.0%
Operating income .....	32,963	11.1%
Income tax expense.....	<u>8,240</u>	2.8%
Net income.....	<u>\$ 24,723</u>	8.3%

\*\*Cost of goods sold = \$109,337 + \$36,555 – \$38,775 = \$107,117

### Problem 2–34

<b>SalesTrack Company</b>			
<b>Income Statement</b>			
<b>for the Year Ended October 31, 2015</b>			
<b>Revenue</b>			<b>\$618,325</b>
<b>Cost of services:</b>			
<b>Wages</b>	<b>\$225,284</b>		
<b>Supplies</b>	<b>17,427</b>	<b>242,711</b>	
<b>Gross margin</b>		<b>385,614</b>	
<b>Selling expenses</b>		<b>126,827</b>	
<b>Administrative expenses</b>		<b>97,626</b>	
<b>Operating income</b>		<b>161,161</b>	
<b>Income tax expense</b>		<b>45,125</b>	
<b>Net income</b>		<b><u>\$116,036</u></b>	

A company can experience negative cash flow even if it generates a profit because changes in the balance sheet accounts can account for cash outflows that are not related to operations.

### Problem 2–35

Answers will vary from student to student but each one should identify the facilities, maintenance costs, advertising, executive salaries as being common to all operations while the inventory of cars, wages, commissions, tools, brochures, and various other costs would be specific to the various parts of the business.

## PROFESSIONAL EXAMINATION PROBLEM\*

### Professional Examination Problem 2–36 MANUFACTURING COST— PRINCETON MANUFACTURING

1.

Princeton Manufacturing Schedule of Cost of Goods Manufactured For the Year Ended December 31, 2015			
Direct materials:			
Beginning raw materials inventory, January 1	\$ 8,000		
Plus: direct material purchases	<u>47,000</u>		
	55,000		
Less: ending raw materials inventory, Dec. 31	<u>4,000</u>		
Raw materials used			\$ 51,000
Direct labour			30,000
Factory overhead:			
Indirect materials	7,000		
Indirect labour	3,000		
Factory depreciation (\$20,000 × .70)	14,000		
Factory taxes	11,000		
Utilities (\$20,000 × .90)	18,000		
Miscellaneous plant overhead	4,000		
Plant repairs and maintenance	9,000		
Fire insurance, factory equipment	3,000		
Materials handling costs	<u>8,000</u>	<u>77,000</u>	
Total manufacturing costs			158,000
Plus: beginning work-in-process inventory, January 1			19,000
Less: ending work-in-process inventory, Dec. 31		<u>18,000</u>	
Cost of goods manufactured			<u>\$159,000</u>

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## Professional Examination Problem 2–36 (Concluded)

2.

### Princeton Manufacturing Schedule of Cost of Goods Sold For the Year Ended December 31, 2015

Beginning finished goods inventory, January 1	\$ 25,000
Plus: cost of goods manufactured	<u>159,000</u>
Goods available for sale	\$184,000
Less: ending finished goods inventory, December 31*	<u>77,000</u>
Cost of goods sold*	<u>\$107,000</u>
*Ending finished goods inventory and cost of goods sold:	
Gross profit:	
Sales × 73.25%	
\$400,000 × .7325	\$293,000
Cost of goods sold:	
Sales – gross profit	
\$400,000 – \$293,000	\$107,000
Ending inventory:	
Goods available for sale – cost of goods sold	
\$184,000 – \$107,000	\$77,000

3.

### Princeton Manufacturing Income Statement For the Year Ended December 31, 2015

Sales		\$400,000
Cost of goods sold		<u>107,000</u>
Gross profit		293,000
Operating expenses		
Selling expenses	\$50,000	
General and administrative	18,000	
Depreciation (\$20,000 × .30)	6,000	
Marketing promotions	1,500	
Utilities (\$20,000 × .10)	2,000	
Courier costs (office)	900	
Customer service costs	<u>3,000</u>	<u>81,400</u>
Net income		<u>\$211,600</u>

### **Professional Examination Problem 2–37**

1. d. (1) direct cost (2) fixed cost
2. a. The cost, in total, does not change with changes in the volume of the cost driver.
3. a. \$125 (Labour of \$50 + Indirect costs of \$75)

## CASES

### Case 2–38

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

2. Traceable costs using equipment hours:

Machine operators	\$ 218,000
Other direct labour	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 maintenance required is also a function of equipment hours and so the salaries of mechanics can be assigned using equipment hours. Pipe and other direct labour 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 labour. Actually, it is not necessary to use equipment hours to assign pipe or other direct labour because these two costs are directly traceable to jobs.

$$\begin{aligned}
 \text{Traceable cost per equipment hour} &= \frac{\$2,551,640}{18,200} \\
 &= \$140.20 \text{ per hour}
 \end{aligned}$$

## Case 2–39

<b>Income Statement</b>		
<b>For One Year of Operation</b>		
	<b>High End</b>	<b>Standard</b>
<b>Revenue</b>	<b><u>\$1,800,000</u></b>	<b><u>\$1,200,000</u></b>
<b>Direct costs:</b>		
<b>Cost of goods sold</b>	<b>945,000</b>	<b>480,000</b>
<b>Mechanic wages</b>	<b>240,000</b>	<b>240,000</b>
<b>Peter's wages (50%)</b>	<b><u>50,000</u></b>	<b><u>50,000</u></b>
<b>Total direct</b>	<b><u>1,235,000</u></b>	<b><u>770,000</u></b>
<b>Indirect costs:</b>		
<b>Depreciation</b>	<b>105,000</b>	<b>65,000</b>
<b>Rent</b>	<b>120,000</b>	<b>120,000</b>
<b>Utilities</b>	<b>18,000</b>	<b>18,000</b>
<b>Administration</b>	<b>50,000</b>	<b>50,000</b>
<b>Advertising</b>	<b>180,000</b>	<b>120,000</b>
<b>Peter's wages (50%)</b>	<b><u>50,000</u></b>	<b><u>50,000</u></b>
<b>Total indirect</b>	<b><u>523,000</u></b>	<b><u>423,000</u></b>
<b>Income</b>	<b><u>\$ 42,000</u></b>	<b><u>\$ 7,000</u></b>

**Revenue:**  $900 \times \$2,000 = \$1,800,000$ ;  $1,200 \times \$1,000 = \$1,200,000$

**COGS:**  $900 \times \$1,050 = \$945,000$ ;  $1,200 \times \$400 = \$480,000$

**Mechanic wages:**  $6 \times \$20 \times 2,000 = \$240,000$

**Advertising:**  $\$15,000 \text{ per month} \times 12 = \$180,000$ ;  $\$10,000 \times 12 = \$120,000$

### **Case 2–39 (Concluded)**

- 2. Yes it makes sense for Peter to quit his job and open his own shop. Profits will be positive under each alternative and this is after he takes a salary of \$100,000 per year.**
- 3. Peter should choose the high-end mufflers as they will generate a greater profit.**

### **Case 2–40**

- 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, favour, 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.**



# CHAPTER 2

## Basic Managerial Accounting Concepts

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IF NOTHING ELSE, MY STUDENTS SHOULD LEARN THAT. . .

---

1. A major objective of cost accounting is accumulating and assigning costs to cost objects.
2. Accounting is sometimes called the language of business and learning accounting terminology is similar to learning a foreign language. Cost classifications help in understanding how costs are traced (direct versus indirect costs), behave (variable versus fixed) and function (product versus period costs).
3. Manufacturers produce their own goods, whereas merchandisers purchase the goods they sell. To calculate cost of goods sold for a manufacturer, you first must calculate the cost of goods manufactured.

### LEARNING OBJECTIVES

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Students should be able to

- LO1 Explain the meaning of cost and how costs are assigned to products and services.
- LO2 Define the various costs of manufacturing products and providing services, as well as the costs of selling and administration.
- LO3 Prepare income statements for manufacturing and service organizations.

### KEY TOPICS

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The following major topics are covered in this chapter (related learning objectives are listed for each topic):

1. Cost assignment (Learning Objective 1)
2. Product and service costs (Learning Objective 2)
3. Cost of goods manufactured and cost of goods sold statements; Income statements for manufacturing and service organizations (Learning Objective 3)

### CORNERSTONES

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Cornerstone 2-1	Calculating Product Cost in Total and Per Unit
Cornerstone 2-2	Calculating Prime Cost and Conversion Cost in Total and Per Unit
Cornerstone 2-3	Calculating the Direct Materials Used in Production
Cornerstone 2-4	Calculating the Cost of Goods Manufactured
Cornerstone 2-5	Calculating the Cost of Goods Sold
Cornerstone 2-6	Preparing an Income Statement for a Manufacturing Firm
Cornerstone 2-7	Calculating the Percentage of Sales Revenue for Each Line on the Income Statement
Cornerstone 2-8	Preparing an Income Statement for a Service Organization

## CHAPTER OUTLINE

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**Discussion Question:** After students read the opening vignette, Canada's Worst Cellphone Bill, ask them to select what they consider to be the most important point in this feature.

After students have viewed the video, ask them to answer the discussion questions listed in the Video Integration Guide near the end of this *Instructor's Manual* chapter.

### **Student Engagement**

*Start a discussion on how companies need to figure out the cost of the items they sell. Draw on student knowledge by asking them to brainstorm a list of ingredients required for a sub sandwich or a decorated cake. You might need to prompt students to ensure that the list has a good variety of items (meats, bread, toppings, condiments and seasonings such as mustard and salt and pepper, napkins, etc.) This list can be left on the board as the following terms are introduced to students.*

## **1. THE MEANING AND USES OF COST**

One objective of management accounting is to determine the cost of products, services, and customers.

### **A. Cost**

- **Cost** is the cash (or cash equivalent) sacrificed for goods and/or services that are expected to produce a current or future benefit to an organization.
- **Expenses** are *expired* costs.

### **B. Accumulating and Assigning Costs**

- **Accumulating costs** is the way that costs are measured and recorded.
- **Assigning costs** are the way that a cost is linked to some cost object.

### **C. Cost Objects**

A **cost object** is any item such as a product, a department, a customer, or an activity for which costs are measured and assigned.

### **D. Assigning Costs to Cost Objects**

The choice of method is made by balancing simplicity versus accuracy.

### **Student Engagement**

*Have students read the You Decide feature that starts on page 33 and then ask them to brainstorm and list all of the costs of one flight. Then ask how an airline company would go about setting ticket prices to ensure profitability.*

## E. Cost Classification

- Costs are classified according to the decision-making needs of management.
- The following cost groups and terms are introduced and defined in this chapter: direct costs, indirect costs, prime and conversion costs, product and period costs, variable, fixed and mixed costs, and selling and administrative costs.
- Tracing direct and indirect costs:
  - Direct costs** can easily and accurately be traced to a cost object. The more costs that can be traced to a cost object, the more accurate the cost assignments are.
  - Indirect costs** cannot be easily and accurately traced to a cost object.

### Student Engagement

Use the ingredient list generated in the previous example of the sub sandwich or decorated cake (or of some other item) to determine direct versus indirect costs. Good examples of indirect costs are salt and pepper and napkins. Ask why these costs are indirect. You could perhaps discuss with the students the use of technology that could make tracing more costs easier (e.g., an automated salt-and-pepper dispensing machine that could measure the exact amount used on each sub).

- Assigning indirect costs:
  - Allocation** is used to assign indirect costs to a cost object, such as a product or department, using a reasonable and convenient method.
  - Methods of cost assignment are summarized below:

Methods of Cost Assignment		
	Direct Tracing	Allocation
<b>Description</b>	Identifying and assigning costs to a cost object that are specifically or physically associated with the cost object Relies on physical observation	Assignment of indirect costs to cost objects based on convenience or an assumed linkage
<b>Cost assignment accuracy</b>	More precise	Less accurate

- Included in other categories of cost:
  - Variable cost:** A cost that increases as product output increases. For example, the number and cost of bicycle tires will increase as the number of bicycles produced increases.
  - Fixed cost:** A cost that does not increase as output increases. For example, the cost of insurance for a factory will not increase as the number of bicycles produced increases.

- Opportunity cost: The benefit given up or sacrificed when one alternative is chosen over another. Opportunity costs are not usually recorded in the accounting system; however, opportunity costs should be considered when evaluating alternatives for decision making.

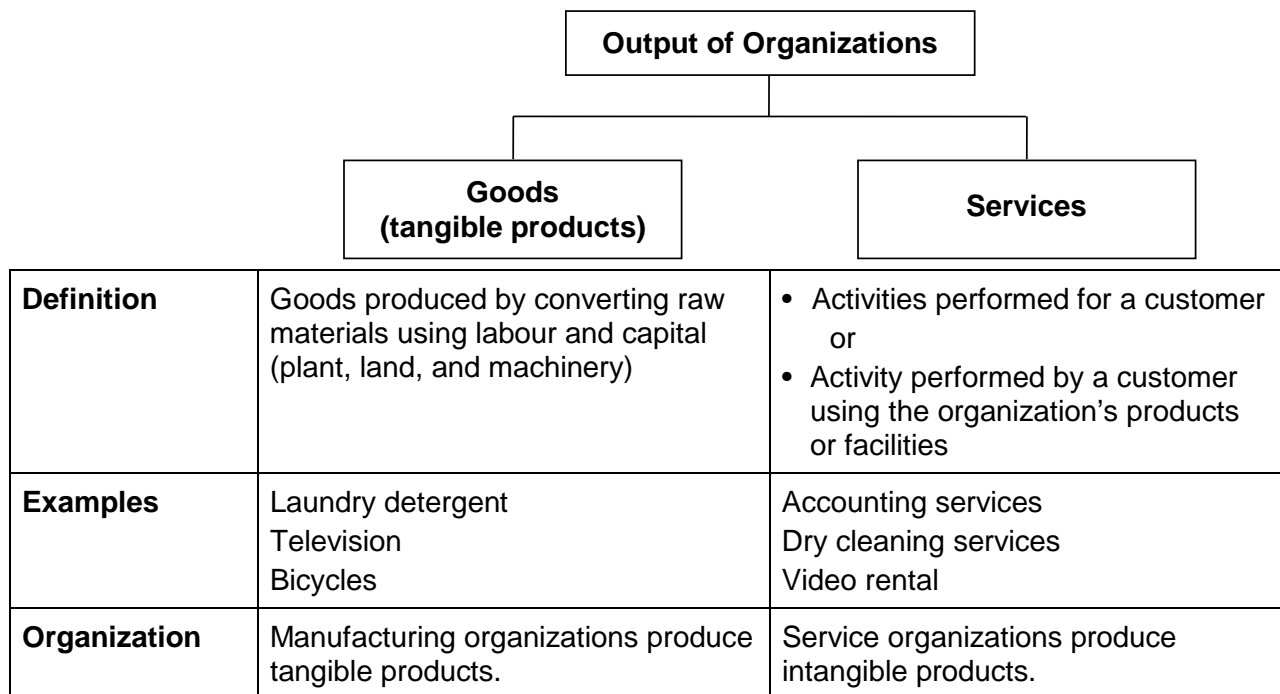
**Discussion Question:** Ask students to consider their mobile phone bills. What portion would be considered a variable cost? What portion is fixed?

### Student Engagement

Have students brainstorm a list of ingredients that would go into a sub, such as meat, bread, and toppings (these would be examples of variable costs—the more subs that are sold the higher the total costs). Then have students brainstorm costs that would be fixed for a sub shop location (rent, insurance, property taxes, etc.).

## 2. PRODUCT AND SERVICE COSTS

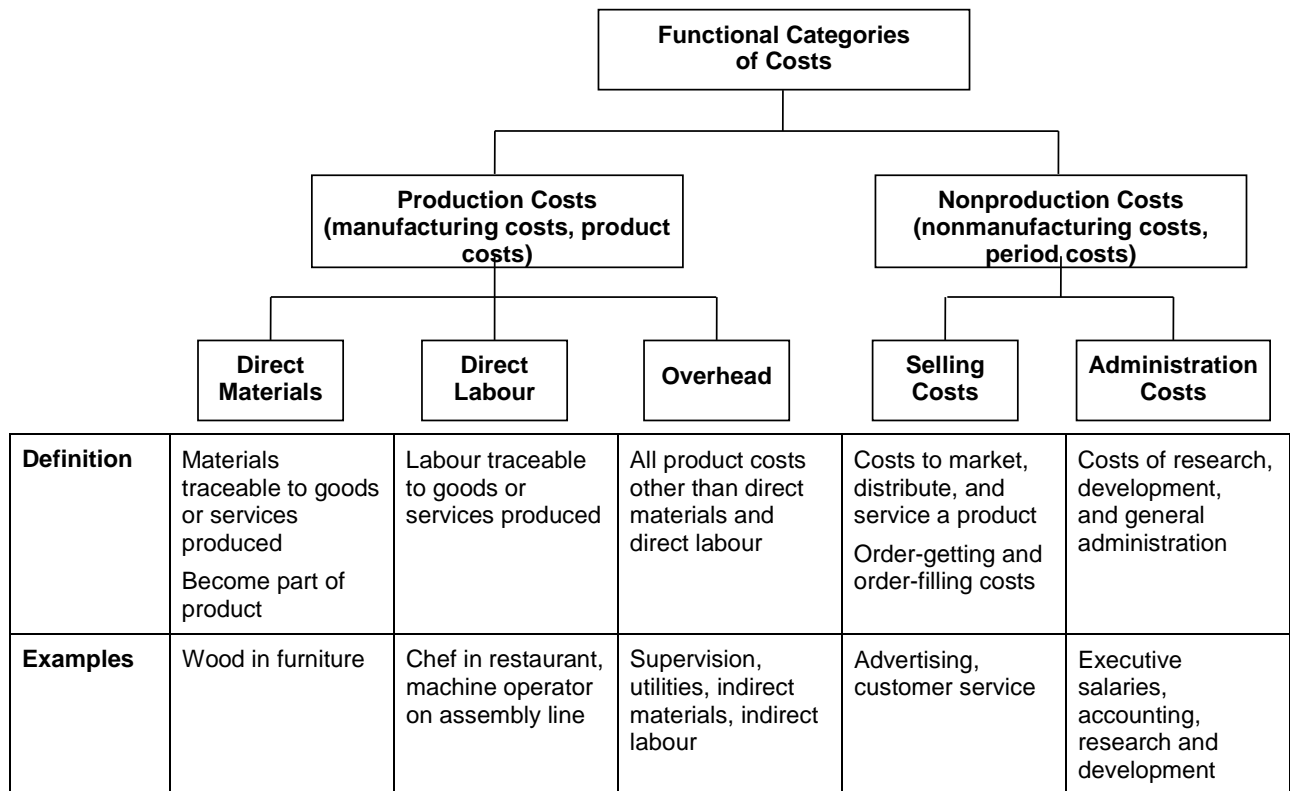
There are two types of output: goods and services, as summarized below:



- **Ethics:** Tracking costs can also detect unauthorized activity and possible ethical problems.

## A. Product Costs

For external product costing, costs are classified by the function they serve, as summarized in the following diagram:



- **Product costs** for external financial reports are manufacturing costs (direct materials, direct labour, and manufacturing overhead) that are first added to an inventory account and remain in inventory until sold. The costs are expensed when the product is sold.
- **Period costs** are nonproduction costs (selling and administrative) and are expensed when incurred.

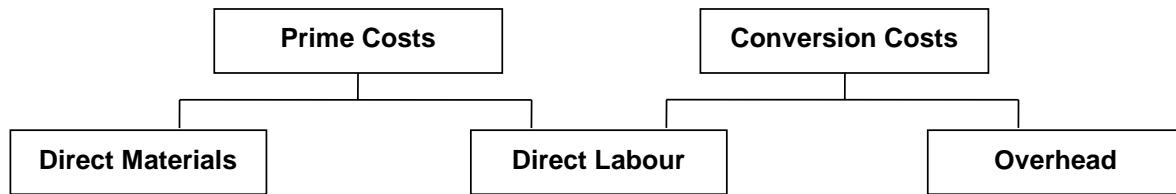
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### Cornerstone 2-1 Calculating Product Cost in Total and Per Unit

Cornerstones can be implemented in your classes in several different ways:

1. Demonstrate this Cornerstone as an example in class.
  2. Use Cornerstone Exercise 2-1 as a demo, in-class exercise. Students can work the exercise individually or in teams.
  3. Discuss the Concept Q&A on page 36. Make a list of the costs that you are incurring for your classes this term. Which costs are direct costs for your school courses? Which are indirect costs?
  4. Discuss the Concept Q&A on page 39. Focus on any object in the room. What do you think the direct materials for that object might include? What kind of direct labour might have worked on that object? What types of overhead costs might have been incurred by the company that produced it?
-

- **Prime costs** are direct materials costs and direct labour costs.
- **Conversion costs** are the costs of converting raw materials into a final product (direct labour costs and overhead costs).




---

### Cornerstone 2-2 Calculating Prime Cost and Conversion Cost in Total and Per Unit

Cornerstones can be implemented in your classes in several different ways:

1. Demonstrate it as an example in class.
  2. Use Cornerstone Exercise 2-2 as a demo, in-class exercise. Students can work the exercise individually or in teams.
  3. Discuss the Analytical Q&A on page 39. A company produced and sold 1,000 units last month. Direct materials totalled \$4,000, direct labour totalled \$5,000, and overhead amounted to \$10,000. (1) What are the total prime costs for last month? (2) What is the conversion cost per unit?
- 

### B. Period Costs

Period costs are all costs that are not product costs.

1. **Selling costs** are costs to market, distribute, and service a product or service.
2. **Administrative costs** are costs associated with research, development, and general administration of the organization that cannot be assigned to either selling or production.

### Student Engagement

*Have students read the Corporate and Social Responsibility feature on page 37 and then ask them to discuss it. Highlight the importance of ethics in costing.*

## 3. PREPARING FINANCIAL STATEMENTS FOR MANUFACTURING OPERATIONS

For income statements for external users, the two major functional categories of expenses are

1. Cost of goods sold (production costs)
2. Operating expenses (nonproduction costs)

Production costs (direct materials, direct labour, and overhead) are product costs because these costs attach to the product.

If the product is in inventory, the product cost is reported as inventory on the balance sheet.

If the product has been sold, the product costs are recognized as an expense (cost of goods sold) on the income statement.

Nonproduction costs (selling and administrative costs) are period costs that are expensed each period.

## A. Financial Statements for Manufacturing Operations

There are differences on both the balance sheet and income statement for manufacturing operations.

## B. Balance Sheet for a Manufacturing Business

A manufacturing firm might have three inventory accounts on the balance sheet:

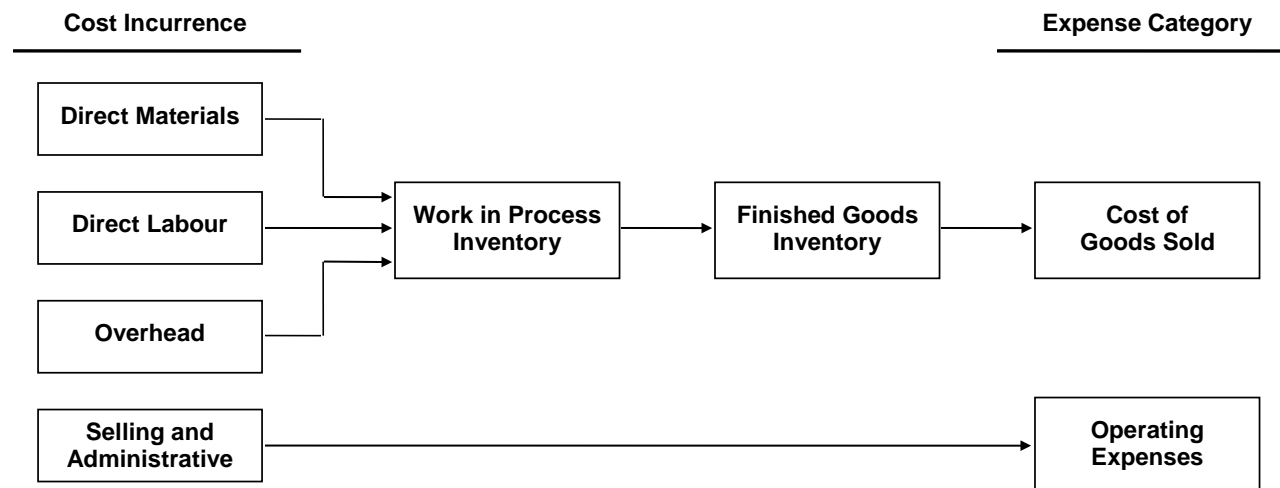
1. Raw materials
2. Work in process
3. Finished goods

## C. Income Statement for a Manufacturing Business

- **Cost of goods sold** consists of the cost of direct materials, direct labour, and overhead attached to the units *sold* during a period.
- The **cost of goods manufactured** is the cost of direct materials, direct labour, and overhead attached to the units *produced* during a period.
- **Work in process** consists of all partially completed units in production.
- **Finished goods** are goods that are complete and ready for sale.

## D. Statement of Cost of Goods Manufactured

Cost flows for a manufacturer are diagramed below.



As direct materials, direct labour, and manufacturing overhead are used in the production process, the associated costs are transferred to the work-in-process inventory account.

As the goods in process are completed, the associated costs are transferred to the finished goods inventory account.

As the goods are sold, the associated costs are transferred to the cost of goods sold account. Thus, the product costs of direct materials, direct labour, and manufacturing overhead are not expensed until the goods are sold.

**Gross margin** is the difference between sales revenue and cost of goods sold.

## **E. Cost of Goods Manufactured: A Second Look**

The cost of goods manufactured represents the total product cost of goods completed during the current period and transferred to the finished goods inventory.

### **Learning Barrier**

Students have a hard time understanding the work-in-progress (WIP) accounts when calculating the cost of goods manufactured. It is helpful to explain in more detail that total manufacturing costs are resources consumed in the current month. Some of manufacturing costs are used to complete units in beginning WIP, some units are started and completed, and some units are started but not completed (ending WIP).

---

### **Cornerstone 2-3 Calculating the Direct Materials Used in Production**

Cornerstones can be implemented in your classes in different ways:

1. Demonstrate this Cornerstone as an example in class.
2. Use Cornerstone Exercise 2-3 as a demo in class. Students can work the exercise individually or in teams.

---

### **Cornerstone 2-4 Calculating Cost of Goods Manufactured (COGM)**

Cornerstones can be implemented in your classes in different ways:

1. Demonstrate this Cornerstone as an example in class.
2. Use Cornerstone Exercise 2-4 as a demo, in-class exercise. Students can work the exercise individually or in teams.

### **Learning Barrier**

Many students find this calculation too complex and don't understand the relationship of WIP in relation to current period manufacturing costs when calculating the COGM. An overview of the flow of goods and how costs are accumulated throughout the manufacturing process would be helpful here.

---

## **F. Cost of Goods Sold**

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### **Cornerstone 2-5 Calculating Cost of Goods Sold (COGS)**

Cornerstones can be implemented in your classes in different ways:

1. Demonstrate this Cornerstone as an example in class.
2. Use Cornerstone Exercise 2-5 as a demo, in-class exercise. Students can work the exercise individually or in teams.

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## **G. Income Statement: Manufacturing Firm**

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### **Cornerstone 2-6 Preparing an Income Statement for a Manufacturing Firm**

### **Cornerstone 2-7 Calculating the Percentage of Sales Revenue for Each Line on the Income Statement**

Cornerstones can be implemented in your classes in different ways:

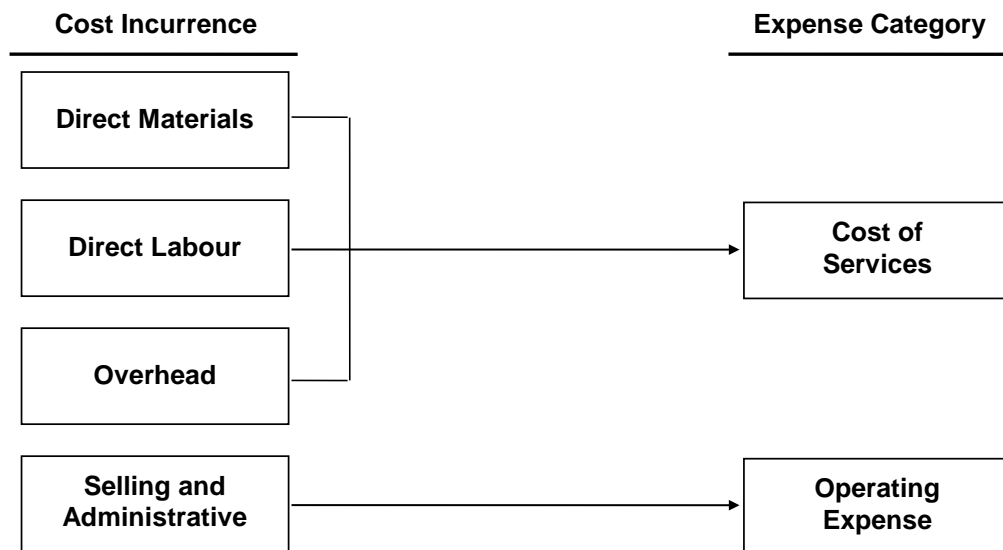
1. Demonstrate these Cornerstones as examples in class.
2. Use Cornerstone Exercises 2-6 and 2-7 as demo, in-class exercises. Students can work the exercises individually or in teams.



3. Discuss the Analytical Q&A on page 52. Your friend Ted mentioned that Mark's department store marks up sweaters by 100 percent. "Wow," said Ted, "So a sweater that costs them \$25 is sold for \$50—they're making \$25 in profit. Is Ted correct? Refer to the income statement in Cornerstone 2-7. What line would include the \$50 price of the sweater? What line would include the original \$25 cost (to the store) of the sweater? What line would include the \$25 that is over and above the cost?"

## H. Income Statement: Service Firm

Cost flows for a service firm are diagrammed below:



## Cornerstone 2-8 Preparing an Income Statement for a Service Organization

Cornerstones can be implemented in your classes in different ways:

1. Demonstrate this Cornerstone as an example in class.
2. Use Cornerstone Exercise 2-8 as a demo, in-class exercise. Students can work the exercise individually or in teams.

## 4. FLOW OF COSTS THROUGH THE GENERAL LEDGER

A T-account summary shows the flow of costs through the general ledger. A more detailed look at accounts is provided in Chapter 5 with job-order costing.

## APPLICATIONS

Applications for this chapter include

- Video integration: See the Video Integration Guide near the end of this chapter for a description of the videos and additional discussion questions and suggested answers.

- End-of-chapter exercises (E), problems (P), and cases (C):

<b>Exercise/ Problem/ Case</b>	<b>Learning Objective<sup>1</sup></b>	<b>Cornerstone<sup>2</sup></b>	<b>Difficulty</b>	<b>Time</b>	<b>AACSB Skills<sup>3</sup></b>	<b>IMA Content Specification<sup>4</sup></b>
E 2-1	LO2	2-1	Easy	5	A	CM
E 2-2	LO2	2-2	Easy	5	A	CM
E 2-3	LO3	2-3	Easy	5	A	CM
E 2-4	LO3	2-4	Easy	10	A	CM, R
E 2-5	LO3	2-5	Easy	5	A	R
E 2-6	LO3	2-6	Easy	5	A	R
E 2-7	LO3	2-7	Easy	5	A	R
E 2-8	LO3	2-8	Easy	5	A	R
E 2-9	LO1		Easy	5	A, C	CM
E 2-10	LO1		Easy	7	A	CM
E 2-11	LO2		Easy	9	A	CM, SM
E 2-12	LO2		Easy	15	A, R	CM
E 2-13	LO2		Medium	10	A	CM
E 2-14	LO2		Easy	5	A	CM
E 2-15	LO2		Easy	5	A	CM, SM
E 2-16	LO3		Medium	5	A	CM
E 2-17	LO3		Easy	5	A	R
E 2-18	LO3		Easy	10	A	CM, R
E 2-19	LO3		Medium	12	A, R	R
E 2-20	LO3		Medium	5	A	R
E 2-21	LO3		Easy	15	A, R	R
P 2-22	LO2, 3		Medium	35	A, R	CM, SM, R
P 2-23	LO1		Medium	20	A	CM, SM
P 2-24	LO3		Medium	20	A	CM, R
P 2-25	LO3		Medium	35	A, R	CM, R
P 2-26	LO3		Medium	25	A	R, CM
P 2-27	LO1, 2		Easy	20	A	CM
P 2-28	LO2, 3		Medium	40	A, R	CM, SM, R
P 2-29	LO3		Medium	30	A	CM, R
P 2-30	LO1		Medium	20	A	CM, R, DA

<b>Exercise/ Problem/ Case</b>	<b>Learning Objective<sup>1</sup></b>	<b>Cornerstone<sup>2</sup></b>	<b>Difficulty</b>	<b>Time</b>	<b>AACSB Skills<sup>3</sup></b>	<b>IMA Content Specification<sup>4</sup></b>
P 2-31	LO1,2,3		Medium	40	A	CM, SM, R
P 2-32	LO1,2		Medium	40	A, R	CM, SM, R
P 2-33	LO3		Hard	40	A	CM
P 2-34	LO3		Hard	20	A, R	CM, R
P 2-35	LO1,2		Medium	10	A	R
P 2-36	PEXam Pr.		Medium	40	A	R
P 2-37	PEXam Pr.		Easy	7	A	R
C 2-38	LO1,2,3		Hard	50	A, R	CM, R
C 2-39	LO1,2,3		Hard	45	A, R	CM, R, SP
C 2-40	LO1,2		Hard	30	E, R	BA

**<sup>1</sup> Learning Objectives:**

LO1 Explain the meaning of cost and how costs are assigned to products and services.

LO2 Define the costs of producing products and services and the costs of selling and administration.

LO3 Prepare cost of goods manufactured and sold statements. Prepare income statements for manufacturing and service organizations.

**<sup>2</sup> Cornerstones:**

Cornerstone 2-1	Calculating Product Cost in Total and Per Unit
Cornerstone 2-2	Calculating Prime Cost and Conversion Cost in Total and Per Unit
Cornerstone 2-3	Calculating the Direct Materials Used in Production
Cornerstone 2-4	Calculating the Cost of Goods Manufactured
Cornerstone 2-5	Calculating the Cost of Goods Sold
Cornerstone 2-6	Preparing an Income Statement for a Manufacturing Firm
Cornerstone 2-7	Calculating the Percentage of Sales Revenue for Each Line on the Income Statement
Cornerstone 2-8	Preparing an Income Statement for a Service Organization

**<sup>3</sup> AACSB Skills:**

C	Communication abilities
E	Ethical understanding and reasoning abilities
A	Analytic skills
T	Use of technology
D	Multicultural and diversity understanding
R	Reflective thinking skills

**<sup>4</sup> IMA Content Specification:**

BE	Business economics
GB	Global business
IC	Internal control
QM	Quantitative methods

FSA	Financial statement and accounting standards
BP	Budget preparation
CM	Cost management
IM	Information management
PM	Performance management
R	Reporting
SP	Strategic planning
SM	Strategic marketing
CF	Corporate finance
DA	Decision analysis
ID	Investment decisions
BA	Business applications

## VIDEO INTEGRATION GUIDE

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**Video Case:** The Worst Cellphone Bill

**Video Running Time:** 21 minutes

**Organizations Discussed:** Bell, Rogers, Virgin, Telus

### Video Case Learning Goals

- Explain how cellphone providers, which are service organizations, price and cost their products.
- Provide examples of customers who were inappropriately charged on their cellphone bills.
- Discuss the pricing practices of the cellphone companies.
- Explain different issues that arise regarding what cellphone contracts promise and what they deliver.

### Chapter Concepts Spotlighted in Video

- Cost
- Contracts
- Margin
- Markup
- Price
- Profit
- Sale
- Service organization
- Services

### Video Case Synopsis

The video describes how a reporter held a contest to find the person with the worst cellphone bill in Canada. The video visits the three finalists and details their stories. The reporter also visits a professor who studies cellphone company costs and pricing. The video also highlights the problems that customers have when dealing with the customer service representatives of the companies.

**Video Case Discussion Questions and Suggested Answers**

1. Explain the difference between a service organization and a manufacturing organization. How does the income statement differ?  
*The cellphone providers are service organizations that provide cellphone service to customers. An income statement for a service organization does not include cost of goods sold or gross profit or gross margin. A manufacturing income statement includes the cost of goods manufactured, which represents costs assigned to completed goods—direct material, direct labour, and overhead.*
2. Give examples of overhead that the cellphone companies incur.  
*Costs associated with the depreciation of the cell towers, and selling expenses relating to its stores (insurance, heat, electricity).*
3. Provide examples of period costs. When are these items reported on the income statement?  
*Selling expenses are period costs. Period costs are expensed immediately, whereas product costs are expensed when the goods are sold.*
4. Do the cellphone companies sell tangible or intangible products?  
*Both are sold. The hardware (the cellphone itself) is an example of a tangible product, whereas the cell services are an example of intangible products.*
5. Investigate your cellphone company and find out what it costs them to provide you with one minute of calling or one text message. Compare that to what you are being charged.
6. Have a group discussion to find out who has the worst cellphone bill in the class.

**EXPERIENTIAL ACTIVITIES**

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1. Obtain published financial statements of a manufacturing and a service organization. Compare and contrast their income statements and balance sheets. Provide examples of product costs and period costs.
2. Obtain published financial statements of two manufacturing companies in the same industry. Compare and contrast their income statements and balance sheets. How does the cost of goods sold vary for the two companies? What are the gross margin percentages for the companies? How would manufacturing companies determine the price to charge their customers? How does this compare to a service organization? Provide examples of product costs and period costs.

# CHAPTER 2

## Basic Managerial Accounting Concepts

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IF NOTHING ELSE, MY STUDENTS SHOULD LEARN THAT. . .

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1. A major objective of cost accounting is accumulating and assigning costs to cost objects.
2. Accounting is sometimes called the language of business and learning accounting terminology is similar to learning a foreign language. Cost classifications help in understanding how costs are traced (direct versus indirect costs), behave (variable versus fixed) and function (product versus period costs).
3. Manufacturers produce their own goods, whereas merchandisers purchase the goods they sell. To calculate cost of goods sold for a manufacturer, you first must calculate the cost of goods manufactured.

### LEARNING OBJECTIVES

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Students should be able to

- LO1 Explain the meaning of cost and how costs are assigned to products and services.
- LO2 Define the various costs of manufacturing products and providing services, as well as the costs of selling and administration.
- LO3 Prepare income statements for manufacturing and service organizations.

### KEY TOPICS

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The following major topics are covered in this chapter (related learning objectives are listed for each topic):

1. Cost assignment (Learning Objective 1)
2. Product and service costs (Learning Objective 2)
3. Cost of goods manufactured and cost of goods sold statements; Income statements for manufacturing and service organizations (Learning Objective 3)

### CORNERSTONES

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Cornerstone 2-1	Calculating Product Cost in Total and Per Unit
Cornerstone 2-2	Calculating Prime Cost and Conversion Cost in Total and Per Unit
Cornerstone 2-3	Calculating the Direct Materials Used in Production
Cornerstone 2-4	Calculating the Cost of Goods Manufactured
Cornerstone 2-5	Calculating the Cost of Goods Sold
Cornerstone 2-6	Preparing an Income Statement for a Manufacturing Firm
Cornerstone 2-7	Calculating the Percentage of Sales Revenue for Each Line on the Income Statement
Cornerstone 2-8	Preparing an Income Statement for a Service Organization

## CHAPTER OUTLINE

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**Discussion Question:** After students read the opening vignette, Canada's Worst Cellphone Bill, ask them to select what they consider to be the most important point in this feature.

After students have viewed the video, ask them to answer the discussion questions listed in the Video Integration Guide near the end of this *Instructor's Manual* chapter.

### **Student Engagement**

*Start a discussion on how companies need to figure out the cost of the items they sell. Draw on student knowledge by asking them to brainstorm a list of ingredients required for a sub sandwich or a decorated cake. You might need to prompt students to ensure that the list has a good variety of items (meats, bread, toppings, condiments and seasonings such as mustard and salt and pepper, napkins, etc.) This list can be left on the board as the following terms are introduced to students.*

## **1. THE MEANING AND USES OF COST**

One objective of management accounting is to determine the cost of products, services, and customers.

### **A. Cost**

- **Cost** is the cash (or cash equivalent) sacrificed for goods and/or services that are expected to produce a current or future benefit to an organization.
- **Expenses** are *expired* costs.

### **B. Accumulating and Assigning Costs**

- **Accumulating costs** is the way that costs are measured and recorded.
- **Assigning costs** are the way that a cost is linked to some cost object.

### **C. Cost Objects**

A **cost object** is any item such as a product, a department, a customer, or an activity for which costs are measured and assigned.

### **D. Assigning Costs to Cost Objects**

The choice of method is made by balancing simplicity versus accuracy.

### **Student Engagement**

*Have students read the You Decide feature that starts on page 33 and then ask them to brainstorm and list all of the costs of one flight. Then ask how an airline company would go about setting ticket prices to ensure profitability.*

## E. Cost Classification

- Costs are classified according to the decision-making needs of management.
- The following cost groups and terms are introduced and defined in this chapter: direct costs, indirect costs, prime and conversion costs, product and period costs, variable, fixed and mixed costs, and selling and administrative costs.
- Tracing direct and indirect costs:
  - Direct costs** can easily and accurately be traced to a cost object. The more costs that can be traced to a cost object, the more accurate the cost assignments are.
  - Indirect costs** cannot be easily and accurately traced to a cost object.

### Student Engagement

Use the ingredient list generated in the previous example of the sub sandwich or decorated cake (or of some other item) to determine direct versus indirect costs. Good examples of indirect costs are salt and pepper and napkins. Ask why these costs are indirect. You could perhaps discuss with the students the use of technology that could make tracing more costs easier (e.g., an automated salt-and-pepper dispensing machine that could measure the exact amount used on each sub).

- Assigning indirect costs:
  - Allocation** is used to assign indirect costs to a cost object, such as a product or department, using a reasonable and convenient method.
  - Methods of cost assignment are summarized below:

Methods of Cost Assignment		
	Direct Tracing	Allocation
<b>Description</b>	Identifying and assigning costs to a cost object that are specifically or physically associated with the cost object Relies on physical observation	Assignment of indirect costs to cost objects based on convenience or an assumed linkage
<b>Cost assignment accuracy</b>	More precise	Less accurate

- Included in other categories of cost:
  - Variable cost:** A cost that increases as product output increases. For example, the number and cost of bicycle tires will increase as the number of bicycles produced increases.
  - Fixed cost:** A cost that does not increase as output increases. For example, the cost of insurance for a factory will not increase as the number of bicycles produced increases.



- Opportunity cost: The benefit given up or sacrificed when one alternative is chosen over another. Opportunity costs are not usually recorded in the accounting system; however, opportunity costs should be considered when evaluating alternatives for decision making.

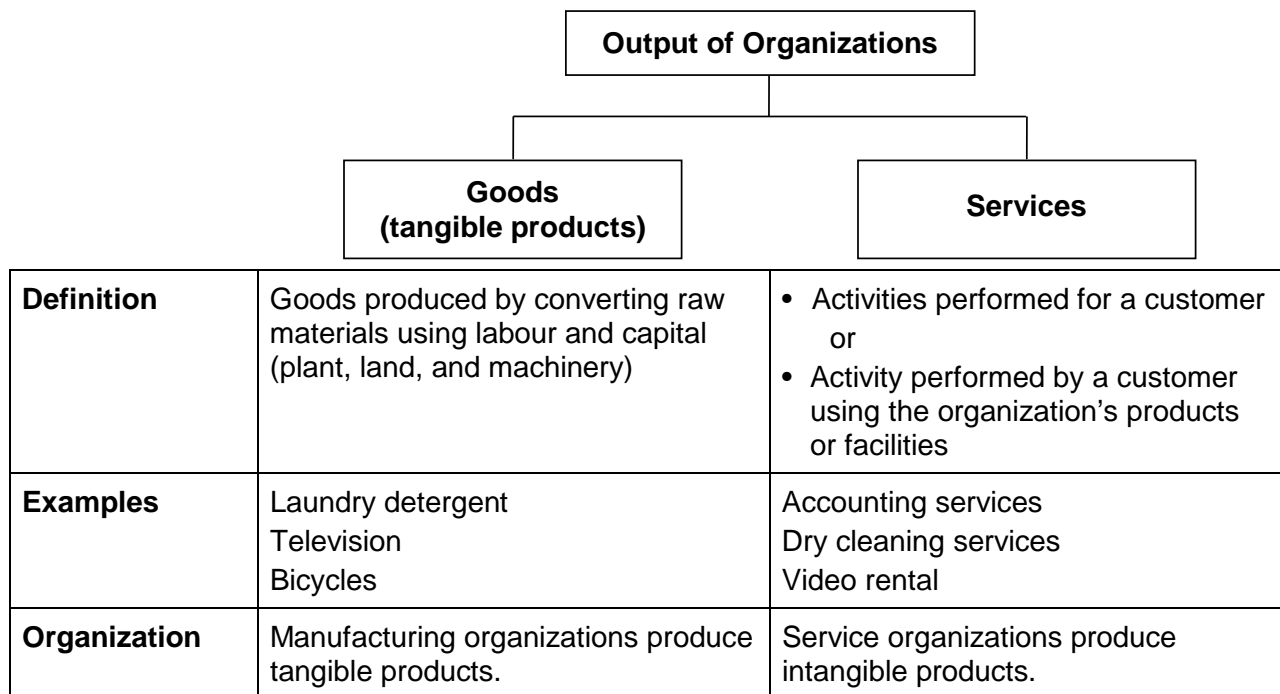
**Discussion Question:** Ask students to consider their mobile phone bills. What portion would be considered a variable cost? What portion is fixed?

### Student Engagement

Have students brainstorm a list of ingredients that would go into a sub, such as meat, bread, and toppings (these would be examples of variable costs—the more subs that are sold the higher the total costs). Then have students brainstorm costs that would be fixed for a sub shop location (rent, insurance, property taxes, etc.).

## 2. PRODUCT AND SERVICE COSTS

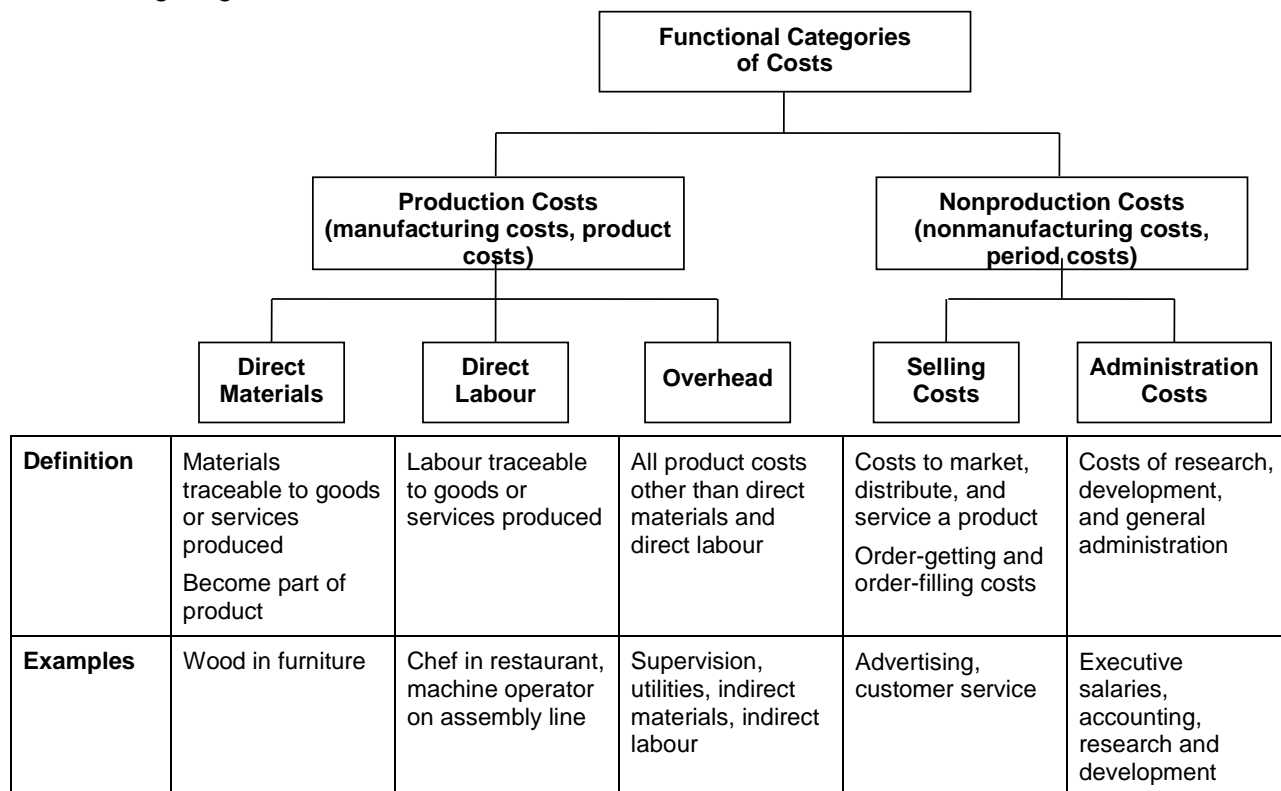
There are two types of output: goods and services, as summarized below:



- **Ethics:** Tracking costs can also detect unauthorized activity and possible ethical problems.

## A. Product Costs

For external product costing, costs are classified by the function they serve, as summarized in the following diagram:



- **Product costs** for external financial reports are manufacturing costs (direct materials, direct labour, and manufacturing overhead) that are first added to an inventory account and remain in inventory until sold. The costs are expensed when the product is sold.
- **Period costs** are nonproduction costs (selling and administrative) and are expensed when incurred.

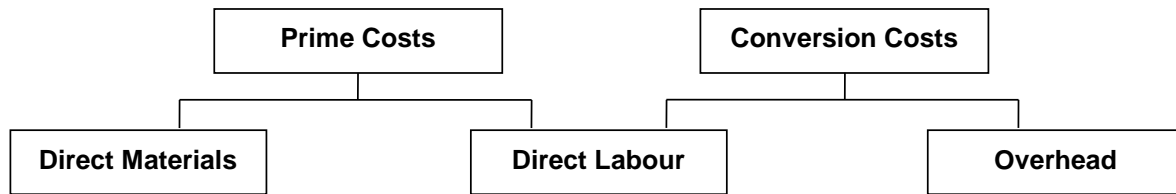
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### Cornerstone 2-1 Calculating Product Cost in Total and Per Unit

Cornerstones can be implemented in your classes in several different ways:

1. Demonstrate this Cornerstone as an example in class.
  2. Use Cornerstone Exercise 2-1 as a demo, in-class exercise. Students can work the exercise individually or in teams.
  3. Discuss the Concept Q&A on page 36. Make a list of the costs that you are incurring for your classes this term. Which costs are direct costs for your school courses? Which are indirect costs?
  4. Discuss the Concept Q&A on page 39. Focus on any object in the room. What do you think the direct materials for that object might include? What kind of direct labour might have worked on that object? What types of overhead costs might have been incurred by the company that produced it?
-

- **Prime costs** are direct materials costs and direct labour costs.
- **Conversion costs** are the costs of converting raw materials into a final product (direct labour costs and overhead costs).




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### Cornerstone 2-2 Calculating Prime Cost and Conversion Cost in Total and Per Unit

Cornerstones can be implemented in your classes in several different ways:

1. Demonstrate it as an example in class.
  2. Use Cornerstone Exercise 2-2 as a demo, in-class exercise. Students can work the exercise individually or in teams.
  3. Discuss the Analytical Q&A on page 39. A company produced and sold 1,000 units last month. Direct materials totalled \$4,000, direct labour totalled \$5,000, and overhead amounted to \$10,000. (1) What are the total prime costs for last month? (2) What is the conversion cost per unit?
- 

### B. Period Costs

Period costs are all costs that are not product costs.

1. **Selling costs** are costs to market, distribute, and service a product or service.
2. **Administrative costs** are costs associated with research, development, and general administration of the organization that cannot be assigned to either selling or production.

### Student Engagement

*Have students read the Corporate and Social Responsibility feature on page 37 and then ask them to discuss it. Highlight the importance of ethics in costing.*

## 3. PREPARING FINANCIAL STATEMENTS FOR MANUFACTURING OPERATIONS

For income statements for external users, the two major functional categories of expenses are

1. Cost of goods sold (production costs)
2. Operating expenses (nonproduction costs)

Production costs (direct materials, direct labour, and overhead) are product costs because these costs attach to the product.

If the product is in inventory, the product cost is reported as inventory on the balance sheet.

If the product has been sold, the product costs are recognized as an expense (cost of goods sold) on the income statement.

Nonproduction costs (selling and administrative costs) are period costs that are expensed each period.

## A. Financial Statements for Manufacturing Operations

There are differences on both the balance sheet and income statement for manufacturing operations.

## B. Balance Sheet for a Manufacturing Business

A manufacturing firm might have three inventory accounts on the balance sheet:

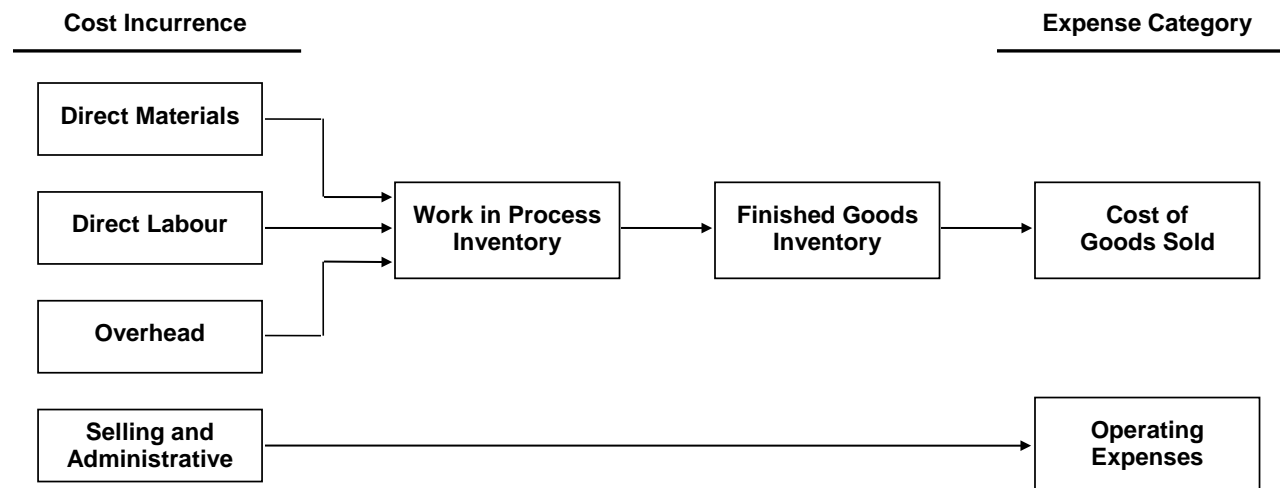
1. Raw materials
2. Work in process
3. Finished goods

## C. Income Statement for a Manufacturing Business

- **Cost of goods sold** consists of the cost of direct materials, direct labour, and overhead attached to the units *sold* during a period.
- The **cost of goods manufactured** is the cost of direct materials, direct labour, and overhead attached to the units *produced* during a period.
- **Work in process** consists of all partially completed units in production.
- **Finished goods** are goods that are complete and ready for sale.

## D. Statement of Cost of Goods Manufactured

Cost flows for a manufacturer are diagramed below.



As direct materials, direct labour, and manufacturing overhead are used in the production process, the associated costs are transferred to the work-in-process inventory account.

As the goods in process are completed, the associated costs are transferred to the finished goods inventory account.

As the goods are sold, the associated costs are transferred to the cost of goods sold account. Thus, the product costs of direct materials, direct labour, and manufacturing overhead are not expensed until the goods are sold.

**Gross margin** is the difference between sales revenue and cost of goods sold.

## **E. Cost of Goods Manufactured: A Second Look**

The cost of goods manufactured represents the total product cost of goods completed during the current period and transferred to the finished goods inventory.

### **Learning Barrier**

Students have a hard time understanding the work-in-progress (WIP) accounts when calculating the cost of goods manufactured. It is helpful to explain in more detail that total manufacturing costs are resources consumed in the current month. Some of manufacturing costs are used to complete units in beginning WIP, some units are started and completed, and some units are started but not completed (ending WIP).

---

### **Cornerstone 2-3 Calculating the Direct Materials Used in Production**

Cornerstones can be implemented in your classes in different ways:

1. Demonstrate this Cornerstone as an example in class.
2. Use Cornerstone Exercise 2-3 as a demo in class. Students can work the exercise individually or in teams.

---

### **Cornerstone 2-4 Calculating Cost of Goods Manufactured (COGM)**

Cornerstones can be implemented in your classes in different ways:

1. Demonstrate this Cornerstone as an example in class.
2. Use Cornerstone Exercise 2-4 as a demo, in-class exercise. Students can work the exercise individually or in teams.

### **Learning Barrier**

Many students find this calculation too complex and don't understand the relationship of WIP in relation to current period manufacturing costs when calculating the COGM. An overview of the flow of goods and how costs are accumulated throughout the manufacturing process would be helpful here.

---

## **F. Cost of Goods Sold**

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### **Cornerstone 2-5 Calculating Cost of Goods Sold (COGS)**

Cornerstones can be implemented in your classes in different ways:

1. Demonstrate this Cornerstone as an example in class.
2. Use Cornerstone Exercise 2-5 as a demo, in-class exercise. Students can work the exercise individually or in teams.

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## **G. Income Statement: Manufacturing Firm**

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### **Cornerstone 2-6 Preparing an Income Statement for a Manufacturing Firm**

### **Cornerstone 2-7 Calculating the Percentage of Sales Revenue for Each Line on the Income Statement**

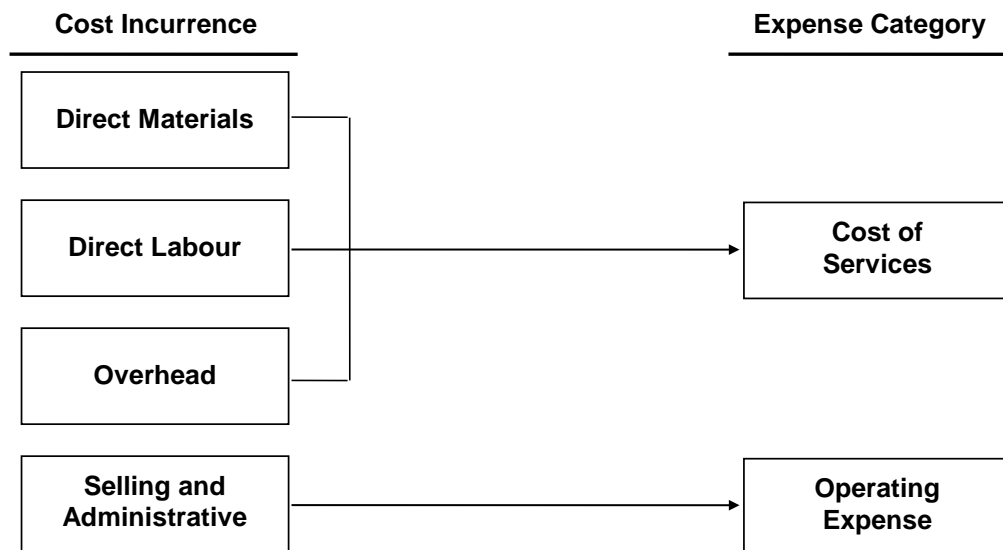
Cornerstones can be implemented in your classes in different ways:

1. Demonstrate these Cornerstones as examples in class.
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3. Discuss the Analytical Q&A on page 52. Your friend Ted mentioned that Mark's department store marks up sweaters by 100 percent. "Wow," said Ted, "So a sweater that costs them \$25 is sold for \$50—they're making \$25 in profit. Is Ted correct? Refer to the income statement in Cornerstone 2-7. What line would include the \$50 price of the sweater? What line would include the original \$25 cost (to the store) of the sweater? What line would include the \$25 that is over and above the cost?"

## H. Income Statement: Service Firm

Cost flows for a service firm are diagramed below:



## Cornerstone 2-8 Preparing an Income Statement for a Service Organization

Cornerstones can be implemented in your classes in different ways:

1. Demonstrate this Cornerstone as an example in class.
2. Use Cornerstone Exercise 2-8 as a demo, in-class exercise. Students can work the exercise individually or in teams.

## 4. FLOW OF COSTS THROUGH THE GENERAL LEDGER

A T-account summary shows the flow of costs through the general ledger. A more detailed look at accounts is provided in Chapter 5 with job-order costing.

## APPLICATIONS

Applications for this chapter include

- Video integration: See the Video Integration Guide near the end of this chapter for a description of the videos and additional discussion questions and suggested answers.

- End-of-chapter exercises (E), problems (P), and cases (C):

<b>Exercise/ Problem/ Case</b>	<b>Learning Objective<sup>1</sup></b>	<b>Cornerstone<sup>2</sup></b>	<b>Difficulty</b>	<b>Time</b>	<b>AACSB Skills<sup>3</sup></b>	<b>IMA Content Specification<sup>4</sup></b>
E 2-1	LO2	2-1	Easy	5	A	CM
E 2-2	LO2	2-2	Easy	5	A	CM
E 2-3	LO3	2-3	Easy	5	A	CM
E 2-4	LO3	2-4	Easy	10	A	CM, R
E 2-5	LO3	2-5	Easy	5	A	R
E 2-6	LO3	2-6	Easy	5	A	R
E 2-7	LO3	2-7	Easy	5	A	R
E 2-8	LO3	2-8	Easy	5	A	R
E 2-9	LO1		Easy	5	A, C	CM
E 2-10	LO1		Easy	7	A	CM
E 2-11	LO2		Easy	9	A	CM, SM
E 2-12	LO2		Easy	15	A, R	CM
E 2-13	LO2		Medium	10	A	CM
E 2-14	LO2		Easy	5	A	CM
E 2-15	LO2		Easy	5	A	CM, SM
E 2-16	LO3		Medium	5	A	CM
E 2-17	LO3		Easy	5	A	R
E 2-18	LO3		Easy	10	A	CM, R
E 2-19	LO3		Medium	12	A, R	R
E 2-20	LO3		Medium	5	A	R
E 2-21	LO3		Easy	15	A, R	R
P 2-22	LO2, 3		Medium	35	A, R	CM, SM, R
P 2-23	LO1		Medium	20	A	CM, SM
P 2-24	LO3		Medium	20	A	CM, R
P 2-25	LO3		Medium	35	A, R	CM, R
P 2-26	LO3		Medium	25	A	R, CM
P 2-27	LO1, 2		Easy	20	A	CM
P 2-28	LO2, 3		Medium	40	A, R	CM, SM, R
P 2-29	LO3		Medium	30	A	CM, R
P 2-30	LO1		Medium	20	A	CM, R, DA

<b>Exercise/ Problem/ Case</b>	<b>Learning Objective<sup>1</sup></b>	<b>Cornerstone<sup>2</sup></b>	<b>Difficulty</b>	<b>Time</b>	<b>AACSB Skills<sup>3</sup></b>	<b>IMA Content Specification<sup>4</sup></b>
P 2-31	LO1,2,3		Medium	40	A	CM, SM, R
P 2-32	LO1,2		Medium	40	A, R	CM, SM, R
P 2-33	LO3		Hard	40	A	CM
P 2-34	LO3		Hard	20	A, R	CM, R
P 2-35	LO1,2		Medium	10	A	R
P 2-36	PEXam Pr.		Medium	40	A	R
P 2-37	PEXam Pr.		Easy	7	A	R
C 2-38	LO1,2,3		Hard	50	A, R	CM, R
C 2-39	LO1,2,3		Hard	45	A, R	CM, R, SP
C 2-40	LO1,2		Hard	30	E, R	BA

**<sup>1</sup> Learning Objectives:**

LO1 Explain the meaning of cost and how costs are assigned to products and services.

LO2 Define the costs of producing products and services and the costs of selling and administration.

LO3 Prepare cost of goods manufactured and sold statements. Prepare income statements for manufacturing and service organizations.

**<sup>2</sup> Cornerstones:**

Cornerstone 2-1	Calculating Product Cost in Total and Per Unit
Cornerstone 2-2	Calculating Prime Cost and Conversion Cost in Total and Per Unit
Cornerstone 2-3	Calculating the Direct Materials Used in Production
Cornerstone 2-4	Calculating the Cost of Goods Manufactured
Cornerstone 2-5	Calculating the Cost of Goods Sold
Cornerstone 2-6	Preparing an Income Statement for a Manufacturing Firm
Cornerstone 2-7	Calculating the Percentage of Sales Revenue for Each Line on the Income Statement
Cornerstone 2-8	Preparing an Income Statement for a Service Organization

**<sup>3</sup> AACSB Skills:**

C	Communication abilities
E	Ethical understanding and reasoning abilities
A	Analytic skills
T	Use of technology
D	Multicultural and diversity understanding
R	Reflective thinking skills

**<sup>4</sup> IMA Content Specification:**

BE	Business economics
GB	Global business
IC	Internal control
QM	Quantitative methods



FSA	Financial statement and accounting standards
BP	Budget preparation
CM	Cost management
IM	Information management
PM	Performance management
R	Reporting
SP	Strategic planning
SM	Strategic marketing
CF	Corporate finance
DA	Decision analysis
ID	Investment decisions
BA	Business applications

## VIDEO INTEGRATION GUIDE

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**Video Case:** The Worst Cellphone Bill

**Video Running Time:** 21 minutes

**Organizations Discussed:** Bell, Rogers, Virgin, Telus

### Video Case Learning Goals

- Explain how cellphone providers, which are service organizations, price and cost their products.
- Provide examples of customers who were inappropriately charged on their cellphone bills.
- Discuss the pricing practices of the cellphone companies.
- Explain different issues that arise regarding what cellphone contracts promise and what they deliver.

### Chapter Concepts Spotlighted in Video

- Cost
- Contracts
- Margin
- Markup
- Price
- Profit
- Sale
- Service organization
- Services

### Video Case Synopsis

The video describes how a reporter held a contest to find the person with the worst cellphone bill in Canada. The video visits the three finalists and details their stories. The reporter also visits a professor who studies cellphone company costs and pricing. The video also highlights the problems that customers have when dealing with the customer service representatives of the companies.

**Video Case Discussion Questions and Suggested Answers**

1. Explain the difference between a service organization and a manufacturing organization. How does the income statement differ?  
*The cellphone providers are service organizations that provide cellphone service to customers. An income statement for a service organization does not include cost of goods sold or gross profit or gross margin. A manufacturing income statement includes the cost of goods manufactured, which represents costs assigned to completed goods—direct material, direct labour, and overhead.*
2. Give examples of overhead that the cellphone companies incur.  
*Costs associated with the depreciation of the cell towers, and selling expenses relating to its stores (insurance, heat, electricity).*
3. Provide examples of period costs. When are these items reported on the income statement?  
*Selling expenses are period costs. Period costs are expensed immediately, whereas product costs are expensed when the goods are sold.*
4. Do the cellphone companies sell tangible or intangible products?  
*Both are sold. The hardware (the cellphone itself) is an example of a tangible product, whereas the cell services are an example of intangible products.*
5. Investigate your cellphone company and find out what it costs them to provide you with one minute of calling or one text message. Compare that to what you are being charged.
6. Have a group discussion to find out who has the worst cellphone bill in the class.

**EXPERIENTIAL ACTIVITIES**

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1. Obtain published financial statements of a manufacturing and a service organization. Compare and contrast their income statements and balance sheets. Provide examples of product costs and period costs.
2. Obtain published financial statements of two manufacturing companies in the same industry. Compare and contrast their income statements and balance sheets. How does the cost of goods sold vary for the two companies? What are the gross margin percentages for the companies? How would manufacturing companies determine the price to charge their customers? How does this compare to a service organization? Provide examples of product costs and period costs.

**Supplemental Case 2-1**

1.

<b>Production Costs</b>	<b>Selling Costs</b>	<b>Administrative Costs</b>
Utilities (OH)	Supervisory salaries (1/3)	Rent
Machine operators (DL)	Delivery costs	Accounting fees
Other direct labour (DL)	Showroom operation	Office salaries
Wood — raw materials (DM)		Accounting Fees
Supervisory salaries (1/3) (OH)		Office Salaries
Depreciation, woodworking tools (OH)		Supervisory salaries (1/3)

2. All of the production-related costs are likely traceable:

Utilities	\$ 65,000
Machine operators	60,000
Other direct labour	65,700
Wood – raw materials	501,340
Supervisory (Franco 1/3)	<u>30,000</u>
Dep., woodworking tools	18,600
	\$740,640

Machine hours

It is reasonable to assume that utility, machine operator, and depreciation costs are related to machine operations, as well as supervisory time. Raw materials and other direct labour could also be allocated to jobs using machine hours, although this is not necessary given that they are directly traceable to a job.

Estimated cost per machine hour = \$740,640 / 1,176 hours = \$629.80 per hour

## Supplemental Case 2-2

1.

Description	Product Cost							
	Variable Cost	Fixed Cost	Direct Materials	Direct Labour	Mfg. Overhead	Sell. & Admin.	Opportunity Cost	Sunk Cost
Legal and filing fees, \$900		<del>X</del>				<del>X</del>		<del>X</del>
<del>KenSylvia's</del> present salary of \$2,200 <del>1,800</del> /month		X					X	
Rent on the production building, \$1,400 <del>1,200</del> /month		X			X			
Rent of production equipment, \$800 <del>700</del> /month		X			X			
Materials for <del>clipperspade</del> production( <del>\$10.25</del> <del>9.75</del> /unit)	X		X					
Labour cost of producing <del>clipperspades</del> ( <del>\$1.40</del> <del>1.25</del> /unit)	X			X				
Rent of room for sales office space, \$750 <del>600</del> /month		X				X		
Cost of part-time purchasing agent( <del>\$1.35</del> <del>0.100</del> /month)		X			X			
Voice messaging, \$5 <del>4</del> /month		X				X		
<del>Sales commission(\$0.65/unit),</del>	<del>X</del>					<del>X</del>		
Interest lost on high-interest savings account( <del>\$1.80</del> <del>0.300</del> /year)		<del>X</del>					X	
Advertising cost, \$450 <del>300</del> /month		X				<del>X</del>		
<del>Sales commission(\$0.50/unit),</del>	<del>X</del>					<del>X</del>		
<del>Legal and filing fees, \$1,200</del>		<del>X</del>				<del>X</del>		<del>X</del>

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2. The cost object for ~~KenSylvia's~~ company is the product: the spade. A reasonable and convenient method to allocate the manufacturing overhead would be based on the number of units produced. Another method could be direct labour hours, although this may require more effort and the benefits with respect to the quality of information produced may not be improved.

**Supplemental Case 2-1**(CPA 3.3.1)

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Franco Wood Working is an owner-operated business started in 1964, shortly after Franco Marzec arrived in Canada. The company started with just Franco producing railings and posts for stairways in residential buildings. The company has grown to three employees: Franco, his brother Joe, and one other person. The business has expanded beyond its original business and now also installs the materials in customer homes.

Franco is able to generate all of his business through referrals; sales are all within the Greater Toronto Area. The company's sales volume averages \$1 million each year, and profits vary between 5% and 20% of sales.

Recently, many more producers have been opening similar businesses in the Toronto area. As a result of this increased competition, Franco is focusing on the company's customer bidding process; when a bid is lost, he reviews the bids with his potential customer to analyze the differences compared to his competitor. His goal is to improve successful outcomes of future bids.

Franco is not confident with his company's accounting system and he believes it is leading to inaccurate bids. Currently, all expenses are simply deducted from revenues to arrive at operating income. No effort is made to distinguish among the costs related to manufacturing materials, managing customers, and administrative activities at the company.

With the goal of improving the current situation, Franco reviewed the income statement for the previous year in great detail (see below). In his analysis, he noted that jobs were priced on the basis of machine hours, with an average price of \$850 per machine hour. However, when it came to classifying and assigning costs, he decided that he needed some help. In particular, he is unsure of how to classify his own \$90,000 salary. About one third of his time was spent on generating bids for potential contracts, one third was spent in general administrative matters, and the final third was spent supervising production staff.

**Franco Wood Working  
Income Statement  
For the Year Ended December 31, 2014**

Sales (1,176 machine hours @ \$850/hour)	\$999,600
Less expenses:	
Utilities	\$65,000
Machine operators	60,000
Rent, finished product warehouse	24,000
Accounting fees	3,000
Office salaries	24,000

Other direct labour	65,700	
Wood — raw materials	501,340	
Supervisory salaries	90,000	
Depreciation, woodworking tools	18,600	
Delivery costs	16,300	
Showroom operation	<u>3,200</u>	
Total expenses		<u>871,140</u>
Income before income taxes		<u>\$128,460</u>

**Required:**

1. Classify the costs in the income statement into the following categories: (1) Production Costs, (2) Selling Costs, or (3) Administrative Costs. For production costs, identify them as either Direct Materials (DM), Direct Labour (DL), or Overhead (OH). Work in Process is not significant (most jobs are started and completed within a week).
2. Assume that a significant driver is machine hours. Identify the expenses that would likely be traced to jobs using this driver. Explain why you feel these costs are traceable using machine hours. What is the cost per machine hour for these traceable costs?

**Supplemental Case 2-2***(CPA 3.3.1)***Formatted:** Font: *Italic*

~~SylviaKen~~ ~~HansonBoyle~~ has invented a new type of ~~tree branch clippergardeningspade~~. After considering the sales volume potential for ~~hisher~~ new product, ~~SylviaKen~~ decided to leave ~~hisher~~ \$~~2,200~~~~1,800~~ per month job as a ~~power line technician~~~~idental hygienist~~ to produce and sell the ~~clipperspades~~ through ~~hisher~~ new company, ~~Garden~~ EasyClip. ~~SylviaKen~~ will rent a small building that will be used to produce the new product. The rent will be \$~~1,400~~~~1,200~~ per month and ~~heshe~~ will rent production equipment at a cost of \$~~800~~~~700~~ per month.

The cost of materials for each ~~spadeclipper~~ will be \$~~10,259~~~~75~~. Production employees will be hired to assemble the ~~spadeclippers~~. They will be paid \$~~1,401~~~~25~~ for each completed unit. ~~SylviaKen~~ will rent a small suite in an office building for use as ~~herhis~~ sales office. The rent will be \$~~750~~~~600~~ per month. An important part of ~~herhis~~ strategy is to keep costs low. This is accomplished by hiring a part-time purchasing agent to search for low-cost sources of materials (wood and metal) used in the production of the ~~spadeclippers~~. This person will be paid \$~~1,350~~~~1,100~~ per month. In addition, ~~shehe~~ has added voice messaging to ~~herhis~~ cellphone plan to get after-hours messages from customers. The addition of voice messaging will increase ~~herhis~~ monthly cellphone bill by \$~~54~~.

~~SylviaKen~~ keeps surplus cash in a high-interest savings account in which ~~shehe~~ earns on average \$~~1,800~~~~2,300~~ per year. The business requires an up-front cash investment by ~~SylviaKen~~, who will use the balance in ~~herhis~~ high-interest savings account to address this need. To sell ~~herhis~~ ~~spadeclippers~~, ~~shehe~~ will use the local newspaper to advertise in the local area. The advertising costs will be \$~~450~~~~300~~ per month. In addition, ~~shehe~~ will pay a sales commission of \$~~0,650~~~~50~~ for each ~~spadeclipper~~ sold. No salary will be taken by ~~SylviaKen~~ in the foreseeable future. ~~SheHe~~ has already paid the legal and filing fees to incorporate ~~herhis~~ business. These fees amounted to \$~~900~~~~1,200~~.

**Required:**

1. Create a table with columns labelled with appropriate cost classifications (see below). Include the relevant cost in the Description column and use an X to indicate the appropriate cost classification (*note: most belong to more than one category*).

Description/(\$)	Variable Cost	Fixed Cost	Product Cost			Sell. & Admin.	Opportunity Cost	Sunk Cost
			Direct Materials	Direct Labour	Mfg. Overhead			

2. Some of the costs you listed above would be classified as manufacturing overhead and must be allocated to a cost object. What is the cost object in ~~SylviaKen~~'s company and what would be a reasonable and convenient method to allocate these costs?

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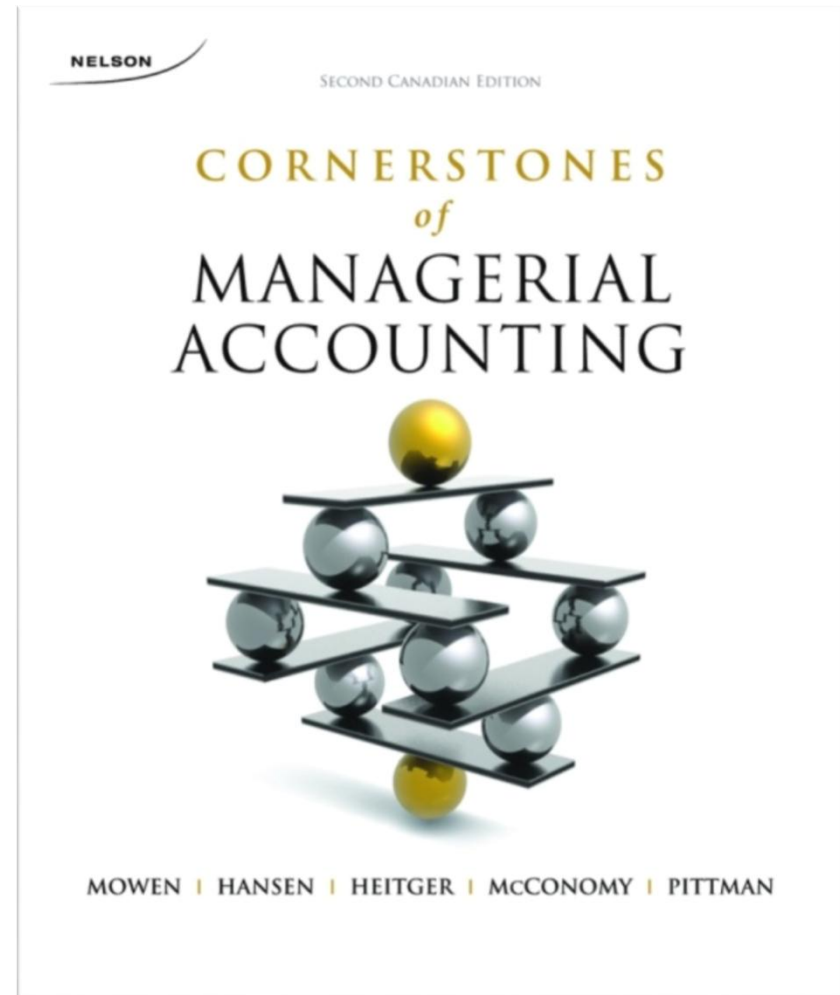
NETA POWERPOINT  
PRESENTATIONS TO ACCOMPANY

# ***CORNERSTONES OF MANAGERIAL ACCOUNTING***

Second Canadian Edition

BY MOWEN/HANSEN/HEITGER/McCONOMY/PITTMAN

**Adapted by Ramesh Saxena**





## CHAPTER 2

# Basic Managerial Accounting Concepts





# Learning Objectives

*After studying this chapter, you should be able to:*

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.

# Cost and Cost Assignment

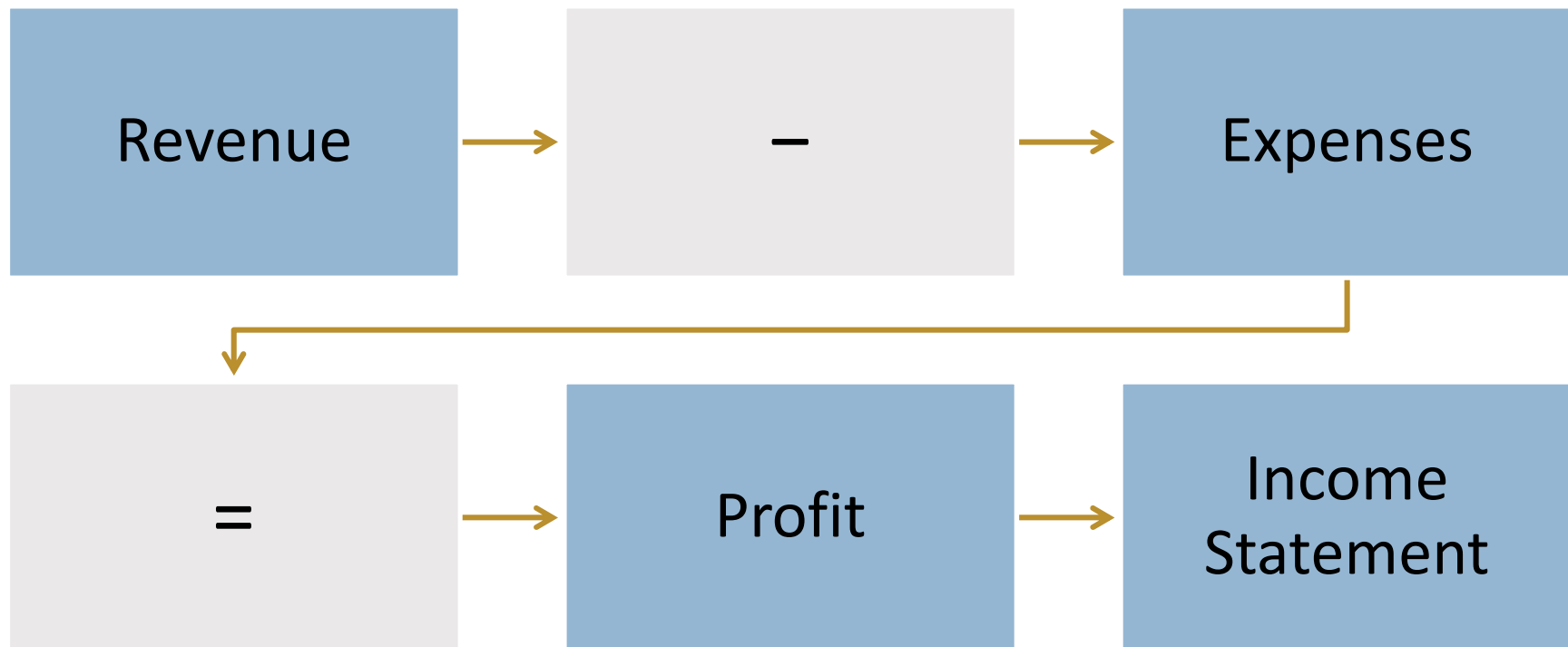
- Cost is the amount of cash or cash equivalent sacrificed for goods and/or services.
- Costs are incurred to produce future benefits.
- In a profit-making firm, these benefits usually mean revenues.

# Cost and Profit

- As costs are used up in the production of revenues, they are said to expire.
- Expired costs are called expenses.
- For a company to remain viable, revenues must be greater than expenses.

# Income Statement

On the income statement, expenses are deducted from revenues to determine income (also called profit).



# Profit Vs. Loss

Revenues  $>$  Costs = Profits

Revenues = Costs = Zero Profits

Revenues  $<$  Costs = Losses

# Cost and Price

Example of cost:

- A furniture manufacturer buys lumber for \$10,000
- **Cost** of the lumber is the amount given up... \$10,000
- **Price** is the amount we charge our customers for our products or services

*Be careful! Cost and price are not the same thing*

# Cost Accumulation

- Received telephone bill

**Phone Bill**  
\$150

- Recorded in Telephone Expense account

**Telephone Expense**  
Bal.    \$800  
      + \$150  
      

---

      \$950



# Accumulating Costs

## Telephone Expense

Bal. \$800
+ \$150
<hr/>
<b>\$950</b>

- This is helpful but managers also need to know which departments used the **\$950** in Telephone Expense.
- In other words, managers want to know how costs are assigned to cost objects.

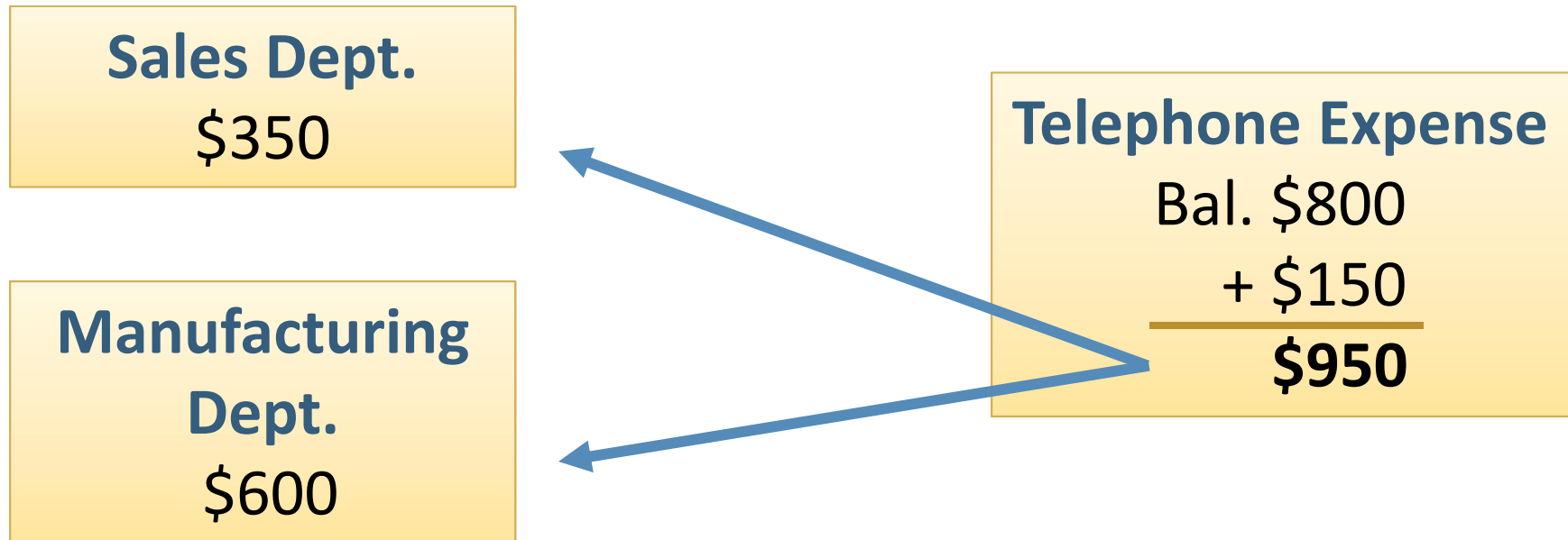
# Cost Objects

- Items for which costs are measured and assigned
- Examples:
  - Products
  - Customers
  - Departments
  - Regions

# Cost Assignment

- Assigning costs is the way that a cost is linked to some cost object.
- Assigning costs tells the company why the money was spent.
- Let's say the **Telephone Expense** was incurred by the Sales Department and the Manufacturing Department
- The Sales and Manufacturing Departments are **cost objects**.

# Assigning Costs



The accountant assigns the Telephone Expense to the two cost objects.

# Cost and Cost Assignment

- Costs can be assigned in a number of ways.
- Some methods are more accurate, but time consuming.
- Others are simpler, but not as precise.

# Cost Classification

- In managerial accounting, costs are classified according to the decision-making needs of management.
- Different costs are used for different purposes.
- Cost definitions can vary according to the objective being served.
- Costs can be classified into groups using a variety of criteria.

# Cost Classification

In Relation To	Cost Type	Description
<b>Cost objects</b>	Direct	Traceable
	Indirect	Non-traceable

Since indirect costs are not traceable, these costs need to be allocated/assigned.

# Cost Assignment

In Relation To	Cost Type	Description
<b>Activity levels</b>	Fixed	Total cost remains fixed with activity level
	Variable	Total cost varies with activity level
	Mixed	Part fixed, part variable



# Cost Assignment

In Relation To	Cost Type	Description
<b>Classifications in the financial statements</b>	Product costs	Inventoriable costs such as direct materials, direct labour and manufacturing overhead
	Period costs	Non-inventoriable costs

# Cost Classification

- Different costs are used for different purposes.
- Classification helps make sense of a great variety of costs.

# Direct and Indirect Costs

## Direct Costs

- Easily and accurately traced to a cost object
- Relationship between the cost and the object can be physically observed

## Indirect Costs

- Cannot be easily traced to a cost object
- Relationship between the cost and the object not easily observed
- Assigned through allocation

# Other Categories of Cost

- **Variable cost**
  - increases in total as output increases and decreases in total as output decreases
- **Fixed cost**
  - total does not increase as output increases and does not decrease as output decreases
- **Mixed cost:**
  - increases in total as output increases and decreases in total as output decreases

# Output

One of the most important cost objects of a company is its output.

## **Two types of output:**

- **Products** produced by manufacturing organizations
- **Services** produced by services organizations

# Types of Costs

## Product costs

- Associated with the manufacture of goods or the provision of services

## Period costs

- All other costs

# Product Cost Classifications

Only three cost elements can be assigned to products for financial reporting:

1. Direct Materials
2. Direct Labour
3. Production Overhead

# Period Costs

## Administrative Costs

- Designing
- Developing
- General administration

## Selling Costs

- Distribution, customer service
- Marketing



# Production Costs

## Raw Materials

- Directly traced to goods or services

## Direct Labour

- Directly traced to goods or services

## Production Overhead

- All production costs other than direct materials or direct labour

# Total Product Cost

**Total Product Cost** = Direct Materials +  
Direct Labour +  
Manufacturing  
Overhead

**Unit Product Cost** =  $\frac{\text{Total Product Cost}}{\text{No. of Units Produced}}$

## Calculating Product Cost



### Information:

- BlueDenim Company makes blue jeans. Last week:
  - Direct materials (denim, thread, zippers, and rivets) costing \$48,000 were put into production.
  - Direct labour of \$30,000 ( $50 \text{ workers} \times 40 \text{ hours} \times \$15 \text{ per hour}$ ) was incurred.
- Overhead equals \$72,000
- By the end of the week, the company had manufactured 30,000 pairs of jeans.

## Calculating Product Cost



### **Required:**

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

# Calculate Product Cost



Direct Materials + Direct Labour + Overhead

<b>Direct Materials</b>	\$48,000
<b>Direct Labour</b>	30,000
<b>Overhead</b>	72,000
<b>Total Product Cost</b>	<u><u>\$150,000</u></u>

# Calculate Product Cost



$$\frac{\text{Total Product Cost}}{\text{Number of Units Produced}} = \frac{\$150,000}{30,000} = \$5 \text{ per pair of jeans}$$

## Calculating Prime Cost and Conversion Cost



### Information:

- Again, looking at BlueDenim Company, last week:
  - Direct materials (denim, thread, zippers, and rivets) costing \$48,000 were put into production.
  - Direct labour of \$30,000 (50 workers  $\times$  40 hours  $\times$  \$15 per hour) was incurred.
- Overhead equals \$72,000
- By the end of the week, the company had manufactured 30,000 pairs of jeans.

## Calculating Prime Cost and Conversion Cost



### **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.



# Prime Costs



**Direct Materials** + **Direct Labour**

\$48,000

+

\$30,000

**Prime Costs  
Per Unit**

=

\$78,000

=

**\$2.60**

30,000

(units produced)

# Conversion Costs



**Conversion Costs = Direct Labour + Overhead**  
*cost of converting raw materials into a final product*

$$\begin{array}{rcccl} \text{Direct Labour} & + & \text{Overhead} & & \\ \$30,000 & + & \$72,000 & & \\ & & \swarrow & \searrow & \\ \text{Conversion Costs Per Unit} & = & \frac{\$102,000}{30,000} & = & \$3.40 \\ & & \text{(units produced)} & & \end{array}$$

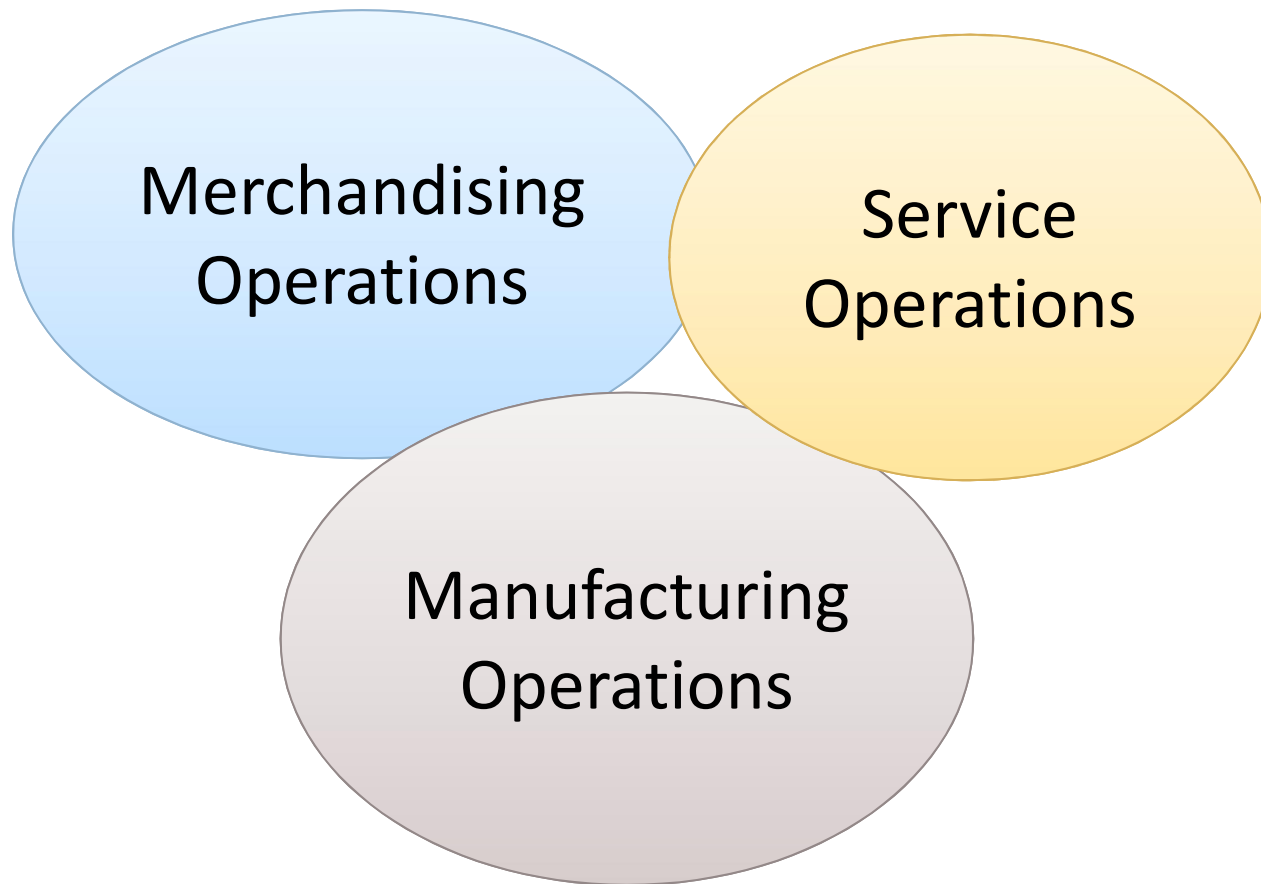
# Period Costs

- The costs of production are asset that are carried in inventories until the goods are sold
- Other costs of running a company that are not carried in inventory are referred to as **period costs**.

# Period Costs

- Period costs are typically expensed in the period in which they are incurred.
- Period costs are of two types:
  - Administrative expenses
  - Selling expenses

# Types of Business Operations

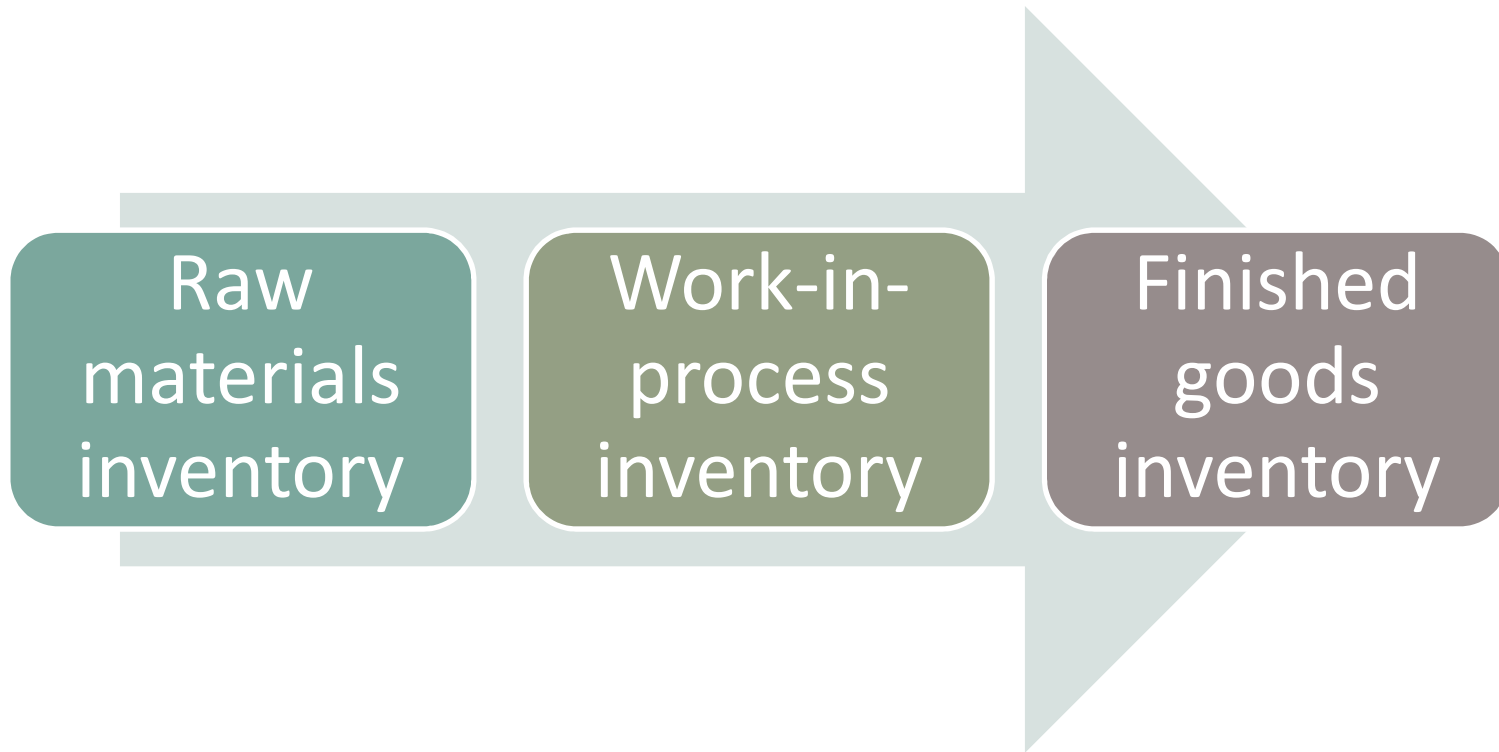


# **Income Statement for Manufacturing Operations**

- The cost of a manufactured product includes the cost of materials used in making the product as well as the cost of converting those materials into a finished product.
- Thus, the cost of a finished product includes the following:
  - Direct materials cost
  - Direct labour cost
  - Manufacturing (factory) overhead cost

# Balance Sheet for Manufacturing Operations

Three types of inventory in the balance sheet:



# Inventory Reporting for Merchandising Operations

EXHIBIT 2.5

## Balance Sheet Reporting of Inventories

### Merchandising Business

Current assets:

Cash	\$100,000
Accounts receivable	300,000
<b>Merchandise inventory</b>	<b>80,000</b>
Supplies	50,000
Total current assets	<u>\$530,000</u>



# Inventory Reporting for Manufacturing Operations

( EXHIBIT 2.5 )

## Balance Sheet Reporting of Inventories

### Manufacturing Business

Current assets:

Cash	\$100,000
Accounts receivable	300,000
<b>Finished goods inventory</b>	<b>80,000</b>
<b>WIP inventory</b>	<b>80,000</b>
<b>Raw materials inventory</b>	<b>45,000</b>
Supplies	50,000
Total current assets	<u>\$655,000</u>

# Cost of Goods Manufactured

- A manufacturer makes the products it sells, using direct materials, direct labour, and factory overhead.
- The total cost of making products that are available for sale during the period is called the cost of goods manufactured.

# Cost of Goods Manufactured

- To determine the cost of goods sold, first the cost of goods manufactured needs to be calculated.
- The cost of goods manufactured is often determined by preparing a statement of cost of goods manufactured.

# Income Statement for a Manufacturing Business

## Income Statements: Merchandising and Manufacturing

( EXHIBIT 2.6 )

### Merchandising Business

Sales	\$700,000
Beginning inventory	100,000
Plus <b>net purchases</b>	370,000
Cost of goods available for sale	470,000
Less ending inventory	80,000
Cost of goods sold	390,000
Gross profit	310,000
Operating expenses:	
Selling expenses	120,000
Administrative expenses	90,000
Total operating expenses	210,000
Net income	\$100,000

# Cost of Goods Manufactured

Three-step sequence:

## Step 1:

- Determine the cost of direct materials used.

## Step 2:

- Determine the total manufacturing costs incurred.

## Step 3:

- Determine the cost of goods manufactured.

# Direct Materials Used

- Only the amount used on products produced during the current period
- Consider beginning and ending inventory levels
- Key point: Purchases do not equal materials used.

## Calculating Direct Materials Used in Production



### Information:

- On May 1, BlueDenim had \$68,000 of materials in inventory.
- During the month of May, the company purchased \$210,000 of materials.
- On May 31, materials inventory equalled \$22,000.

### Required:

1. Calculate the direct materials used in production for May.

# Calculating Direct Materials Used in Production



Beginning Materials Inventory	+	Purchases	–	Ending Materials Inventory	=	Materials Used in Production
\$68,000	+	\$210,000	–	\$22,000	=	\$256,000

What about work-in-process inventory?



## Calculating COGM



### **Additional Information:**

- During the month of May, the company purchased \$210,000 of materials.
- On May 31, materials inventory equalled \$22,000.
- During the month of May, BlueDenim Company incurred:
  - Direct labour cost of \$135,000
  - Manufacturing overhead of \$150,000

## Calculating COGM

**Inventory Information:**

	May 1	May 31
Materials	\$68,000	\$22,000
Work in Process	50,000	16,000

**Required:**

1. Calculate the cost of goods manufactured for May.
2. Calculate the cost of one pair of jeans, assuming 115,000 pairs of jeans were completed during May.

# COGM for the Month of May



Direct materials	\$256,000
Direct labour	135,000
Overhead	<u>150,000</u>
Total manufacturing cost	\$541,000
Work in process, May 1	50,000
Work in process, May 31	<u><u>(16,000)</u></u>
Cost of goods manufactured	\$575,000

# COGM for the Month of May



Cost of goods manufactured per unit for the month of May is:

$$\begin{aligned}\text{COGM per Unit} &= \frac{\text{Cost of Goods Manufactured}}{\text{Number of Units}} \\ &= \frac{\$575,000}{115,000 \text{ units}} \\ &= \$5 \text{ per unit}\end{aligned}$$

## Calculating COGS



### Information:

- On May 1, BlueDenim Company had 10,000 units in finished goods inventory costing \$50,000.
- On May 31, the company had 26,000 units in finished goods inventory costing \$130,000.

### Required:

1. Calculate the cost of goods sold for May.
2. Calculate the pairs of jeans sold in May.

# Calculating COGS



Cost of goods manufactured	\$575,000
Finished goods, May 1	50,000
Finished goods, May 31	(130,000)
<b>Cost of Goods Sold</b>	<b><u>\$495,000</u></b>

Reported as an  
asset on the  
Balance Sheet

Reported as an  
expense on the  
Income Statement

# Calculating Units Sold



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

## Preparing an Income Statement for a Manufacturing Firm



### Information:

- BlueDenim Company sold 99,000 pairs of jeans in May at a total cost of \$495,000.
- Each pair sold at a price of \$8.
- BlueDenim also incurred:
  - Commissions equal to 10% of the sales price
  - Other selling expense of \$120,000
  - Administrative expenses of \$85,000

### Required:

1. Prepare a May income statement for BlueDenim



# Income Statement



Sales revenue	99,000 pairs of jeans × \$8	\$792,000
Cost of goods sold		495,000
Gross margin		<u>\$297,000</u>
Less:	\$792,000 × 10%	
Selling expense:		
Commissions	\$ 79,200	
Fixed selling expense	120,000	199,200
Administrative expense		<u>85,000</u>
Operating income		<u><u>\$ 12,800</u></u>

# Calculate Percentage to Sales Revenue

- Because the absolute amounts do not always tell the full story
- The percentage to sales revenue allows for comparisons to other companies, no matter how big or small the absolute amounts

## CORNERSTONE 2.7

### Calculating the Percentage of Sales Revenue for Each Line on the Income Statement



#### **Information:**

BlueDenim Company's income statement for the month of May was shown in Cornerstone 2.6.

#### **Required:**

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

# Calculate Percentage to Sales Revenue



Sales revenue			%
Cost of goods sold		\$792,000	100.0
Gross margin		495,000	62.5
Less:		\$297,000	37.5
Selling expense:			
Commissions	\$ 79,200		
Fixed selling expense	120,000	199,200	25.2
Administrative expense		85,000	10.7
Operating income		\$ 12,800	1.6

# **Income Statement of a Service Organization**

- In a service organization, there is no product to purchase or to manufacture.
- This means there are no beginning or ending inventories.
- As a result, there is no cost of goods sold or gross margin on the income statement.
- Instead, the cost of providing services appears along with the other operating expenses of the company.

## Income Statement of a Service Organization



### Information:

- Komala Information Systems designs and installs software
- Last month, Komala had costs of:
  - Software licensing , \$5,000
  - Service technicians, \$35,000
  - Research and development, \$55,000
  - Selling expenses, \$5,000
  - Administrative expenses, \$7,000
- Sales totalled \$130,000

**Required:** Prepare an income statement.

# Income Statement of a Service Organization



Sales revenues:		\$130,000
Less operating expenses		
Software licensing	\$ 5,000	
Service technicians	35,000	
R&D	55,000	
Selling expenses	5,000	
Administrative expense	7,000	<u>107,000</u>
Operating income		<u><u>\$23,000</u></u>