Cornerstones of Managerial Accounting (Canadian) 3rd edition Mowen Solutions Manual

SKU: 9780176721237-SOLUTIONS

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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. These costs are then 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 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 its competitors.

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

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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 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.

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CORNERSTONE EXERCISES

Cornerstone Exercise 2–1

Direct materials	$ 48,000
Direct labour	80,000
Manufacturing overhead	112,000
Total product cost	$240,000

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

Therefore, one hockey stick costs $30 to produce.

Cornerstone Exercise 2–2

Direct materials	$ 48,000
Direct labour	80,000
Total prime cost	$128,000

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

Direct labour	$ 80,000
Manufacturing overhead	112,000
Total conversion cost	$192,000

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

Cornerstone Exercise 2–3

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

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Cornerstone Exercise 2–4

Direct materials*	$171,000
Direct labour	165,000
Manufacturing overhead	215,000
Total manufacturing cost for June	551,000
WIP, June 1	60,000
WIP, June 30	(71,000)
Cost of goods manufactured	$540,000

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

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

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	(215,000)
Cost of goods sold	$ 485,000
Number of units sold:	
Finished goods inventory, June 1	5,000
Units finished during June	18,000
Finished goods inventory, June 30	(7,000)
Units sold during June	16,000

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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		485,000
Gross margin		955,000
Less:		
Selling expense:		
Commissions (0.15 × $1,440,000)	$216,000	
Fixed selling expense	200,000	416,000
Administrative expense		115,000
Operating income		$ 424,000

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		485,000	33.7
Gross margin		955,000	66.3
Less:			
Selling expense:			
Commissions (0.15 × $1,440,000)	$216,000		
Fixed selling expense	200,000	416,000	28.9
Administrative expense		115,000	8.0
Operating income		$ 424,000	29.4

*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%

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Cornerstone Exercise 2–7 (Continued)

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	35,000	370,000
Operating income		$ 40,000

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EXERCISES

Exercise 2–9

1. **Selling expenses**

Peter	Salary	$40,000	×	100%	=	$ 40,000
	Commission	$40,000	×	100%	=	40,000
Lauren	Salary	$50,000	×	75%	=	37,500
	Commission	$35,000	×	100%	=	35,000
Elizabeth	Salary	$50,000	×	60%	=	30,000
	Commission	$25,000	×	100%	=	25,000
						$207,500

Administrative expenses

Peter	Salary	$40,000	×	0%	=	$ 0
	Commission	$40,000	×	0%	=	0*
Lauren	Salary	$50,000	×	25%	=	12,500
	Commission	$35,000	×	0%	=	0*
Elizabeth	Salary	$50,000	×	40%	=	20,000
	Commission	$25,000	×	0%	=	0*
						$32,500

2. Lauren and Elizabeth are paid more salary than Peter because they have less opportunity to earn commission since they do not spend 100% of their time selling.

*Note that commission is completely a selling expense; it is not allocated between selling and administrative expense.

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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	12,000
Total product cost	$42,000

3. Unit product cost = $\frac{\$42,000}{6,000}$ = $7

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Exercise 2–12

Costs	Product Cost			Period Cost	
	Direct Materials	Direct Labour	Manufacturing 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 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		
Totals	$324,000	$180,000	$220,950	$193,500	$322,500

2.

Direct materials	$324,000
Direct labour	180,000
Manufacturing overhead	220,950
Total product cost	$724,950

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

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

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

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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	960,000
Total product cost	$2,400,000

2. Product cost per unit $= \frac{\text{Total product cost}}{\text{Number of units}}$

$= \frac{\$2,400,000}{19,200} = \$125$

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Exercise 2–15

1. Prime cost = $1,200,000 + $240,000 = $1,440,000
2. Per unit prime cost = $1,440,000/19,200 = $75
3. Total conversion cost = $240,000 + $960,000 = $1,200,000
4. Conversion cost per unit = $1,200,000/19,200 = $62.50
5.

Direct materials	$1,200,000
Direct labour	240,000
Manufacturing overhead	960,000
Marketing and selling	2,600,000
Administrative costs	1,600,000
Total full cost	$6,600,000

   Full cost per unit: $6,600,000/19,200 units = $343.75 per unit

6. The full cost of $910 per unit would be used in pricing decisions for the product to ensure that all costs of operating the business were covered.

Exercise 2–16

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

Exercise 2–17

1.

Finished goods inventory, January 1	2,100
Units completed during the year	54,000
Finished goods inventory, December 31	(2,750)
Units sold	53,350

2.

Units sold		53,350
× Unit cost	×	$1,125
Cost of goods sold		$60,018,750

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Exercise 2–18

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

Exercise 2–19

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

*See solution to Exercise 2–18.

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

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Exercise 2–20

Jasper Company
Income Statement

Sales*		$3,360,000	100.0%
Cost of goods sold:			
Beginning inventory	$ 0		
Direct materials	180,000		5.4%
Direct labour	505,000		15.0%
Manufacturing overhead	110,000		3.3%
Less: ending inventory	0	795,000	23.7%
Gross margin		2,565,000	76.3%
Selling expenses		437,000	13.0%
Administrative expenses		854,000	25.4%
Net income		$1,274,000	37.9%

*280,000 x $12 = $3,360,000
A manager can use the percentage information to determine where adjustments can be made to the cost of operating the business. It would appear that administrative expenses are the highest expense item and therefore should be closely examined.

Exercise 2–21

Revenue	$62,500,000	100.0%
Cost of goods sold	39,062,500	62.5%
Gross margin*	23,437,500	37.5%
Selling expenses	12,774,123	20.4%
Administrative expenses***	6,387,061	10.2%
Operating income**	4,276,316	6.8%
Income tax expense	1,026,316	1.6%
Net income	$ 3,250,000	5.2%

*37.5% x $62,500,000 = $23,437,500 **$3,250,000/(1 – .24)
***($23,437,500 – 4,276,316)/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.

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PROBLEMS

Problem 2–22

1.

Cost	Direct Materials	Direct Labour	Manufacturing Overhead	Selling and Administrative Expense
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

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

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the fries. They are direct materials but could also be classified as overhead because of cost and convenience.

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 × 10,000)		$35,000
Less cost of goods sold:		
Direct materials	$7,810	
Direct labour	7,250	
Manufacturing overhead	4,570	19,630
Gross margin		15,370
Less: Selling and administrative expense		9,250
Net income		$ 6,120

3. **Elena's simplifying assumptions were: (1) all part-time employees are production workers, (2) 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 margin 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.

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Problem 2–23

1.	Direct costs	Composite materials	$ 632,000
		Labour	500,000
		Labelling ink	12,500
			$1,144,500
	Indirect costs	Supervisor	$ 70,000
		Stencils	27,500
		Strapping	6,250
		Factory rent	18,000
		Machine depreciation (5 years)	5,000
			$126,750
2.	Total cost of manufacturing		
	Direct costs		$1,144,500
	Indirect costs		126,750
	Total		$1,271,250

3. Per unit cost: $1,271,250/8,475 = $150

4. If cost is $150 per stick and gross margin is 40%, selling price must be 150/0.60 = $250.

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	326,250
	Total manufacturing cost for July	709,350
	Work in process, July 1	63,000
	Work in process, July 31	(97,500)
	Cost of goods manufactured	$674,850

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

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Problem 2–25

1.

Direct materials	$18
Direct labour	12
Manufacturing overhead	16
Unit product cost	$46

Total product cost = $46 × 200,000 = $9,200,000

2.

Infinity Inc.
Income Statement
For Last Year

Sales ($60 × 200,000)	$12,000,000
Cost of goods sold	9,200,000
Gross margin	2,800,000
Less:	
Commissions ($2 × 200,000)	400,000
Advertising expense	100,000
Administrative expenses	300,000
Operating income	$ 2,000,000

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

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 by $60,000 than it would be if there were no beginning inventory. This can be seen in the following statement of cost of goods sold.

Cost of goods manufactured ($46 × 200,000)	$9,200,000
Add: Beginning inventory finished goods ($40 × 10,000)	400,000
Less: Ending inventory finished goods ($46 × 10,000)	(460,000)
Cost of goods sold	$9,140,000

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Problem 2–25 (Continued)

Infinity Inc.
Revised Income Statement
For Last Year

Sales ($60 × 200,000)	$12,000,000
Cost of goods sold	9,140,000
Gross margin	2,860,000
Less:	
Commissions ($2 × 200,000)	400,000
Advertising expense	100,000
Administrative expenses	300,000
Operating income	$ 2,060,000

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		$ 8,975
Direct labour		10,500
Manufacturing overhead:		
Supplies	$ 675	
Factory insurance	350	
Factory supervision	2,225	
Materials handling	3,750	7,000
Total manufacturing cost for May		26,475
Work in process, May 1		12,500
Work in process, May 31		(14,250)
Cost of goods manufactured		$ 24,725

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Problem 2–26 (Continued)

2.

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

Cost of goods manufactured	$24,725
Finished goods inventory, May 1	6,685
Finished goods inventory, May 31	(4,250)
Cost of goods sold	$27,160

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 already 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.

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

2.

Berry Company
Income Statement
For Last Year

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

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.

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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	11,900	153,900
Total cost of product		653,900
Beginning work in process		13,040
Ending work in process		(14,940)
Cost of goods manufactured		$652,000

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

*Units sold = 4,000 + 500 – 700 = 3,800
**Cost of goods sold = $652,000 + $80,000 – $114,100 = $617,900

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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

1. Direct materials:

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

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

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Problem 2–31 (Continued)

2.	Direct materials	$2,800	
	Direct labour	3,500	
	Total prime costs	$6,300	
	Magazine:		
	Direct materials	$2,000	
	Direct labour	2,500	
	Total prime costs	$4,500	
	Brochure:		
	Direct materials	$ 800	
	Direct labour	1,000	
	Total prime costs	$1,800	
3.	Total monthly conversion cost:		
	Direct labour	$3,500	
	Manufacturing overhead	3,190	
	Total	$6,690	
	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)*	1,100	2,250
	Total		$4,750
	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)*	440	940
	Total		$1,940

*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 per machine hour for power and $\frac{\$40,000}{20,000}$ = $2 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.

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Problem 2–31 (Continued)

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

[a]Distribution of goods is a selling expense.

[b]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	(14,300)
Tent sale loss	$(1,300)

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

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Problem 2–33

1.

Quadrant Corporation
Statement of Cost of Goods Manufactured
For Year Ended September 30, 2018

Direct materials	$ 36,392*
Direct labour	45,772
Manufacturing overhead	27,556
Total cost of product	109.720
Beginning work in process	9,624
Ending work in process	(10,007)
Cost of goods manufactured	$109,337

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

2.

Quadrant Corporation
Income Statement
For Year Ended September 30, 2018

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

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

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Problem 2–34

Current Year Income Statement

Revenue ($150,000 × 4 × 3)		**$1,800,000**
Operating costs		
Partner salaries ($150,000 × 4)	**$600,000**	
Research lawyers ($125,000 × 2)	**250,000**	
Legal assistants ($60,000 × 4)	**240,000**	
Reception/clerical ($50,000 × 2)	**100,000**	
Office overhead	**500,000**	
Total costs		**1,690,000**
Profit		**$ 110,000**

The firm needs a profit of $500,000 to meet needs of the partners ($125,000 each), so income must increase by $390,000. Revenue must be equal to $2,250,000 on an annual basis. Billing must be based on more than three times the salaries of the partners. If billing was based on four times the salaries of the partners, then revenues would more than cover the costs and leave enough profit for profit sharing. The reason that the other firm's formula does not work is that the indirect costs of Healy & Sons are proportionately greater.

Problem 2–35

1.	**Salary costs:**	**Samuel Miller**	**$ 175,000**
		Blaney Just	**175,000**
		Lawyer #1	**135,000**
		Lawyer #2	**135,000**
		Secretaries	**125,000**
		Admin assistants	**80,000**
		Receptionist	**32,500**
	Professional costs		**75,000**
	Rent, utilities, office supplies		**250,000**
	Total costs		**$1,182,500**

If each partner is going to earn an additional $175,000 through profit sharing, then their share of the profits must be $350,000 split two ways. If the two salaried lawyers share 20% of the profits then the partners' share is equal to 80%. Profits must, therefore, be equal to $437,500 (= $350,000/0.8). If total costs, before profit sharing, are $1,182,500 and profits are $437,500, then revenues must be $1,620,000.

2. **To generate revenue of $1,620,000 at an average rate of $250 per hour, the firm must bill a total of 6,480 billable hours or an average of 1,620 billable hours per lawyer.**

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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, 2018

Direct materials:		
Beginning raw materials inventory, January 1	$ 8,000	
Plus: direct material purchases	47,000	
	55,000	
Less: ending raw materials inventory, Dec. 31	4,000	
Raw materials used		$ 51,000
Direct labour		30,000
Factory overhead:		
Indirect materials	7,000	
Indirect labour	3,000	
Depreciation: factory ($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	8,000	77,000
Total manufacturing costs		158,000
Plus: beginning work-in-process inventory, January 1		19,000
Less: ending work-in-process inventory, Dec. 31		18,000
Cost of goods manufactured		$159,000

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Professional Examination Problem 2–36 (Continued)

2.

Princeton Manufacturing
Schedule of Cost of Goods Sold
For the Year Ended December 31, 2018

Beginning finished goods inventory, January 1	$ 25,000
Plus: cost of goods manufactured	159,000
Goods available for sale	184,000
Less: ending finished goods inventory, December 31*	77,000
Cost of goods sold*	$107,000

*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, 2018

Sales		$400,000
Cost of goods sold		107,000
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	3,000	81,400
Net income		$211,600

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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)**

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CASES

Case 2–38

1.

Production	Selling	Administrative
(DL) Machine operators		Utilities
(DL) Other direct labour		Rent
(OH) Supervisory salaries		CPA fees
(DM) Pipe		Adm. salaries
(OH) Tires and fuel	Advertising	
(OH) Depreciation, equipment		
(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	$ 2,551,640

Machine operators, tires and fuel, and depreciation are all directly caused by equipment usage, which is measured by equipment hours. One can also argue that the 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.

$$\text{Traceable cost per equipment hour} = \frac{\$2,551,640}{18,200}$$

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

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Case 2–39

Income Statement

For One Year of Operation

	High End	Standard
Revenue	**$1,800,000**	**$1,200,000**
Direct costs:		
Cost of goods sold	**945,000**	**480,000**
Mechanics' wages	**240,000**	**240,000**
Peter's wages (50%)	**50,000**	**50,000**
Total direct	**1,235,000**	**770,000**
Indirect costs:		
Depreciation	**105,000**	**65,000**
Rent	**120,000**	**120,000**
Utilities	**18,000**	**18,000**
Administration	**50,000**	**50,000**
Advertising	**180,000**	**120,000**
Peter's wages (50%)	**50,000**	**50,000**
Total indirect	**523,000**	**423,000**
Income	**$ 42,000**	**$ 7,000**

Revenue: 900 x $2,000 = $1,800,000; 1,200 x $1,000 = $1,200,000

COGS: 900 x $1,050 = $945,000; 1,200 x $400 = $480,000

Mechanics' wages: 6 x $20 X2,000 = $240,000

Advertising: $15,000 per month x 12 = $180,000; $10,000 x 12 = $120,000

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Case 2–39 (Continued)

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

Freddie is in a very difficult position. He should not accept the inducement being offered by Sydney to influence his decision. But it does not end there. Freddie should remove himself from the decision making on the project so that there will be no perceived conflict of interest in judging submissions that contain one from a good friend. He should also report to the mayor the fact that he was approached to accept an inducement by one of the bidders.

He may want to do it on a no-names basis initially to see what the reaction is. If the mayor wants to exclude the bidder from the competition, he will have to disclose it. If the mayor is simply happy that Freddie did not accept the inducement, then he may not have to disclose Sydney's name.

Freddie should also ask himself whether he should report Sydney to the professional body of architects, as Sydney would appear to be in contravention of their code of conduct.

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