Chapter 2

Building Blocks of Managerial Accounting

Quick Check Questions

Answers:

1. b	**3. a**	**5. c**	**7. b**	**9. b**
2. b	**4. b**	**6. b**	**8. d**	**10. c**

Short Exercises

(5 min.) S2-1

X-Treme is a *merchandiser* because it has a single inventory account.

Y-Not? is a *service* company because it has no inventory.

Zesto is a *manufacturer* because it has three kinds of inventory: raw materials inventory, work in process inventory, and finished goods inventory.

(10 min.) S2-2

a. ***Service*** **companies generally have no inventory.**

b. **Bombardier is a *manufacturing* company.**

c. **Merchandisers' inventory consists of *the cost of merchandise* and *freight-in*.**

d. ***Manufacturing*** **companies carry three types of inventories: raw materials inventory, *work in process inventory*, and *finished goods inventory*.**

e. **TD Insurance is a *service* company.**

f. **Two types of *merchandising* companies include *retailers* and *wholesalers*.**

g. **Direct materials are stored in *raw materials inventory*.**

h. **Zellers is a *merchandising* company.**

i. **Manufacturers sell from their stock of *finished goods inventory*.**

j. **Labour costs usually account for the highest percentage of *service* companies' costs.**

k. **Partially completed units are kept in the *work in process inventory*.**

(5 min.) S2-3

a. Distribution

b. Design

c. Marketing

d. Research and Development (R&D)

e. Customer Service

f. Production or Purchases

(5–10 min.) S2-4

a. Production

b. Customer Service

c. Distribution

d. Research and Development (R&D)

e. Marketing

f. Research and Development (R&D)

g. Production

h. Design

i. Distribution

j. Production

(10 min.) S2-5

a. direct; trace

b. indirect; allocate

c. direct; trace

d. indirect; allocate

e. direct; trace

f. indirect; allocate

g. direct; trace

h. direct; trace

(5–10 min.) S2-6

a. Inventoriable product cost
b. Inventoriable product cost
c. Period cost
d. Period cost
e. Inventoriable product cost*
f. Inventoriable product cost
g. Period cost
h. Inventoriable product cost
i. Period cost

*Since the software is for tracking inventory, the cost would be associated with production. It would therefore likely be classified as part of manufacturing overhead, an inventoriable product cost. However, some companies might consider the software an administrative cost, which would be a period cost.

(5–10 min.) S2-7

COST	Period Cost or Inventoriable Product Cost?	If an Inventoriable Product Cost: Is it DM, DL, or MOH?
a. Depreciation on automated production equipment	Product	MOH
b. Telephone bills relating to customer service call centre	Period	
c. Wages and benefits paid to assembly line workers in the manufacturing plant	Product	DL
d. Repairs and maintenance on factory equipment	Product	MOH
e. Lease payment on administrative headquarters	Period	
f. Salaries paid to quality control inspectors in the plant	Product	MOH
g. Property insurance–40% of building is used for sales and administration; 60% of building is used for manufacturing	40% Period; 60% Product	— MOH
h. Standard packaging materials used to package individual units of product for sale (for example, cereal boxes in which cereal is packaged)	Product	DM

(5–10 min.) S2-8

COST	Period Cost or Inventoriable Product Cost?	If an Inventoriable Product Cost: Is it DM, DL, or MOH?
1. Cost of milk purchased from local dairy farmers	Product	DM
2. Lubricants used in running bottling machines	Product	MOH
3. Depreciation on refrigerated trucks used to collect raw milk from dairy local dairy farmer	Product	MOH (part of the cost of acquiring DM)
4. Property tax on dairy processing plant	Product	MOH
5. Television advertisements for DairyPlains' products	Period	
6. Gasoline used to operate refrigerated trucks used to deliver finished dairy products to grocery stores	Period (distribution element of value chain)	
7. Company president's annual bonus	Period	
8. Plastic 4-litre containers in which milk is packaged	Product	DM
9. Depreciation on marketing department's computers	Period (marketing element of value chain)	
10. Wages and salaries paid to machine operators at dairy processing plant	Product	DL
11. Research and development on improving milk pasteurization process	Period (R&D element of value chain)	

(5 min.) S2-9

Snap's	
Total Manufacturing Overhead Computation	
Manufacturing overhead:	
Glue for camera frames*	$ 250
Plant depreciation expense	10,000
Plant supervisor's salary	4,000
Plant janitor's salary	1,000
Oil for manufacturing equipment	25
Total manufacturing overhead	$15,275

*Assuming that it is not cost-effective to trace the low-cost glue to individual cameras

The following explanation is provided for instructional purposes, but it is not required.

Depreciation on company cars used by the sales force is a marketing expense, interest expense is a financing expense, and the company president's salary is an administrative expense. None of these expenses are incurred in the manufacturing plant, so they are not part of manufacturing overhead.

The flash bulbs are a direct material, not part of manufacturing overhead.

(5 min.) S2-10

Circuits Plus		
Cost of Goods Sold Computation		
Cost of goods sold:		
Beginning inventory		$ 3,500
Purchases	$40,000	
Import duties	1,000	
Freight-in	3,000	44,000
Cost of goods available for sale		47,500
Ending inventory		(5,500)
Cost of goods sold		$42,000

(5–10 min.) S2-11

Salon Secrets		
Income Statement		
Sales revenue		**$38,230,000**
Cost of goods sold:		
Beginning inventory	**$ 3,270,000**	
Purchases	**23,450,000**	
Cost of goods available for sale	**26,720,000**	
Ending inventory	**(3,920,000)**	
Cost of goods sold		**(22,800,000)**
Gross profit		**15,430,000**
Operating expenses		**(6,115,000)**
Operating income		**$ 9,315,000**

(5 min.) **S2-12**

Sunny's Bikes		
Computation of Direct Materials Used		
Direct materials used:		
Beginning raw materials inventory		$ 4,000
Purchases of direct materials	$16,000	
Import duties	1,000	
Freight-in	200	17,200
Direct materials available for use		21,200
Ending raw materials inventory		(1,500)
Direct materials used		$19,700

(5 min.) **S2-13**

Smith Manufacturing		
Schedule of Cost of Goods Manufactured		
Beginning work in process inventory		$ 76,000
Add: Direct materials used	$524,000	
Direct labour	223,000	
Manufacturing overhead	742,000	
Total manufacturing costs incurred during the period		1,489,000
Total manufacturing costs to account for		1,565,000
Less: Ending work in process inventory		(85,000)
Cost of goods manufactured		$1,480,000

(10 min.) S2-14

Relevant quantitative information might include:

- **Difference in salaries**
- **Difference in benefits**
- **Difference in costs of housing**
- **Difference in costs of transportation**
- **Difference in costs of food**

Relevant qualitative information might include:

- **Difference in lifestyle**
- **Difference in weather**
- **Difference in job description**
- **Difference in future career development opportunities**
- **Proximity to family and friends**

Relevant information always pertains to the future and differs between alternatives.

Student responses may vary.

(10 min.) S2-15

a) fixed

b) fixed

c) variable

d) variable in most cases. In some cases, consumers are charged a flat monthly fee for water hook-up (fixed portion of the bill), plus a fee for the amount of water used (variable portion of the bill). In such cases, the monthly water bill would be a mixed cost.

e) fixed or variable, depending on the cell phone plan. Plans that offer a set monthly fee for virtually unlimited minutes are fixed because the cost stays constant over a wide range of minutes. Plans that charge a specified rate per minute are variable.

f) fixed

g) usually variable; fixed in some cities offering unlimited use with monthly passes.

Exercises (Group A)

(10 min.) E2-16A

a. ***Manufacturing companies*** **produce their own inventory.**

b. ***Merchandising companies*** **typically have a single category of inventory.**

c. ***Service companies*** **do not have tangible products intended for sale.**

d. ***Merchandising companies*** **resell products they previously purchased ready-made from suppliers.**

e. ***Manufacturing companies*** **use their workforce and equipment to transform raw materials into new finished products.**

f. ***Merchandising companies*** **sell to consumers.**

g. **Swaim, a company based in Saskatchewan, makes furniture. Partially completed sofas are *work in process inventory*. Completed sofas that remain unsold in the warehouse are *finished goods inventory*. Fabric and wood are *raw materials inventory*.**

h. **For McCain's, potatoes, cardboard boxes, and waxed-paper liners are classified as *raw materials inventory*.**

i. ***Wholesalers*** **buy in bulk from manufacturers and sell to retailers.**

(10–15 min.) **E2-17A**

Reqs. 1 and 2

Rogers Plus						
Cost Classification						
	R & D	Design	Purchases	Marketing	Distribution	Customer Service
Research on selling						
satellite radio service	$ 400					
Purchases of merchandise			$30,000			
Rearranging store layout		$750				
Newspaper advertisements				$5,000		
Depreciation expense on						
delivery trucks					$1,000	
Payment to consultant for advice						
on location of new store	2,500					
Freight-in			3,000			
Salespersons' salaries				4,000		
Customer complaint department						$800
Total	$2,900	$750	$33,000	$9,000	$1,000	$800

Req. 3

The total inventoriable product costs are the $30,000 of purchases plus the $3,000 freight-in = $33,000.

(5-10 min.) E 2-18A

a. R&D
b. Purchasing
c. Marketing
d. Distributing
e. Customer service
f. Design

(15 min.) E2-19A

Reqs. 1 and 2

Samsung Electronics								
Cost Classification								
			Production					
	R & D	Design	Direct Materials	Direct Labour	Manufacturing Overhead	Marketing	Distribution	Customer Service
Salaries of telephone salespeople						$ 5		
Depreciation on plant and equipment					$65			
Exterior case for phone			$ 6					
Scientists' salaries	$12							
Delivery expense							$ 7	
Transmitters			61					
Rearrange production process		$ 2						
Assembly line workers' wages				$10				
Technical support hotline								$ 3
1-800 (toll-free) line for customer orders	-					1		
Total costs	$12	$ 2	$67	$10	$65	$ 6	$ 7	$ 3

Req. 3

Total inventoriable product costs:

Direct materials……………………………………	**$ 67**
Direct labour…………………………………………	**10**
Manufacturing overhead……………………………	**65**
Total inventoriable product cost…………………	**$142**

Req. 4

The total prime cost is:

Direct materials……………………………………	**$ 67**
Direct labour…………………………………………	**10**
	$ 77

Req. 5

The total conversion cost is:

Direct labour…………………………………………	**$ 10**
Manufacturing overhead……………………………	**65**
	$ 75

(5–10 min.) E2-20A

Cost	Direct or Indirect Cost?
a. Produce manager's salary	Direct
b. Cost of the produce	Direct
c. Store utilities	Indirect
d. Bags and twist ties provided to customers in the produce department for packaging fruits and vegetables	Direct
e. Depreciation expense on refrigerated produce display shelves	Direct
f. Cost of shopping carts and baskets	Indirect
g. Wages of checkout clerks	Indirect
h. Cost of grocery store's advertisement flyer placed in the weekly newspaper	Indirect
i. Store manager's salary	Indirect
j. Cost of equipment used to peel and core pineapples at the store	Direct
k. Free grocery delivery service provided to senior citizens	Indirect
l. Depreciation on self-checkout machines	Indirect

(10 min.) E2-21A

a. *Direct costs* can be traced to cost objects.

b. *Period costs* are expensed when incurred.

c. *Prime costs* are the combination of direct materials and direct labour.

d. Compensation includes wages, salaries, and *fringe benefits*.

e. *Inventoriable product costs* are treated as *assets* until sold.

f. *Inventoriable product costs* include costs from only the production or purchases element of the value chain.

g. *Indirect costs* are allocated to cost objects.

h. Both direct and indirect costs are *assigned* to *cost objects*.

i. *Total costs* include costs from every element of the value chain.

j. *Conversion costs* are the combination of direct labour and manufacturing overhead.

k. *Inventoriable product costs* are expensed as *cost of goods sold* when sold.

l. Manufacturing overhead includes all *indirect costs* of production.

(15–20 min.) E2-22A

Req. 1

		DM	DL	IM	IL	Other MOH	Period
a.	Airplane seats	$250					
b.	Depreciation on administrative offices						$60
c.	Assembly workers' wages		$600				
d.	Plant utilities					$120	
e.	Production supervisors' salaries				$100		
f.	Jet engines	1,000					
g.	Machine lubricants			$15			
h.	Depreciation on forklifts					50	
i.	Property tax on corporate marketing offices						25
j.	Cost of warranty repairs						225
k.	Factory janitors' wages				30		
l.	Cost of designing new plant layout						175
m.	Machine operators' health insurance		40				
	TOTAL	$1,250	$640	$15	$130	$170	$485

Req. 2	**Total manufacturing overhead costs**	=	**IM + IL + Other MOH**
		=	**$15 + 130 + 170 = $315**
Req. 3	**Total inventoriable product costs**	=	**DM + DL + MOH**
		=	**$1,250 + 640 + 315 = $2,205**
Req. 4	**Total prime costs**	=	**DM + DL**
		=	**$1,250 + 640 = $1,890**
Req. 5	**Total conversion costs**	=	**DL + MOH**
		=	**$640 + 315 = $955**
Req. 6	**Total period costs**	=	**$485**

(10 min.) E2-23A

Lords		
Current Assets		
Current assets:		
Cash		$ 15,000
Accounts receivable		80,000
Inventories:		
Raw materials inventory	$10,000	
Work in process inventory	40,000	
Finished goods inventory	63,000	
Total inventories		113,000
Prepaid expenses		6,000
Total current assets		$214,000

Lords must be a *manufacturer* because it has three kinds of inventory: raw materials, work in process, and finished goods.

(10–15 min.) E2-24A

Precious Pets		
Income Statement		
for Last Year		
Sales revenue		$ 987,000
Cost of goods sold:		
Beginning inventory	$ 17,000	
Purchases and freight-in*	663,000	
Cost of goods available for sale	680,000	
Ending inventory	(15,000)	
Cost of goods sold		(665,000)
Gross profit		322,000
Operating expenses:		
Website expenses	$ 56,000	
Marketing expenses	22,000	
Freight-out expenses	25,000	
Total operating expenses		(103,000)
Operating income		$ 219,000

***purchases of $642,000 + freight-in of $21,000 = $663,000**

(5–10 min.) E2-25A

Beasann's Die-Cuts			
Cost of Goods Manufactured			
Beginning work in process inventory			$ 21,000
Add: Direct materials used			
Beginning raw materials inventory	$ 13,000		
Plus: Purchases of direct materials	58,000		
Direct materials available for use	71,000		
Less: Ending raw materials inventory	(17,000)		
Direct materials used		$ 54,000	
Direct labour		123,000	
Manufacturing overhead		152,000	
Total manufacturing costs incurred during the period			329,000
Total manufacturing costs to account for			350,000
Less: Ending work in process inventory			(15,000)
Cost of goods manufactured			$335,000

(15–20 min.) E2-26A

Strike Marine Company			
Schedule of Cost of Goods Manufactured			
Beginning work in process inventory			$ 50,000
Add: Direct materials used:			
Beginning raw materials inventory	$ 25,000		
Purchases of direct materials	78,000		
Available for use	103,000		
Ending raw materials inventory	(28,000)		
Direct materials used		$75,000	
Direct labour		82,000	
Manufacturing overhead:			
Indirect labour	$ 15,000		
Insurance on plant	9,000		
Depreciation–plant building and equipment	13,000		
Repairs and maintenance–plant	4,000	41,000	
Total manufacturing costs incurred during the year			198,000
Total manufacturing costs to account for			248,000
Less: Ending work in process inventory			(35,000)
Cost of goods manufactured			$213,000

Strike Marine Company	
Schedule of Cost of Goods Sold	
Beginning finished goods inventory	$ 18,000
Cost of goods manufactured*	213,000
Cost of goods available for sale	231,000
Ending finished goods inventory	(25,000)
Cost of goods sold	$206,000

*From schedule of cost of goods manufactured

(continues E2-26A) (15–20 min.) E2-27A

Strike Marine Company		
Income Statement		
for Last Year		
Sales revenue (32,000 × $12)		$384,000
Cost of goods sold:		
Beginning finished goods inventory	$ 18,000	
Cost of goods manufactured		
(E 2-25A)	213,000	
Cost of goods available for sale	231,000	
Ending finished goods inventory	(25,000)	
Cost of goods sold		206,000
Gross profit		178,000
Operating expenses:		
Marketing expenses	$ 77,000	
General and administrative expenses	29,000	106,000
Operating income		$ 72,000

Students may simply use the $206,000 cost of goods sold computation from E2-26A rather than repeating the details of the computation here.

(25 min.) E2-28A

Instructional note: **This is a fairly challenging exercise that requires students to work backwards through financial statement elements.**

a.

Revenues	**$27,000**
Cost of goods sold	**15,000**
Gross profit	**$12,000**

b. To determine beginning raw materials inventory, start with the materials used computation and work backwards:

Beginning raw materials inventory	**$ 2,000**
Purchases of direct materials	**9,000**
Available for use	**11,000**
Ending raw materials inventory	**(3,000)**
Direct materials used	**$ 8,000**

c. To determine ending finished goods inventory, start by computing the cost of goods manufactured:

Beginning work in process inventory		**$ 0**
Direct materials used	**$8,000**	
Direct labour	**3,000**	
Manufacturing overhead	**6,300**	**17,300**
Total manufacturing costs to account for		**17,300**
Ending work in process inventory		**(1,500)**
Cost of goods manufactured		**$15,800**

Now use the cost of goods sold computation to determine ending finished goods inventory:

Beginning finished goods inventory	$ 4,300
Cost of goods manufactured (from above)	15,800
Cost of goods available for sale	20,100
Ending finished goods inventory	(5,100)
Cost of goods sold (from part A)	$15,000

(15–20 min.) E2-29A

a. Cost of operating automated production machinery versus the cost of direct labour when deciding whether to automate production	Relevant–The cost of employing labour versus automating production will likely differ.
b. Cost of computers purchased six months ago when deciding whether to upgrade to computers with faster processing speed	Irrelevant–The cost of the computers, which were purchased in the past, is a sunk cost.
c. Cost of purchasing packaging materials from an outside vendor when deciding whether to continue manufacturing the packaging materials in-house	Relevant–The cost is relevant if it differs between outsourcing and making the materials in-house.
d. The property tax rates in different locales when deciding where to locate the company's headquarters	Relevant–The company will incur different property taxes depending on where it locates.
e. The type of gas (regular or premium) used by delivery vans when deciding which make and model of van to purchase for the company's delivery van fleet	Relevant–The type of gas used by the delivery vans will affect the cost of operating the vans in the future.
f. Depreciation expense on old manufacturing equipment when deciding whether to replace it with newer equipment	Irrelevant–Depreciation expense is simply the paper write-off (expensing) of a sunk cost. Also, the remaining net book value of the equipment will need to be expensed regardless of whether the equipment is replaced.

g. The fair market value of old manufacturing equipment when deciding whether to replace it with newer equipment	**Relevant–The fair market value is the amount of money the company could expect to receive from selling the old equipment if it decides to replace it with newer equipment.**
h. The interest rate paid on invested funds when deciding how much inventory to keep on-hand	**Relevant–Funds tied up in inventory can not earn interest. The higher the interest rate, the more likely the company will want to decrease inventory levels and invest the extra funds.**
i. The cost of land purchased three years ago when deciding whether to build on the land now or wait two more years before building	**Irrelevant–The cost of the land is a sunk cost whether the company builds on the land now or in the future.**
j. The total amount of the restaurant's fixed costs when deciding whether to add additional items to the menu	**Most likely irrelevant–Unless the additional items will require the restaurant to purchase additional kitchen equipment, the total fixed cost will probably not change.**

(10 min.) E2-30A

a. Managers cannot influence ***uncontrollable costs*** in the short run.

b. Total ***variable costs*** decrease when production volume decreases.

c. For decision-making purposes, costs that do not differ between alternatives are ***irrelevant costs***.

d. Costs that have already been incurred are called ***sunk costs***.

e. Total ***fixed costs*** stay constant over a wide range of production volume.

f. The ***differential cost*** is the difference in cost between two alternative courses of action.

g. The product's ***marginal cost*** is the cost of making one more unit.

h. A product's ***fixed costs*** and ***variable costs***, not the product's ***average cost,*** should be used to forecast total costs at different production volumes.

(10 min.) E2-31A

COST	Variable or Fixed
a. Thread used by a garment manufacturer	Variable
b. Property tax on manufacturing facility	Fixed
c. Yearly salaries paid to sales staff	Fixed
d. Gasoline used to operate delivery vans	Variable
e. Annual contract for pest (insect) control	Fixed
f. Boxes used to package breakfast cereal at Kellogg's	Variable
g. Straight-line depreciation on production equipment	Fixed
h. Cell phone bills for sales staff–contract billed at $.03 cents per minute	Variable
i. Wages paid to hourly assembly line workers in the manufacturing plant	Variable
j. Monthly lease payment on administrative headquarters	Fixed
k. Commissions paid to the sales staff–5% of sales revenue	Variable
l. Credit card transaction fee paid by retailer– $0.20 per transaction plus 2% of the sales amount	Variable
m. Annual business licence fee from city	Fixed
n. Cost of ice cream sold at Cow's Dairy in PEI	Variable
o. Cost of shampoo used at a hair salon	Variable

(10 min.) E2-32A

a)	Variable costs	=	20,000,000 units × $1 / unit	=	$20,000,000
	+ Fixed costs			=	5,000,000
	= Total costs			=	$25,000,000
b)	$25,000,000	÷	20,000,000 units	=	$1.25 per unit
c)	$5,000,000	÷	20,000,000 units	=	$0.25 per unit
d)	Variable costs	=	25,000,000 units × $1 / unit	=	$25,000,000
	+ Fixed costs			=	5,000,000
	= Total costs			=	$30,000,000
e)	$30,000,000	÷	25,000,000 units	=	$1.20 per unit
f)	$ 5,000,000	÷	25,000,000 units	=	$0.20 per unit

g) The average product cost decreases as production volume increases because the company is spreading its fixed costs over 5 million more units. The company will be operating more efficiently, so the average cost of making each unit decreases.

Exercises (Group B)

(10 min.) E2-33B

a. ***Service companies*** **do not sell tangible products.**

b. ***Wholesalers*** **buy in bulk from manufacturers and sell to retailers.**

c. ***Manufacturing companies*** **produce their own inventory.**

d. ***Merchandising companies*** **typically have only one category of inventory.**

e. **Keller Inc. builds bicycles. Partially completed bikes are** ***work in process inventory*****. Completed bikes that remain unsold in the warehouse are** ***finished goods inventory*****. Aluminum and plastic are** ***raw materials inventory.***

f. ***Merchandising companies*** **sell merchandise to consumers.**

g. ***Manufacturing companies*** **transform raw materials into new finished products using their workforce and equipment.**

h. ***Merchandising companies*** **resell products they previously purchased ready-made from suppliers.**

i. **For Sony, blank compact discs, CD cases, and unprinted case liners are classified as** ***raw materials inventory*****.**

(10–15 min.) **E2-34B**

Reqs. 1 and 2

Accessory Shack						
Cost Classification						
	R & D	**Design**	**Purchases**	**Marketing**	**Distribution**	**Customer Service**
Research on selling satellite radio service	$500					
Purchases of merchandise			$32,000			
Rearranging store layout		$800				
Newspaper advertisements				$5,800		
Depreciation expense on delivery trucks					$1,900	
Payment to consultant for advice on location of new store	2,200					
Freight-in			3,600			
Salespersons' salaries				4,500		
Customer complaint department						$900
Total	$2,700	$800	$35,600	$10,300	$1,900	$900

Req. 3

The total inventoriable product costs are the $32,000 of purchases plus the $3,600 freight-in = $35,600.

(5-10 min.) E 2-35B

a. Distributing
b. Customer service
c. Marketing
d. Design
e. Research and Development (R&D)
f. Purchasing

Reqs. 1 and 2

Plum Electronics Cost Classification								
			Production					
	R & D	Design	Direct Materials	Direct Labour	Manufacturing Overhead	Marketing	Distribution	Customer Service
Salaries of telephone salespeople						$ 4		
Depreciation on plant and equipment					$55			
Exterior case for phone			$ 8					
Scientists' salaries	$11							
Delivery expense							$ 5	
Transmitters			58					
Rearrange production process		$ 1						
Assembly line workers' wages				$9				
Technical support hotline								$ 3
1-800 (toll-free) line for customer orders	-					2		
Total costs	$11	$ 1	$66	$9	$55	$ 6	$ 5	$ 3

Req. 3

Total inventoriable product costs:

Direct materials……………………………………	$ 66
Direct labour……………………………………………	9
Manufacturing overhead……………………………	55
Total inventoriable product cost…………………	$130

Req. 4

The total prime cost is:

Direct materials……………………………………	$ 66
Direct labour……………………………………………	9
	$ 75

Req. 5

The total conversion cost is:

Direct labour……………………………………………	$ 9
Manufacturing overhead……………………………	55
	$ 64

(5–10 min.) E2-37B

Cost	Direct or Indirect Cost?
a. Garden manager's salary	Direct
b. Cost of shopping carts and baskets	Indirect
c. Wages of checkout clerks	Indirect
d. Cost of the merchandise	Direct
e. Depreciation expense on demonstration water feature	Direct
f. Cost of hardware store's advertisement flyer placed in the weekly newspaper	Indirect
g. Depreciation on self-checkout machines	Indirect
h. Bags provided to garden customer for packaging small items	Direct
i. Store manager's salary	Indirect
j. Free garden delivery service provided to senior citizens	Direct
k. Cost of equipment used to plant and water plants at the store	Direct
l. Store utilities	Indirect

(10 min.) E2-38B

a. ***Inventoriable product costs*** **include costs from only the production or purchases element of the value chain.**

b. ***Indirect costs*** **are allocated to cost objects.**

c. **The combination of direct materials and direct labour is *prime costs*.**

d. **The combination of direct labour and manufacturing overhead is *conversion costs*.**

e. **Both direct and indirect costs are *assigned* to *cost objects*.**

f. **All *indirect costs* of production are included in manufacturing overhead.**

g. ***Period costs*** **are expensed when incurred.**

h. **Wages, salaries, and *fringe benefits* are considered compensation.**

i. ***Total costs*** **include costs from every element of the value chain.**

j. ***Direct costs*** **can be traced to cost objects.**

k. **Until sold, *inventoriable product costs* are treated as *assets*.**

I. ***Inventoriable product costs*** **are expensed as** ***cost of goods sold*** **when sold.**

(15–20 min.) E2-39B

Req. 1

		DM	DL	IM	IL	Other MOH	Period
a.	Airplane seats	$270					
b.	Depreciation on administrative offices						$70
c.	Assembly workers' wages		$690				
d.	Plant utilities					$140	
e.	Production supervisors' salaries				$150		
f.	Jet engines	1,200					
g.	Machine lubricants			$35			
h.	Depreciation on forklifts					90	
i.	Property tax on corporate marketing offices						15
j.	Cost of warranty repairs						215
k.	Factory janitors' wages				40		
l.	Cost of designing new plant layout						180
m.	Machine operators' health insurance		60				
	TOTAL	$1,470	$750	$35	$190	$230	$480

(continued) E2-39B

Req. 2	**Total manufacturing overhead costs**	**=**	**IM + IL + Other MOH**
		=	**$35 + 190 + 230 = $455**
Req. 3	**Total inventoriable product costs**	**=**	**DM + DL + MOH**
		=	**$1,470 + 750 + 455 = $2,675**
Req. 4	**Total prime costs**	**=**	**DM + DL**
		=	**$1,470 + 750 = $2,220**
Req. 5	**Total conversion costs**	**=**	**DL + MOH**
		=	**$750 + 455 = $1,205**
Req. 6	**Total period costs**	**=**	**$480**

(10 min.) **E2-40B**

Esquires		
Current Assets		
Current assets:		
Cash		$ 14,900
Accounts receivable		79,000
Inventories:		
Raw materials inventory	$10,400	
Work in process inventory	38,000	
Finished goods inventory	63,000	
Total inventories		111,400
Prepaid expenses		5,600
Total current assets		$210,900

Esquires must be a *manufacturer* because it has three kinds of inventory: raw materials, work in process, and finished goods.

(10–15 min.) E2-41B

Prestigious Pets		
Income Statement		
for Last Year		
Sales revenue		$ 1,060,000
Cost of goods sold:		
Beginning inventory	$ 15,500	
Purchases and freight-in*	663,500	
Cost of goods available for sale	679,000	
Ending inventory	(12,800)	
Cost of goods sold		(666,200)
Gross profit		393,800
Operating expenses:		
Website expenses	$ 53,000	
Marketing expenses	33,000	
Freight-out expenses	28,500	
Total operating expenses		(114,500)
Operating income		$ 279,300

***purchases of $643,000 + freight-in of $20,500 = $663,500**

(5–10 min.) **E2-42B**

Lawrence's Die-Cuts			
Cost of Goods Manufactured			
Beginning work in process inventory			$ 27,000
Add: Direct materials used			
Beginning raw materials inventory	$ 18,000		
Plus: Purchases of direct materials	66,000		
Direct materials available for use	84,000		
Less: Ending raw materials inventory	(14,000)		
Direct materials used		$ 70,000	
Direct labour		135,000	
Manufacturing overhead		155,000	
Total manufacturing costs incurred during the period			360,000
Total manufacturing costs to account for			387,000
Less: Ending work in process inventory			(21,000)
Cost of goods manufactured			$366,000

(15–20 min.) **E2-43B**

South Marine Company			
Schedule of Cost of Goods Manufactured			
Beginning work in process inventory			$ 44,000
Add: Direct materials used:			
Beginning raw materials inventory	$ 28,000		
Purchases of direct materials	76,000		
Available for use	104,000		
Ending raw materials inventory	(30,000)		
Direct materials used		$74,000	
Direct labour		81,000	
Manufacturing overhead:			
Indirect labour	$ 41,000		
Insurance on plant	10,500		
Depreciation–plant building and equipment	13,400		
Repairs and maintenance–plant	4,300	69,200	
Total manufacturing costs incurred during the year			224,200
Total manufacturing costs to account for			268,200
Less: Ending work in process inventory			(37,000)
Cost of goods manufactured			$231,200

South Marine Company	
Schedule of Cost of Goods Sold	
Beginning finished goods inventory	$ 13,000
Cost of goods manufactured*	231,200
Cost of goods available for sale	244,200
Ending finished goods inventory	(29,000)
Cost of goods sold	$215,200

*From schedule of cost of goods manufactured (continues E2-43B) (15–20 min.) **E2-44B**

South Marine Company		
Income Statement		
for Last Year		
Sales revenue (37,000 × $14)		$518,000
Cost of goods sold:		
Beginning finished goods inventory	$ 13,000	
Cost of goods manufactured		
(E2-41B)	231,200	
Cost of goods available for sale	244,200	
Ending finished goods inventory	(29,000)	
Cost of goods sold		215,200
Gross profit		302,800
Operating expenses:		
Marketing expenses	$ 78,000	
General and administrative expenses	26,500	104,500
Operating income		$ 198,300

Students may simply use the $215,200 cost of goods sold computation from E2-43B rather than repeating the details of the computation here.

(25 min.) **E2-45B**

Instructional note: **This is a fairly challenging exercise that requires students to work backwards through financial statement elements.**

a.

Revenues	**$27,200**
Cost of goods sold	$\boxed{15,100}$
Gross profit	**$12,100**

b. To determine beginning raw materials inventory, start with the materials used computation and work backwards:

Beginning raw materials inventory	$\boxed{\$\ 3,000}$
Purchases of direct materials	**9,100**
Available for use	$\boxed{12,100}$
Ending raw materials inventory	**(3,600)**
Direct materials used	**$ 8,500**

c. To determine ending finished goods inventory, start by computing the cost of goods manufactured:

Beginning work in process inventory		**$ 0**
Direct materials used	**$8,500**	
Direct labour	**3,900**	
Manufacturing overhead	**6,000**	**18,400**
Total manufacturing costs to account for		**18,400**
Ending work in process inventory		**(1,800)**
Cost of goods manufactured		**$16,600**

Now use the cost of goods sold computation to determine the ending finished goods inventory:

Beginning finished goods inventory	**$ 4,700**
Cost of goods manufactured (from above)	**16,600**
Cost of goods available for sale	**21,300**
Ending finished goods inventory	**$\boxed{(6,200)}$**
Cost of goods sold (from part A)	**$15,100**

(15–20 min.) E2-46B

a. Cost of barcode scanners purchased six months ago when deciding whether to upgrade to scanners that are faster and easier to use	Irrelevant–The cost of the scanners, which were purchased in the past, is a sunk cost.
b. The fair market value of an ice cream truck when deciding whether to replace it with a newer ice cream truck	Relevant–The fair market value is the amount of money the company could expect to receive from selling the old truck if it decides to replace it with a newer truck.
c. Cost of operating automated production machinery versus the cost of direct labour when deciding whether to automate production	Relevant–The cost of employing labour versus automating production will likely differ.
d. Cost of purchasing packaging materials from an outside vendor when deciding whether to continue manufacturing the packaging materials in-house	Relevant–The cost is relevant if it differs between outsourcing and making the materials in-house.
e. The cost of an expansion site purchased two years ago when deciding whether to sell the site or to expand business to it now	Irrelevant–The cost of the site is a sunk cost whether the company builds on the land now or sells it.
f. The property tax rates in different locales when deciding where to locate the company's headquarters	Relevant–The company will incur different property taxes depending on where it locates.

g. The interest rate paid on invested funds when deciding how much inventory to keep on-hand	**Relevant–Funds tied up in inventory cannot earn interest. The higher the interest rate, the more likely the company will want to decrease inventory levels and invest the extra funds.**
h. The gas mileage of delivery vans, when deciding which make and model of van to purchase for the company's delivery van fleet	**Relevant–The amount of gas used by the delivery vans will affect the cost of operating the vans in the future.**
i. Depreciation expense on old manufacturing equipment when deciding whether to replace it with newer equipment	**Irrelevant–Depreciation expense is simply the paper write-off (expensing) of a sunk cost. Also, the remaining net book value of the equipment will need to be expensed regardless of whether the equipment is replaced.**
j. The total amount of a coffee shop's fixed costs when deciding whether to introduce a new drink line	**Most likely irrelevant–Unless the additional items will require the coffee shop to purchase additional materials, the total fixed cost will probably not change.**

(10 min.) E2-47B

a. **In the short run, managers cannot influence *uncontrollable costs.***

b. **Costs that do not differ between alternatives are *irrelevant costs*, for decision-making purposes.**

c. **Total *variable costs* decrease when production volume decreases.**

d. **A product's *fixed costs* and *variable costs*, not the product's *average cost*, should be used to forecast total costs at different production volumes.**

e. **Total *fixed costs* stay constant over a wide range of production volumes.**

f. ***Sunk costs* are costs that have already been incurred.**

g. **The cost of making one more unit is the product's *marginal cost*.**

h. **The difference in cost between two alternative courses of action is the *differential costs*.**

(10 min.) E2-48B

COST	Variable or Fixed
a. Credit card transaction fee paid by retailer–$0.20 per transaction plus 2% of the sales amount	Variable
b. Yearly salaries paid to marketing staff	Fixed
c. Gasoline used to drive company shuttle	Variable
d. Syrup used by an ice cream parlour	Variable
e. Property tax on an electronics factory	Fixed
f. Annual contract for company landscaping	Fixed
g. Boxes used to package computer components at Dell	Variable
h. Wages paid to hourly retail staff at the company store	Variable
i. Annual web hosting fee for company website	Fixed
j. Cost of coffee sold at Starbucks	Variable
k. Monthly lease payment on branch office	Fixed
l. Straight-line depreciation on production equipment	Fixed

m. Rental car fees for company business travellers–contract billed at $0.25 per kilometre	**Variable**
n. Commissions paid to the sales staff–7% of sales revenue	**Variable**
o. Cost of paint used at an auto body shop	**Variable**

(10 min.) E2-49B

a)	Variable costs	=	15,000,000 units × \$1 / unit	=	\$15,000,000
	+ Fixed costs			=	6,000,000
	= Total costs			=	\$21,000,000
b)	\$21,000,000	÷	15,000,000 units	=	\$1.40 per unit
c)	\$ 6,000,000	÷	15,000,000 units	=	\$0.40 per unit
d)	Variable costs	=	20,000,000 units × \$1 / unit	=	\$20,000,000
	+ Fixed costs			=	6,000,000
	= Total costs			=	\$26,000,000
e)	\$26,000,000	÷	20,000,000 units	=	\$1.30 per unit
f)	\$ 6,000,000	÷	20,000,000 units	=	\$0.30 per unit

g) The average product cost decreases as production volume increases because the company is spreading its fixed costs over 5 million more units. The company will be operating more efficiently, so the average cost of making each unit decreases.

Problems (Group A)

(30 min.) P2-50A

Reqs. 1 and 2

ShaZam Cola
Value Chain Cost Classification
(In thousands)

Cost	R&D	Design	Production: Direct Materials	Production: Direct Labour	Production: Manufacturing Overhead	Marketing	Distribution	Customer Service
Plant utilities					$ 750			
Depreciation on plant and equipment					3,000			
Payment for new recipe	$1,000							
Salt*					25			
Replace products with expired dates								$ 50
Rearranging plant layout		$1,100						
Lemon syrup			$18,000					
Lime flavouring			1,000					
Production costs of “cents-off” store coupons for customers						$ 600		
Delivery truck drivers’ wages							$250	
Bottles			1,300					
Sales commissions						400		
Plant janitors’ wages					1,000			
Wages of workers who mix syrup				$8,000				
Customer hotline								200
Depreciation on delivery trucks							150	
Freight-in			1,500					
Total costs	$1,000	$1,100	$21,800*	$8,000	$4,775	$1,000	$400	$250

***Salt’s low value makes it likely treated as indirect materials. However, some students may classify salt as direct materials.**

Req. 3

Total inventoriable product costs:

Direct materials......................................…..	**$21,800**
Direct labour...….	**8,000**
Manufacturing overhead.......................…..	**4,775**
Total inventoriable product costs..........…	**$34,575**

Req. 4

The managers of R&D and design are likely to cut their costs. This can increase costs of later value-chain elements. For example, if the recipe is not adjusted to consumer tastes, more marketing may be required and/or sales may decline. If the recipe is not designed so the soda is easy to produce, or if the production process is not well laid out, production costs will be higher than they need to be. If cutting R&D and design costs leads to lower quality soda, customer service costs such as returns may also increase.

(45–55 min.) **P2-51A**

Part One:

Hannah's Pets		
Income Statement		
Year Ended December 31, 2014		
Sales revenue		$54,000
Cost of goods sold:		
Beginning inventory	$15,000	
Purchases of merchandise	27,000	
Cost of goods available for sale	42,000	
Ending inventory	(10,250)	
Cost of goods sold		31,750
Gross profit		22,250
Operating expenses:		
Utilities expense	$ 2,450	
Rent expense	4,000	
Sales commission expense	2,300	8,750
Operating income		$13,500

Part Two:
Req. 1

Best Friends Manufacturing			
Schedule of Cost of Goods Manufactured			
Year Ended December 31, 2012			
Beginning work in process inventory			$ 0
Add: Direct materials used:			
Beginning raw materials inventory	$13,500		
Purchases of direct materials	31,000		
Available for use	44,500		
Ending raw materials inventory	(9,275)		
Direct materials used		$35,225	
Direct labour		18,300	
Manufacturing overhead:			
Utilities for plant	$ 4,600		
Plant janitorial services	1,250		
Rent on manufacturing plant	9,000		
		14,850	
Total manufacturing costs incurred			
during the year			68,375
Total manufacturing costs to			
account for			68,375
Less: Ending work in process inventory			(720)
Cost of goods manufactured			$67,655

Req. 2

Best Friends Manufacturing		
Income Statement		
Year Ended December 31, 2012		
Sales revenue		**$105,000**
Cost of goods sold:		
Beginning finished goods inventory	**$ 0**	
Cost of goods manufactured*	**67,655**	
Cost of goods available for sale	**67,655**	
Ending finished goods inventory	**(5,700)**	
Cost of goods sold		**61,955**
Gross profit		**43,045**
Operating expenses:		
Customer service hotline expense	**1,000**	
Delivery expense	**1,500**	
Sales salaries expense	**5,000**	**7,500**
Operating income		**$ 35,545**

From the Schedule of Cost of Goods Manufactured in *Req. 1

Req. 3

Best Friends Manufacturing's cost of goods sold is based on its *cost of goods manufactured*. In contrast, Hannah's Pets cost of goods sold is based on its merchandise *purchases*.

Part Three: ***Reqs. 1 and 2***

Hannah's Pets
Partial Balance Sheet
December 31, 2011

Inventory...........	$10,250

Best Friends Manufacturing
Partial Balance Sheet
December 31, 2012

Raw materials inventory......	$ 9,275
Work in process inventory..	720
Finished goods inventory…	5,700
Total inventory..................	$15,695

(25–35 min.) P2-52A

Tretinik Manufacturing Company			
Schedule of Cost of Goods Manufactured			
Month Ended June 30, 2014			
Beginning work in process inventory			$ 21,000
Add: Direct materials used:			
Beginning raw materials inventory	$27,000		
Purchases of direct materials	51,000		
Available for use	78,000		
Ending raw materials inventory	(23,000)		
Direct materials used		$55,000	
Direct labour		71,000	
Manufacturing overhead		40,000	
Total manufacturing costs			
incurred during the month			166,000
Total manufacturing costs to			
account for			187,000
Less: Ending work in process inventory			(25,000)
Cost of goods manufactured			$162,000

Tretinik Manufacturing Company		
Income Statement		
Month Ended June 30, 2014		
Sales revenue		**$463,000**
Cost of goods sold:		
Beginning finished goods inventory	**$115,000**	
Cost of goods manufactured*	**162,000**	
Cost of goods available for sale	**277,000**	
Ending finished goods inventory	**(68,000)**	
Cost of goods sold		**209,000**
Gross profit		**254,000**
Operating expenses:		
Marketing expense	**99,000**	
Administrative expense	**55,000**	**154,000**
Operating income		**$100,000**

***From the Schedule of Cost of Goods Manufactured**

(10 min.) P2-53A

a. **As shown below, the quantitative data suggests you would net $4,000 more by taking Job #1 and living at home.**

Attributes:	**Take Job #1 and live at home**	**Take Job #2 and rent an apartment**
Salary	**$30,000**	**$35,000**
Rent	**0**	**(6,000)**
Food	**0**	**(2,400)**
Cable	**0**	**(600)**
Salary, net of living expenses	**$30,000**	**$26,000**

Net Difference = $30,000 − $26,000 = $4,000

b. **The costs of doing laundry, operating the car, and paying for cell phone service are irrelevant because they do not differ between the two alternatives.**

c. **You might consider whether you would like to live with your parents again! Even though you would benefit by $4,000 if you live at home, you may decide it isn't worth it!**

d. If you want Job #2 and you want to live at home, you will benefit by the higher salary and the lower living expenses. However, you'll need to factor in the higher costs of commuting to work via car (gas, tolls, service) or train (fare). Qualitatively, you will want to consider whether the time spent commuting is worth the extra money you will be netting from living at home.

(15–20 min.) P2-54A

Req. 1

Monthly pizza volume	2,500	3,000	5,000
Total fixed costs	$ 6,000	$ 6,000	$ 6,000
Total variable costs	5,000	6,000	10,000
Total costs	$11,000	$12,000	$16,000
Fixed cost per pizza	$ 2.40	$ 2.00	$ 1.20
Variable cost per pizza	2.00	2.00	2.00
Average cost per pizza	$ 4.40	$ 4.00	$ 3.20
Sales price per pizza	$10.00	$10.00	$10.00
Average profit per pizza	$ 5.60	$ 6.00	$ 6.80

Req. 2

Companies want to operate near or at full capacity to better utilize the resources they spend on fixed costs. The more units they produce, the lower the average fixed cost per unit.

Req. 3

At the current volume, the restaurant's monthly profit is $18,000, calculated as follows:

Total Sales Revenue	− Total Costs	= Monthly Profit
($10 per pizza × 3,000 pizzas)	− $12,000	= $18,000

If the owner decreases the sales price to increase volume, the new monthly profit will be:

Total Sales Revenue at the new price and volume	− Total Costs at the new volume	= New Monthly Profit
($9.50 per pizza × 5,000 pizzas)	− $16,000	= $31,500

Since the restaurant will generate an additional $13,500 of profit ($31,500 − $18,000), the owner should decrease the sales price to increase the volume.

Problems (Group B)

(30 min.) P2-55B

Reqs. 1 and 2

Best Value Cola Value Chain Cost Classification *(In thousands)*								
			Production					
Cost	R&D	Design	Direct Materials	Direct Labour	Manufacturing Overhead	Marketing	Distribution	Customer Service
Plant utilities					$ 750			
Depreciation on plant and equipment					2,800			
Payment for new recipe	$1,040							
Salt*					25			
Replace products with expired dates								$ 45
Rearranging plant layout		$1,400						
Lemon syrup			$17,000					
Lime flavouring			1,120					
Production costs of "cents-off" store coupons for customers						$ 470		
Delivery truck drivers' wages							$285	
Bottles			1,310					
Sales commissions						400		
Plant janitors' wages					1,050			
Wages of workers who mix syrup				$8,000				
Customer hotline								190
Depreciation on delivery trucks							200	
Freight-in			1,300					
Total costs	$1,040	$1,400	$20,730	$8,000	$4,625	$870	$485	$235

*Salt's low value makes it likely treated as indirect materials. However, some students may classify salt as direct materials.

Req. 3

Total inventoriable product costs:

Direct materials..	$20,730
Direct labour...	8,000
Manufacturing overhead............................	4,625
Total inventoriable product costs...........	$33,355

Req. 4

The managers of R&D and design are likely to cut their costs. This can increase costs of later value-chain elements. For example, if the recipe is not adjusted to consumer tastes, more marketing may be required and/or sales may decline. If the recipe is not designed so the soda is easy to produce, or if the production process is not well laid out, production costs will be higher than they need to be. If cutting R&D and design costs leads to lower quality soda, customer service costs such as returns may also increase.

(45–55 min.) P2-56B

Part One:

Lindsey's Pets		
Income Statement		
Year Ended December 31, 2014		
Sales revenue		$55,000
Cost of goods sold:		
Beginning inventory	$12,200	
Purchases of merchandise	34,500	
Cost of goods available for sale	46,700	
Ending inventory	(9,400)	
Cost of goods sold		37,300
Gross profit		17,700
Operating expenses:		
Utilities expense	$ 1,500	
Rent expense	3,400	
Sales commission expense	4,100	9,000
Operating income		$8,700

(continued) **P2-56B**

Part Two:

Req. 1

Best Friends Manufacturing Schedule of Cost of Goods Manufactured Year Ended December 31, 2015			
Beginning work in process inventory			$ 0
Add: Direct materials used:			
Beginning raw materials inventory	$10,000		
Purchases of direct materials	39,000		
Available for use	49,000		
Ending raw materials inventory	(8,000)		
Direct materials used		$41,000	
Direct labour		20,000	
Manufacturing overhead:			
Utilities for plant	$ 4,500		
Plant janitorial services	1,150		
Rent on manufacturing plant	8,400		
		14,050	
Total manufacturing costs incurred			
during the year			75,050
Total manufacturing costs to			
account for			75,050
Less: Ending work in process inventory			(4,000)
Cost of goods manufactured			$71,050

Req. 2

Best Friends Manufacturing		
Income Statement		
Year Ended December 31, 2015		
Sales revenue		$103,000
Cost of goods sold:		
Beginning finished goods inventory	$ 0	
Cost of goods manufactured*	71,050	
Cost of goods available for sale	71,050	
Ending finished goods inventory	(3,000)	
Cost of goods sold		68,050
Gross profit		34,950
Operating expenses:		
Customer service hotline expense	1,400	
Delivery expense	2,500	
Sales salaries expense	4,200	8,100
Operating income		$ 26,850

From the Schedule of Cost of Goods Manufactured in *Req. 1

Req. 3

Best Friends Manufacturing's cost of goods sold is based on its *cost of goods manufactured*. In contrast, Lindsey's Pets cost of goods sold is based on its merchandise *purchases*.

Part Three: ***Reqs. 1 and 2***

Lindsey's Pets
Partial Balance Sheet
December 31, 2014

Inventory...........	$9,400

Best Friends Manufacturing
Partial Balance Sheet
December 31, 2015

Raw materials inventory......	$ 8,000
Work in process inventory..	4,000
Finished goods inventory…	3,000
Total inventory................…..	$15,000

(25–35 min.) P2-57B

Chili Manufacturing Company			
Schedule of Cost of Goods Manufactured			
Month Ended June 30, 2015			
Beginning work in process inventory			**$ 27,000**
Add: Direct materials used:			
Beginning raw materials inventory	**$24,000**		
Purchases of direct materials	**56,000**		
Available for use	**80,000**		
Ending raw materials inventory	**(28,000)**		
Direct materials used		**$52,000**	
Direct labour		**79,000**	
Manufacturing overhead		**43,000**	
Total manufacturing costs incurred during the month			**174,000**
Total manufacturing costs to account for			**201,000**
Less: Ending work in process inventory			**(21,000)**
Cost of goods manufactured			**$180,000**

Chili Manufacturing Company		
Income Statement		
Month Ended June 30, 2015		
Sales revenue		$470,000
Cost of goods sold:		
Beginning finished goods inventory	$114,000	
Cost of goods manufactured*	180,000	
Cost of goods available for sale	294,000	
Ending finished goods inventory	(66,000)	
Cost of goods sold		228,000
Gross profit		242,000
Operating expenses:		
Marketing expense	98,000	
Administrative expense	68,000	166,000
Operating income		$76,000

*From the Schedule of Cost of Goods Manufactured

(10 min.) P2-58B

a. As shown below, the quantitative data suggests you would net $8,050 more by taking Job #1 and living at home.

Attributes:	Take Job #1 and live at home	Take Job #2 and rent an apartment
Salary	$49,000	$54,000
Rent	0	(9,000)
Food	0	(3,500)
Cable	0	(550)
Salary, net of living expenses	$49,000	$40,950

Net Difference = $49,000 − $40,950 = $8,050

b. The costs of doing laundry, operating the car, and paying for cell phone service are irrelevant because they do not differ between the two alternatives.

c. You might consider whether you would like to live with your parents again! Even though you would benefit by $8,050 if you live at home, you may decide it isn't worth it!

d. If you want Job #2 and you want to live at home, you will benefit by the higher salary and the lower living expenses. However, you'll need to factor in the higher costs of commuting to work via car (gas, tolls, service) or train (fare). Qualitatively, you will want to consider whether the time spent commuting is worth the extra money you will be netting from living at home.

(15–20 min.) P2-59B

Req. 1

Monthly pizza volume	2,500	5,000	10,000
Total fixed costs	$ 5,000	$ 5,000	$ 5,000
Total variable costs	3,000	6,000	12,000
Total costs	$8,000	$11,000	$17,000
Fixed cost per pizza	$ 2.00	$ 1.00	$ .50
Variable cost per pizza	1.20	1.20	1.20
Average cost per pizza	$ 3.20	$ 2.20	$ 1.70
Sales price per pizza	$5.50	$5.50	$5.50
Average profit per pizza	$ 2.30	$ 3.30	$ 3.80

Req. 2

Companies want to operate near or at full capacity to better utilize the resources they spend on fixed costs. The more units they produce, the lower the average fixed cost per unit.

Req. 3

At the current volume, the restaurant's monthly profit is $16,500 calculated as follows:

Total Sales Revenue	− Total Costs	= Monthly Profit
($5.50 per pizza × 5,000 pizzas)	− $11,000	= $16,500

If the owner decreases the sales price to increase volume, the new monthly profit will be:

Total Sales Revenue at the new price and volume	− Total Costs at the new volume	= New Monthly Profit
($5.00 per pizza × 10,000 pizzas)	− $17,000	= $33,000

Since the restaurant will generate an additional $16,500 of profit ($33,000 − $16,500), the owner should decrease the sales price to increase the volume.

Application Question

(30 min.) A2-60

Req. 1

The ending inventory costs derived from the following schedule are: raw materials, $113,000; work in process, $229,000; and finished goods, $154,000.

PowerBox					
Inventory Reconstruction Schedule					
Raw Materials Inventory		**Work in Process Inventory**		**Finished Goods Inventory**	
Beginning Inventory	**$113,000 (G)**	**Beginning Inventory**	**$ 229,000 (G)**	**Beginning Inventory**	**$ 154,000 (G)**
+ Purchases	**476,000 (G)**	**+ Direct Materials used**	**446,000[e]**	**+ Cost of goods manufactured**	**1,186,000[c]**
		+ Direct labour	**505,000 (G)**		
		+ Manufacturing Overhead	**245,000 (G)**		
= Direct Materials available for use	**589,000**	**= Total manufacturing costs to account for**	**1,425,000 (G)**	**= Cost of goods available for sale**	**1,340,000 (G)**
− Ending inventory	**143,000[f]**	**− Ending inventory**	**239,000[d]**	**− Ending inventory**	**150,000[b]**
= Direct Materials used	**$446,000[e]**	**= Cost of goods manufactured**	**$1,186,000[c]**	**= Cost of goods Sold**	**$1,190,000[a]**

(G) = Amount given in the case

[a]Cost of good sold:

Sales	**×**	**(1 − Gross profit %)**	**=**	**Cost of goods sold**
$1,700,000	**×**	**70%**	**=**	**$1,190,000**

[b]Ending finished goods inventory:

Cost of goods available for sale	**−**	**Ending finished goods inventory**	**=**	**Cost of goods sold**
$1,340,000	**−**	**Ending finished goods inventory**	**=**	**$1,190,000**
		Ending finished goods inventory	**=**	**$ 150,000**

[c]Cost of goods manufactured:

Beginning finished goods inventory	**+**	**Cost of goods manufactured**	**=**	**Cost of goods available for sale**
$154,000	**+**	**Cost of goods manufactured**	**=**	**$1,340,000**
		Cost of goods manufactured	**=**	**$1,186,000**

[d]Ending work in process inventory:

Total manufacturing costs to account for	**−**	**Ending work in process inventory**	**=**	**Cost of goods manufactured**
$1,425,000	**−**	**Ending work in process inventory**	**=**	**$1,186,000**
		Ending work in process inventory	**=**	**$ 239,000**

[e]Direct materials used:

Beginning work in process inventory	**+**	**Direct materials used**	**+**	**Direct labour**	**+**	**Manufacturing overhead**	**=**	**Total manufacturing costs to account for**
$229,000	**+**	**Direct materials used**	**+**	**$505,000**	**+**	**$245,000**	**=**	**$1,425,000**
		Direct materials used					**=**	**$ 446,000**

[f]Ending direct materials inventory:

Direct materials available for use	**−**	**Ending direct materials inventory**	**=**	**Direct materials used**
$589,000	**−**	**Ending direct materials inventory**	**=**	**$446,000**
		Ending direct materials inventory	**=**	**$143,000**

Req. 2

Today's Date

PowerBox
5 Research Triangle Way
Red Deer, AB T2A 3H7

Mr. Bassil Boulos
Industrial Insurance
1122 Main Street
Sudbury, ON P2B 4K9

Dear Mr. Boulos:

As a result of flooding, PowerBox suffered the complete loss of all inventories at its facility at 5 Research Triangle Way. Industrial Insurance covers these inventories under policy #3454340-23. Our records indicate the cost of these inventories was:

Raw materials	$143,000
Work in process	239,000
Finished goods	150,000
Total inventory cost	$532,000

Please contact me at your earliest convenience regarding our insurance claim.

Sincerely,

Annette Plum
Controller

Discussion & Analysis

1. Briefly describe a service company, a merchandising company, and a manufacturing company. Give an example of each type of company, but do not use the same examples as given in the chapter.

Service companies are in business to sell intangible services. Merchandising companies are in business to sell tangible products they buy from manufacturers. Manufacturing companies use labour, plant, and equipment to convert raw materials into new finished products. An accounting firm is an example of a service company; Le Chateau is an example of a merchandising company; and Johnson & Johnson is an example of a manufacturer.

2. How do service, merchandising, and manufacturing companies differ from each other? How are service, merchandising, and manufacturing companies similar to each other? List as many similarities and differences as you can identify.

Differ:

- **Inventories**
- **Primary output**
- **Customers**

Student answers will vary.

Similar:

- **Profit motivated**
- **Marketing**
- **IFRS and ASPE**

Student answers will vary.

3. What is the value chain? What are the six types of business activities found in the value chain? Which type(s) of business activities in the value chain generate costs that go directly to the income statement once incurred? What type(s) of business activities in the value chain generate costs that flow into inventory on the balance sheet?

The value chain is the activities that add value to a firm's products and services. The six types of business activities in the value chair are R&D, design, production or purchases, marketing, distribution, and customer service. All costs along the value chain for service companies, all except for purchases for merchandisers, and all except for production for manufacturers go directly to the income statement once they are incurred. Purchases flow into inventory for a merchandiser and production flows into inventories for a manufacturer.

4. Compare direct costs to indirect costs. Give an example of a cost at a company that could be a direct cost at one level of the organization but would be considered an indirect cost at a different level of that organization. Explain why this same cost could be both direct and indirect (at different levels).

A direct cost can be traced to a cost object whereas an indirect cost relates to the cost object but cannot be traced to it. The salary of a car sales manager is a direct cost to the sales department, but an indirect cost of the car itself. The salary of a sales manager is directly traceable to the sales department because that is the only place the manager works in the company. The salary is an indirect cost of the car because it is impossible to determine how much of it belongs to a specific car. In other words, the sales manager's salary affects the cost of all cars sold, but it is not traceable to individual cars.

5. What is meant by the term "inventoriable product costs"? What is meant by the term "period costs"? Why does it matter whether a cost is an inventoriable product cost or a period cost?

Inventoriable product costs are all costs of a product that GAAP requires companies to treat as an asset (inventory) for

external financial reporting. These costs are not expensed until the product is sold. Period costs are costs that are expensed in the period in which they are incurred, often called Operating Expenses, or Selling, General, and Administrative Expenses. An inventoriable product cost is treated as an asset until the product is sold; it will benefit a future period. A period cost is expensed when it is incurred as it has no future value.

6. Compare inventoriable product costs to period costs. Using a product of your choice, give examples of inventoriable product costs and period costs. Explain why you categorized your costs as you did.

Levi Strauss makes jeans. The inventoriable product costs would include denim, thread, zippers, labour, and factory overhead. All of these costs are related to the production of the jeans and are therefore inventoriable.
The costs of advertising the jeans in magazines are period costs because they occur regardless of when the inventory is sold and are expensed in the current period. The commissions paid to employees who sell the jeans to merchandisers, and the cost of shipping the jeans to buyers are all period costs because they are incurred once the jeans have been produced and have no future value to the company.

7. Describe how the income statement of a merchandising company differs from the income statement of a manufacturing company. Also comment on how the income statement from a merchandising company is similar to the income statement of a manufacturing company.

The Cost of goods sold section of the income statement is different for a merchandiser and a manufacturer because a merchandiser buys finished goods whereas a manufacturer produces finished goods. The merchandiser uses the cost of purchases in the computation of Cost of goods sold, where the manufacturer uses the Cost of goods manufactured in the computation of Cost of goods sold. The rest of the income statement is the same for both merchandisers and manufacturers. It includes Sales revenue, Gross profit, Operating expenses, and Operating income.

8. How are the cost of goods manufactured, the cost of goods sold, the income statement, and the balance sheet related for a manufacturing company? What specific items flow from one statement or schedule to the next? Describe the flow of costs between the cost of goods manufactured, the cost of goods sold, the income statement, and the balance sheet for a

manufacturing company.

The Cost of goods manufactured includes all the costs of production, direct material, direct labour, and manufacturing overhead. This amount is used in the preparation of the income statement in the computation of Cost of goods sold where it is added to beginning Finished goods inventory to determine Cost of goods available for sale. The remaining Finished goods that have not been sold is shown on the balance sheet as inventory.

9. What makes a cost relevant or irrelevant when making a decision? Suppose a company is evaluating whether to use its warehouse for storage of its own inventory or whether to rent it out to a local theatre group for housing props. Describe what information might be relevant when making that decision.

When making a decision, a cost is considered relevant or irrelevant depending on whether it changes between the alternatives in the decision. Some relevant costs to consider in the evaluation of whether to use the warehouse for storage or whether to rent it would be the cost of storage elsewhere, how much rent could be charged for the warehouse, insurance costs, and so forth.

10. Explain why "differential cost" and "variable cost" do not have the same meaning. Give an example of a situation in which there is a cost that is a differential cost but not a variable cost.

A differential cost is the difference in cost between two alternative courses of action whereas a variable cost is a cost that changes in total in direct proportion to changes in volume. If a company was deciding between renting office space downtown (more expensive) or in the suburbs (less expensive), the cost of rent would be an example of a differential cost that is not a variable cost. Rent is a fixed cost.

Student answers may vary.

Application & Analysis

Discussion Questions

1. Describe the product that is being produced and the company that produces it.

The product is jeans and the company is Levi Strauss & Co.

2. Describe the six value chain business activities that this product would pass through from its inception to its ultimate delivery to the customer.

The six value chain business activities are:

- **R&D**
- **Design**
- **Production**
- **Marketing**
- **Distribution**
- **Customer Service**

3. List at least three costs that would be incurred in each of the six business activities in the value chain.

- **R&D–investigating new fabrics, customer needs surveys, innovation**
- **Design–style, quality, durability**
- **Production–material, labour, overhead**
- **Marketing–advertisements, sponsorships, Internet presence**

- **Distribution–shipping, administrative costs, storage**
- **Customer Service–warranties, call centre, customer e-mail support**

4. Classify each cost you identified in the value chain as either being an inventoriable product cost or a period cost. Explain your justification.

All the costs, with the exception of production costs, are period costs. Only the production costs are inventoriable.

5. A cost object can be anything for which managers want a separate measurement of cost. List three different potential cost objects other than the product itself for the company you have selected.

- **Advertising**
- **Internal Control**
- **Environmental Sustainability**

6. List a direct cost and an indirect cost for each of the three different cost objects in #5. Explain why each cost would be direct or indirect.

- **Advertising**
  - **Direct–cost of advertising 501 brand jeans**
  - **Indirect–cost of advertising Levi Strauss & Co.**
- **Internal Control**
  - **Direct–cost of separating duties within a department**

    - **Indirect–audit committee costs for the company**
- **Environmental Sustainability**
  - **Direct–zero waste within a department**
  - **Indirect–company-wide energy efficiency**

Student answers will vary.

Classroom Applications

CMA-1
d.

CMA-2
b.

CMA-3.
d.

CMA-4.
c.

CMA-5.
b.

(CMA Adapted)