

# Chapter 2

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## Building Blocks of Managerial Accounting

### Quick Check Questions

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#### Answers:

1. b  
2. b

3. a  
4. b

5. c  
6. b

7. b  
8. d

9. b  
10. c

## Short Exercises

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(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.**

- 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**

- 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.**

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

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

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

**\*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 is 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

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

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

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

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

**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.**

- 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)

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(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.

**Reqs. 1 and 2**

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

**Req. 3**

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

(15 min.) E2-18A

Reqs. 1 and 2

Samsung Electronics								
Cost Classification								
	R & D	Design	Production			Marketing	Distribution	Customer Service
			Direct Materials	Direct Labour	Manufacturing Overhead			
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		
<b>Total costs</b>	<b>\$12</b>	<b>\$ 2</b>	<b>\$67</b>	<b>\$10</b>	<b>\$65</b>	<b>\$ 6</b>	<b>\$ 7</b>	<b>\$ 3</b>

**Req. 3**

**Total inventoriable product costs:**

Direct materials.....	\$ 67
Direct labour.....	10
Manufacturing overhead.....	<u>65</u>
Total inventoriable product cost.....	<u>\$142</u>

**Req. 4**

**The total prime cost is:**

Direct materials.....	\$ 67
Direct labour.....	<u>10</u>
	<u>\$ 77</u>

**Req. 5**

**The total conversion cost is:**

Direct labour.....	\$ 10
Manufacturing overhead.....	<u>65</u>
	<u>\$ 75</u>

(5–10 min.) E2-19A

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

- 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.

**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				
	<b>TOTAL</b>	<b>\$1,250</b>	<b>\$640</b>	<b>\$15</b>	<b>\$130</b>	<b>\$170</b>	<b>\$485</b>

**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

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

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

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

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

(5–10 min.) E2-24A

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

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

(continued) **E2-25A**

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

**\*From schedule of cost of goods manufactured.**

(continues E2-25A) (15–20 min.) **E2-26A**

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

Students may simply use the \$206,000 cost of goods sold computation from E2-25A rather than repeating the details of the computation here.

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

a.

<b>Revenues</b>	<b>\$27,000</b>
<b>Cost of goods sold</b>	<b><u>15,000</u></b>
<b>Gross profit</b>	<b><u>\$12,000</u></b>

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

<b>Beginning raw materials inventory</b>	<b>\$ 2,000</b>	↑
<b>Purchases of direct materials</b>	<b>9,000</b>	
<b>Available for use</b>	<b><u>11,000</u></b>	
<b>Ending raw materials inventory</b>	<b><u>(3,000)</u></b>	
<b>Direct materials used</b>	<b><u>\$ 8,000</u></b>	

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

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

(continued) E2-27A

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

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

<b>a. Cost of operating automated production machinery versus the cost of direct labour when deciding whether to automate production.</b>	<b>Relevant–The cost of employing labour versus automating production will likely differ.</b>
<b>b. Cost of computers purchased six months ago when deciding whether to upgrade to computers with faster processing speed.</b>	<b>Irrelevant–The cost of the computers, which were purchased in the past, is a sunk cost.</b>
<b>c. Cost of purchasing packaging materials from an outside vendor when deciding whether to continue manufacturing the packaging materials in-house.</b>	<b>Relevant–The cost is relevant if it differs between outsourcing and making the materials in-house.</b>
<b>d. The property tax rates in different locales when deciding where to locate the company’s headquarters.</b>	<b>Relevant–The company will incur different property taxes depending on where they locate.</b>
<b>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.</b>	<b>Relevant–The type of gas used by the delivery vans will affect the cost of operating the vans in the future.</b>
<b>f. Depreciation expense on old manufacturing equipment when deciding whether to replace it with newer equipment.</b>	<b>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.</b>

<b>g. The fair market value of old manufacturing equipment when deciding whether to replace it with newer equipment.</b>	<b>Relevant–The fair market value is the amount of money the company could expect to receive from selling the old equipment if they decide to replace it with newer equipment.</b>
<b>h. The interest rate paid on invested funds when deciding how much inventory to keep on-hand.</b>	<b>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.</b>
<b>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.</b>	<b>Irrelevant–The cost of the land is a sunk cost whether the company builds on the land now or in the future.</b>
<b>j. The total amount of the restaurant’s fixed costs when deciding whether to add additional items to the menu.</b>	<b>Most likely irrelevant–Unless the additional items will require the restaurant to purchase additional kitchen equipment, the total fixed cost will probably not change.</b>

- 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.) E2-30A**

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

**(10 min.) E2-31A**

$$\begin{array}{lcl}
 \text{a) Variable costs} & = & 20,000,000 \text{ units} \times \$1 / \text{unit} = \$20,000,000 \\
 + \text{Fixed costs} & & = \underline{5,000,000} \\
 = \text{Total costs} & & = \$25,000,000
 \end{array}$$

$$\text{b) } \$25,000,000 \div 20,000,000 \text{ units} = \$1.25 \text{ per unit}$$

$$\text{c) } \$5,000,000 \div 20,000,000 \text{ units} = \$0.25 \text{ per unit}$$

$$\begin{array}{lcl}
 \text{d) Variable costs} & = & 25,000,000 \text{ units} \times \$1 / \text{unit} = \$25,000,000 \\
 + \text{Fixed costs} & & = \underline{5,000,000} \\
 = \text{Total costs} & & = \$30,000,000
 \end{array}$$

$$\text{e) } \$30,000,000 \div 25,000,000 \text{ units} = \$1.20 \text{ per unit}$$

$$\text{f) } \$5,000,000 \div 25,000,000 \text{ units} = \$0.20 \text{ per unit}$$

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)

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(10 min.) E2-32B

- 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.

**Reqs. 1 and 2**

<b>Accessory Shack</b>						
<b>Cost Classification</b>						
	<u>R &amp; D</u>	<u>Design</u>	<u>Purchases</u>	<u>Marketing</u>	<u>Distribution</u>	<u>Customer Service</u>
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
<b>Total</b>	<u>\$2,700</u>	<u>\$800</u>	<u>\$35,600</u>	<u>\$10,300</u>	<u>\$1,900</u>	<u>\$900</u>

**Req. 3**

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

(15 min.) E2-34B

Reqs. 1 and 2

Plum Electronics								
Cost Classification								
	R & D	Design	Production			Marketing	Distribution	Customer Service
			Direct Materials	Direct Labour	Manufacturing Overhead			
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		
<b>Total costs</b>	<b>\$11</b>	<b>\$ 1</b>	<b>\$66</b>	<b>\$9</b>	<b>\$55</b>	<b>\$ 6</b>	<b>\$ 5</b>	<b>\$ 3</b>

**Req. 3**

**Total inventoriable product costs:**

Direct materials.....	\$ 66
Direct labour.....	9
Manufacturing overhead.....	<u>55</u>
Total inventoriable product cost.....	<u>\$130</u>

**Req. 4**

**The total prime cost is:**

Direct materials.....	\$ 66
Direct labour.....	<u>9</u>
	<u>\$ 75</u>

**Req. 5**

**The total conversion cost is:**

Direct labour.....	\$ 9
Manufacturing overhead.....	<u>55</u>
	<u>\$ 64</u>

(5–10 min.) E2-35B

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

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

**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				
	<b>TOTAL</b>	<b>\$1,470</b>	<b>\$750</b>	<b>\$35</b>	<b>\$190</b>	<b>\$230</b>	<b>\$480</b>

(continued) E2-37B

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

(10 min.) E2-38B

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

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

(10–15 min.) E2-39B

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

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

(5–10 min.) E2-40B

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

(15–20 min.) E2-41B

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

(continued) E2-41B

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

\*From schedule of cost of goods manufactured.

(continues E2-41B) (15–20 min.) E2-42B

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

Students may simply use the \$215,200 cost of goods sold computation from E2-41B rather than repeating the details of the computation here.

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

a.

<b>Revenues</b>	<b>\$27,200</b>
<b>Cost of goods sold</b>	<b><u>15,100</u></b>
<b>Gross profit</b>	<b><u>\$12,100</u></b>

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

<b>Beginning raw materials inventory</b>	<b>\$ 3,000</b>	↑
<b>Purchases of direct materials</b>	<b>9,100</b>	
<b>Available for use</b>	<b><u>12,100</u></b>	
<b>Ending raw materials inventory</b>	<b><u>(3,600)</u></b>	
<b>Direct materials used</b>	<b><u>\$ 8,500</u></b>	

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

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

(continued) E2-43B

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

<b>Beginning finished goods inventory</b>	<b>\$ 4,700</b>
<b>Cost of goods manufactured (from above)</b>	<b><u>16,600</u></b>
<b>Cost of goods available for sale</b>	<b>21,300</b>
<b>Ending finished goods inventory</b>	<b><u>(6,200)</u></b>
<b>Cost of goods sold (from part A)</b>	<b><u>\$15,100</u></b>

(15–20 min.) E2-44B

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

<p><b>g. The interest rate paid on invested funds when deciding how much inventory to keep on-hand.</b></p>	<p><b>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.</b></p>
<p><b>h. The gas mileage of delivery vans, when deciding which make and model of van to purchase for the company’s delivery van fleet.</b></p>	<p><b>Relevant–The amount of gas used by the delivery vans will affect the cost of operating the vans in the future.</b></p>
<p><b>i. Depreciation expense on old manufacturing equipment when deciding whether to replace it with newer equipment.</b></p>	<p><b>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.</b></p>
<p><b>j. The total amount of a coffee shop’s fixed costs when deciding whether to introduce a new drink line.</b></p>	<p><b>Most likely irrelevant–Unless the additional items will require the coffee shop to purchase additional materials, the total fixed cost will probably not change.</b></p>

- 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.) E2-46B

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

<b>m. Rental car fees for company business travelers—contract billed at \$0.25 per kilometre</b>	<b>Variable</b>
<b>n. Commissions paid to the sales staff—7% of sales revenue</b>	<b>Variable</b>
<b>o. Cost of paint used at an auto body shop</b>	<b>Variable</b>

(10 min.) E2-47B

- 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.) P2-48A

Reqs. 1 and 2

ShaZam Cola								
Value Chain Cost Classification								
<i>(In thousands)</i>								
Cost	R&D	Design	Production			Marketing	Distribution	Customer Service
			Direct Materials	Direct Labour	Manufacturing Overhead			
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					
<b>Total costs</b>	<b>\$1,000</b>	<b>\$1,100</b>	<b>\$21,800*</b>	<b>\$8,000</b>	<b>\$4,775</b>	<b>\$1,000</b>	<b>\$400</b>	<b>\$250</b>

\*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.....	<u>4,775</u>
Total inventoriable product costs.....	<u>\$34,575</u>

**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.

**Part One:**

<b>Hannah's Pets</b>		
<b>Income Statement</b>		
<b>Year Ended December 31, 2009</b>		
<b>Sales revenue</b>		<b>\$54,000</b>
<b>Cost of goods sold:</b>		
<b>Beginning inventory</b>	<b>\$15,000</b>	
<b>Purchases of merchandise</b>	<b><u>27,000</u></b>	
<b>Cost of goods available for sale</b>	<b>42,000</b>	
<b>Ending inventory</b>	<b><u>(10,250)</u></b>	
<b>Cost of goods sold</b>		<b><u>31,750</u></b>
<b>Gross profit</b>		<b>22,250</b>
<b>Operating expenses:</b>		
<b>Utilities expense</b>	<b>\$ 2,450</b>	
<b>Rent expense</b>	<b>4,000</b>	
<b>Sales commission expense</b>	<b><u>2,300</u></b>	<b><u>8,750</u></b>
<b>Operating income</b>		<b><u>\$13,500</u></b>

**Part Two:**  
**Req. 1**

<b>Best Friends Manufacturing</b>			
<b>Schedule of Cost of Goods Manufactured</b>			
<b>Year Ended December 31, 2010</b>			
<b>Beginning work in process inventory</b>			<b>\$ 0</b>
<b>Add: Direct materials used:</b>			
<b>Beginning raw materials inventory</b>	<b>\$13,500</b>		
<b>Purchases of direct materials</b>	<b><u>31,000</u></b>		
<b>Available for use</b>	<b>44,500</b>		
<b>Ending raw materials inventory</b>	<b><u>(9,275)</u></b>		
<b>Direct materials used</b>		<b>\$35,225</b>	
<b>Direct labour</b>		<b>18,300</b>	
<b>Manufacturing overhead:</b>			
<b>Utilities for plant</b>	<b>\$ 4,600</b>		
<b>Plant janitorial services</b>	<b>1,250</b>		
<b>Rent on manufacturing plant</b>	<b><u>9,000</u></b>		
		<b><u>14,850</u></b>	
<b>Total manufacturing costs incurred during the year</b>			<b><u>68,375</u></b>
<b>Total manufacturing costs to account for</b>			<b>68,375</b>
<b>Less: Ending work in process inventory</b>			<b><u>(720)</u></b>
<b>Cost of goods manufactured</b>			<b><u>\$67,655</u></b>

**Req. 2**

<b>Best Friends Manufacturing</b>		
<b>Income Statement</b>		
<b>Year Ended December 31, 2010</b>		
<b>Sales revenue</b>		<b>\$105,000</b>
<b>Cost of goods sold:</b>		
Beginning finished goods inventory	\$ 0	
Cost of goods manufactured*	<u>67,655</u>	
Cost of goods available for sale	67,655	
Ending finished goods inventory	<u>(5,700)</u>	
<b>Cost of goods sold</b>		<u>61,955</u>
<b>Gross profit</b>		<b>43,045</b>
<b>Operating expenses:</b>		
Customer service hotline expense	1,000	
Delivery expense	1,500	
Sales salaries expense	<u>5,000</u>	<u>7,500</u>
<b>Operating income</b>		<b><u>\$ 35,545</u></b>

\*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, 2009**

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**Inventory..... \$10,250**

**Best Friends Manufacturing  
Partial Balance Sheet  
December 31, 2010**

---

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

(25–35 min.) P2-50A

<b>Tretinik Manufacturing Company</b>			
<b>Schedule of Cost of Goods Manufactured</b>			
<b>Month Ended June 30, 2009</b>			
<b>Beginning work in process inventory</b>			<b>\$ 21,000</b>
<b>Add: Direct materials used:</b>			
Beginning raw materials inventory	\$27,000	↑	
Purchases of direct materials	51,000		
<u>Available for use</u>	<u>78,000</u>	↓	
Ending raw materials inventory	<u>(23,000)</u>		
<b>Direct materials used</b>		↓ <b>\$55,000</b>	
<b>Direct labour</b>		<b>71,000</b>	↑
<b>Manufacturing overhead</b>		<b>40,000</b>	
<b>Total manufacturing costs</b>			
<u>incurred during the month</u>			<u>166,000</u>
<b>Total manufacturing costs to</b>			
<u>account for</u>			<u>187,000</u>
<b>Less: Ending work in process inventory</b>			<b>(25,000)</b>
<b>Cost of goods manufactured</b>			<b>\$162,000</b>

(continued) P2-50A

<b>Tretinik Manufacturing Company</b>		
<b>Income Statement</b>		
<b>Month Ended June 30, 2009</b>		
<b>Sales revenue</b>		<b>\$463,000</b>
<b>Cost of goods sold:</b>		
<b>Beginning finished goods inventory</b>	<b>\$115,000</b>	
<b>Cost of goods manufactured*</b>	<b>162,000</b>	
<b>Cost of goods available for sale</b>	<b>277,000</b>	
<b>Ending finished goods inventory</b>	<b>(68,000)</b>	
<b>Cost of goods sold</b>		<b>209,000</b>
<b>Gross profit</b>		<b>254,000</b>
<b>Operating expenses:</b>		
<b>Marketing expense</b>	<b>99,000</b>	
<b>Administrative expense</b>	<b>55,000</b>	<b>154,000</b>
<b>Operating income</b>		<b>\$100,000</b>

\*From the Schedule of Cost of Goods Manufactured

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

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

**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.**

**Req. 1**

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

**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

<b>Total Sales Revenue</b>	<b>- Total Costs</b>	<b>= Monthly Profit</b>
<b>(\$10 per pizza × 3,000 pizzas)</b>	<b>- \$12,000</b>	<b>= \$18,000</b>

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

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

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.) P2-53B

Reqs. 1 and 2

Best Value Cola								
Value Chain Cost Classification								
<i>(In thousands)</i>								
Cost	R&D	Design	Production			Marketing	Distribution	Customer Service
			Direct Materials	Direct Labour	Manufacturing Overhead			
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					
<b>Total costs</b>	<b>\$1,040</b>	<b>\$1,400</b>	<b>\$20,730</b>	<b>\$8,000</b>	<b>\$4,625</b>	<b>\$870</b>	<b>\$485</b>	<b>\$235</b>

\*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:**

<b>Direct materials.....</b>	<b>\$20,730</b>
<b>Direct labour.....</b>	<b>8,000</b>
<b>Manufacturing overhead.....</b>	<b><u>4,625</u></b>
<b>Total inventoriable product costs.....</b>	<b><u>\$33,355</u></b>

**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.

## Part One:

<b>Lindsey's Pets</b>		
<b>Income Statement</b>		
<b>Year Ended December 31, 2009</b>		
<b>Sales revenue</b>		<b>\$55,000</b>
<b>Cost of goods sold:</b>		
<b>Beginning inventory</b>	<b>\$12,200</b>	
<b>Purchases of merchandise</b>	<b><u>34,500</u></b>	
<b>Cost of goods available for sale</b>	<b>46,700</b>	
<b>Ending inventory</b>	<b><u>(9,400)</u></b>	
<b>Cost of goods sold</b>		<b><u>37,300</u></b>
<b>Gross profit</b>		<b>17,700</b>
<b>Operating expenses:</b>		
<b>Utilities expense</b>	<b>\$ 1,500</b>	
<b>Rent expense</b>	<b>3,400</b>	
<b>Sales commission expense</b>	<b><u>4,100</u></b>	<b><u>9,000</u></b>
<b>Operating income</b>		<b><u>\$8,700</u></b>

## Part Two:

## Req. 1

<b>Best Friends Manufacturing</b>			
<b>Schedule of Cost of Goods Manufactured</b>			
<b>Year Ended December 31, 2010</b>			
<b>Beginning work in process inventory</b>			<b>\$ 0</b>
<b>Add: Direct materials used:</b>			
Beginning raw materials inventory	\$10,000		
Purchases of direct materials	<u>39,000</u>		
Available for use	49,000		
Ending raw materials inventory	<u>(8,000)</u>		
<b>Direct materials used</b>		<b>\$41,000</b>	
<b>Direct labour</b>		<b>20,000</b>	
<b>Manufacturing overhead:</b>			
Utilities for plant	\$ 4,500		
Plant janitorial services	1,150		
Rent on manufacturing plant	<u>8,400</u>		
		<u>14,050</u>	
<b>Total manufacturing costs incurred during the year</b>			<b><u>75,050</u></b>
<b>Total manufacturing costs to account for</b>			<b>75,050</b>
<b>Less: Ending work in process inventory</b>			<b><u>(4,000)</u></b>
<b>Cost of goods manufactured</b>			<b><u>\$71,050</u></b>

**Req. 2**

<b>Best Friends Manufacturing</b>		
<b>Income Statement</b>		
<b>Year Ended December 31, 2010</b>		
<b>Sales revenue</b>		<b>\$103,000</b>
<b>Cost of goods sold:</b>		
<b>Beginning finished goods inventory</b>	<b>\$ 0</b>	
<b>Cost of goods manufactured*</b>	<b><u>71,050</u></b>	
<b>Cost of goods available for sale</b>	<b>71,050</b>	
<b>Ending finished goods inventory</b>	<b><u>(3,000)</u></b>	
<b>Cost of goods sold</b>		<b><u>68,050</u></b>
<b>Gross profit</b>		<b>34,950</b>
<b>Operating expenses:</b>		
<b>Customer service hotline expense</b>	<b>1,400</b>	
<b>Delivery expense</b>	<b>2,500</b>	
<b>Sales salaries expense</b>	<b><u>4,200</u></b>	<b><u>8,100</u></b>
<b>Operating income</b>		<b><u>\$ 26,850</u></b>

\*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, 2009**

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Inventory..... **\$9,400**

**Best Friends Manufacturing  
Partial Balance Sheet  
December 31, 2010**

---

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

(25–35 min.) P2-55B

<b>Chili Manufacturing Company</b>			
<b><u>Schedule of Cost of Goods Manufactured</u></b>			
<b><u>Month Ended June 30, 2010</u></b>			
<b>Beginning work in process inventory</b>			<b>\$ 27,000</b>
<b>Add: Direct materials used:</b>			
Beginning raw materials inventory	\$24,000	↑	
Purchases of direct materials	56,000		
<u>Available for use</u>	80,000	↓	
Ending raw materials inventory	(28,000)		
<b>Direct materials used</b>		↓	<b>\$52,000</b>
<b>Direct labour</b>			<b>79,000</b>
<b>Manufacturing overhead</b>			<b>43,000</b>
<b>Total manufacturing costs</b>			
<u>incurred during the month</u>			<b>174,000</b>
<b>Total manufacturing costs to</b>			
<u>account for</u>			<b>201,000</b>
<b>Less: Ending work in process</b>			
<b>inventory</b>			<b>(21,000)</b>
<b>Cost of goods manufactured</b>			<b>\$180,000</b>

(continued) P2-55B

<b>Chili Manufacturing Company</b>		
<b><u>Income Statement</u></b>		
<b><u>Month Ended June 30, 2010</u></b>		
<b>Sales revenue</b>		<b>\$470,000</b>
<b>Cost of goods sold:</b>		
<b>Beginning finished goods inventory</b>	↓ \$114,000	
<b>Cost of goods manufactured*</b>	↓ 180,000	
<b>Cost of goods available for sale</b>	↓ 294,000	
<b>Ending finished goods inventory</b>	(66,000) ↑	
<b>Cost of goods sold</b>		<b>228,000</b>
<b>Gross profit</b>		<b>242,000</b>
<b>Operating expenses:</b>		
<b>Marketing expense</b>	98,000 ↓	
<b>Administrative expense</b>	68,000 ↑	<b>166,000</b>
<b>Operating income</b>		<b>\$76,000</b>

\*From the Schedule of Cost of Goods Manufactured

(10 min.) **P2-56B**

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

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

**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.) **P2-57B**

**Req. 1**

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

**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

<b>Total Sales Revenue</b>	<b>- Total Costs</b>	<b>= Monthly Profit</b>
<b>(\$5.50 per pizza × 5,000 pizzas)</b>	<b>- \$11,000</b>	<b>= \$16,500</b>

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

<b>Total Sales Revenue at the new price and volume</b>	<b>- Total Costs at the new volume</b>	<b>= New Monthly Profit</b>
<b>(\$5.00 per pizza × 10,000 pizzas)</b>	<b>- \$17,000</b>	<b>= \$33,000</b>

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.

# Decision Case

(30 min.) C2-58

## 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.

<b>PowerBox</b>					
<b>Inventory Reconstruction Schedule</b>					
<u>Raw materials inventory</u>		<u>Work in Process Inventory</u>		<u>Finished Goods Inventory</u>	
Beginning inventory	\$113,000 (G)	Beginning Inventory	\$ 229,000 (G)	Beginning inventory	\$ 154,000 (G)
+ Purchases	476,000 (G)	+ Direct Materials Used	446,000 <sup>e</sup>	+ Cost of goods manufactured	1,186,000 <sup>c</sup>
		+ 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 <sup>f</sup>	- Ending inventory	239,000 <sup>d</sup>	- Ending inventory	150,000 <sup>b</sup>
= Direct Materials used	\$446,000 <sup>e</sup>	= Cost of goods manufactured	\$1,186,000 <sup>c</sup>	= Cost of goods Sold	\$1,190,000 <sup>a</sup>

(G) = Amount given in the case.

(continued) C2-58

<sup>a</sup>Cost of good sold:

Sales	x	(1 – Gross profit %)	=	Cost of goods sold
\$1,700,000	x	70%	=	\$1,190,000

<sup>b</sup>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

<sup>c</sup>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

<sup>d</sup>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

<sup>e</sup>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

<sup>f</sup>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:**

<b>Raw materials</b>	<b>\$143,000</b>
<b>Work in process</b>	<b>239,000</b>
<b>Finished goods</b>	<b><u>150,000</u></b>
<b>Total inventory cost</b>	<b><u>\$532,000</u></b>

**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?**

**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 chain 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. 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 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, 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**

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## **Basic 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 email 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

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**CMA-1**

**d**

**CMA-2**

**b.**

**CMA-3.**

**d.**

**CMA-4.**

**c.**

**CMA-5.**

**b.**

**(CMA Adapted)**