

Chapter 2

Building Blocks of Managerial Accounting

Quick Check Questions

Answers:

QC2-1. b	QC2-3. a	QC2-5. c	QC2-7. b	QC2-9. b
QC2-2. b	QC2-4. b	QC2-6. b	QC2-8. d	QC2-10. c

Short Exercises

(5 min.) S 2-1

ABC Co. is a **manufacturer**, because it has three kinds of inventory: Raw Materials Inventory, Work in Process Inventory, and Finished Goods Inventory.

DEF Co. is a **merchandise**, because it has a single inventory account.

GHI Co. is a **service** company, because it has no inventory.

(10 min.) S 2-2

- Direct materials are stored in raw materials inventory.
- Kmart is a merchandising company.
- Manufacturers sell from their stock of finished goods inventory.
- Labor costs usually account for the highest percentage of service companies' costs.
- Partially completed units are kept in the work in process inventory.
- Service companies generally have no inventory.
- Intel is a manufacturing company.
- Merchandisers' inventory consists of the cost of merchandise and freight in.
- Manufacturing companies carry three types of inventories: raw materials inventory, work in process inventory, and finished goods inventory.
- H&R Block is a service company.
- Two types of merchandising companies include retailers and wholesalers.

(5-10 min.) S 2-3

- 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.) S 2-4

- a. direct; trace
- b. indirect; allocate
- c. direct; trace
- d. direct; trace
- e. direct; trace
- f. indirect; allocate
- g. direct; trace
- h. indirect; allocate

(5-10 min.) S 2-5

- 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

(5-10 min.) S 2-6

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

(5-10 min.) S 2-7

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

(5 min.) S 2-8

Frame Pro's	
Total Manufacturing Overhead Computation	
Manufacturing overhead:	
Glue for picture frames*	\$ 450
Plant depreciation expense	8,100
Plant supervisor's salary	3,300
Plant janitor's salary	1,500
Oil for manufacturing equipment	110
Total manufacturing overhead	<u>\$13,460</u>

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

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 wood for frames is a direct material, not part of manufacturing overhead.

(5 min.) S 2-9

Retailer		
Cost of Goods Sold Computation		
Cost of goods sold:		
Beginning inventory		\$ 4,200
Purchases	\$42,000	
Import duties	1,100	
Freight-in	<u>3,600</u>	<u>46,700</u>
Cost of goods available for sale		50,900
Ending inventory		<u>(5,400)</u>
Cost of goods sold		<u>\$45,500</u>

(5-10 min.) S 2-10

Gossamer Secrets		
Income Statement		
Sales revenue		\$39,330,000
Cost of goods sold:		
Beginning inventory	\$ 3,350,000	
Purchases	<u>23,975,000</u>	
Cost of goods available for sale	27,325,000	
Ending inventory	<u>(4,315,000)</u>	
Cost of goods sold		<u>(23,010,000)</u>
Gross profit		16,290,000
Operating expenses		<u>(6,150,000)</u>
Operating income		<u>\$ 10,140,000</u>

(5 min.) S 2-11

Allterrain		
Computation of Direct Materials Used		
Direct materials used:		
Beginning raw materials inventory		\$ 3,900
Purchases of direct materials	\$15,600	
Import duties	900	
Freight-in	<u>600</u>	<u>17,100</u>
Direct materials available for use		21,000
Ending raw materials inventory		<u>(2,000)</u>
Direct materials used		<u>\$19,000</u>

(5 min.) S 2-12

Robinson Manufacturing		
Schedule of Cost of Goods Manufactured		
Beginning work in process inventory		\$ 78,000
Add: Direct materials used	\$523,000	
Direct labor	215,000	
Manufacturing overhead	<u>774,500</u>	
Total manufacturing costs incurred during period		<u>1,512,000</u>
Total manufacturing costs to account for		1,590,500
Less: Ending work in process inventory		<u>(84,000)</u>
Cost of goods manufactured		<u>\$1,506,500</u>

(10 min.) S 2-13

Relevant quantitative information might include:

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

Relevant qualitative information might include:

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

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

Student responses may vary.

(10 min.) S 2-14

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

Exercises (Group A)

(10 min.) E 2-15A

- a. Wholesalers buy products in bulk from producers, mark them up, and resell them to retailers.
- b. Most for-profit organizations can be described as being in one (or more) of three categories: merchandising, service, and manufacturing.
- c. Honda Motors converts raw materials inventory into finished products.
- d. Inventory (merchandise) for a company such as Staples includes all of the costs necessary to purchase products and get them onto the store shelves.
- e. Land's End, Sears Roebuck & Co., and LL Bean are all examples of merchandising companies.
- f. An insurance company, a health care provider, and a bank are all examples of service companies.
- g. Work in process inventory is composed of goods partially through the manufacturing process (not finished yet).
- h. Manufacturing companies report three types of inventory on a balance sheet.
- i. Service companies typically do not have an inventory account.

(10-15 min.) E 2-16A

Reqs. 1 and 2

Radio Shack						
Cost Classification						
	<u>R & D</u>	<u>Design</u>	<u>Purchases</u>	<u>Marketing</u>	<u>Distribution</u>	<u>Customer Service</u>
Research on selling satellite radio service	\$ 600					
Purchases of merchandise			\$39,000			
Rearranging store layout		\$700				
Newspaper advertisements				\$5,800		
Depreciation expense on delivery trucks					\$1,100	
Payment to consultant for advice on location of new store	2,100					
Freight-in			3,700			
Salespersons' salaries				4,300		
Customer complaint department						\$800
Total	<u>\$2,700</u>	<u>\$700</u>	<u>\$42,700</u>	<u>\$10,100</u>	<u>\$1,100</u>	<u>\$800</u>

Req. 3

The total inventoriable product costs are \$42,700.

(15 min.) E 2-17A

Reqs. 1, 2, and 3

Samsung Electronics								
Cost Classification								
	R & D	Design	Production			Marketing	Distribution	Customer Service
			Direct Materials	Direct Labor	Manufacturing Overhead			
Salaries of salespeople						\$ 5		
Depreciation on plant and equipment					\$70			
Exterior case for phone			\$ 6					
Scientists' salaries	\$11							
Delivery expense							\$ 8	
Chip set			\$62					
Rearrange production process		\$ 1						
Assembly-line workers' wages				\$12				
Technical support hotline								\$ 3
1-800 (toll-free) line for customer orders	-					5		
Total costs	<u>\$11</u>	<u>\$ 1</u>	<u>\$68</u>	<u>\$12</u>	<u>\$70</u>	<u>\$ 10</u>	<u>\$ 8</u>	<u>\$ 3</u>

Req. 4

Total inventoriable product costs:

Direct materials.....	\$ 68
Direct labor.....	12
Manufacturing overhead.....	70
Total inventoriable product cost.....	<u>\$150</u>

Req. 5

The total prime cost is:

Direct materials.....	\$ 68
Direct labor.....	12
	<u>\$ 80</u>

Req. 6

The total conversion cost is:

Direct labor.....	\$ 12
Manufacturing overhead.....	70
	<u>\$ 82</u>

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

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

(5-10 min.) E 2-19A

Cost	Direct or Indirect cost?
a. Manager of Juniors department	Direct
b. Cost of Juniors clothing	Direct
c. Cost of radio advertising for the store	Indirect
d. Cost of bags used to package customer purchases at the main registers for the store	Indirect
e. Juniors department sales clerks	Direct
f. Electricity for the building	Indirect
g. Depreciation of the building	Indirect
h. Cost of hangers used to display the clothing in the store	Indirect
i. The Medina Kohl's store manager's salary	Indirect
j. Juniors clothing buyers' salaries (these buyers buy for all Juniors departments of Kohl's stores)	Indirect
k. Cost of costume jewelry on the mannequins in the Juniors department	Direct
l. Cost of security staff at the Medina store	Indirect

(10 min.) E 2-20A

- a. Company-paid fringe benefits may include health insurance, retirement plan contributions, payroll taxes, and paid vacations.
- b. Conversion costs are the costs of transforming direct materials into finished goods.
- c. Direct material plus direct labor equals prime costs.
- d. The allocation process results into a less precise cost figure being assigned to the cost objects.
- e. Total costs include the costs of all resources used throughout the value chain.
- f. Inventoriable product costs are initially treated as assets on the balance sheet.
- g. Steel, tires, engines, upholstery, carpet, and dashboard instruments are used in the assembly of a car. Since the manufacturer can trace the cost of these materials (including freight-in and import duties) to specific units or batches of vehicles, they are considered direct costs of the vehicles.
- h. Indirect costs cannot be directly traced to a(n) cost object.
- i. Costs that can be traced directly to a(n) cost object are called direct costs.
- j. When manufacturing companies sell their finished products, the costs of those finished products are removed from inventory and expensed as cost of goods sold.
- k. Period costs include R&D, marketing, distribution, and customer service costs.
- l. GAAP requires companies to use only inventoriable product costs for external financial reporting.

Req. 1

		DM	DL	IM	IL	Other MOH	Period
a.	Depreciation on forklifts					\$60	
b.	Property tax on corporate marketing offices						\$30
c.	Cost of warranty repairs						\$220
d.	Factory janitors' wages				\$10		
e.	Cost of designing new plant layout						\$190
f.	Machine operators' health insurance		\$40				
g.	Airplane seats	\$270					
h.	Depreciation on administrative offices						\$70
i.	Assembly workers' wages		\$670				
j.	Plant utilities					\$110	
k.	Production supervisors' salaries				\$160		
l.	Jet engines	\$1,100					
m.	Machine lubricants			\$20			
	TOTAL	\$1,370	\$710	\$20	\$170	\$170	\$510

Req. 2 Total manufacturing overhead costs = IL + IM + Other MOH
= \$170 + 20 + 170 = \$360

Req. 3 Total inventoriable product costs = DL + DM + MOH
= \$710 + 1,370 + 360 = \$2,440

Req. 4 Total prime costs = DL + DM
= \$710 + 1,370 = \$2,080

Req. 5 Total conversion costs = DL + MOH
= \$710 + 360 = \$1,070

Req. 6 Total period costs = \$510

(10 min.) E 2-22A

Knights		
Current Assets		
Current assets:		
Cash		\$ 15,300
Accounts receivable		79,000
Inventories:		
Raw materials inventory	\$9,800	
Work in process inventory	42,000	
Finished goods inventory	<u>59,000</u>	
Total inventories		110,800
Prepaid expenses		<u>6,100</u>
Total current assets		<u>\$211,200</u>

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

(10-15 min.) E 2-23A

Pampered Pets		
Income Statement		
For Last Year		
Sales revenue		\$ 1,010,000
Cost of goods sold:		
Beginning inventory	\$ 16,800	
Purchases and freight-in*	<u>658,900</u>	
Cost of goods available for sale	675,700	
Ending inventory	<u>(13,700)</u>	
Cost of goods sold		<u>(662,000)</u>
Gross profit		348,000
Operating expenses:		
Web site expenses	\$ 55,000	
Marketing expenses	33,000	
Freight-out expenses	<u>28,000</u>	
Total operating expenses		<u>(116,000)</u>
Operating income		<u>\$ 232,000</u>

*purchases of \$639,000 + freight-in of \$19,900 = \$658,900

(5-10 min.) E 2-24A

Sharpland Industries			
Cost of Goods Calculation			
Beginning work in process inventory			\$ 22,000
Add: Direct materials used			
Beginning raw materials inventory	\$ 14,000		
Plus: Purchases of direct materials	<u>58,000</u>		
Direct materials available for use	72,000		
Less: Ending raw materials inventory	<u>(17,000)</u>		
Direct materials used		\$ 55,000	
Direct labor		132,000	
Manufacturing overhead		<u>164,000</u>	
Total manufacturing costs incurred during the period			<u>351,000</u>
Total manufacturing costs to account for			373,000
Less: Ending work in process inventory			<u>(18,000)</u>
Cost of goods manufactured			<u>\$355,000</u>

(15-20 min.) E 2-25A

Quality Aquatic Company			
Cost of Goods Calculation			
Beginning work in process inventory			\$ 36,000
Add: Direct materials used:			
Beginning raw materials inventory	\$ 29,000		
Purchases of direct materials	<u>73,000</u>		
Available for use	102,000		
Ending raw materials inventory	<u>(31,000)</u>		
Direct materials used		\$71,000	
Direct labor		89,000	
Manufacturing overhead:			
Indirect labor	\$ 42,000		
Insurance on plant	10,500		
Depreciation - plant building and equipment	13,000		
Repairs and maintenance – plant	<u>4,000</u>	<u>69,500</u>	
Total manufacturing costs incurred during the year			<u>229,500</u>
Total manufacturing costs to account for			265,500
Less: Ending work in process inventory			<u>(30,000)</u>
Cost of goods manufactured			<u>\$235,500</u>

(continued) E 2-25A

Quality Aquatic Company	
Schedule of Cost of Goods Sold	
Beginning finished goods inventory	\$ 22,000
Cost of goods manufactured*	<u>235,500</u>
Cost of goods available for sale	257,500
Ending finished goods inventory	<u>(28,000)</u>
Cost of goods sold	<u>\$229,500</u>

*From schedule of cost of goods manufactured.

(continues E 2-25A) (15-20 min.) E 2-26A

Quality Aquatic Company		
Income Statement		
For Last Year		
Sales revenue (32,000 × \$12)		\$462,000
Cost of goods sold:		
Beginning finished goods inventory	\$ 22,000	
Cost of goods manufactured		
(E 2-25A)	<u>235,500</u>	
Cost of goods available for sale	257,500	
Ending finished goods inventory	<u>(28,000)</u>	
Cost of goods sold		<u>229,500</u>
Gross profit		232,500
Operating expenses:		
Marketing expenses	\$ 83,000	
General and administrative expenses	<u>26,500</u>	<u>109,500</u>
Operating income		<u>\$ 123,000</u>

Students may simply use the \$229,500 cost of goods sold computation from E 2-25A, rather than repeating the details of the computation here.

(25 min.) E 2-27A

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

a.

Revenues	\$27,300
Cost of goods sold	<u>15,000</u>
Gross profit	<u>\$12,700</u>

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	<u>9,200</u>
Available for use	<u>11,000</u>
Ending raw materials inventory	<u>(3,300)</u>
Direct materials used	<u>\$ 8,000</u>



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 labor	3,100	
Manufacturing overhead	<u>6,300</u>	<u>17,400</u>
Total manufacturing costs to account for		17,400
Ending work in process inventory		<u>(1,800)</u>
Cost of goods manufactured		<u>\$15,600</u>

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

Beginning finished goods inventory	\$ 4,200
Cost of goods manufactured (from above)	<u>15,600</u>
Cost of goods available for sale	19,800
Ending finished goods inventory	<u>(5,200)</u>
Cost of goods sold (from part A)	<u>\$14,600</u>

(15-20 min.) E 2-28A

a. The type of fuel (gas or diesel) 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.
b. Depreciation expense on old manufacturing equipment when deciding whether or not 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.
c. The fair market value of old manufacturing equipment when deciding whether or not 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 they decide to replace it with newer equipment.
d. 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.
e. The cost of land purchased 3 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.
f. 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.
g. Cost of operating automated production machinery versus the cost of direct labor, when deciding whether to automate production.	Relevant – the cost of employing labor versus automating production will likely differ.
h. Cost of computers purchased 6 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.
i. Cost of purchasing packaging materials from an outside vendor, when deciding whether to continue manufacturing the packaging materials	Relevant – the cost is relevant if it differs between outsourcing and making the materials in-house.

in-house.	
j. 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 they locate.

(10 min.) E2-29A

- a. In the long-run, most costs are controllable, meaning that management is able to influence or change the amount of the cost.
- b. Gasoline is one of many variable costs in the operation of a motor vehicle.
- c. Within the relevant range, fixed costs do not change in total with changes in product volume.
- d. Costs that differ between alternatives are called differential costs.
- e. The average cost per unit declines as a production facility produces more units.
- f. A marginal cost is the cost of making one more unit.
- g. 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.
- h. Sunk costs are costs that have already been incurred.

(10 min.) E 2-30A

COST	Variable or Fixed
a. Shipping costs for Amazon.com	Variable
b. Cost of fuel used for a national trucking company	Variable
c. Sales commissions at a car dealership	Variable
d. Cost of fabric used at a clothing manufacturer	Variable
e. Monthly office lease costs for a CPA firm	Fixed
f. Cost of fruit sold at a grocery store	Variable
g. Cost of coffee used at a Starbucks store	Variable
h. Monthly rent for a nail salon	Fixed
i. Depreciation of exercise equipment at the YMCA	Fixed
j. Hourly wages paid to sales clerks at Best Buy	Variable
k. Property taxes for a restaurant	Fixed
l. Monthly insurance costs for the home office of a company	Fixed
m. Monthly flower costs for a florist	Variable
n. Monthly depreciation of equipment for a customer service office	Fixed
o. Monthly cost of French fries at a McDonald's restaurant	Variable

(10 min.) E 2-31A

- | | | | | | |
|----|----------------|---|-------------------------------|---|------------------|
| 1) | Variable costs | = | 20,000,000 units × \$1 / unit | = | \$60,000,000 |
| | + Fixed costs | | | = | <u>4,000,000</u> |
| | = Total costs | | | = | \$64,000,000 |
| 2) | \$64,000,000 | ÷ | 20,000,000 units | = | \$3.20 per unit |
| 3) | \$ 4,000,000 | ÷ | 20,000,000 units | = | \$0.20 per unit |
| 4) | Variable costs | = | 75,000,000 units × \$1 / unit | = | \$75,000,000 |
| | + Fixed costs | | | = | <u>4,000,000</u> |
| | = Total costs | | | = | \$79,000,000 |
| 5) | \$79,000,000 | ÷ | 25,000,000 units | = | \$3.16 per unit |
| 6) | \$ 4,000,000 | ÷ | 25,000,000 units | = | \$0.16 per unit |
- 7) 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.) E 2-32B

- During production, manufacturing companies use direct labor and manufacturing overhead to convert direct materials into finished products.
- Merchandising companies have only one category of inventory on their balance sheet.
- During production as units are completed, they are moved out of work in process inventory into finished goods inventory.
- Inventory merchandise includes all of the costs associated with getting the goods to the store including freight-in costs and import duties if the products for resale were purchased overseas.
- Merchandising companies can either be wholesalers or retailers.
- Raw materials inventory includes the wood, fasteners, and braces used in building picnic tables at a park furniture manufacturer.
- Wholesalers sell products to other companies (typically not to individual consumers).
- Service companies make up the largest sector of the U.S. economy.
- Ford Motor Company and Post Cereals can be described as manufacturing companies.

Reqs. 1 and 2

Accessory Shack						
Cost Classification						
	<u>R & D</u>	<u>Design</u>	<u>Purchases</u>	<u>Marketing</u>	<u>Distribution</u>	<u>Customer Service</u>
Research on selling satellite radio service	\$400					
Purchases of merchandise			\$30,000			
Rearranging store layout		\$950				
Newspaper advertisements				\$5,200		
Depreciation expense on delivery trucks					\$1,400	
Payment to consultant for advice on location of new store	2,500					
Freight-in			3,900			
Salespersons' salaries				4,000		
Customer complaint department						\$700
Total	<u>\$2,900</u>	<u>\$950</u>	<u>\$33,900</u>	<u>\$9,200</u>	<u>\$1,400</u>	<u>\$700</u>

Req. 3

The total inventoriable product costs are the \$30,000 of purchases plus the \$3,900 freight-in = \$33,900.

Reqs. 1, 2, and 3

Cost Classification								
	R & D	Design	Production			Marketing	Distribution	Customer Service
			Direct Materials	Direct Labor	Manufacturing Overhead			
Salaries of salespeople						\$ 7		
Depreciation on plant and equipment					\$75			
Exterior case for phone			\$ 6					
Scientists' salaries	\$10							
Delivery expense							\$ 5	
Chip set			\$60					
Rearrange production process		\$ 4						
Assembly-line workers' wages				\$12				
Technical support hotline								\$ 2
1-800 (toll-free) line for customer orders	-					\$ 3		
Total costs	<u>\$10</u>	<u>\$ 4</u>	<u>\$66</u>	<u>\$12</u>	<u>\$75</u>	<u>\$10</u>	<u>\$ 5</u>	<u>\$ 2</u>

Req. 4

Total inventoriable product costs:

Direct labor.....	\$ 12
Direct materials.....	66
Manufacturing overhead.....	<u>75</u>
Total inventoriable product cost.....	<u>\$153</u>

Req. 5

The total prime cost is:

Direct labor.....	\$ 12
Direct materials.....	<u>66</u>
	<u>\$ 78</u>

Req. 6

The total conversion cost is:

Direct labor.....	\$ 12
Manufacturing overhead.....	<u>75</u>
	<u>\$ 87</u>

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

- Distributing
- Customer service
- Marketing
- Design
- Research and Development (R&D)
- Purchasing

Cost	Direct or Indirect cost?
a. Salary of the manager of the dealership	Indirect
b. Sales commissions	Direct
c. Cost of new cars	Direct
d. Cost of car detailing	Direct
e. Salary of the receptionist for the dealership	Indirect
f. Depreciation on the building	Indirect
g. Advertising in the local newspaper	Indirect
h. Salary of the sales manager for the New Car Sales department	Direct
i. Cost of drinks provided in the reception area	Indirect
j. Cost of gasoline used at the dealership	Indirect
k. Utilities expense for the building	Direct
l. New car brochures provided to prospective buyers	Indirect

- Material and labor costs that can be traced directly to particular units manufactured are direct costs if the manufactured product is the cost object.
- Direct costs are outlays that can be identified with a specific product or department.
- Inventoriable product costs include the direct costs attributable to the production of the goods.
- In manufacturing, when goods are sold, costs are transferred from the finished goods inventory account to cost of goods sold.
- Allocation is used to assign the indirect costs to a product or department.
- Inventoriable costs include direct material, direct labor, and manufacturing overhead costs.
- Prime costs are the combination of direct materials and direct labor.
- Period costs are expenditures that are not directly associated with the production of a product, such as advertising costs and general administrative costs.
- Nearly anything of interest to a decision maker can be a cost object, including products, stores, and departments.
- Raw materials inventory, work in process inventory, and finished goods inventory are considered to be assets on the balance sheet.
- Direct costs are those outlays that can be traced to a particular cost object.
- Fringe benefits are the cost of compensation provided employees besides the employees' salaries and wages.

Req. 1

		DM	DL	IM	IL	Other MOH	Period
a.	Depreciation on forklifts					\$80	
b.	Property tax on corporate marketing offices						\$35
c.	Cost of warranty repairs						\$235
d.	Factory janitors' wages				\$10		
e.	Cost of designing new Plant layout						\$185
f.	Machine operators' health insurance		\$70				
g.	Airplane seats	\$270					
h.	Depreciation on admin offices						\$50
i.	Assembly workers' wages		\$690				
j.	Plant utilities					\$140	
k.	Production supervisors' salaries				\$110		
l.	Jet engines	\$1,300					
m.	Machine lubricants			\$15			
	TOTAL	<u>\$1,570</u>	<u>\$760</u>	<u>\$15</u>	<u>\$120</u>	<u>\$220</u>	<u>\$505</u>

Req. 2

Total manufacturing overhead costs	=	IL + IM + Other MOH
	=	\$120 + 15 + 220 = \$355

$$\begin{aligned} \text{Req. 3} \quad \text{Total inventoriable product costs} &= \text{DL} + \text{DM} + \text{MOH} \\ &= \$760 + 1,570 + 355 = \$2,685 \end{aligned}$$
$$\begin{aligned} \text{Req. 4} \quad \text{Total prime costs} &= \text{DL} + \text{DM} \\ &= \$760 + 1,570 = \$2,330 \end{aligned}$$
$$\begin{aligned} \text{Req. 5} \quad \text{Total conversion costs} &= \text{DL} + \text{MOH} \\ &= \$760 + 355 = \$1,115 \end{aligned}$$

Req. 6 Total period costs = \$505

(10 min.) E 2-39B

Saints		
Current Assets		
Current assets:		
Cash		\$ 14,700
Accounts receivable		81,000
Inventories:		
Raw materials inventory	\$ 9,600	
Work in process inventory	40,000	
Finished goods inventory	<u>61,000</u>	
Total inventories		110,600
Prepaid expenses		<u>5,900</u>
Total current assets		<u>\$212,200</u>

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

(10-15 min.) E 2-40B

Pretty Pets		
Income Statement		
For Current Year		
Sales revenue		\$ 997,000
Cost of goods sold:		
Beginning inventory	\$ 17,350	
Purchases and freight-in*	<u>654,500</u>	
Cost of goods available for sale	671,850	
Ending inventory	<u>(13,100)</u>	
Cost of goods sold		<u>(658,750)</u>
Gross profit		338,250
Operating expenses:		
Web site expenses	\$ 56,500	
Marketing expenses	33,200	
Freight-out expenses	<u>27,500</u>	
Total operating expenses		<u>(117,200)</u>
Operating income		<u>\$ 221,050</u>

*purchases of \$635,000 + freight-in of \$19,500 = \$654,500

(5-10 min.) E 2-41B

Fitzcarron Industries			
Calculation of Goods Manufactured			
Beginning work in process inventory			\$ 29,000
Add: Direct materials used			
Beginning raw materials inventory	\$ 17,000		
Plus: Purchases of direct materials	<u>58,000</u>		
Direct materials available for use	75,000		
Less: Ending raw materials inventory	<u>(18,000)</u>		
Direct materials used		\$ 57,000	
Direct labor		128,000	
Manufacturing overhead		<u>161,000</u>	
Total manufacturing costs incurred during the period			<u>346,000</u>
Total manufacturing costs to account for			375,000
Less: Ending work in process inventory			<u>(20,000)</u>
Cost of goods manufactured			<u>\$355,000</u>

(15-20 min.) E 2-42B

Crystal Bay Company			
Calculation of Cost of Goods Manufactured			
Beginning work in process inventory			\$ 35,000
Add: Direct materials used:			
Beginning raw materials inventory	\$ 26,000		
Purchases of direct materials	<u>73,000</u>		
Available for use	99,000		
Ending raw materials inventory	<u>(33,000)</u>		
Direct materials used		\$66,000	
Direct labor		86,000	
Manufacturing overhead:			
Indirect labor	\$ 40,000		
Insurance on plant	10,000		
Depreciation - plant building and equipment	13,200		
Repairs and maintenance – plant	<u>4,200</u>	<u>67,400</u>	
Total manufacturing costs incurred during the year			<u>219,400</u>
Total manufacturing costs to account for			254,400
Less: Ending work in process inventory			<u>(31,000)</u>
Cost of goods manufactured			<u>\$223,400</u>

(15-20 min.) E 2-43B

Crystal Bay Company		
Income Statement		
For Last Year		
Sales revenue (37,000 × \$14)		\$540,000
Cost of goods sold:		
Beginning finished goods inventory	\$ 14,000	
Cost of goods manufactured		
(E 2-41B)	<u>223,400</u>	
Cost of goods available for sale	237,400	
Ending finished goods inventory	<u>(29,000)</u>	
Cost of goods sold		<u>208,400</u>
Gross profit		331,600
Operating expenses:		
Marketing expenses	\$ 76,000	
General and administrative expenses	<u>27,500</u>	<u>103,500</u>
Operating income		\$ <u>228,100</u>

Students may simply use the \$208,400 cost of goods sold computation from E 2-42B, rather than repeating the details of the computation here.

(25 min.) E 2-44B

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

a.

Revenues	\$27,900
Cost of goods sold	<u>15,500</u>
Gross profit	<u>\$12,400</u>

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

Beginning raw materials inventory	\$ 2,400
Purchases of direct materials	<u>9,600</u>
Available for use	<u>12,000</u>
Ending raw materials inventory	<u>(3,500)</u>
Direct materials used	<u>\$ 8,500</u>

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 labor	3,400	
Manufacturing overhead	<u>6,300</u>	<u>18,200</u>
Total manufacturing costs to account for		18,200
Ending work in process inventory		<u>(1,000)</u>
Cost of goods manufactured		<u>\$17,200</u>

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

Beginning finished goods inventory	\$ 4,900
Cost of goods manufactured (from above)	<u>17,200</u>
Cost of goods available for sale	22,100
Ending finished goods inventory	<u>(6,600)</u>
Cost of goods sold (from part A)	<u>\$15,500</u>

(15-20 min.) E 2-45B

a. Fuel economy when purchasing new trucks for the delivery fleet	Relevant.
b. Real estate property tax rates when selecting the location for a new order processing center	Relevant
c. The purchase price of the old computer when replacing it with a new computer with improved features	Irrelevant
d. The average cost of vehicle operation when purchasing a new delivery van	Relevant
e. The original cost of the current stove when selecting a new, more efficient stove for a restaurant	Irrelevant
f. The fair market value (trade-in value) of the existing forklift when deciding whether to replace it with a new, more efficient model	Relevant
g. The cost of land when determining where to build a new call center	Relevant
h. The cost of renovations when deciding whether to build a new office building or to renovate the existing office building	Relevant
i. The cost of production when determining whether to continue to manufacture the screen for a smartphone or to purchase it from an outside supplier	Relevant
j. Local tax incentives when selecting the location of a new office complex for a company's headquarters	Relevant

(10 min.) E2-46B

- Costs that change in total in direct proportion to changes in volume are called variable costs.
- Costs and benefits that are the same for all alternatives considered and can be ignored are called irrelevant costs.
- Sunk costs are irrelevant costs that have already been incurred and cannot be changed or recovered.
- The marginal costs at any production level is the cost required to produce the next unit.
- Research and development and advertising costs are considered to be controllable costs because managers can influence the amount of these costs.
- Fixed costs are costs that stay constant in total over the relevant range despite changes in volume.
- Average cost is equal to the total costs of production divided by the number of units produced.
- Differential costs are the differences in costs between two alternative courses of action.

(10 min.) E 2-47B

COST	Variable or Fixed
a. Total wages paid to the hourly production workers	Variable
b. Property taxes at a manufacturer	Fixed
c. Freight costs at Ford Motor Company	Variable
d. Cost of fuel for the delivery department of a home improvement store	Variable
e. Packaging costs for Crate and Barrel's web sales operations	Variable
f. Annual salary for a manager of a fast food restaurant	Fixed
g. Shipping costs for Amazon.com	Variable
h. Building lease cost for a hair care salon	Fixed
i. Coffee costs for a coffee shop	Variable
j. Monthly straight-line depreciation costs for a factory	Fixed
k. Monthly travel expenses for sales people	Variable
l. Property insurance costs on a warehouse	Fixed
m. Cost of postage for the bills mailed by an electric company	Variable
n. Cost of produce at a grocery store	Variable
o. Monthly lawn maintenance fee for a tenant in an office building	Fixed

(10 min.) E 2-48B

a) Variable costs	=	20,000,000 units × \$1 / unit	=	\$20,000,000
+ Fixed costs			=	<u>4,000,000</u>
= Total costs			=	<u>\$24,000,000</u>

$$\text{b) } \$24,000,000 \div 20,000,000 \text{ units} = \$1.20 \text{ per unit}$$

c) $\$4,000,000 \div 20,000,000 \text{ units} = \0.20 per unit

d) Variable costs	=	20,000,000 units × \$1.20 / unit	=	\$25,000,000
+ Fixed costs			=	<u>4,000,000</u>
= Total costs			=	\$29,000,000

$$\text{e) } \$29,000,000 \div 25,000,000 \text{ units} = \$1.16 \text{ per unit}$$

$$\text{f) } \$ 4,000,000 \div 25,000,000 \text{ units} = \$0.16 \text{ per unit}$$

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.

Problems (Group A)

(30 min.) P 2-49A

Reqs. 1, 2, and 3

Fizz Cola								
Value Chain Cost Classification								
(In thousands)								
Cost	R&D	Design	Production			Marketing	Distribution	Customer Service
			Direct Materials	Direct Labor	Manufacturing Overhead			
Plant utilities					\$ 850			
Depreciation on plant and equipment					3,100			
Payment for new recipe	\$1,140							
Salt*					25			
Replace products with expired dates								\$ 35
Rearranging plant layout		\$1,400						
Lemon syrup			\$18,000					
Lime flavoring			980					
Production costs of "cents-off" store coupons for customers						\$ 370		
Truck drivers' wages							\$265	
Bottles			1,410					
Sales commissions						350		
Plant janitors' wages					1,000			
Wages of workers who mix syrup				\$7,700				
Customer hotline								180
Depreciation on delivery trucks							300	
Freight-in			1,400					
Total costs	\$1,140	\$1,400	\$21,790*	\$7,700	\$4,975	\$720	\$565	\$215

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

Req. 4

Total inventoriable product costs:

Direct materials	\$21,790
Direct labor.....	7,700
Manufacturing overhead.....	<u>4,975</u>
Total inventoriable product costs.....	<u>\$34,465</u>

Req. 5

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.) P 2-50A

Part One:

Pam's Posies Floral		
Income Statement		
Year Ended December 31, 2011		
Sales revenue		\$55,000
Cost of goods sold:		
Beginning inventory	\$12,200	
Purchases of merchandise	<u>37,000</u>	
Cost of goods available for sale	49,200	
Ending inventory	<u>(9,800)</u>	
Cost of goods sold		<u>39,400</u>
Gross profit		15,600
Operating expenses:		
Utilities expense	\$ 4,300	
Rent expense	3,200	
Sales commission expense	<u>1,100</u>	<u>8,600</u>
Operating income		<u>\$7,000</u>

Part Two:

Req. 1

Floral Manufacturing			
Calculation of Cost of Goods Manufactured			
Year Ended December 31, 2012			
Beginning work in process inventory			\$ 0
Add: Direct materials used:			
Beginning raw materials inventory	\$18,000		
Purchases of direct materials	<u>35,000</u>		
Available for use	53,000		
Ending raw materials inventory	<u>(9,500)</u>		
Direct materials used		\$43,500	
Direct labor		24,000	
Manufacturing overhead:			
Utilities for plant	\$ 8,200		
Plant janitorial services	4,200		
Rent on manufacturing plant	<u>1,050</u>		
		<u>13,450</u>	
Total manufacturing costs incurred during the year			<u>80,950</u>
Total manufacturing costs to account for			80,950
Less: Ending work in process inventory			<u>(5,000)</u>
Cost of goods manufactured			<u>\$75,950</u>

Req. 2

Floral Manufacturing		
Income Statement		
Year Ended December 31, 2012		
Sales revenue		\$109,000
Cost of goods sold:		
Beginning finished goods inventory	\$ 0	
Cost of goods manufactured*	<u>75,950</u>	
Cost of goods available for sale	75,950	
Ending finished goods inventory	<u>(5,500)</u>	
Cost of goods sold		<u>70,450</u>
Gross profit		38,550
Operating expenses:		
Customer service hotline expense	1,600	
Delivery expense	3,000	
Sales salaries expense	<u>4,500</u>	<u>9,100</u>
Operating income		<u>\$ 29,450</u>

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

Req. 3

A manufacturer's cost of goods sold is based on its cost of goods manufactured. In contrast, a merchandiser's cost of goods sold is based on its merchandise purchases.

Part Three: Reqs. 1 and 2

Pam Posies Floral Partial Balance Sheet December 31, 2011		Floral Manufacturing Partial Balance Sheet December 31, 2012	
Inventory.....	<u>\$9,800</u>	Raw materials inventory.....	\$ 9,500
		Work in process inventory..	5,000
		Finished goods inventory...	<u>5,500</u>
		Total inventory.....	<u>\$20,000</u>

(25-35 min.) P 2-51A

Elly Manufacturing Company			
Calculation of Cost of Goods Manufactured			
Month Ended June 30			
Beginning work in process inventory			\$ 21,000
Add: Direct materials used:			
Beginning raw materials inventory	\$24,000	↑	
Purchases of direct materials	<u>53,000</u>		
Available for use	77,000		
Ending raw materials inventory	<u>(23,000)</u>	↓	
Direct materials used		\$54,000	
Direct labor		<u>70,000</u>	↑
Manufacturing overhead		<u>45,000</u>	
Total manufacturing costs			
incurred during the month			<u>169,000</u>
Total manufacturing costs to			
account for			<u>190,000</u>
Less: Ending work in process inventory			<u>(27,000)</u>
Cost of goods manufactured			<u>\$163,000</u>

Elly Manufacturing Company		
Income Statement		
Month Ended June 30		
Sales revenue		\$510,000
Cost of goods sold:		
Beginning finished goods inventory	\$116,000	
Cost of goods manufactured*	<u>163,000</u>	
Cost of goods available for sale	<u>279,000</u>	
Ending finished goods inventory	<u>(69,000)</u>	
Cost of goods sold		<u>210,000</u>
Gross profit		<u>300,000</u>
Operating expenses:		
Marketing expense	94,000	
Administrative expense	<u>60,000</u>	
Operating income		<u>\$146,000</u>

*From the Calculation of Cost of Goods Manufactured

1) As shown below, the quantitative data suggests you would net \$10,150 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	\$44,000	\$49,000
Rent	0	(12,000)
Food	0	(2,500)
Cable and Internet	0	(650)
Salary, net of living expenses	\$44,000	\$33,850

Net Difference = **\$44,000 – \$33,850 = \$10,150**

2) 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.

3) You might consider whether you would like to live with your parents again or not! Even though you would benefit by \$10,150 if you live at home, you may decide it isn't worth it!

4) 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

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	<u>\$ 8,000</u>	<u>\$11,000</u>	<u>\$17,000</u>
Fixed cost per pizza	\$ 2.00	\$ 1.00	\$ 0.50
Variable cost per pizza	1.20	1.20	1.20
Average cost per pizza	<u>\$ 3.20</u>	<u>\$ 2.20</u>	<u>\$ 1.70</u>
Selling 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

(continued) P 2-53A

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
(\$5.50 per pizza × 10,000 pizzas)	- \$17,000	= \$33,000

Since the restaurant will generate an additional \$16,500 of profit the owner should decrease the sales price to increase the volume.

Problems (Group B)

(30 min.) P 2-54B

Reqs. 1, 2, and 3

Buzz Cola								
Value Chain Cost Classification								
(In thousands)								
Cost	R&D	Design	Production			Marketing	Distribution	Customer Service
			Direct Materials	Direct Labor	Manufacturing Overhead			
Plant utilities					\$ 650			
Depreciation on plant and equipment					3,200			
Payment for new recipe	\$1,190							
Salt*					25			
Replace products with expired dates								\$ 40
Rearranging plant layout		\$1,700						
Lemon syrup			\$18,000					
Lime flavoring			920					
Production costs of "cents-off" store coupons for customers						\$ 530		
Truck drivers' wages							\$295	
Bottles			1,190					
Sales commissions						325		
Plant janitors' wages					1,000			
Wages of workers who mix syrup				\$7,700				
Customer hotline								190
Depreciation on trucks							325	
Freight-in			1,300					
Total costs	\$1,190	\$1,700	\$21,410	\$7,700	\$4,875	\$855	\$520	\$230

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

(continued) P 2-54B

Req. 4

Total inventoriable product costs:

Direct materials	\$21,410
Direct labor.....	7,700
Manufacturing overhead	<u>4,875</u>
Total inventoriable product costs	<u>\$33,985</u>

Req. 5

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.) P 2-55B

Part One:

Lindsey's Blooms		
Income Statement		
Year Ended December 31, 2011		
Sales revenue		\$58,000
Cost of goods sold:		
Beginning inventory	\$12,000	
Purchases of merchandise	<u>38,000</u>	
Cost of goods available for sale	50,000	
Ending inventory	<u>(9,300)</u>	
Cost of goods sold		<u>40,700</u>
Gross profit		17,300
Operating expenses:		
Utilities expense	\$ 4,500	
Rent expense	3,800	
Sales commission expense	<u>1,600</u>	<u>9,900</u>
Operating income		<u><u>\$7,400</u></u>

Part Two:

Req. 1

Floral Manufacturing			
Calculation of Cost of Goods Manufactured			
Year Ended December 31, 2012			
Beginning work in process inventory			\$ 0
Add: Direct materials used:			
Beginning raw materials inventory	\$10,000		
Purchases of direct materials	<u>39,000</u>		
Available for use	49,000		
Ending raw materials inventory	<u>(9,500)</u>		
Direct materials used		\$39,500	
Direct labor		22,000	
Manufacturing overhead:			
Utilities for plant	\$ 8,800		
Plant janitorial services	4,100		
Rent on manufacturing plant	<u>1,350</u>		
		<u>14,250</u>	
Total manufacturing costs incurred during the year			<u>75,750</u>
Total manufacturing costs to account for			75,750
Less: Ending work in process inventory			<u>(1,000)</u>
Cost of goods manufactured			<u>\$74,750</u>

Req. 2

Floral Manufacturing		
Income Statement		
Year Ended December 31, 2012		
Sales revenue		\$101,000
Cost of goods sold:		
Beginning finished goods inventory	\$ 0	
Cost of goods manufactured*	<u>74,050</u>	
Cost of goods available for sale	74,050	
Ending finished goods inventory	<u>(5,000)</u>	
Cost of goods sold		<u>69,750</u>
Gross profit		31,250
Operating expenses:		
Customer service hotline expense	1,400	
Delivery expense	3,000	
Sales salaries expense	<u>4,200</u>	
Operating income		<u>\$ 22,650</u>

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

Req. 3

A manufacturer's cost of goods sold is based on its cost of goods manufactured. In contrast, a merchandiser's cost of goods sold is based on its merchandise purchases.

Part Three: Reqs. 1 and 2

Lindsey's Blooms
Partial Balance Sheet
December 31, 2011

Floral Manufacturing
Partial Balance Sheet
December 31, 2012

Inventory.....	<u>\$9,300</u>	Raw materials inventory.....	\$ 9,500
		Work in process inventory..	1,000
		Finished goods inventory...	<u>5,000</u>
		Total inventory.....	<u>\$15,500</u>

(25-35 min.) P 2-56B

Tioga Manufacturing Company			
Calculation of Cost of Goods Manufactured			
Month Ended June 30			
Beginning work in process inventory			\$ 20,000
Add: Direct materials used:			
Beginning raw materials inventory	\$25,000	↑	
Purchases of direct materials	58,000	↑	
Available for use	83,000		
Ending raw materials inventory	(29,000)	↓	
Direct materials used			\$54,000
Direct labor		↓	70,000
Manufacturing overhead			47,000
Total manufacturing costs			
incurred during the month			171,000
Total manufacturing costs to			
account for			191,000
Less: Ending work in process inventory			(23,000)
Cost of goods manufactured			\$168,000

Tioga Manufacturing Company			
Income Statement			
Month Ended June 30			
Sales revenue			\$480,000
Cost of goods sold:			
Beginning finished goods inventory	\$111,000		
Cost of goods manufactured*	168,000	↓	
Cost of goods available for sale	279,000		
Ending finished goods inventory	(63,000)	↓	
Cost of goods sold			216,000
Gross profit			264,000
Operating expenses:			
Marketing expense	100,000	↓	
Administrative expense	67,000	↓	
Operating income			\$97,000

*From the Calculation of Cost of Goods Manufactured

1) As shown below, the quantitative data suggests you would net \$10,300 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	\$41,000	\$46,000
Rent	0	(12,000)
Food	0	(2,500)
Cable and Internet	0	(800)
Salary, net of living expenses	\$41,000	\$30,750

Net Difference = \$41,000 - \$30,750 = \$10,300

2) 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.

3) You might consider whether you would like to live with your parents again or not! Even though you would benefit by \$10,300 if you live at home, you may decide it isn't worth it!

4) 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.) P 2-58B

Req. 1

Monthly pizza volume	4,500	6,000	7,500
Total fixed costs	\$ 9,000	\$ 9,000	\$ 9,000
Total variable costs	6,300	8,400	10,500
Total costs	<u>\$15,300</u>	<u>\$17,400</u>	<u>\$19,500</u>
Fixed cost per pizza	\$ 2.00	\$ 1.50	\$ 1.20
Variable cost per pizza	1.40	1.40	1.40
Average cost per pizza	<u>\$ 3.40</u>	<u>\$ 2.90</u>	<u>\$ 2.60</u>
Sales price per pizza	\$6.25	\$6.25	\$6.25
Average profit per pizza	\$ 2.85	\$ 3.35	\$ 3.65

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 \$20,100 calculated as follows

Total Sales Revenue	– Total Costs	= Monthly Profit
(\$6.25 per pizza × 6,000 pizzas)	– \$17,400	= \$20,100

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
(\$6.25 per pizza × 7,500 pizzas)	– \$19,500	= \$23,625

Since the restaurant will generate an additional \$3,525 of profit (\$23,625 – \$20,100), the owner should decrease the sales price to increase the volume.

Discussion & Analysis

A2-59

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 labor, plant, and equipment to convert raw materials into new finished products. An accounting firm is an example of a service company; Barnes & Noble 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
- GAAP

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, labor, 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 labor, 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 theater 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.

11. **Greenwashing, the practice of overstating a company’s commitment to sustainability, has been in the news over the past few years. Perform an Internet search of the term “greenwashing.” What examples of greenwashing can you find?**

Student answers may vary.

12. In the chapter, Ricoh was mentioned as a company that has designed its copiers so that at the end **of the copier’s life, Ricoh will collect and dismantle the product for usable parts**, shred the metal casing, and use the parts and shredded material to build new copiers. This product design can be called **“cradle to cradle” design. Are there any other products you are aware of that have a “cradle to cradle” design? Perform an Internet search for “cradle to cradle design” or a related term if you need ideas.**

Student answers may vary.

Application & Analysis

A2-60 Costs in the Value Chain at a Real Company and Cost Objects

Choose a company with which you are familiar that manufactures a product. In this activity, you will be making reasonable assumptions about the activities involved in the value chain for this product; companies do not typically publish information about their value chain.

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, labor, overhead
- Marketing – advertisements, sponsorships, Internet presence
- Distribution – shipping, administrative costs, storage
- Customer Service – warranties, call center, 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 – Companywide energy efficiency

Note: Student answers will vary.

Decision Case

(30 min.) A2-61

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 labor	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.

^aCost of good sold:

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

^bEnding 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

^cCost 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

^dEnding 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

^eDirect materials used:

Beginning work in process inventory	+	Direct material used	+	Direct labor	+	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

^fEnding 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
Raleigh, NC 27698

Mr. Gary Streer
Industrial Insurance
1122 Main Street
Hartford, CT 06268

Dear Mr. Streer:

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	\$113,000
Work in process	229,000
Finished goods	<u>154,000</u>
Total inventory cost	<u>\$496,000</u>

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

Sincerely,

Annette Plum
Controller

A2-62

d. advertising for the Sleep-Well Inn chain.
(CMA Adapted)

A2-63

c. \$110,110.
(CMA Adapted)

A2-64

b. \$250,000.
(CMA Adapted)