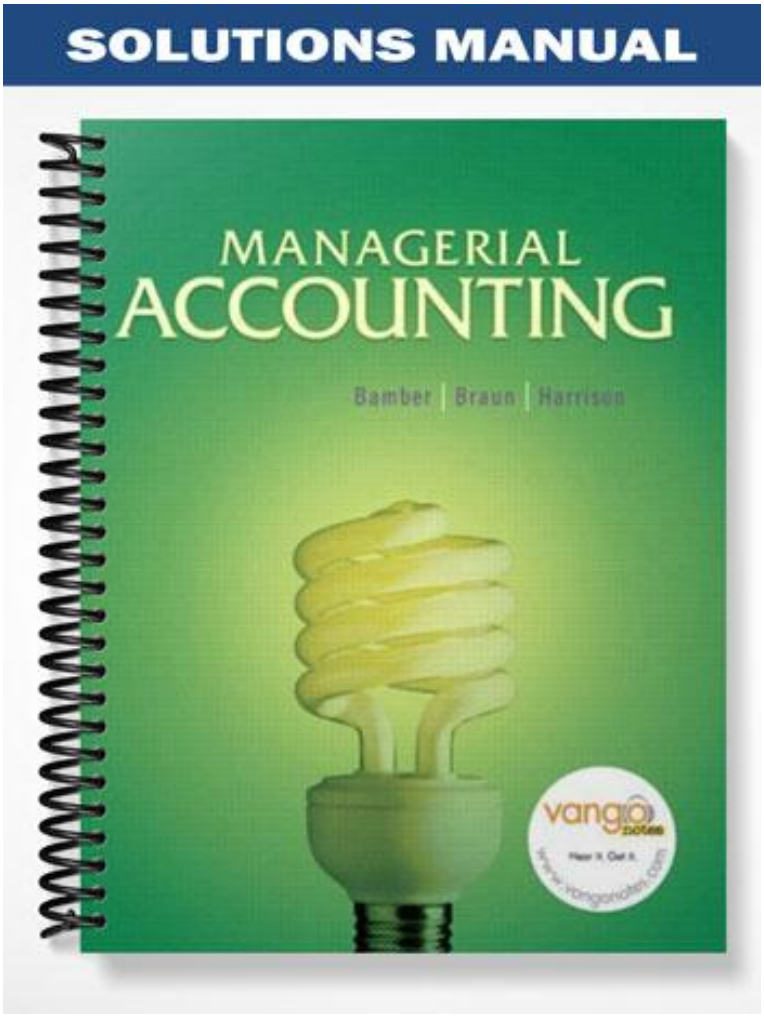
SOLUTIONS MANUAL



Chapter 2

Building Blocks of Managerial Accounting

Chapter Review Quiz

Answers:

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

Explanations:

6. c.

	Beginning raw materials inventory…….	$ 6
+	Purchases of materials…….....	100
	Materials available for use…….	106
−	Ending raw materials inventory……	(5)
	Materials used……...	$101

7. d.

	Beginning work in process inventory……..		$ 2
+	Materials used……..	$101	
+	Direct labor……...	30	
+	Manufacturing overhead……...	20	
	Total manufacturing costs incurred……..		151
	Total manufacturing costs to account for...		153
−	Ending work in process inventory…….		(1)
	Cost of goods manufactured……...		$152

8. a.

	Beginning finished goods inventory…….	**$ 3**
+	**Cost of goods manufactured……**	**152**
	Cost of goods available for sale……..	**155**
−	**Ending finished goods inventory…….**	**(5)**
	Cost of goods sold……..	**$150**

Short Exercises

(5 min.) S 2-1

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

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

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

(10 min.) S 2-2

a. Service companies generally have no inventory.

b. Boeing 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. Prudential Insurance Company is a service company.

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

g. Direct materials are stored in raw materials inventory.

h. Sears is a merchandising company.

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

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

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

(10 min.) S 2-3

RESEARCH & DEVELOPMENT (R&D) – performing research on new Web page capabilities, developing new security or privacy software, or developing additional services for customers.

DESIGN – designing computer software to provide customers with information, stock selection tools, and to efficiently process transactions.

PRODUCTION – labor of employees who maintain computer hardware, software, and databases; depreciation on servers.

MARKETING – cost of Web and newspaper ads.

DISTRIBUTION – cost to deliver stock transaction confirmations and stock certificates.

CUSTOMER SERVICE – providing customer hotline and e-mail services to respond to questions.

E*TRADE might decide to spend more money on R & D (in-depth research) and design (of better software) to provide more online instruction to new customers, thus reducing customer service costs.

Student examples will vary.

(5 min.) S 2-4

a. Distribution

b. Design

c. Marketing

d. Research and Development

e. Customer Service

f. Production or Purchases

(5-10 min.) S 2-5

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 2-6

a. direct; trace

b. indirect; allocate

c. direct; trace

d. indirect; allocate

e. direct; trace

f. indirect; allocate

g. direct; trace

h. direct; trace

(5-10 min.) S 2-7

a. DIRECT MATERIALS – wood, glass, and plastic

b. DIRECT LABOR – assembly-line workers' wages, saw operators' wages, and paint robot operators' wages

c. INDIRECT MATERIALS – glue, nails, and paint

d. INDIRECT LABOR – wages of storehouse workers, janitors, and plant manager

e. OTHER MANUFACTURING OVERHEAD – depreciation on plant and equipment, plant utilities, insurance on the plant, and property taxes on the plant

Student examples will vary.

(5-10 min.) S 2-8

a. Inventoriable product cost

b. Inventoriable product cost

c. Period cost

d. Period cost

e. Inventoriable product cost –or– period 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 cost. However, some companies might consider the software an administrative cost, which would be a period cost.**

(5-10 min.) S 2-9

a. Inventoriable product cost; MOH

b. Period cost

c. Inventoriable product cost; DL

d. Inventoriable product cost; MOH

e. Period cost

f. Inventoriable product cost; MOH

g. 40% period cost / 60% inventoriable product cost; MOH

h. Inventoriable product cost; DM

(5-10 min.) S 2-10

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

(5 min.) S 2-11

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

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

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

Depreciation on company cars used by the sales force is a marketing expense, interest expense is a financing expense, and the company president's salary is an administrative expense. None of these expenses 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.) S 2-12

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

(5-10 min.) S 2-13

Salon Secrets		
Income Statement		
Year ended 20XX		
Sales revenue		$38,230,000
Cost of goods sold:		
Beginning inventory	$ 3,270,000	
Purchases	23,450,000	
Cost of goods available for sale	26,720,000	
Ending inventory	(3,920,000)	
Cost of goods sold		(22,800,000)
Gross profit		15,430,000
Operating expenses		(6,115,000)
Operating income		$ 9,315,000

Cost of direct materials used = $7,000
Cost of goods manufactured = $35,000

These figures can be found as follows:

Top-Flight			
Schedule of Cost of Goods Manufactured			
Year Ended December 31, 2007			
Beginning work in process inventory			$ 2,000
Add: Direct materials used:			
Beginning raw materials inventory	$ 9,000		
Purchases of direct materials	20,000		
Available for use	29,000		
Ending raw materials inventory	(22,000)		
Direct materials used		$ 7,000	
Direct labor		19,000	
Manufacturing overhead		12,000	
Total manufacturing costs incurred during year			38,000
Total manufacturing costs to account for			40,000
Less: Ending work in process inventory			(5,000)
Cost of goods manufactured			$35,000

Some students may answer this question using algebra, without preparing a new schedule of the cost of goods manufactured.

(5 min.) S 2-15

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

(5 min.) S 2-16

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

(5 min.) S 2-17

Relevant quantitative information might include:

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

Relevant qualitative information might include:

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

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

Student responses may vary.

(10 min.) S 2-18

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

(10 min.) E 2-19

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. Retailers **sell to consumers.**

g. Swaim, a company based in North Carolina, 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 Kellogg's, corn, cardboard boxes, and waxed-paper liners are classified as raw materials inventory**.**

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

(10-15 min.) E 2-20

Reqs. 1 and 2

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

Req. 3

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

(15 min.) E 2-21

Reqs. 1 and 2

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

Req. 3

Total inventoriable product costs:

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

Req. 4

The total prime cost is:

Direct materials	**$ 67**
Direct labor	**10**
Total prime cost	**$ 77**

Req. 5

The total conversion cost is:

Direct labor	**$ 10**
Manufacturing overhead	**65**
Total conversion cost	**$ 75**

(5-10 min.) E 2-22

a. Direct cost

b. Direct cost

c. Indirect cost

d. Direct cost

e. Direct cost

f. Indirect cost

g. Indirect cost

h. Indirect cost

i. Indirect cost

j. Direct cost

k. Indirect cost

l. Indirect cost

(10 min.) E 2-23

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 labor.**

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. Full product costs **include costs from every element of the value chain.**

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

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

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

(15-20 min.) E 2-24

Req. 1

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

Req. 2 **Total manufacturing overhead costs** = IM + IL + Other MOH

= $15 + 130 + 170 = $315

Req. 3 **Total inventoriable product costs** = DM + DL + MOH

= $1,250 + 640 + 315 = $2,205

Req. 4 **Total prime costs** = DM + DL

= $1,250 + 640 = $1,890

Req. 5 **Total conversion costs** = DL + MOH

= $640 + 315 = $955

Req. 6 **Total period costs** = $485

(10 min.) E 2-25

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

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

(10-15 min.) E 2-26

Precious Pets		
Income Statement		
For the Year Ended 2007		
Sales revenue		$ 987,000
Cost of goods sold:		
Beginning inventory	$ 17,000	
Purchases and freight-in*	663,000	
Cost of goods available for sale	680,000	
Ending inventory	(15,000)	
Cost of goods sold		665,000
Gross profit		322,000
Operating expenses:		
Web site expenses	$ 56,000	
Marketing expenses	22,000	
Freight-out expenses	25,000	
Total operating expenses		103,000
Operating income		$ 219,000

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

(5-10 min.) E 2-27

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

(15-20 min.) E 2-28

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

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

*From schedule of cost of goods manufactured.

(continues E 2-28) (15-20 min.) E 2-29

Strike Marine Company		
Income Statement		
Year Ended 2007		
Sales revenue (32,000 × $12)		$384,000
Cost of goods sold:		
Beginning finished goods inventory	$ 18,000	
Cost of goods manufactured		
(E 2-28)	213,000	
Cost of goods available for sale	231,000	
Ending finished goods inventory	(25,000)	
Cost of goods sold		206,000
Gross profit		178,000
Operating expenses:		
Marketing expenses	$ 77,000	
General and administrative expenses	29,000	106,000
Operating income		$ 72,000

Students may simply use the $206,000 cost of goods sold computation from E 2-28, rather than repeating the details of the computation here.

(25 min.) E 2-30

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

a.

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

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

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

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

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

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

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

(15-20 min.) E 2-31

a. **Relevant – the cost of employing labor versus automating production will likely differ.**

b. **Irrelevant – the cost of the computers, which were purchased in the past, is a sunk cost.**

c. **Relevant – the cost is relevant if it differs between outsourcing and making the materials in-house.**

d. **Relevant – the company will incur different property taxes depending on where they locate.**

e. **Relevant – the type of gas used by the delivery vans will affect the cost of operating the vans in the future.**

f. **Irrelevant – depreciation expense is simply the paper write-off (expensing) of a sunk cost. Also, the remaining net book value of the equipment will need to be expensed regardless of whether the equipment is replaced.**

g. 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.

h. Relevant – funds tied up in inventory can not earn interest. The higher the interest rate, the more likely the company will want to decrease inventory levels and invest the extra funds.

i. Irrelevant – the cost of the land is a sunk cost whether the company builds on the land now, or in the future.

j. Most likely irrelevant – unless the additional items will require the restaurant to purchase additional kitchen equipment, the total fixed cost will probably not change.

(10 min.) E2-32

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.) E 2-33

a. Variable

b. Fixed

c. Fixed

d. Variable

e. Fixed

f. Variable

g. Fixed

h. Variable

i. Variable

j. Fixed

k. Variable

l. Variable

m. Fixed

n. Variable

o. Variable

(10 min.) E 2-34

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

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

Problems

Group A

Problems begin on the next page.

(30 min.) P 2-35A

Reqs. 1 and 2

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

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

Req. 3

Total inventoriable product costs:

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

Req. 4

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

(45-55 min.) P 2-36A

Part One:

Hannah's Pets		
Income Statement		
Year Ended December 31, 2007		
Sales revenue		$54,000
Cost of goods sold:		
Beginning inventory	$15,000	
Purchases of merchandise	27,000	
Cost of goods available for sale	42,000	
Ending inventory	(10,250)	
Cost of goods sold		31,750
Gross profit		22,250
Operating expenses:		
Utilities expense	$ 2,450	
Rent expense	4,000	
Sales commission expense	2,300	8,750
Operating income		$13,500

Part Two:

Req. 1

Best Friends Manufacturing			
Schedule of Cost of Goods Manufactured			
Year Ended December 31, 2008			
Beginning work in process inventory			$ 0
Add: Direct materials used:			
Beginning raw materials inventory	$13,500		
Purchases of direct materials	31,000		
Available for use	44,500		
Ending raw materials inventory	(9,275)		
Direct materials used		$35,225	
Direct labor		18,300	
Manufacturing overhead:			
Utilities for plant	$ 4,600		
Plant janitorial services	1,250		
Rent on manufacturing plant	9,000		
Sub-total: Manufacturing overhead		14,850	
Total manufacturing costs incurred during the year			68,375
Total manufacturing costs to account for			68,375
Less: Ending work in process inventory			(720)
Cost of goods manufactured			$67,655

Req. 2

Best Friends Manufacturing		
Income Statement		
Year Ended December 31, 2008		
Sales revenue		$105,000
Cost of goods sold:		
Beginning finished goods inventory	$ 0	
Cost of goods manufactured*	67,655	
Cost of goods available for sale	67,655	
Ending finished goods inventory	(5,700)	
Cost of goods sold		61,955
Gross profit		43,045
Operating expenses:		
Customer service hotline expense	1,000	
Delivery expense	1,500	
Sales salaries expense	5,000	7,500
Operating income		$ 35,545

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

Req. 3

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

Part Three: Req. 1

Hannah's Pets
Partial Balance Sheet
December 31, 2007

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

Req. 2

Best Friends Manufacturing
Partial Balance Sheet
December 31, 2008

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

(25-35 min.) P 2-37A

Tretinik Manufacturing Company			
Schedule of Cost of Goods Manufactured			
Month Ended June 30, 2007			
Beginning work in process inventory			$ 21,000
Add: Direct materials used:			
Beginning raw materials inventory	$27,000		
Purchases of direct materials	51,000		
Available for use	78,000		
Ending raw materials inventory	(23,000)		
Direct materials used		$55,000	
Direct labor		71,000	
Manufacturing overhead		40,000	
Total manufacturing costs			
incurred during the month			166,000
Total manufacturing costs to			
account for			187,000
Less: Ending work in process inventory			(25,000)
Cost of goods manufactured			$162,000

Tretinik Manufacturing Company		
Income Statement		
Month Ended June 30, 2007		
Sales revenue		$463,000
Cost of goods sold:		
Beginning finished goods inventory	$115,000	
Cost of goods manufactured*	162,000	
Cost of goods available for sale	277,000	
Ending finished goods inventory	(68,000)	
Cost of goods sold		209,000
Gross profit		254,000
Operating expenses:		
Marketing expense	99,000	
Administrative expense	55,000	154,000
Operating income		$100,000

*From the Schedule of Cost of Goods Manufactured

(10 min.) P 2-38A

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

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

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

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

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

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

(15-20 min.) P 2-39A

Req. 1

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

Req. 2

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

Req. 3

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

Total Sales Revenue ($10 x 3,000)…….	**$30,000**
Less: Total Costs……	**(12,000)**
Monthly profit…….	**$18,000**

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

Total Sales Revenue ($9.50 x 5,000)…….	**$47,500**
Less: Total costs at new volume……..	**(16,000)**
Monthly profit at new volume……..	**$31,500**

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

Req. 4

If the owner leaves the price at $10 per pizza, but spends an extra $10,000 on advertising, the new monthly profit will be:

Total Sales Revenue at new price	
($10 x 5,000)……	**$50,000**
**Less: Advertising Costs……..…….. **	**(10,000)**
Other costs at new volume……..…	**(16,000)**
Monthly Profit……	**$24,000**

The restaurant would generate an additional $6,000 of profit over its current level by advertising ($24,000 − $18,000). Of the two ideas, decreasing the sale price to $9.50 will provide $7,500 more profit ($31,500 − $24,000) than running an advertising campaign.

Req. 5

The owner erroneously used the current average profit margin of $6.00 (sales price − average cost) to forecast total profit at a different **level of output (5,000 pizzas × $6.00 per pizza = $30,000). His calculations were wrong because he failed to take cost behavior into consideration. He assumed the average cost per pizza would be the same, regardless of whether 3,000 or 5,000 pizzas were produced. He failed to recognize that the fixed cost per unit would decrease as the production volume increased.**

Problems

Group B

Problems begin on the next page.

(30 min.) P 2-40B

Reqs. 1 and 2

Apple Computer								
Value Chain Cost Classification								
(In millions)								
			Production					
	R & D	Design	Direct Materials	Direct Labor	Manufacturing Overhead	Marketing	Distribution	Customer Service
Payment to UPS for delivering PCs to customers							$300	
Cost of hard drives used			$ 4,700					
Cost of Internet banner ads						$650		
Plant janitors' wages					$ 10			
Wages of workers who assemble PCs				$1,500				
Cost of customer hotline for troubleshooting problems								$40
Wages of forklift drivers on the plant floor					25			
Plant utilities					35			
Cost of software loaded on computers			30					
Depreciation on plant and equipment					300			
Salaries of scientists working on next generation laptops	$45							
Insurance and taxes on plant property					40			
Cost of oil used for conveyor belts and other plant equipment					5			
Payment to engineers redesigning the exterior case		$20						
Wages of sales associates taking phone orders						50		
Cost of circuit boards used			5,500					
Total costs	$45	$20	$10,230	$1,500	$415	$700	$300	$40

Req. 3

Total inventoriable product costs:

Direct materials	**$10,230**
Direct labor	**1,500**
Manufacturing overhead	**415**
Total inventoriable product costs	**$12,145**

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 PC is not technologically superior, more marketing will be required and/or sales will decline. If the PC is hard to manufacture or the production process is not well laid-out, production costs will increase. If cutting R&D and Design costs leads to lower-quality PCs, this will likely increase customer service costs as well.

Student responses to Req. 4 **may vary.**

(45-55 min.) P 2-41B

Part One:

Precious Memories		
Income Statement		
Year Ended December 31, 2007		
Sales revenue		$90,000
Cost of goods sold:		
Beginning inventory	$12,700	
Purchases of merchandise	36,000	
Freight-in	550	
Cost of goods available for sale	49,250	
Ending inventory	(8,750)	
Cost of goods sold		40,500
Gross profit		49,500
Operating expenses:		
Store rent expense	$ 7,000	
Sales salaries expense	4,500	
Store utilities expense	1,950	
Advertising expense	2,300	15,750
Operating income		$33,750

Part Two:

Req. 1

Forever Manufacturing			
Schedule of Cost of Goods Manufactured			
Year Ended December 31, 2009			
Beginning work in process inventory			$ 0
Add: Direct materials used:			
Beginning raw materials inventory	$13,000		
Purchases of direct materials	32,000		
Available for use	45,000		
Ending raw materials inventory	(7,750)		
Direct materials used		$37,250	
Direct labor		20,000	
Manufacturing overhead:			
Utilities for plant	$ 2,000		
Plant janitorial services	750		
Rent on plant	11,000		
Depreciation expense on plant equipment	3,500		
Manufacturing overhead:		17,250	
Total manufacturing costs incurred during the year			74,500
Total manufacturing costs to account for			74,500
Less: Ending work in process inventory			(1,750)
Cost of goods manufactured			$72,750

Req. 2

Forever Manufacturing		
Income Statement		
Year Ended December 31, 2009		
Sales revenue		$126,450
Cost of goods sold:		
Beginning finished goods inventory	$ 0	
Cost of goods manufactured*	72,750	
Cost of goods available for sale	72,750	
Ending finished goods inventory	(2,000)	
Cost of goods sold		70,750
Gross profit		55,700
Operating expenses:		
R & D expense	$ 3,700	
Sales commission expense	4,000	
Depreciation expense—delivery truck	2,500	
Warranty refund expense	1,500	11,700
Operating income		$ 44,000

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

Req. 3

Forever Manufacturing's cost of goods sold is based on its cost of goods manufactured**. In contrast, Precious Memories' cost of goods sold is based on its merchandise** purchases**.**

Part Three: Req. 1

Precious Memories
Partial Balance Sheet
December 31, 2007

Inventory.....	**$8,750**

Req. 2

Forever Manufacturing
Partial Balance Sheet
December 31, 2009

Raw materials inventory.....	**$ 7,750**
Work in process inventory……...	**1,750**
Finished goods inventory……	**2,000**
Total inventory..……..	**$11,500**

(25-35 min.) P 2-42B

Pacific Manufacturing Company			
Schedule of Cost of Goods Manufactured			
Month Ended April 30, 2007			
Beginning work in process inventory			$ 15,000
Add: Direct materials used:			
Beginning raw materials inventory	$10,000		
Purchases of direct materials	65,000		
Available for use	75,000		
Ending raw materials inventory	(23,000)		
Direct materials used		$52,000	
Direct labor		68,000	
Manufacturing overhead		40,000	
Total manufacturing costs			
incurred during the month			160,000
Total manufacturing costs to			
account for			175,000
Less: Ending work in process inventory			(25,000)
Cost of goods manufactured			$150,000

Pacific Manufacturing Company		
Income Statement		
Month Ended April 30, 2007		
Sales revenue		$450,000
Cost of goods sold:		
Beginning finished goods inventory	$124,000	
Cost of goods manufactured*	150,000	
Cost of goods available for sale	274,000	
Ending finished goods inventory	(67,000)	
Cost of goods sold		207,000
Gross profit		243,000
Operating expenses:		
Marketing expenses	103,000	
Administrative expenses	64,000	167,000
Operating income		$ 76,000

*From the Schedule of Cost of Goods Manufactured

(10 min.) P 2-43B

a) As shown below, the quantitative data suggests you would net $8,700 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	$45,000	$50,000
Rent	0	(10,000)
Food	0	(3,000)
Cable	0	(700)
Salary, net of living expenses	$45,000	$36,300

Net Difference = $45,000 − $36,300 = $8,700

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 or not! Even though you would benefit by $8,700 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.) P 2-44B

Req. 1

Monthly sandwich volume	3,000	4,000	6,000
Total fixed costs	$6,000	$ 6,000	$ 6,000
Total variable costs	3,750	5,000	7,500
Total costs	$9,750	$11,000	$13,500
Fixed cost per sandwich	$2.00	$1.50	$1.00
Variable cost per sandwich	1.25	1.25	1.25
Average cost per sandwich	$3.25	$2.75	$2.25
Sales price per sandwich	$6.00	$6.00	$6.00
Average profit per sandwich	$2.75	$3.25	$3.75

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 $13,000 calculated as follows:

Total Sales Revenue ($6 x 4,000)……..	**$24,000**
Less: Total Costs……..	**(11,000)**
Monthly Profit……	**$13,000**

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

Total Sales Revenue ($5.50 x 6,000)……	**$33,000**
Less: Total costs at new volume……	**(13,500)**
Monthly Profit at new volume……..	**$19,500**

Since the restaurant will generate an additional $6,500 of profit ($19,500 − $13,000), the owner should decrease the sales price to increase the volume.

Req. 4

If the owner leaves the price at $6 per sandwich, but spends an extra $4,000 on advertising, the new monthly profit will be:

Total Sales Revenue ($6 x 6,000)……	**$36,000**
Less: Advertising costs……...	**(4,000)**
Other costs at new volume……..…….	**(13,500)**
Monthly profit	**$18,500**

The restaurant would generate an additional $5,500 of profit over its current level by advertising ($18,500 − $13,000). Of the two ideas, decreasing the sales price to $5.50 will provide $1,000 more profit ($19,500 − $18,500) than running an advertising campaign.

Req. 5

The owner erroneously used the current average profit margin of $3.25 (sales price − average cost) to forecast total profit at a different level of output (6,000 sandwiches × $3.25 per sandwich = $19,500). His calculations were wrong because he failed to take cost behavior into consideration. He assumed the average cost per sandwich would be the same, regardless of whether 4,000 or 6,000 sandwiches were produced. He failed to recognize that the fixed cost per unit would decrease as the production volume increased.

Decision Case

(30 min.) Decision Case 2-45

Req. 1

The ending inventory costs derived from the following schedule are: Raw materials $143,000, Work in process $239,000, and Finished goods $150,000.

PowerBox
Inventory Reconstruction Schedule

Raw materials inventory	
Beginning inventory	$ 113,000 (G)
+ Direct materials purchased plus freight-in	476,000 (G)
= Direct Materials available for use	589,000
− Ending inventory	(143,000)[f]
= Direct Materials used	$ 446,000[e]

Work in Process Inventory		
Beginning Inventory		$ 229,000 (G)
+ Direct Materials Used	446,000[e]	
+ Direct labor	505,000 (G)	
+ Manufacturing Overhead	245,000 (G)	
Total manufacturing costs incurred during year		1,196,000
= Total manufacturing costs to account for		1,425,000 (G)
− Ending inventory		(239,000)[d]
= Cost of goods manufactured		$1,186,000[c]

Finished Goods Inventory	
Beginning inventory	$ 154,000 (G)
+ Cost of goods manufactured	1,186,000[c]
= Cost of goods available for sale	1,340,000 (G)
− Ending inventory	(150,000)[b]
= Cost of goods sold	$1,190,000[a]

(G) = Amount given in the case.

(continued) Decision Case 2-45

[a]**Cost of good sold:**

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

[b]**Ending finished goods inventory:**

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

[c]**Cost of goods manufactured:**

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

[d]**Ending work in process inventory:**

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

[e]**Direct materials used:**

Beginning work in process inventory	+	Direct 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

[f]**Ending direct materials inventory:**

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

Req. 2

Today's Date

PowerBox
5 Research Triangle Way
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	**$143,000**
Work in process	**239,000**
Finished goods	**150,000**
Total inventory cost	**$532,000**

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

Sincerely,

Annette Plum
Controller