

# Chapter 2

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## Building Blocks of Managerial Accounting

### Quick Check

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#### Answers

QC2-1. a	QC2-4. c	QC2-7. c	QC2-10. a
QC2-2. c	QC2-5. d	QC2-8. a	QC2-11. d
QC2-3. d	QC2-6. c	QC2-9. d	QC2-12. a

### Short Exercises

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(10 min.) S2-1

- a. Manufacturing companies report three types of inventory on the balance sheet.
- b. Inventory (merchandise) for a company such as Best Buy (consumer electronics) includes all the costs necessary to purchase products and get them onto the store shelves.
- c. Most for-profit organizations can be described as belonging to one (or more) of three categories: merchandising companies, service companies, and manufacturing companies.
- d. Work in process inventory is composed of goods partially through the manufacturing process (not finished yet).
- e. Forever 21, Target, and Kohl's are all examples of merchandising companies.
- f. Service companies typically do not have an inventory account.
- g. Johnson & Johnson, a personal care products manufacturer, converts raw materials inventory into finished products.
- h. A law office, an advertising agency, and a hospital are all examples of service companies.
- i. Wholesalers buy products in bulk from producers, mark them up, and resell them to retailers.

(5 min.) S2-2

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

Dean Co. is a *merchandiser* because it has a single inventory account.

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

(5–10 min.) S2-3

- a. Marketing
- b. Design
- c. Production
- d. Distribution
- e. Distribution
- f. Customer service
- g. Production
- h. Production
- i. Research and Development (R&D)

(5–10 min.) S2-4

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

(10 min.) S2-5

- a. Cost object
- b. Direct cost
- c. Assign
- d. Indirect cost
- e. Allocate
- f. Direct cost
- g. Trace
- h. Allocate
- i. Indirect cost
- j. Trace
- k. Cost object

(5–10 min.) S2-6

- a. Product cost
- b. Product cost
- c. Product cost
- d. Product cost
- e. Product cost
- f. Period cost
- g. Period cost
- h. Period cost
- i. Period cost

(5–10 min.) S2-7

- a. Product cost
- b. Period cost
- c. Product cost
- d. Product cost
- e. Period cost
- f. Product cost
- g. Period cost
- h. Product cost
- i. Period cost

(5–10 min.) S2-8

COST	Period Cost or Product Cost?	If a Product Cost: Is it DM, DL, or MOH?
a. Property taxes – 30% of building is used for sales, marketing, and administrative offices; 70% of building is used for manufacturing	30% Period; 70% Product	-- MOH
b. Wages and benefits paid to assembly-line workers in the manufacturing plant	Product	DL
c. Depreciation on automated production equipment	Product	MOH
d. Salaries paid to quality control inspectors in the plant	Product	MOH
e. Repairs and maintenance on factory equipment	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. Lease payment on administrative headquarters	Period	
h. Telecommunications costs for the customer service call center	Period	

COST	Period Cost or Product Cost?	If a Product Cost: Is it DM, DL, or MOH?
1. Television advertisements for Bailey’s products	Period	
2. Lubricants used in running bottling machines	Product	MOH
3. Research and development related to elimination of antibiotic residues in milk	Period	
4. Gasoline used to operate refrigerated trucks delivering finished dairy products to grocery stores	Period	
5. Company president’s annual bonus	Period	
6. Depreciation on refrigerated trucks used to collect raw milk from dairy farmers	Product	MOH
7. Plastic gallon containers in which milk is packaged	Product	DM
8. Property insurance on dairy processing plant	Product	MOH
9. Cost of milk purchased from local dairy farmers	Product	DM
10. Depreciation on tablets used by sales staff	Period	
11. Wages and salaries paid to machine operators at dairy processing plant	Product	DL

(5 min.) S2-10

<b>Olson Frames</b>	
<b>Computation of Total Manufacturing Overhead</b>	
Manufacturing overhead:	
Plant depreciation expense	\$ 6,000
Plant supervisor’s salary	3,100
Plant janitor’s salary	1,800
Glue for picture frames*	400
Oil for manufacturing equipment	<u>250</u>
Total manufacturing overhead	<u>\$11,550</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.

(5–10 min.) S2-11

<b>Salon Hair</b>		
<b>Income Statement</b>		
<b>For the Year Ended</b>		
Sales revenue		\$38,850,000
Cost of goods sold:		
Beginning inventory	\$ 3,500,000	
Purchases	<u>23,975,000</u>	
Cost of goods available for sale	27,475,000	
Less: Ending inventory	<u>(4,445,000)</u>	
Less: Cost of goods sold		<u>(23,030,000)</u>
Gross profit		15,820,000
Less: Operating expenses		<u>(7,100,000)</u>
Operating income		<u>\$ 8,720,000</u>

(5 min.) S2-12

<b>Calculation of Cost of Goods Sold</b>		
Beginning inventory		\$ 3,800
Purchases	\$40,000	
Import duties	1,300	
Freight-in	<u>3,700</u>	<u>45,000</u>
Cost of goods available for sale		48,800
Less: Ending inventory		<u>(5,900)</u>
Cost of goods sold		<u>\$42,900</u>

(5 min.) S2-13

<b>Mason Bikes</b>		
<b>Calculation of Direct Materials Used</b>		
Beginning raw materials inventory		\$ 4,700
Purchases of direct materials	\$16,000	
Import duties	1,300	
Freight-in	<u>400</u>	<u>17,700</u>
Materials available for use		22,400
Less: Ending raw materials inventory		<u>(1,200)</u>
Direct materials used		<u>\$21,200</u>

(10 min.) S2-14

<b>Robinson Manufacturing</b>		
<b>Schedule of Cost of Goods Manufactured</b>		
Beginning work in process inventory		\$ 72,400
Plus: Manufacturing costs incurred:		
Direct materials used	\$519,800	
Direct labor	223,500	
Manufacturing overhead	<u>775,115</u>	<u>1,518,415</u>
Total manufacturing costs to account for		1,590,815
Less: Ending work in process inventory		<u>(87,600)</u>
Cost of goods manufactured		<u>\$1,503,215</u>

(10 min.) S2-15

- a. A(n) marginal cost is the cost of making one more unit.
- b. Gasoline is one of many variable costs in the operation of a motor vehicle.
- c. 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.
- d. The average cost\* per unit declines as a production facility produces more units.
- e. Costs that differ between alternatives are called differential costs.
- f. In the long run, most costs are controllable costs, meaning that management is able to influence or change the amount of the cost.
- g. Sunk costs are costs that have already been incurred.

\*or fixed cost

**(10 min.) S2-16**

<b>COST</b>	<b>Variable or Fixed</b>
a. Cost of French fries used at a McDonald's restaurant	Variable
b. Hourly wages paid to cashiers at The Home Depot	Variable
c. Monthly sugar costs for The Hershey Company	Variable
d. Cost of fuel used by Old Dominion Freight Line, a national trucking company	Variable
e. Shipping costs at Amazon.com	Variable
f. Monthly rent for Onyx Nail Bar, a nail salon in Dallas, Texas	Fixed
g. Sales commissions at Tampa Honda in Florida	Variable
h. Monthly insurance costs for the building housing the administrative offices of Panera Bread in St. Louis, Missouri	Fixed
i. Monthly depreciation of equipment used in the customer service department at Klagen Ford Lincoln, a car dealership in Kent, Ohio	Fixed
j. Cost of rubber used to manufacture L.L. Bean boots	Variable
k. Cost of oranges sold at a Kroger grocery store	Variable
l. Monthly office lease costs for the Portland office of E & Y, a global audit firm	Fixed
m. Monthly cost of coffee at a Dunkin' Donuts store	Variable
n. Property taxes for an Applebee's Neighborhood Grill & Bar	Fixed
o. Depreciation of exercise equipment at an LA Fitness club	Fixed

**(10 min.) S2-17**

- The total cost of performing 1,000 oil changes in May is \$20,000  $[(1,000 \times \$12) + \$8,000]$ .
- The average cost of performing each oil change in May is \$20  $[(1,000 \times \$12) + \$8,000] / 1,000$ .
- The marginal cost of performing an oil change in May is \$12 (the variable cost per unit).
- If the company could reach full capacity one month, the total cost would be \$56,000  $[(4,000 \times \$12) + \$8,000]$ .
- At full capacity, the average cost of each oil change would be \$14  $[(4,000 \times \$12) + \$8,000] / 4,000$ .
- Yes, as the shop operates closer to full capacity, the fixed costs are spread over more oil changes, thereby decreasing the average cost of each oil change. As the average cost declines, the shop could offer its service at a lower price point in order to stay competitive in the market.

**(5 min.) S2-18**

1.	To reduce the company's tax bill, Jack uses total cost to value inventory instead of using product cost as required by law.	Competence—Perform professional duties in accordance with relevant laws, regulations, and technical standards.
2.	Since Emilie works in the accounting department, she is aware that profits are going to fall short of analysts' projections. She tells her aunt to sell stock in the company before the earnings release date.	Confidentiality—Refrain from using confidential information for unethical or illegal advantage.
3.	Veronica pays a Mexican official a bribe of \$50,000 to allow the company to locate a factory in that jurisdiction so that the company can take advantage of the cheaper labor costs. Without the bribe, the factory cannot be located in that location.	Integrity—Refrain from engaging in any conduct that would prejudice carrying out duties ethically.
4.	There is a failure in the company's backup systems after a system crash. Month-end reports will be delayed. Kayla, the manager of the division experiencing the system failure, does not report this upcoming delay to anyone because she does not want to be the bearer of bad news.	Credibility—Disclose delays or deficiencies in information, timeliness, processing, or internal controls in conformance with organization policy and/or applicable law.

**(10 min.) S2-19**

1. Filter Warehouse ID for Rocky River only and sort Item # alphabetically.
2. Filter Item # for GR-113 only and sort Warehouse ID alphabetically.
3. Filter Cost for greater than \$3,000 and sort Warehouse ID alphabetically.
4. Filter state to include only CA, filter cost greater than \$5,000, and sort in alphabetical order.
5. Filter inventory items by state to only include Ohio and then sort by date.

**(10 min.) S2-20**

1. Filter by Sales greater than \$10,000.
2. Filter by Salesperson = Cameron Howell.
3. Sort by Sales.
4. Filter by Salesperson; sort by Sales.

## Exercises (Group A)

(10–15 min.) E2-21A

## Reqs. 1–2

Value Chain Cost Classification						
	R & D	Design	Purchases	Marketing	Distribution	Customer Service
Newspaper advertisements				\$5,100		
Payment to consultant for advice on location of new store	\$2,700					
Purchases of merchandise			\$37,000			
Freight-in			\$3,700			
Salespeople's salaries				\$4,600		
Depreciation expense on delivery trucks					\$1,500	
Research on selling satellite radio service	\$ 250					
Customer Complaint Department						\$550
Rearranging store layout		\$650				
Total	<u>\$2,950</u>	<u>\$650</u>	<u>\$40,700</u>	<u>\$9,700</u>	<u>\$1,500</u>	<u>\$550</u>

## Req. 3

The total product costs are \$40,700.

## Req. 4

The total period costs are \$15,350 (all categories except for purchases).

**Reqs. 1–3**

Value Chain Cost Classification								
	R & D	Design	Production			Marketing	Distribution	Customer Service
			Direct Materials	Direct Labor	Mfg. Overhead			
Delivery expense to customers via UPS							\$9	
Salaries of salespeople						\$4		
Chipset (the set of chips used in a phone)			\$56					
Exterior case for phone			\$6					
Assembly-line workers' wages				\$8				
Technical customer support hotline								\$5
Depreciation on plant and equipment					\$60			
Rearrange production process to accommodate new robot		\$3						
1-800 (toll-free) line for customer orders						\$1		
Scientists' salaries	\$10							
<b>Total costs</b>	<b>\$10</b>	<b>\$ 3</b>	<b>\$62</b>	<b>\$8</b>	<b>\$60</b>	<b>\$5</b>	<b>\$9</b>	<b>\$5</b>

**Req. 4**

Total product costs:

Direct materials.....	\$ 62
Direct labor.....	8
Manufacturing overhead.....	<u>60</u>
Total product cost.....	<u>\$130</u>

**Req. 5**

The total prime cost is:

Direct materials.....	\$ 62
Direct labor.....	<u>8</u>
	<u>\$ 70</u>

**Req. 6**

The total conversion cost is:

Direct labor.....	\$ 8
Manufacturing overhead.....	<u>60</u>
	<u>\$ 68</u>

**(10 min.) E2-23A**

- a. Direct
- b. Indirect
- c. Direct
- d. Indirect
- e. Direct
- f. Indirect
- g. Indirect
- h. Direct
- i. Indirect
- j. Direct
- k. Direct
- l. Direct
- m. Indirect
- n. Indirect
- o. Indirect

**(5–10 min.) E2-24A**

- a. Purchasing
- b. Marketing
- c. Design
- d. Distribution
- e. Customer Service
- f. Research and Development (R&D)



(10–15 min.) E2-26A

<b>Outdoor Amenities</b>		
<b>Income Statement</b>		
<b>For the Year Ended December 31</b>		
Sales revenue		\$255,000
Cost of goods sold:		
Wood	\$ 57,800	
Stain	12,700	
Labor costs	36,900	
Indirect labor costs	21,300	
Utility costs	11,200	
Other manufacturing overhead	<u>9,800</u>	
Less: <b>Cost of goods sold</b>		<u><b>149,700</b></u>
<b>Gross profit</b>		<u><b>105,300</b></u>
Less: Operating expenses		
Salaries and wages	\$37,400	
Rent and utilities	12,000	
Marketing costs	<u>17,300</u>	
<b>Total operating expenses</b>		<u><b>66,700</b></u>
<b>Operating income</b>		<u><b>\$ 38,600</b></u>

Note: For this exercise, the student is not required to prepare an income statement, but the income statement is presented here to show the calculations for each item in the exercise requirements.

(10–15 min.) E2-27A

Cost of goods sold calculation:	
Beginning inventory	\$ 16,250
Plus: Purchases and freight-in*	<u>657,500</u>
Cost of goods available for sale	673,750
Less: Ending inventory	<u>(16,000)</u>
Cost of goods sold	<u>\$ 657,750</u>

<b>Prestigious Pugs</b>		
<b>Income Statement</b>		
<b>For Last Year</b>		
Sales revenue		\$ 1,105,000
Less: Cost of goods sold		<u>(657,750)</u>
Gross profit		447,250
Less operating expenses:		
Website expenses	\$ 55,000	
Marketing expenses	30,500	
Freight-out expenses	<u>29,500</u>	
<b>Total operating expenses</b>		<u><b>(115,000)</b></u>
<b>Operating income</b>		<u><b>\$ 332,250</b></u>

\*purchases of \$638,000 + freight-in of \$19,500 = \$657,500

(5–10 min.) E2-28A

**Calculation of direct materials used**

Beginning raw materials inventory	\$	17,000
Plus: Purchases of direct materials		55,000
		<hr/>
Materials available for use	\$	72,000
Less: Ending raw materials inventory		(12,000)
		<hr/>
Direct materials used	\$	60,000
		<hr/> <hr/>

**Schedule of cost of goods manufactured**

Beginning work in process inventory	\$	22,000
Plus: Manufacturing costs incurred		
Direct materials used (from previous schedule)		60,000
Direct labor		121,000
Manufacturing overhead		151,000
		<hr/>
Total manufacturing costs to account for	\$	354,000
Less: Ending work in process inventory		(21,000)
		<hr/>
Cost of goods manufactured	\$	333,000
		<hr/> <hr/>

**Calculation of direct materials used**

Beginning raw materials inventory	\$ 23,000
Plus: Purchases of direct materials	74,000
	<hr/>
Materials available for use	\$ 97,000
Less: Ending raw materials inventory	(25,000)
	<hr/>
Direct materials used	<u><u>\$ 72,000</u></u>

**Schedule of cost of goods manufactured**

Beginning work in process inventory	\$ 35,000
Plus: Manufacturing costs incurred	
Direct materials used (from previous schedule)	72,000
Direct labor	86,000
Manufacturing overhead (42,000 + 11,500 + 13,400 + 3,700)	70,600
	<hr/>
Total manufacturing costs to account for	\$ 263,600
Less: Ending work in process inventory	(31,000)
	<hr/>
<b>Cost of goods manufactured</b>	<u><u>\$ 232,600</u></u>

**Calculation of cost of goods sold**

Beginning finished goods inventory	\$ 20,000
Plus: Cost of goods manufactured (from previous schedule)	232,600
	<hr/>
Cost of goods available for sale	\$ 252,600
Less: Ending finished goods inventory	(22,000)
	<hr/>
<b>Cost of goods sold</b>	<u><u>\$ 230,600</u></u>

(15–20 min.) E2-30A

**West Nautical Company**  
**Income Statement**  
**For Current Year**

Sales revenue (34,000 units x \$12)	\$	408,000
Less: Cost of goods sold (from previous exercise)		230,600
		230,600
Gross profit	\$	177,400
		177,400
Less operating expenses:		
Marketing expenses		77,000
General and administrative expenses		28,500
		28,500
Total operating expenses	\$	105,500
		105,500
Operating income	\$	71,900
		71,900

Students may simply use the \$230,600 cost of goods sold computation from E2-26A rather than repeating the details of the computation of cost of goods sold here.

a. The fair market value of old manufacturing equipment when deciding whether or not to replace it with new equipment. (old equipment will be sold if new equipment is purchased)	Relevant—the fair market value is the amount of money the company could expect to receive from selling the old equipment if they decide to replace it with newer equipment.
b. Cost of purchasing packaging materials from an outside vendor, when deciding whether to continue manufacturing the packaging materials in-house	Relevant—the cost is relevant if it differs between outsourcing and making the materials in-house.
c. 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.
d. 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.
e. The cost of land purchased three years ago when deciding whether to build on the land now or wait two more years before building	Irrelevant—the cost of the land is a sunk cost whether the company builds on the land now or in the future.
f. The interest rate received 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 to earn additional interest.
g. Cost of computers purchased six months ago when deciding whether to upgrade to computers with faster processing speed	Irrelevant—the cost of the computers, which were purchased in the past, is a sunk cost.
h. 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.
i. 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 because gas and diesel do not cost the same amount.
j. 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.

- |    |   |   |                    |   |                    |
|----|---|---|--------------------|---|--------------------|
| 1) | Variable costs  | = | (\$2 x 25,000,000) | = | \$50,000,000       |
|    | + <u>Fixed costs</u>  |   |                    |   | = <u>7,000,000</u> |
|    | = Total costs   |   |                    |   | = \$57,000,000     |
| 2) | \$57,000,000  | ÷ | 25,000,000 units   | = | \$2.28 per unit    |
| 3) | \$ 7,000,000  | ÷ | 25,000,000 units   | = | \$0.28 per unit    |
| 4) | Variable costs  | = | (\$2 x 35,000,000) | = | \$70,000,000       |
|    | + <u>Fixed costs</u>  |   |                    |   | = <u>7,000,000</u> |
|    | = Total costs   |   |                    |   | = \$77,000,000     |
| 5) | \$77,000,000  | ÷ | 35,000,000 units   | = | \$2.20 per unit    |
| 6) | \$ 7,000,000  | ÷ | 35,000,000 units   | = | \$0.20 per unit    |
| 7) | The average product cost decreases as production volume increases because the company is <i>spreading its fixed costs</i> over 10 million more units. The company will be operating <i>more</i> efficiently, so the average cost of making each unit decreases. |   |                    |   |                    |

1. Rocky River warehouse: First item: DT-331; Last item: SQ-998

Item #	Date purchased	Quantity	Cost	Warehouse ID	State
DT-331	5/5/2018	900	1900	Rocky River	OH
DU-550	10/28/2019	1922	7792	Rocky River	OH
DU-550	12/20/2018	1829	7431	Rocky River	OH
DU-550	9/26/2019	739	3004	Rocky River	OH
DU-550	5/24/2019	665	2733	Rocky River	OH
EM-904	7/3/2019	375	3130	Rocky River	OH
EM-904	10/8/2019	1261	4244	Rocky River	OH
EM-904	10/2/2019	1447	4802	Rocky River	OH
EM-904	3/22/2019	434	1462	Rocky River	OH
EM-904	12/20/2018	501	1997	Rocky River	OH
EM-904	2/24/2019	1294	4276	Rocky River	OH
EM-904	7/5/2019	807	2703	Rocky River	OH
EM-904	7/5/2019	1810	6038	Rocky River	OH
EM-904	6/15/2019	930	3076	Rocky River	OH
EM-904	6/14/2019	773	2581	Rocky River	OH
EM-904	9/12/2019	1497	5012	Rocky River	OH
EM-904	3/2/2019	1428	4846	Rocky River	OH
EM-904	7/4/2019	1638	5494	Rocky River	OH
SQ-998	2/4/2019	459	1782	Rocky River	OH
SQ-998	5/25/2019	500	1903	Rocky River	OH
SQ-998	12/20/2019	1369	5370	Rocky River	OH
SQ-998	10/20/2019	1965	7522	Rocky River	OH

2. Order:

- a. Albany
- b. Dayton
- c. Forest Hills
- d. Oakland

First warehouse in list with Item GR-113: Albany

Third warehouse in list with Item GR-113: Forest Hills

Number of GR-113 items in stock: 46,352

Total cost of GR-113 items in total: \$219,171

3. Which warehouses have inventory items with a cost of more than \$3,000? List warehouses in alphabetic order. What is the first warehouse listed? **Albany**

What is the last warehouse listed? **Tucson**

- a. Albany
- b. Cordele
- c. Dayton
- d. Forest Hills
- e. Lansing
- f. Oakland
- g. Phoenix
- h. Rocky River
- i. Santa Clara
- j. Tucson

4. What inventory items in warehouses in California have a cost greater than \$5,000? *To get the list of items, filter State to include only CA and Cost to have a number filter of greater than \$5,000. Several inventory items on the list fit these criteria.* The inventory items should be listed in alphabetic order. What is the first inventory item listed? *Highlighted below.* What is the fifth inventory item listed? *Highlighted below.* Note: the rest of the list has been omitted from this solutions manual.

Item #	Date purchased	Quantity	Cost	Warehouse ID	State
AT-986	2/10/2019	1693	14372	Oakland	CA
AT-986	5/25/2019	1046	8931	Oakland	CA
AT-986	7/23/2019	858	6865	Oakland	CA
AT-986	11/30/2019	1031	8775	Oakland	CA
AT-986	3/14/2019	1316	10903	Oakland	CA

5. What are the oldest three inventory items in the warehouses located in Ohio? What is the total cost of inventory in Ohio warehouses that was purchased in 2018?

Three oldest items in warehouses in Ohio:

Item #	Date purchased	Quantity	Cost	Warehouse ID	State
VA-334	2/18/2018	281	2479	Dayton	OH
IE-245	3/14/2018	202	1226	Dayton	OH
DT-331	5/5/2018	900	1900	Rocky River	OH

Total cost of inventory in Ohio warehouses that was purchased in 2018:

Item #	Date purchased	Quantity	Cost	Warehouse ID	State
VA-334	2/18/2018	281	2479	Dayton	OH
IE-245	3/14/2018	202	1226	Dayton	OH
DT-331	5/5/2018	900	1900	Rocky River	OH
IE-245	12/12/2018	1371	8634	Dayton	OH
EM-904	12/19/2018	369	1252	Dayton	OH
JB-678	12/19/2018	104	211	Dayton	OH
EM-904	12/20/2018	601	1997	Rocky River	OH
DU-550	12/20/2018	1829	7431	Rocky River	OH
			<b>25130</b>		

(30 min.) E2-34A

1. How many orders total more than \$10,000? 4

Order #	Date	Product ID	Sales	Customer #	Salesperson
3288	4/3/2020	EM-770	31130	3884	Li, Mary
9183	7/3/2020	IF-484	18711	7419	Webster, Rupert
4510	1/26/2020	EG-133	13501	6158	Lopez, Dolly
4121	5/9/2020	IF-484	11450	8151	Gerbig, Hannah

2. Rupert Webster’s customers: 26 orders

Order #	Date	Product ID	Sales	Customer #	Salesperson
9183	7/3/2020	IF-484	18711	7419	Webster, Rupert
9917	7/24/2020	IF-484	8235	7419	Webster, Rupert
4453	12/12/2020	IF-302	4918	7415	Webster, Rupert
4112	6/13/2020	IF-484	4879	7425	Webster, Rupert
4020	5/25/2020	IF-484	3989	7428	Webster, Rupert
5420	4/16/2020	IF-302	3962	7427	Webster, Rupert
5403	2/16/2020	FD-101	3928	7421	Webster, Rupert
5053	3/4/2020	IF-302	3878	7428	Webster, Rupert
5386	3/28/2020	IF-484	3377	7417	Webster, Rupert
4951	8/24/2020	JB-678	3285	7426	Webster, Rupert
4897	5/23/2020	EM-770	3137	7427	Webster, Rupert
5161	11/27/2020	FD-101	2792	7418	Webster, Rupert
4308	4/1/2020	FD-101	2738	7427	Webster, Rupert
4108	7/21/2020	FD-101	2674	7427	Webster, Rupert
4826	2/24/2020	TR-134	2580	7427	Webster, Rupert
4129	6/3/2020	TR-134	2510	7422	Webster, Rupert
4168	3/10/2020	IF-302	2467	7415	Webster, Rupert
5138	10/12/2020	FD-101	2447	7415	Webster, Rupert
4490	3/6/2020	EM-770	2442	7426	Webster, Rupert
4041	11/15/2020	TR-134	2412	7424	Webster, Rupert
4547	7/12/2020	DT-331	2022	7415	Webster, Rupert
5278	6/8/2020	EM-770	1476	7418	Webster, Rupert
5244	7/9/2020	IF-484	1439	7416	Webster, Rupert
4464	4/25/2020	TR-134	1398	7421	Webster, Rupert
4353	8/26/2020	FD-101	1383	7415	Webster, Rupert
4564	7/13/2020	SB-446	1327	7421	Webster, Rupert
			<b>26</b>		

3. Rank orders high to low. High: 31,130; Low: 1,306

4. Dolly Lopez orders:

Dollar amount of largest order: 13,501

Dollar amount of smallest order: 1,312

Total of sales made by Lopez: 397,861

How many orders by Lopez: 116

5. List of orders between \$5,000 and \$10,000 alphabetically by salesperson

Order #	Date	Product ID	Sales	Customer #	Salesperson
5206	2/17/2020	DT-331	8554	3886	Li, Mary
5186	3/22/2020	EM-770	6872	3890	Li, Mary
4670	11/24/2020	FD-101	9106	6160	Lopez, Dolly
4627	8/26/2020	IF-302	6103	6159	Lopez, Dolly
4610	4/27/2020	FD-101	9073	6165	Lopez, Dolly
4493	7/31/2020	IF-484	8843	6165	Lopez, Dolly
4487	4/6/2020	TR-134	5841	6166	Lopez, Dolly
4419	12/21/2020	TR-134	6474	6159	Lopez, Dolly
4704	8/4/2020	TR-134	6210	5152	Smythe, Jake
4505	9/18/2020	EG-133	7943	5155	Smythe, Jake
4431	12/20/2020	FD-101	9042	5161	Smythe, Jake
4397	7/24/2020	TR-134	7314	5155	Smythe, Jake
4306	1/16/2020	IF-302	7975	5162	Smythe, Jake
4286	10/15/2020	IF-484	6724	5158	Smythe, Jake
4252	12/22/2020	FD-101	7463	5151	Smythe, Jake
4218	12/9/2020	EM-904	7546	5160	Smythe, Jake
4155	8/2/2020	EM-770	6897	5158	Smythe, Jake
4087	4/22/2020	FD-101	7992	5158	Smythe, Jake
4033	1/14/2020	FD-101	5836	5160	Smythe, Jake
3996	1/1/2020	FD-101	8158	5150	Smythe, Jake
3993	7/31/2020	IF-484	8034	5158	Smythe, Jake
3908	12/11/2020	FD-101	6875	5156	Smythe, Jake
3803	12/8/2020	EG-133	5847	5156	Smythe, Jake
3718	8/11/2020	IF-302	6379	5161	Smythe, Jake
3599	4/7/2020	FD-101	8929	5159	Smythe, Jake
9917	7/24/2020	IF-484	8235	7419	Webster, Rupert
			<b>193765</b>		

## Exercises (Group B)

(10–15 min.) E2-35B

**Reqs. 1–2**

Value Chain Cost Classification						
	R & D	Design	Purchases	Marketing	Distribution	Customer Service
Newspaper advertisements				\$5,300		
Payment to consultant for advice on location of new store	\$2,400					
Purchases of merchandise			\$31,000			
Freight-in			\$3,600			
Salespeople's salaries				\$4,900		
Depreciation expense on delivery trucks					\$1,400	
Research on whether store should sell satellite radio service	\$500					
Customer Complaint Department						\$900
Rearrangement of store layout		\$600				
<b>Total</b>	<u>\$2,900</u>	<u>\$600</u>	<u>\$34,600</u>	<u>\$10,200</u>	<u>\$1,400</u>	<u>\$900</u>

**Req. 3**

The total product costs are the \$31,000 of purchases plus the \$3,600 freight-in = \$34,600.

**Req. 4**

The total period costs are \$16,000 (all categories except for purchases).

Reqs. 1–3

Cost Classification								
	R & D	Design	Production			Marketing	Distribution	Customer Service
			Direct Materials	Direct Labor	Mfg. Overhead			
Delivery expense to customers via UPS							\$10	
Salaries of salespeople						\$6		
Chipset (the set of chips used in a phone)			\$60					
Exterior case for phone			\$4					
Assembly-line workers' wages				\$12				
Technical customer-support hotline								\$5
Depreciation on plant and equipment					\$65			
Rearrange production process to accommodate new robot		\$1						
1-800 (toll-free) line for customer orders						\$3		
Salaries of scientists who developed new model	\$11							
	-							
<b>Total costs</b>	<b>\$11</b>	<b>\$1</b>	<b>\$64</b>	<b>\$12</b>	<b>\$65</b>	<b>\$9</b>	<b>\$10</b>	<b>\$5</b>

Req. 4

Total product costs:

Direct materials.....	\$ 64
Direct labor.....	12
Manufacturing overhead.....	<u>65</u>
Total product cost.....	<u>\$141</u>

Req. 5

The total prime cost is:

Direct materials.....	\$ 64
Direct labor.....	<u>12</u>
	<u>\$ 76</u>

Req. 6

The total conversion cost is:

Direct labor.....	\$ 12
Manufacturing overhead.....	<u>65</u>
	<u>\$ 77</u>

**(10 min.) E2-37B**

- a. Indirect
- b. Indirect
- c. Direct
- d. Direct
- e. Indirect
- f. Direct
- g. Indirect
- h. Direct
- i. Indirect
- j. Direct
- k. Direct
- l. Indirect
- m. Direct
- n. Indirect
- o. Direct

**(5–10 min.) E2-38B**

- a. Customer Service
- b. Marketing
- c. Purchasing/Producing
- d. Distribution
- e. Design
- f. Research and Development



<b>Backyard Amenities</b>		
<b>Income Statement</b>		
<b>For the Year Ended December 31</b>		
Sales revenue		\$267,000
Cost of goods sold:		
Wood	\$ 59,100	
Stain	14,500	
Labor costs	33,700	
Indirect labor costs	23,700	
Utility costs	12,100	
Other manufacturing overhead	<u>11,300</u>	
<b>Less: Cost of goods sold</b>		<b><u>154,400</u></b>
<b>Gross profit</b>		<b><u>112,600</u></b>
Less: Operating expenses		
Salaries and wages	\$38,100	
Rent and utilities	13,200	
Marketing costs	<u>15,200</u>	
<b>Total operating expenses</b>		<b><u>66,500</u></b>
<b>Operating income</b>		<b><u>\$ 46,100</u></b>

*Note:* For this exercise, students are not required to prepare an income statement, but the income statement is presented here to show the calculations for each item in the exercise requirements.

**(10–15 min.) E2-41B**

Cost of goods sold calculation:	
Beginning inventory	\$ 19,800
Plus: Purchases and freight-in*	<u>655,500</u>
Cost of goods available for sale	675,300
Less: Ending inventory	<u>(13,100)</u>
Cost of goods sold	<u>\$ 662,200</u>

<b>Charismatic Cats</b>		
<b>Income Statement</b>		
<b>For Current Year</b>		
Sales revenue		\$ 1,060,000
Less: Cost of goods sold		<u>(662,200)</u>
Gross profit		397,800
Less operating expenses:		
Website expenses	\$ 53,000	
Marketing expenses	33,200	
Freight-out expenses	<u>28,500</u>	
Total operating expenses		<u>(114,700)</u>
Operating income		<u>\$ 283,100</u>

\*purchases of \$636,000 + freight-in of \$19,500 = \$655,500

**(5–10 min.) E2-42B**

**Calculation of direct materials used**

Beginning raw materials inventory	\$ 14,000
Plus: Purchases of direct materials	<u>63,000</u>
Materials available for use	\$ 77,000
Less: Ending raw materials inventory	<u>(19,000)</u>
Direct materials used	<u>\$ 58,000</u>

**Schedule of cost of goods manufactured**

Beginning work in process inventory	\$ 25,000
Plus: Manufacturing costs incurred	
Direct materials used (from previous schedule)	58,000
Direct labor	133,000
Manufacturing overhead	<u>162,000</u>
Total manufacturing costs to account for	\$ 378,000
Less: Ending work in process inventory	<u>(24,000)</u>
Cost of goods manufactured	<u>\$ 354,000</u>

**Calculation of direct materials used**

Beginning raw materials inventory	\$ 25,000
Plus: Purchases of direct materials	79,000
	<hr/>
Materials available for use	\$ 104,000
Less: Ending raw materials inventory	(33,000)
	<hr/>
Direct materials used	<u><u>\$ 71,000</u></u>

**Schedule of cost of goods manufactured**

Beginning work in process inventory	\$ 42,000
Plus: Manufacturing costs incurred	
Direct materials used (from previous schedule)	71,000
Direct labor	84,000
Manufacturing overhead (46,000 + 7,500 + 13,100 + 4,400)	71,000
	<hr/>
Total manufacturing costs to account for	\$ 268,000
Less: Ending work in process inventory	(36,000)
	<hr/>
<b>Cost of goods manufactured</b>	<u><u>\$ 232,000</u></u>

**Calculation of cost of goods sold**

Beginning finished goods inventory	\$ 21,000
Plus: Cost of goods manufactured (from previous schedule)	232,000
	<hr/>
Cost of goods available for sale	\$ 253,000
Less: Ending finished goods inventory	(28,000)
	<hr/>
<b>Cost of goods sold</b>	<u><u>\$ 225,000</u></u>

**Golden Bay Company**  
**Income Statement**  
**For Current Year**

Sales revenue (39,000 x \$15)	\$ 585,000
Less: Cost of goods sold (from previous exercise)	225,000
	<hr/>
Gross profit	\$ 360,000
Less: operating expenses:	
Marketing expenses	76,000
General and administrative expenses	26,500
	<hr/>
Total operating expenses	\$ 102,500
	<hr/>
Operating income	<u><u>\$ 257,500</u></u>

Students may simply use the \$225,000 cost of goods sold computation from E2-38B rather than repeating the details of the computation here.

a. The cost of production when determining whether to continue to manufacture the screen for a smartphone or to purchase it from an outside supplier (old equipment will be sold if new equipment is purchased)	Relevant—the cost is relevant if it differs between outsourcing and making the materials in-house.
b. The cost of land when determining where to build a new call center	Relevant—the company will incur different land cost depending on where they locate.
c. The average cost of vehicle operation when purchasing a new delivery van	Relevant—the average cost of vehicle operation will differ depending on which van is purchased.
d. Real estate property tax rates when selecting the location for a new order processing center	Relevant—the company will incur different property taxes depending on where they locate.
e. The purchase price of the old computer when replacing it with a new computer with improved features	Irrelevant—the cost of the computer, which was purchased in the past, is a sunk cost.
f. The cost of renovations when deciding whether to build a new office building or to renovate the existing office building	Relevant—the cost of renovating the existing building versus building a new one will likely differ.
g. The original cost of the current stove when selecting a new, more efficient stove for a restaurant	Irrelevant—the cost of the current stove, which was purchased in the past, is a sunk cost.
h. Local tax incentives when selecting the location of a new office complex for a company’s headquarters	Relevant—the company will incur different tax incentives depending on where they locate.
i. The fair market value (trade-in value) of the existing forklift when deciding whether to replace it with a new, more efficient model	Relevant—the fair market value is the amount of money the company could expect to receive from selling the existing forklift if they decide to replace it with a newer model.
j. Fuel economy when purchasing new trucks for the delivery fleet	Relevant—the average cost of fuel (fuel economy) will differ depending on which delivery vehicle is purchased.

**(10 min.) E2-46B**

- |    |   |   |                               |   |                    |
|----|---|---|-------------------------------|---|--------------------|
| 1) | Variable costs  | = | 20,000,000 units × \$1 / unit | = | \$20,000,000       |
|    | + <u>Fixed costs</u>  |   |                               |   | = <u>3,000,000</u> |
|    | = Total costs   |   |                               |   | = \$23,000,000     |
| 2) | \$23,000,000  | ÷ | 20,000,000 units              | = | \$1.15 per unit    |
| 3) | \$ 3,000,000  | ÷ | 20,000,000 units              | = | \$0.15 per unit    |
| 4) | Variable costs  | = | 30,000,000 units × \$1 / unit | = | \$30,000,000       |
|    | + <u>Fixed costs</u>  |   |                               |   | = <u>3,000,000</u> |
|    | = Total costs   |   |                               |   | = \$33,000,000     |
| 5) | \$33,000,000  | ÷ | 30,000,000 units              | = | \$1.10 per unit    |
| 6) | \$ 3,000,000  | ÷ | 30,000,000 units              | = | \$0.10 per unit    |
| 7) | The average product cost decreases as production volume increases because the company is <i>spreading its fixed costs</i> over 10 million more units. The company will be operating <i>more</i> efficiently, so the average cost of making each unit decreases. |   |                               |   |                    |

1. Elyria warehouse: First item: DT-331; Last item: SQ-998

Item #	Date purchased	Quantity	Cost	Warehouse ID	State
DT-331	5/5/2018	890	7500	Elyria	OH
DU-550	10/28/2019	1927	7792	Elyria	OH
DU-550	12/20/2018	1834	7431	Elyria	OH
DU-550	9/26/2019	744	3004	Elyria	OH
DU-550	5/24/2019	670	2733	Elyria	OH
EM-904	7/3/2019	450	4170	Elyria	OH
EM-904	10/8/2019	1266	4244	Elyria	OH
EM-904	10/2/2019	1452	4802	Elyria	OH
EM-904	3/22/2019	439	1462	Elyria	OH
EM-904	12/20/2018	606	1997	Elyria	OH
EM-904	2/24/2019	1299	4276	Elyria	OH
EM-904	7/5/2019	812	2703	Elyria	OH
EM-904	7/5/2019	1815	6038	Elyria	OH
EM-904	6/15/2019	935	3076	Elyria	OH
EM-904	6/14/2019	778	2581	Elyria	OH
EM-904	9/12/2019	1502	5012	Elyria	OH
EM-904	3/2/2019	1433	4846	Elyria	OH
EM-904	7/4/2019	1643	5494	Elyria	OH
SQ-998	2/4/2019	464	1782	Elyria	OH
SQ-998	5/25/2019	505	1903	Elyria	OH
SQ-998	12/20/2019	1374	5370	Elyria	OH
SQ-998	10/20/2019	1970	7522	Elyria	OH

2. Order:

- a. Cordele
- b. Dayton
- c. Kentwood
- d. Lansing
- e. Oakland
- f. Phoenix
- g. Santa Clara

First warehouse in list with Item DR-114: Cordele

Third warehouse in list with Item DR-114: Kentwood

Number of DR-114 items in stock: 20,643

Total cost of DR-114 items in total: \$85,726

3. Which warehouses have inventory items with a cost of more than \$3,000? List warehouses in alphabetic order. What is the first warehouse listed? **Albany**  
What is the last warehouse listed? **Tucson**

- h. Albany
  - i. Cordele
  - j. Dayton
  - k. Elyria
  - l. Kentwood
  - m. Lansing
  - n. Oakland
  - o. Phoenix
  - p. Santa Clara
  - q. Tucson
4. What inventory items in warehouses in California have a cost greater than \$5,000? *To get the list of items, filter State to include only CA and Cost to have a number filter of greater than \$5,000. Several inventory items on the list fit these criteria.* The inventory items should be listed in alphabetic order. What is the first inventory item listed? *Highlighted below.* What is the fifth inventory item listed? *Highlighted below. Note: the rest of the list has been omitted from this solutions manual.*

Item #	Date purchased	Quantity	Cost	Warehouse ID	State
AT-986	2/10/2019	1698	14372	Oakland	CA
AT-986	5/25/2019	1051	8931	Oakland	CA
AT-986	7/23/2019	863	6865	Oakland	CA
AT-986	11/30/2019	1036	8775	Oakland	CA
AT-986	3/14/2019	1321	10903	Oakland	CA

5. What are the oldest three inventory items in the warehouses located in Ohio? What is the total cost of inventory in Ohio warehouses that was purchased in 2018?

Three oldest items in warehouses in Ohio:

Item #	Date purchased	Quantity	Cost	Warehouse ID	State
DR-114	2/18/2018	286	2479	Dayton	OH
IE-245	3/14/2018	207	1226	Dayton	OH
DT-331	5/5/2018	890	7500	Elyria	OH

Total cost of inventory in Ohio warehouses that was purchased in 2018:

Item #	Date purchased	Quantity	Cost	Warehouse ID	State
DR-114	2/18/2018	286	2479	Dayton	OH
IE-245	3/14/2018	207	1226	Dayton	OH
DT-331	5/5/2018	890	7500	Elyria	OH
IE-245	12/12/2018	1376	8634	Dayton	OH
EM-904	12/19/2018	374	1252	Dayton	OH
JB-678	12/19/2018	109	211	Dayton	OH
DU-550	12/20/2018	1834	7431	Elyria	OH
EM-904	12/20/2018	606	1997	Elyria	OH
			<b>30730</b>		

1. How many orders total more than \$10,000? 4

Order #	Date	Product ID	Sales	Customer #	Salesperson
3265	43924	ES-220	29480	3883	Liu, Theo
9160	44015	JT-484	17719	7419	Laurel, Rosemary
4510	1/26/2020	EG-133	13504	6158	Howard, Joanna
4121	5/9/2020	IF-484	11453	8151	Rickett, Grace

2. Rosemary Laurel's customers: 26 orders

Order #	Date	Product ID	Sales	Customer #	Salesperson
9160	44015	JT-484	17719	7419	Laurel, Rosemary
9894	44036	JT-474	7798	7419	Laurel, Rosemary
4453	12/12/2020	IF-302	4921	7415	Laurel, Rosemary
4112	6/13/2020	IF-484	4882	7425	Laurel, Rosemary
4020	5/25/2020	IF-484	3992	7428	Laurel, Rosemary
5420	4/16/2020	IF-302	3965	7427	Laurel, Rosemary
5403	2/16/2020	FD-101	3931	7421	Laurel, Rosemary
5053	3/4/2020	EM-533	3881	7428	Laurel, Rosemary
5386	3/28/2020	IF-484	3380	7417	Laurel, Rosemary
4951	8/24/2020	EM-533	3288	7426	Laurel, Rosemary
4897	5/23/2020	EM-770	3140	7427	Laurel, Rosemary
5161	11/27/2020	UM-970	2795	7418	Laurel, Rosemary
4308	4/1/2020	FD-101	2741	7427	Laurel, Rosemary
4108	7/21/2020	FD-101	2677	7427	Laurel, Rosemary
4826	2/24/2020	TR-134	2583	7427	Laurel, Rosemary
4129	6/3/2020	TR-134	2513	7422	Laurel, Rosemary
4168	3/10/2020	IF-302	2470	7415	Laurel, Rosemary
5138	10/12/2020	TD-505	2450	7415	Laurel, Rosemary
4490	3/6/2020	EM-770	2445	7426	Laurel, Rosemary
4041	11/15/2020	TR-134	2415	7424	Laurel, Rosemary
4547	7/12/2020	DT-331	2025	7415	Laurel, Rosemary
5278	6/8/2020	ES-220	1479	7418	Laurel, Rosemary
5244	7/9/2020	ES-220	1442	7416	Laurel, Rosemary
4464	4/25/2020	TR-134	1401	7421	Laurel, Rosemary
4353	8/26/2020	JT-484	1386	7415	Laurel, Rosemary
4564	7/13/2020	SB-446	1330	7421	Laurel, Rosemary

3. Rank orders high to low. High: 29,480; Low: 1,309

4. Joanna Howard orders:

Dollar amount of largest order: 13,504

Dollar amount of smallest order: 1,315

Total of sales made by Howard: 397,989

How many orders by Howard: 116

5. List of orders between \$5,000 and \$10,000 alphabetically by salesperson

4487	4/6/2020	TR-134	5844	6166	Howard, Joanna
4627	8/26/2020	UM-970	6106	6159	Howard, Joanna
4419	12/21/2020	TR-134	6477	6159	Howard, Joanna
4493	7/31/2020	IF-484	8846	6165	Howard, Joanna
4610	4/27/2020	UM-970	9076	6165	Howard, Joanna
4670	11/24/2020	FD-101	9109	6160	Howard, Joanna
4033	1/14/2020	FD-101	5839	5160	Irvin, Jonathan
3803	12/8/2020	EG-133	5850	5156	Irvin, Jonathan
4704	8/4/2020	TR-134	6213	5152	Irvin, Jonathan
3718	8/11/2020	IF-302	6382	5161	Irvin, Jonathan
4155	8/2/2020	EM-770	6400	5158	Irvin, Jonathan
4286	10/15/2020	IF-484	6727	5158	Irvin, Jonathan
3908	12/11/2020	FD-101	6878	5156	Irvin, Jonathan
4397	7/24/2020	EM-533	7317	5155	Irvin, Jonathan
4252	12/22/2020	FD-101	7466	5151	Irvin, Jonathan
4218	12/9/2020	EM-904	7549	5160	Irvin, Jonathan
4505	9/18/2020	EG-133	7946	5155	Irvin, Jonathan
4306	1/16/2020	IF-302	7978	5162	Irvin, Jonathan
4087	4/22/2020	FD-101	7995	5158	Irvin, Jonathan
3993	7/31/2020	IF-484	8037	5158	Irvin, Jonathan
3996	1/1/2020	FD-101	8161	5150	Irvin, Jonathan
3599	4/7/2020	FD-101	8932	5159	Irvin, Jonathan
4431	12/20/2020	EM-533	9045	5161	Irvin, Jonathan
9894	7/24/2020	JT-474	7798	7419	Laurel, Rosemary
5186	3/22/2020	EM-770	6875	3890	Liu, Theo
5206	2/17/2020	DT-331	8557	3886	Liu, Theo
			<b>193403</b>		

**Problems (Group A)**

**(30 min.) P2-49A**

**Reqs. 1–3**

ShaZam Cola								
Value Chain Cost Classification								
<i>(In thousands)</i>								
Cost	R&D	Design	Production			Marketing	Distribution	Customer Service
			Direct Materials	Direct Labor	Mfg. Overhead			
Plant janitors' wages					\$1,000			
Truck drivers' wages							\$235	
Payment for new recipe	\$1,300							
Depreciation on delivery trucks							\$300	
Plant utilities					\$ 350			
Lime flavoring			\$1,100					
Rearranging plant layout		\$1,000						
Bottles			\$1,200					
Salt*					\$35			
Sales commissions						\$400		
Production costs of "cents-off" store coupons for customers						\$630		
Lemon syrup			\$19,000					
Replace products with expired dates								\$40
Depreciation on plant and equipment					\$2,800			
Wages of workers who mix syrup				\$8,500				
Customer hotline								\$160
Freight-in			\$2,000					
<b>Total costs</b>	<b>\$1,300</b>	<b>\$1,000</b>	<b>\$23,300*</b>	<b>\$8,500</b>	<b>\$4,185</b>	<b>\$1,030</b>	<b>\$535</b>	<b>\$200</b>

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

**Req. 4**

Total product costs:

Direct materials.....	\$23,300
Direct labor.....	8,500
Manufacturing overhead.....	<u>4,185</u>
Total product costs.....	<u>\$35,985</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, 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.

(30 min.) P2-50A

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

a.

Revenues	\$27,200
Less: <b>Cost of goods sold</b>	<u>14,600</u>
Gross profit	<u>\$12,600</u>

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

<b>Beginning raw materials inventory</b>		<b>\$ 2,300</b>
Plus: Purchases of direct materials		9,100
Materials available for use		<u>11,400</u>
Less: Ending raw materials inventory		(3,300)
Direct materials used		<u>\$ 8,100</u>

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

Beginning work in process inventory		\$ 0
Plus: Manufacturing costs incurred:		
Direct materials used	\$8,100	
Direct labor	3,600	
Manufacturing overhead	<u>6,400</u>	<u>18,100</u>
Total manufacturing costs to account for		18,100
Less: Ending work in process inventory		<u>(1,900)</u>
Cost of goods manufactured		<u>\$16,200</u>

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

Beginning finished goods inventory		\$ 4,000
Plus: Cost of goods manufactured (from above)		<u>16,200</u>
Cost of goods available for sale		20,200
Less: <b>Ending finished goods inventory</b>		<u>(5,600)</u>
Cost of goods sold (from part A)		<u>\$14,600</u>

**(30 min.) P2-51A****Req. 1**

The ending inventory costs derived from the following schedule are: Raw materials \$112,000, Work in process \$89,000, and Finished goods \$355,000.

Inventory Reconstruction Schedule					
Raw Materials Inventory		Work in Process Inventory		Finished Goods Inventory	
Beginning inventory	\$75,000 (G)	Beginning inventory	\$ 226,000 (G)	Beginning inventory	\$ 213,000 (G)
+ Purchases	533,000 (G)	+ Direct materials used	496,000 <sup>e</sup>	+ Cost of goods manufactured	1,402,000 <sup>c</sup>
		+ Direct labor	551,000 (G)		
		+ Manufacturing overhead	218,000 (G)		
= Materials available for use	608,000	= Total manufacturing costs to account for	1,491,000 (G)	= Cost of goods available for sale	1,615,000 (G)
– Ending inventory	112,000 <sup>f</sup>	– Ending inventory	89,000 <sup>d</sup>	– Ending inventory	355,000 <sup>b</sup>
= Direct Materials used	\$496,000 <sup>e</sup>	= Cost of goods manufactured	\$1,402,000 <sup>c</sup>	= Cost of goods sold	\$1,260,000 <sup>a</sup>

(G) = Amount given in the case.

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

Sales	×	(1 – Gross profit %)	=	Cost of goods sold
\$1,800,000	×	70%	=	\$1,260,000

<sup>b</sup> Ending finished goods inventory:

Cost of goods available for sale	–	Ending finished goods inventory	=	Cost of goods sold
\$1,615,000	–	Ending finished goods inventory	=	\$1,260,000
		Ending finished goods inventory	=	\$ 355,000

<sup>c</sup> Cost of goods manufactured:

Beginning finished goods inventory	+	Cost of goods manufactured	=	Cost of goods available for sale
\$213,000	+	Cost of goods manufactured	=	\$1,615,000
		Cost of goods manufactured	=	\$1,402,000

(continued) P2-51A

<sup>d</sup> Ending work in process inventory:

Total manufacturing costs to account for	–	Ending work in process inventory	=	Cost of goods manufactured
\$1,491,000	–	Ending work in process inventory	=	\$1,402,000
		Ending work in process inventory	=	\$ 89,000

<sup>e</sup> Direct materials used:

Beginning work in process inventory	+	Direct material used	+	Direct labor	+	Manufacturing overhead	=	Total manufacturing costs to account for
\$226,000	+	Direct materials used	+	\$551,000	+	\$218,000	=	\$1,491,000
		Direct materials used					=	\$ 496,000

<sup>f</sup> Ending raw materials inventory:

Materials available for use	–	Ending raw materials inventory	=	Direct materials used
\$608,000	–	Ending raw materials inventory	=	\$496,000
		Ending raw materials inventory	=	\$112,000

(45–55 min.) P2-52A

**Part One:**

Cost of goods sold calculation:	
Beginning inventory	\$ 12,000
Plus: Purchases	<u>36,000</u>
Cost of goods available for sale	48,000
Less: Ending inventory	<u>(9,100)</u>
Cost of goods sold	<u>\$ 38,900</u>

Patsy's Posies		
Income Statement		
Year Ended December 31, 2019		
Sales revenue		\$53,000
Less: Cost of goods sold		<u>38,900</u>
Gross profit		14,100
Less operating expenses:		
Utilities expense	\$ 1,100	
Rent expense	4,600	
Sales commission expense	<u>4,000</u>	<u>9,700</u>
Operating income		<u>\$4,400</u>

**Part Two:****Req. 1****Calculation of direct materials used**

Beginning raw materials inventory	\$ 14,000
Plus: Purchases of direct materials, freight-in, and import duties	<u>30,000</u>
Materials available for use	\$ 44,000
Less: Ending raw materials inventory	<u>(8,000)</u>
Direct materials used	<u><u>\$ 36,000</u></u>

**Schedule of cost of goods manufactured**

Beginning work in process inventory	\$ -
Plus: Manufacturing costs incurred	
Direct materials used (from previous schedule)	36,000
Direct labor	23,000
Manufacturing overhead (\$4,900 + \$1,350 + \$9,600)	<u>15,850</u>
Total manufacturing costs to account for	\$ 74,850
Less: Ending work in process inventory	<u>(5,000)</u>
Cost of goods manufactured	<u><u>\$ 69,850</u></u>

**Calculation of cost of goods sold**

Beginning finished goods inventory	\$ -
Plus: Cost of goods manufactured (from previous schedule)	<u>69,850</u>
Cost of goods available for sale	\$ 69,850
Less: Ending finished goods inventory	<u>(2,500)</u>
Cost of goods sold	<u><u>\$ 67,350</u></u>

**Req. 2****Floral City Manufacturing****Income Statement****For Year Ended December 31, 2020**

Sales revenue	\$ 104,000
Less: Cost of goods sold (from previous schedule)	<u>67,350</u>
Gross profit	<u>\$ 36,650</u>
Less operating expenses:	
Delivery expense	1,500
Sales salaries expense	4,300

(continued) P2-52A

Customer service hotline	1,400
Total operating expenses	<u>\$ 7,200</u>
Operating income	<u>\$ 29,450</u>

**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. 1–2**

Patsy’s Posies Partial Balance Sheet December 31, 2019	Floral City Manufacturing Partial Balance Sheet December 31, 2020
Inventory..... <u>\$9,100</u>	Raw materials inventory..... \$ 8,000
	Work in process inventory... 5,000
	Finished goods inventory... <u>2,500</u>
	Total inventory..... <u>\$15,500</u>

**(10 min.) P2-53A**

1) As shown below, the quantitative data suggests you would net \$7,400 more by taking Job #1 and living at home.

Attributes:	Take Job #1 and live at home	Take Job #2 and rent an apartment
<b>Salary</b>	<b>\$49,000</b>	<b>\$54,000</b>
<b>Rent</b>	<b>0</b>	<b>(8,500)</b>
<b>Food</b>	<b>0</b>	<b>(3,250)</b>
<b>Cable and internet</b>	<b>0</b>	<b>(650)</b>
<b>Salary, net of living expenses</b>	<b>\$49,000</b>	<b>\$41,600</b>

**Net difference = \$49,000 – \$41,600 = \$7,400**

- 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.
- You might consider whether you would like to live with your parents again or not! Even though you would benefit by \$7,400 if you live at home, you may decide it isn’t worth it!
- If you want Job #2 and 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	6,000	7,500	10,000
Total fixed costs	\$ 12,000	\$ 12,000	\$ 12,000
Total variable costs	9,300	11,625	15,500
Total costs	<u>\$ 21,300</u>	<u>\$23,625</u>	<u>\$27,500</u>
Fixed cost per pizza	\$ 2.00	\$ 1.60	\$ 1.20
Variable cost per pizza	1.55	1.55	1.55
Average cost per pizza	<u>\$ 3.55</u>	<u>\$ 3.15</u>	<u>\$ 2.75</u>
Selling price per pizza	\$ 6.25	\$ 6.25	\$ 6.25
Average profit per pizza	\$ 2.70	\$ 3.10	\$ 3.50

**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 \$23,250 calculated as follows:

Total Sales Revenue	– Total Costs	= Monthly Profit
(\$6.25 per pizza × 7,500 pizzas)	– \$23,625	= \$23,250

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

Total Sales Revenue at the new price and volume	– Total Costs at the new volume	= New Monthly Profit
(\$5.75 per pizza × 10,000 pizzas)	– \$27,500	= \$30,000

Because the restaurant will generate an additional profit of \$6,750, the owner should decrease the sales price to increase the volume.

## Problems (Group B)

(30 min.) P2-55B

**Reqs. 1–3**

Crystal Cola								
Value Chain Cost Classification								
<i>(In thousands)</i>								
Cost	R&D	Design	Production			Marketing	Distribution	Customer Service
			Direct Materials	Direct Labor	Mfg. Overhead			
Truck drivers' wages							\$285	
Lemon syrup			\$16,000					
Depreciation on trucks							\$175	
Lime flavoring			\$1,020					
Payment for new recipe	\$1,090							
Customer hotline								\$220
Sales commissions						\$450		
Production costs of "cents-off" store coupons for customers						\$630		
Rearranging plant layout		\$1,200						
Freight-in			\$1,300					
Depreciation on plant and equipment					\$2,900			
Bottles			\$1,490					
Salt*					\$15			
Plant utilities					\$1,250			
Wages of workers who mix syrup				\$7,900				
Plant janitors' wages					\$1,000			
Replace products with expired dates								\$40
<b>Total costs</b>	<b>\$1,090</b>	<b>\$1,200</b>	<b>\$19,810*</b>	<b>\$7,900</b>	<b>\$5,165</b>	<b>\$1,080</b>	<b>\$460</b>	<b>\$260</b>

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

**Req. 4**

Total product costs:

<b>Direct materials.....</b>	<b>\$19,810</b>
<b>Direct labor.....</b>	<b>7,900</b>
<b>Manufacturing overhead.....</b>	<b>5,165</b>
<b>Total product costs.....</b>	<b><u>\$32,875</u></b>

**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, 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.

(30 min.) P2-56B

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

a.

Revenues	\$27,400
Less: <b>Cost of goods sold</b>	<u>15,300</u>
Gross profit	<u>\$12,100</u>

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

<b>Beginning raw materials inventory</b>	<b>\$ 2,100</b>	↑
Plus: Purchases of direct materials	9,300	
Materials available for use	<u>11,400</u>	
Less: Ending raw materials inventory	<u>(2,900)</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
Plus: Manufacturing costs incurred:		
Direct materials used	\$8,500	
Direct labor	3,200	
Manufacturing overhead	<u>6,500</u>	<u>18,200</u>
Total manufacturing costs to account for		18,200
Less: Ending work in process inventory		<u>(1,800)</u>
Cost of goods manufactured		<u>\$16,400</u>

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

Beginning finished goods inventory	\$ 4,400
Plus: Cost of goods manufactured (from above)	<u>16,400</u>
Cost of goods available for sale	20,800
Less: <b>Ending finished goods inventory</b>	<u>(5,500)</u>
Cost of goods sold (from part A)	<u>\$15,300</u>

**Req. 1**

The ending inventory costs derived from the following schedule are: Raw materials \$51,000, Work in process \$102,000, and Finished goods \$255,000.

Inventory Reconstruction Schedule					
Raw Materials Inventory		Work in Process Inventory		Finished Goods Inventory	
Beginning inventory	\$85,000 (G)	Beginning inventory	\$ 187,000 (G)	Beginning inventory	\$ 209,000 (G)
+ Purchases	524,000 (G)	+ Direct materials used	558,000 <sup>e</sup>	+ Cost of goods manufactured	1,406,000 <sup>c</sup>
		+ Direct labor	545,000 (G)		
		+ Manufacturing overhead	218,000 (G)		
= Materials available for use	609,000	= Total manufacturing costs to account for	1,508,000 (G)	= Cost of goods available for sale	1,615,000 (G)
- Ending inventory	51,000 <sup>f</sup>	- Ending inventory	102,000 <sup>d</sup>	- Ending inventory	255,000 <sup>b</sup>
= Direct materials used	\$558,000 <sup>e</sup>	= Cost of goods manufactured	\$1,406,000 <sup>c</sup>	= Cost of goods Sold	\$1,360,000 <sup>a</sup>

(G) = Amount given in the case.

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

Sales	×	(1 – Gross profit %)	=	Cost of goods sold
\$1,600,000	×	85%	=	\$1,360,000

<sup>b</sup> Ending finished goods inventory:

Cost of goods available for sale	–	Ending finished goods inventory	=	Cost of goods sold
\$1,615,000	–	Ending finished goods inventory	=	\$1,360,000
		Ending finished goods inventory	=	\$ 255,000

<sup>c</sup> Cost of goods manufactured:

Beginning finished goods inventory	+	Cost of goods manufactured	=	Cost of goods available for sale
\$209,000	+	Cost of goods manufactured	=	\$1,615,000
		Cost of goods manufactured	=	\$1,406,000

<sup>d</sup> Ending work in process inventory:

Total manufacturing costs to account for	–	Ending work in process inventory	=	Cost of goods manufactured
\$1,508,000	–	Ending work in process inventory	=	\$1,406,000
		Ending work in process inventory	=	\$ 102,000

**(continued) P2-57B**

<sup>e</sup> Direct materials used:

Beginning work in process inventory	+	Direct material used	+	Direct labor	+	Manufacturing overhead	=	Total manufacturing costs to account for
\$187,000	+	Direct materials used	+	\$545,000	+	\$218,000	=	\$1,508,000
		Direct materials used					=	\$ 558,000

<sup>f</sup> Ending raw materials inventory:

Materials available for use	-	Ending raw materials inventory	=	Direct materials used
\$609,000	-	Ending raw materials inventory	=	\$558,000
		Ending raw materials inventory	=	\$51,000

**(45–55 min.) P2-58B**

**Part One:**

Cost of goods sold calculation:	
Beginning inventory	\$ 12,600
Plus: Purchases	<u>38,000</u>
Cost of goods available for sale	50,600
Less: Ending inventory	<u>(9,200)</u>
Cost of goods sold	<u>\$ 41,400</u>

Fran's Flowers		
Income Statement		
Year Ended December 31, 2019		
Sales revenue		\$53,000
Less: Cost of goods sold		<u>41,400</u>
Gross profit		11,600
Less operating expenses:		
Utilities expense	\$ 1,000	
Rent expense	4,400	
Sales commission expense	<u>4,100</u>	<u>9,500</u>
Operating income		<u>\$2,100</u>

**Part Two:**

**Req. 1**

**Calculation of direct materials used**

Beginning raw materials inventory	18,000
Plus: Purchases of direct materials, freight-in, and import duties	31,000
Materials available for use	49,000
Less: Ending raw materials inventory	(7,500)
Direct materials used	41,500

**Schedule of cost of goods manufactured**

Beginning work in process inventory	-
Plus: Manufacturing costs incurred	
Direct materials used (from previous schedule)	41,500
Direct labor	22,000
Manufacturing overhead (\$4,300 + \$1,250 + \$9,400)	14,950
Total manufacturing costs to account for	78,450
Less: Ending work in process inventory	(4,000)
Cost of goods manufactured	74,450

**Calculation of cost of goods sold**

Beginning finished goods inventory	-
Plus: Cost of goods manufactured (from previous schedule)	74,450
Cost of goods available for sale	74,450
Less: Ending finished goods inventory	(4,500)
Cost of goods sold	69,950

**Req. 2**

**Floral Place Manufacturing  
Income Statement  
For Year Ended December 31, 2020**

Sales revenue	109,000
Less: Cost of goods sold (from previous schedule)	69,950
Gross profit	39,050
Less operating expenses:	
Delivery expense	3,800
Sales salaries expense	4,800
Customer service hotline	1,700
Total operating expenses	10,300
Operating income	28,750

**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. 1–2**

Fran’s Flowers Partial Balance Sheet December 31, 2019	Floral Place Manufacturing Partial Balance Sheet December 31, 2020
Inventory.....	<u>\$9,200</u>
	Raw materials inventory.....
	\$ 7,500
	Work in process inventory..
	4,000
	Finished goods inventory...
	<u>4,500</u>
	Total inventory.....
	<u>\$16,000</u>

**(10 min.) P2-59B**

1) As shown below, the quantitative data suggests you would net \$10,800 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	\$42,000	\$47,000
Rent	0	(12,000)
Food	0	(3,000)
Cable and internet	<u>0</u>	<u>(800)</u>
Salary, net of living expenses	\$42,000	\$31,200

Net difference = \$42,000 – \$31,200 = \$10,800

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 \$10,800 if you live at home, you may decide it isn’t worth it!

4) If you want Job #2 and 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	5,000	8,000	10,000
Total fixed costs	\$ 10,000	\$ 10,000	\$ 10,000
Total variable costs	7,250	11,600	14,500
Total costs	<u>\$17,250</u>	<u>\$21,600</u>	<u>\$24,500</u>
Fixed cost per pizza	\$ 2.00	\$ 1.25	\$ 1.00
Variable cost per pizza	1.45	1.45	1.45
Average cost per pizza	<u>\$ 3.45</u>	<u>\$ 2.70</u>	<u>\$ 2.45</u>
Sales price per pizza	\$6.25	\$6.25	\$6.25
Average profit per pizza	\$ 2.80	\$ 3.55	\$ 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 \$28,400 calculated as follows:

Total Sales Revenue	- Total Costs	= Monthly Profit
(\$6.25 per pizza × 8,000 pizzas)	- \$21,600	= \$28,400

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
(\$5.75 per pizza × 10,000 pizzas)	- \$24,500	= \$33,000

Because the restaurant will generate an additional profit of \$4,600 (\$33,000 - \$28,400), the owner should decrease the sales price to increase the volume.

## Serial Case

C2-61

**Req. 1**

Caesars Entertainment Corporation				
Consolidated Statements of Operations (condensed and adapted)				
In millions, except per share data				
	Years Ended December 31,			
	2018	2017	2016	
<b>Revenues</b>				
Casino revenue	\$ 4,247	\$ 2,168	\$ 1,608	
Food and beverage revenue	1,574	982	822	
Rooms revenue	1,519	1,074	950	
Other revenues	1,051	644	497	
Net revenues	\$ 8,391	\$ 4,868	\$ 3,877	
<b>Expenses</b>				
Casino expenses	\$ 2,393	\$ 1,213	\$ 890	
Food and beverage expenses	1,106	693	572	
Rooms expenses	480	360	318	
Miscellaneous expenses	3,673	2,065	1,871	
Total expenses	\$ 7,652	\$ 4,331	\$ 3,651	
Income/(loss) from operations	\$ 739	\$ 537	\$ 226	

**Req. 2**

Caesar's operating income increased from 2016–17 and increased from 2017–18.

**Req. 3**

The casino division had the most revenue in 2018 and generated the most expenses in 2018.

## Discussion & Analysis

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A2-62

- 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. Costs that go directly to the income statement are all costs along the value chain for service companies, all costs except for purchases for merchandisers, and all costs 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 it is not traceable to individual cars.

- 5. What is meant by the term “product costs”? What is meant by the term “period costs”? Why does it matter whether a cost is a product cost or a period cost?**

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 and are often called Operating Expenses, or Selling, General, and Administrative Expenses. A 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 product costs to period costs. Using a product of your choice, give examples of product costs and period costs. Explain why you categorized your costs as you did.**

Levi Strauss makes jeans. The 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, whereas 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 materials, 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 ending finished goods inventory is deducted from cost of goods available for sale on the income statement to determine cost of goods sold. 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 online search of the term “greenwashing.” What examples of greenwashing can you find?**

Student answers may vary.

- 12. Ricoh is 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 online search for “cradle to cradle design” or a related term if you need ideas.**

Student answers may vary.

## Application & Analysis

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A2-63

### 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 e-mail support

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

All the costs, except 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 question 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

Student answers will vary.

**Ethics Mini-Case**

- a) If Ryan were to increase income by adding sales commission costs and advertising costs to product costs, the following ethical principles would be violated:
- i. Competence: Perform professional duties in accordance with relevant laws, regulations, and technical standards. By adding in period costs to product costs, Ryan would be violating technical standards.
  - ii. Competence: Provide decision support information that is accurate and clear. Adding in period costs would not be accurate or clear.
  - iii. Credibility: Disclose all relevant information that could reasonably be expected to influence an intended user's understanding of the reports. Because these period costs would be buried in product costs, the user's understanding would be lessened.
  - iv. Integrity: Abstain from engaging in or supporting any activity that might discredit the profession. By manipulating the accounting numbers to serve his own purpose, Ryan would be violating the integrity principle.
- b) If Ryan were to make the company loan to Brandon, ethical principles would be violated because there is no company policy that allows loans to employees. Ryan would be violating the following ethical principles:
- i. Integrity: Mitigate actual conflicts of interest. Ryan is putting the needs of his friend before the company. This is a conflict of interest. Ryan wants to help his friend, which may be to the detriment of the company. If Brandon does not pay back the loan, the company loses money. If Brandon does not pay back the money on a timely basis, the company may have a cash shortage.
  - ii. Competence: Perform professional duties in accordance with relevant laws, regulations, and technical standards. Ryan is using the company's funds for personal reasons, and this is clearly a violation of his responsibility in a fiduciary position at the company. He does not have the right to disburse the company's funds for personal reasons.
- c) Perhaps a third course of action would be to think of other alternatives:
- i. Refer Brandon to a credit counseling service or to an employee assistance program.
  - ii. Talk with the board about the temporary downturn and persuade them that bonuses might be a good strategic option.

Student answers may vary; the above answers are only a starting point for class discussion.

**Real Life Mini-Case**

1. Starbucks could be considered both a service company and a merchandiser. The cafe part of Starbucks would be considered primarily service-oriented, while the sale of Starbucks' coffee, mugs, teas, and merchandise would be primarily merchandiser-oriented.
2. A typical value chain is composed of the following phases. Potential costs for a cup of coffee's value chain are included with each phase:
  - a. Research & Development: Performing research on the proper roasting methods for coffee beans and on the various types of coffee beans that might be used
  - b. Design: Designing the coffee brewing machines to be used in the cafes for brewing the cup of coffee; designing store layouts; designing the cup and sleeve
  - c. Production or Purchases: Brewing the coffee would include the coffee beans, the water, any milk or sugar used. Other costs at this point of the value chain would be the labor of the employees brewing and serving the coffee.
    - i. Costs are increasing here for Starbucks (labor, rent)
    - ii. Costs are decreasing here for Starbucks (coffee costs)
  - d. Marketing: A variety of marketing of its coffee, including print and web advertisements
  - e. Distribution: Delivery of services and products to customers through Starbucks stores, grocery stores and shipments from online sales
  - f. Customer Service: If a customer is unhappy with the cup of coffee, Starbucks can be contacted for some resolution. The costs of providing customers with complimentary coffee to compensate for a less-than-perfect store visit would be in this part of the value chain. In addition, the cost of administering Starbucks' loyalty program would be part of the customer service value chain.
3. Starbucks cup of coffee served in Bellevue, Tennessee, café:
  - a. Costs
    - i. Direct material: Coffee beans, water, cup, cup sleeve, milk, sugar
    - ii. Direct labor: Store barista who serves the cup of coffee
    - iii. Overhead: Store lighting, store rent, depreciation on equipment, store manager salary, insurance on the store, and other similar costs
    - iv. Direct material cost would have decreased and direct labor cost would have increased in the past few years.
  - b. Direct costs assuming Bellevue store is the cost object would be coffee in the cup, water in the cup, labor of the barista, and possibly milk. Indirect costs would be the cost to light the store, the insurance on the store, and others.
  - c. Direct costs of the cup of coffee assuming Starbucks Corporation is the cost object: Almost all costs would be direct, including advertising, corporate employees, depreciation, and other costs of the corporation.
4. Starbucks café in Bellevue, Tennessee, and a pound of bagged coffee assuming coffee is ground at time of purchase:
  - a. Costs of that pound of coffee
    - i. Direct material: Coffee beans, bag
    - ii. Direct labor: Store barista who grinds coffee and packages
    - iii. Overhead: Store lighting, store rent, depreciation on equipment, store manager salary, insurance on the store, and other similar costs
  - b. Direct costs assuming Bellevue store is the cost object would be coffee beans, the packaging, and the labor of the employees who processed the packaged coffee. Indirect costs would be the cost to light the store, the insurance on the store, and other similar costs.
  - c. Direct costs of the pound of coffee assuming Starbucks Corporation is the cost object: Almost all costs would be direct, including advertising, corporate employees, depreciation, and other costs of the corporation.

Student answers may vary; the above answers are only a starting point for class discussion.