

# CHAPTER 8

## Valuation of Inventories: A Cost-Basis Approach

### ANSWERS TO QUESTIONS

1. In a retailing concern, inventory normally consists of only one category that is the product awaiting resale. In a manufacturing company, inventories consist of raw materials, work in process, and finished goods. Sometimes a manufacturing or factory supplies inventory account is also included.

LO: 1, Bloom: K, Difficulty: Simple, Time: 3-5, AACSB: Communication, AICPA BB: None, AICPA FC: Reporting, AICPA PC: Communication

2. (a) Inventories are unexpired costs and represent future benefits to the owner. A statement of financial position includes a listing of all unexpired costs (assets) at a specific point in time. Because inventories are assets owned at the specific point in time for which a statement of financial position is prepared, they must be included in order that the owners' financial position will be presented fairly.  
(b) Beginning and ending inventories are included in the computation of net income only for the purpose of arriving at the cost of goods sold during the period of time covered by the statement. Goods included in the beginning inventory which are no longer on hand are expired costs to be matched against revenues recognized during the period. Goods included in the ending inventory are unexpired costs to be carried forward to a future period, rather than expensed.

LO: 1, Bloom: K, Difficulty: Simple, Time: 3-5, AACSB: Communication, AICPA BB: None, AICPA FC: Reporting, AICPA PC: Communication

3. In a perpetual inventory system, data are available at any time on the quantity and dollar amount of each item of material or type of merchandise on hand. A physical inventory is a physical count of inventory on hand at a point in time. In a periodic system, the inventory is periodically counted (at least once a year) but up-to-date records are not necessarily maintained. Discrepancies often occur between the physical count and the perpetual records because of clerical errors, theft, waste, misplacement of goods, etc.

LO: 1, Bloom: K, Difficulty: Simple, Time: 3-5, AACSB: Communication, AICPA BB: None, AICPA FC: Reporting, AICPA PC: Communication

4. No, Mishima, Inc. should not report this amount on its balance sheet. As consignee, it does not own this merchandise and therefore it is inappropriate for it to recognize this merchandise as part of its inventory.

LO: 2, Bloom: AP, Difficulty: Simple, Time: 3-5, AACSB: Analysis, Communication, AICPA BB: None, AICPA FC: Reporting, AICPA PC: Communication

5. Repurchase agreements (product financing arrangements) are essentially off-balance-sheet financing devices. These arrangements make it appear that a company has sold its inventory or never taken title to it so they can keep loans off their balance sheets. A repurchase agreements arrangement should not be recorded as a sale. Rather, the inventory and related liability should be reported on the balance sheet.

LO: 2, Bloom: K, Difficulty: Simple, Time: 3-5, AACSB: Communication, AICPA BB: None, AICPA FC: Reporting, AICPA PC: Communication

6. (a) Inventory.  
(b) Not shown, possibly in a note to the financial statements if material.  
(c) Inventory.  
(d) Inventory, separately disclosed as raw materials.  
(e) Not shown, possibly a note to the financial statements.  
(f) Inventory or manufacturing supplies.

LO: 2, Bloom: C, Difficulty: Simple, Time: 3-5, AACSB:., AICPA BB: None, AICPA BB: None, AICPA FC: Reporting, AICPA PC:., AICPA BB: None

7. Cost, which has been defined generally as the price paid or consideration given to acquire an asset, is the primary basis for accounting for inventories. As applied to inventories, cost means the sum of the applicable expenditures and charges directly or indirectly incurred in bringing an article to its existing condition and location. These applicable expenditures and charges include all acquisition and production costs but exclude all selling expenses and that portion of general and administrative expenses not clearly related to production. Freight charges applicable to the product are considered a cost of the goods.

LO: 2, Bloom: K, Difficulty: Simple, Time: 3-5, AACSB: Communication, AICPA BB: None, AICPA FC: Measurement, Reporting, AICPA PC: Communication

8. By their nature, product costs “attach” to the inventory and are recorded in the inventory account. These costs are directly connected with the bringing of goods to the place of business of the buyer and converting such goods to a salable condition. Such charges would include freight charges on goods purchased, other direct costs of acquisition, and labor and other production costs incurred in processing the goods up to the time of sale.

Period costs are not considered to be directly related to the acquisition or production of goods and therefore are not considered to be a part of inventories.

Conceptually, these expenses are as much a cost of the product as the initial purchase price and related freight charges attached to the product. While selling expenses are generally considered as more directly related to the cost of goods sold than to the unsold inventory, in most cases, though, the costs, especially administrative expenses, are so unrelated or indirectly related to the immediate production process that any allocation is purely arbitrary.

Interest costs are considered a cost of financing and are generally expensed as incurred, when related to getting inventories ready for sale.

LO: 2, Bloom: K, Difficulty: Simple, Time: 3-5, AACSB: Communication, AICPA BB: None, AICPA FC: Measurement, Reporting, AICPA PC: Communication

9. Cash discounts (purchase discounts) should not be accounted for as financial income when payments are made. Income should be recognized when the performance obligation is satisfied (when the company sells the inventory). Furthermore, a company does not recognize revenue from purchasing goods. Cash discounts should be considered as a reduction in the cost of the items purchased.

LO: 2, Bloom: K, Difficulty: Simple, Time: 3-5, AACSB: Communication, AICPA BB: None, AICPA FC: Measurement, Reporting, AICPA PC: Communication

10. \$60.00, \$63.00, \$61.80\*. (Freight-In not included for discount.) \*  $\$63.00 - (\$60 \times .02) = \$61.80$

LO: 2, Bloom: K, Difficulty: Simple, Time: 3-5, AACSB: Communication, AICPA BB: None, AICPA FC: Measurement, Reporting, AICPA PC: Communication

11. Arguments for the specific identification method are as follows:

- (1) It provides an accurate and ideal matching of costs and revenues because the cost is specifically identified with the sales price.
- (2) The method is realistic and objective since it adheres to the actual physical flow of goods rather than an artificial flow of costs.
- (3) Inventory is valued at actual cost instead of an assumed cost.

Arguments against the specific identification method include the following:

- (1) The cost of using it restricts its use to goods of high unit value.
- (2) The method is impractical for manufacturing processes or cases in which units are commingled and identity lost.
- (3) It allows an artificial determination of income by permitting arbitrary selection of the items to be sold from a homogeneous group.
- (4) It may not be a meaningful method of assigning costs in periods of changing price levels.

- 12.** The first-in, first-out method approximates the specific identification method when the physical flow of goods is on a FIFO basis. When the goods are subject to spoilage or deterioration, FIFO is particularly appropriate. In comparison to the specific identification method, an attractive aspect of FIFO is the elimination of the danger of artificial determination of income by the selection of advantageously priced items to be sold. The basic assumption is that costs should be charged in the order in which they are incurred. As a result, the inventories are stated at the latest costs. Where the inventory is consumed and valued in the FIFO manner, there is no accounting recognition of unrealized gain or loss. A criticism of the FIFO method is that it maximizes the effects of price fluctuations upon reported income because current revenue is matched with the oldest costs which are probably least similar to current replacement costs. On the other hand, this method produces a balance sheet value for the asset close to current replacement costs. It is claimed that FIFO is deceptive when used in a period of rising prices because the reported income is not fully available since a part of it must be used to replace inventory at higher cost.

The results achieved by the average-cost method resemble those of the specific identification method where items are chosen at random or there is a rapid inventory turnover. Compared with the specific identification method, the average-cost method has the advantage that the goods need not be individually identified; therefore accounting is not so costly and the method can be applied to fungible goods. The average-cost method is also appropriate when there is no marked trend in price changes. In opposition, it is argued that the method is illogical. Since it assumes that all sales are made proportionally from all purchases and that inventories will always include units from the first purchases, it is argued that the method is illogical because it is contrary to the chronological flow of goods. In addition, in periods of price changes there is a lag between current costs and costs assigned to income or to the valuation of inventories.

If it is assumed that actual cost is the appropriate method of valuing inventories, last-in, first-out is not theoretically correct. In general, LIFO is directly adverse to the specific identification method because the goods are not valued in accordance with their usual physical flow. An exception is the application of LIFO to piled coal or ores which are more or less consumed in a LIFO manner. Proponents argue that LIFO provides a better matching of current costs and revenues.

During periods of sharp price movements, LIFO has a stabilizing effect upon reported income figures because it eliminates paper income and losses on inventory and smoothes the impact of income taxes. LIFO opponents object to the method principally because the inventory valuation reported in the balance sheet could be seriously misleading. The profit figures can be artificially influenced by management through contracting or expanding inventory quantities. Temporary involuntary depletion of LIFO inventories would distort current income by the previously unrecognized price gains or losses applicable to the inventory reduction.

- 13.** A company may obtain a price index from an outside source (external index)—the government, a trade association, an exchange—or by computing its own index (internal index) using the double extension method. Under the double extension method the ending inventory is priced at both base-year costs and at current-year costs, with the total current cost divided by the total base cost to obtain the current year index.

14. Under the double extension method, LIFO inventory is priced at both base-year costs and current-year costs. The total current-year cost of the inventory is divided by the total base-year cost to obtain the current-year index.

The index for the LIFO pool consisting of product A and product B is computed as follows:

Product	Units	Base-Year Cost		Current-Year Cost	
		Unit	Total	Unit	Total
A	25,500	\$10.20	\$260,100	\$21.00	\$ 535,500
B	10,350	\$37.00	382,950	\$45.60	471,960
December 31, 2020 inventory			<u>\$643,050</u>		<u>\$1,007,460</u>

$$\frac{\text{Current-Year Cost}}{\text{Base-Year Cost}} = \frac{\$1,007,460}{\$643,050} = 156.67, \text{ index at 12/31/20.}$$

LO: 4, Bloom: AP, Difficulty: Moderate, Time: 5-7, AACSB: Analysis, Communication, AICPA BB: None, AICPA FC: Measurement, Reporting, AICPA PC: Communication

15. The LIFO method results in a smaller net income because later costs, which are higher than earlier costs, are matched against revenue. Conversely, in a period of falling prices, the LIFO method would result in a higher net income because later costs in this case would be lower than earlier costs, and these later costs would be matched against revenue.

LO: 4, Bloom: K, Difficulty: Simple, Time: 3-5, AACSB: Communication, AICPA BB: None, AICPA FC: Reporting, AICPA PC: Communication

16. The dollar-value method uses dollars instead of units to measure increments, or reductions in a LIFO inventory. After converting the closing inventory to the same price level as the opening inventory, the increases in inventories, priced at base-year costs, is converted to the current price level and added to the opening inventory. Any decrease is subtracted at base-year costs to determine the ending inventory.

The principal advantage is that it requires less record-keeping. It is not necessary to keep records or make calculations of opening and closing quantities of individual items. Also, the use of a base inventory amount gives greater flexibility in the makeup of the base and eliminates many detailed calculations.

The unit LIFO inventory costing method is applied to each type of item in an inventory. Any type of item removed from the inventory base (e.g., magnets) and replaced by another type (e.g., coils) will cause the old cost (magnets) to be removed from the base and to be replaced by the more current cost of the other item (coils).

The dollar-value LIFO costing method treats the inventory base as being composed of a base of cost in dollars rather than of units. Therefore, a change in the composition of the inventory (less magnets and more coils) will not change the cost of inventory base so long as the amount of the inventory stated in base-year dollars does not change.

LO: 4, Bloom: K, Difficulty: Moderate, Time: 3-5, AACSB: Communication, AICPA BB: None, AICPA FC: Reporting, AICPA PC: Communication

17. (a) LIFO layer—a LIFO layer (increment) is formed when the ending inventory at base-year prices exceeds the beginning inventory at base-year prices.
- (b) LIFO reserve—the difference between the inventory method used for internal purposes and LIFO.
- (c) LIFO effect—the change in the LIFO reserve (Allowance to Reduce Inventory to LIFO) from one period to the next.

LO: 4, Bloom: K, Difficulty: Simple, Time: 3-5, AACSB: Communication, AICPA BB: None, AICPA FC: Reporting, AICPA PC: Communication

<b>18.</b> December 31, 2020 inventory at December 31, 2019 prices, \$1,053,000 ÷ 1.08 .....	\$975,000
Less: Inventory, December 31, 2019 .....	<u>800,000</u>
Increment added during 2020 at base prices .....	<u>\$175,000</u>
Increment added during 2020 at December 31, 2020 prices, \$175,000 X 1.08 .....	\$189,000
Add: Inventory at December 31, 2019 .....	<u>800,000</u>
Inventory, December 31, 2020, under dollar-value LIFO method .....	<u>\$989,000</u>

LO: 4, Bloom: AP, Difficulty: Moderate, Time: 3-5, AACSB: Communication, AICPA BB: None, AICPA FC: Reporting, AICPA PC: Communication

- 19.** Phantom inventory profits occur when the inventory costs matched against sales are less than the replacement cost of the inventory. The cost of goods sold therefore is understated and profit is considered overstated. Phantom profits are said to occur when FIFO is used during periods of rising prices.

High inventory profits through involuntary liquidation occur if a company is forced to reduce its LIFO base or layers. If the base or layers of old costs are eliminated, strange results can occur because old, irrelevant costs can be matched against current revenues. A distortion in reported income for a given period may result, as well as consequences that are detrimental from an income tax point of view.

LO: 4, Bloom: K, Difficulty: Moderate, Time: 3-5, AACSB: Communication, AICPA BB: None, AICPA FC: Reporting, AICPA PC: Communication

- 20.** This omission would have no effect upon the net income for the year, since the purchases and the ending inventory are understated in the same amount. With respect to financial position, both the inventory and the accounts payable would be understated. Materiality would be a factor in determining whether an adjustment for this item should be made as omission of a large item would distort the amount of current assets and the amount of current liabilities. It, therefore, might influence the current ratio to a considerable extent.

LO: 5, Bloom: K, Difficulty: Moderate, Time: 3-5, AACSB: Communication, AICPA BB: None, AICPA FC: Reporting, AICPA PC: Communication

# SOLUTIONS TO BRIEF EXERCISES

## BRIEF EXERCISE 8.1

### RIVERA COMPANY Balance Sheet (Partial) December 31

<b>Current assets</b>		
Cash .....		\$ 190,000
Receivables (net) .....		400,000
Inventories		
Finished goods .....	\$170,000	
Work in process .....	200,000	
Raw materials .....	<u>335,000</u>	705,000
Prepaid insurance .....		<u>41,000</u>
<b>Total current assets</b> .....		<b><u>\$1,336,000</u></b>

LO: 1, Bloom: AP, Difficulty: Simple, Time: 3-5, AACSB: Analysis, AICPA BB: None, AICPA FC: Reporting, AICPA PC: AICPA BB: None

## BRIEF EXERCISE 8.2

Inventory (150 X \$34) .....	5,100	
Accounts Payable .....		5,100
Accounts Payable (6 X \$34)	204	
.....		
Inventory .....		204
Accounts Receivable (125 X \$50)	6,250	
.....		
Sales .....		6,250
Cost of Goods Sold (125 X \$34) .....	4,250	
Inventory .....		4,250

LO: 1, Bloom: AP, Difficulty: Simple, Time: 5-7, AACSB: Analysis, AICPA BB: None, AICPA FC: Reporting, AICPA PC: AICPA BB: None

## BRIEF EXERCISE 8.3

December 31 inventory per physical count .....		\$ 200,000
Goods-in-transit purchased FOB shipping point .		25,000
Goods-in-transit sold FOB destination.....		<u>22,000</u>

December 31 inventory .....

\$ 247,000

LO: 2, Bloom: AP, Difficulty: Simple, Time: 3-5, AACSB: Analysis, AICPA BB: None, AICPA FC: Reporting, AICPA PC:, AICPA BB: None

### BRIEF EXERCISE 8.4

Weighted average cost per unit	$\frac{\$11,850}{1,000} =$	<u>\$ 11.85</u>
Ending inventory 400 X \$11.85 =		<u>\$ 4,740</u>
Cost of goods available for sale		\$11,850
Deduct ending inventory		<u>4,740</u>
Cost of goods sold (600 X \$11.85)		<u>\$ 7,110</u>

LO: 3, Bloom: AP, Difficulty: Moderate, Time: 3-5, AACSB: Analysis, AICPA BB: None, AICPA FC: Measurement, Reporting, AICPA PC:, AICPA BB: None

### BRIEF EXERCISE 8.5

April 23	350 X \$13 =	\$ 4,550
April 15	50 X \$12 =	<u>600</u>
Ending inventory		<u>\$ 5,150</u>
Cost of goods available for sale		\$11,850
Deduct ending inventory		<u>5,150</u>
Cost of goods sold		<u>\$ 6,700</u>

LO: 3, Bloom: AP, Difficulty: Moderate, Time: 3-5, AACSB: Analysis, AICPA BB: None, AICPA FC: Measurement, Reporting, AICPA PC:, AICPA BB: None

### BRIEF EXERCISE 8.6

April 1	250 X \$10 =	\$ 2,500
April 15	150 X \$12 =	<u>1,800</u>
Ending inventory		<u>\$ 4,300</u>
Cost of goods available for sale		\$11,850
Deduct ending inventory		<u>4,300</u>
Cost of goods sold		<u>\$ 7,550</u>

LO: 3, Bloom: AP, Difficulty: Moderate, Time: 3-5, AACSB: Analysis, AICPA BB: None, AICPA FC: Measurement, Reporting, AICPA PC:, AICPA BB: None

## BRIEF EXERCISE 8.7

FIFO inventory balance at December 31, 2020.....	\$2,900,000
LIFO inventory balance at December 31, 2020.....	<u>(1,500,000)</u>
LIFO reserve at December 31, 2020 .....	1,400,000
LIFO reserve at December 31, 2020 .....	\$1,400,000
LIFO reserve at January 1, .....	<u>(1,300,000)</u>
LIFO effect for 2020.....	100,000
At December 31, 2020, the entry to record the LIFO effect is:	
Cost of Goods Sold	100,000
Allowance to Reduce Inventory to LIFO	100,000

LO: 4, Bloom: AP, Difficulty: Moderate, Time: 3-5, AACSB: Analysis , AICPA BB: None, AICPA FC: Measurement, Reporting, AICPA PC:, AICPA BB: None

## BRIEF EXERCISE 8.8

2019		\$100,000
2020	$\$119,900 \div 1.10 = \underline{\$109,000}$	
	\$100,000 X 1.00 .....	\$100,000
	\$9,000* X 1.10.....	<u>9,900</u>
		<u>\$109,900</u>
	 *\$109,000 – \$100,000	
2021	$\$134,560 \div 1.16 = \underline{\$116,000}$	
	\$100,000 X 1.00 .....	\$100,000
	\$9,000 X 1.10 .....	9,900
	\$7,000** X 1.16 .....	<u>8,120</u>
		<u>\$118,020</u>
	 **\$116,000 – \$109,000	

LO: 4, Bloom: AP, Difficulty: Moderate, Time: 5-7, AACSB: Analysis , AICPA BB: None, AICPA FC: Measurement, Reporting, AICPA PC:, AICPA BB: None



## BRIEF EXERCISE 8.9

2020 inventory at base amount ( $\$22,140 \div 1.08$ )		\$ 20,500
2019 inventory at base amount		<u>(19,750)</u>
Increase in base inventory		<u>\$ 750</u>
2020 inventory under LIFO		
Layer one	\$19,750 X 1.00	\$ 19,750
Layer two	\$ 750 X 1.08	<u>810</u>
		<u>\$ 20,560</u>
2021 inventory at base amount ( $\$25,935 \div 1.14$ )		\$ 22,750
2020 inventory at base amount		<u>20,500</u>
Increase in base inventory		<u>\$ 2,250</u>
2021 inventory under LIFO		
Layer one	\$19,750 X 1.00	\$ 19,750
Layer two	\$ 750 X 1.08	810
Layer three	\$ 2,250 X 1.14	<u>2,565</u>
		<u>\$ 23,125</u>

LO: 4, Bloom: AP, Difficulty: Moderate, Time: 3-5, AACSB: Analysis, AICPA BB: None, AICPA FC: Measurement, Reporting, AICPA PC:, AICPA BB: None

## BRIEF EXERCISE 8.10

Cost of goods sold as reported .....	\$1,400,000
Overstatement of 12/31/19 inventory .....	(110,000)
Overstatement of 12/31/20 inventory .....	<u>35,000</u>
Corrected cost of goods sold .....	<u>\$1,325,000</u>
12/31/20 retained earnings as reported .....	\$5,200,000
Overstatement of 12/31/20 inventory .....	<u>(35,000)</u>
Corrected 12/31/20 retained earnings .....	<u>\$5,165,000</u>

LO: 5, Bloom: AP, Difficulty: Simple, Time: 3-5, AACSB: Analysis, AICPA BB: None, AICPA FC: Reporting, AICPA PC:, AICPA BB: None

# SOLUTIONS TO EXERCISES

## EXERCISE 8.1 (15–20 minutes)

Items 1, 3, 5, 8, 11, 13, 14, 16, and 17 would be reported as inventory in the financial statements.

The following items would not be reported as inventory:

2. Cost of goods sold in the income statement.
4. Not reported in the financial statements.
6. Cost of goods sold in the income statement.
7. Cost of goods sold in the income statement.
9. Interest expense in the income statement.
10. Advertising expense in the income statement.
12. Office supplies in the current assets section of the balance sheet.
15. Not reported in the financial statements.
18. Short-term investments in the current asset section of the balance sheet.

LO: 2, Bloom: AP, Difficulty: Moderate, Time: 15-20, AACSB: Analysis, AICPA BB: None, AICPA FC: Reporting, AICPA PC: , AICPA BB: None

## EXERCISE 8.2 (10–15 minutes)

Inventory per physical count	\$441,000
Goods in transit to customer, f.o.b. destination	+ 38,000
Goods in transit from vendor, f.o.b. seller	<u>+ 51,000</u>
Inventory to be reported on balance sheet	<u>\$530,000</u>

The consigned goods of \$61,000 are not owned by Jose Oliva and were properly excluded.

The goods in transit to a customer of \$46,000, shipped f.o.b. shipping point, are properly excluded from the inventory because the title to the goods passed when they left the seller (Oliva) and therefore a sale and related cost of goods sold should be recorded in 2020.

The goods in transit from a vendor of \$83,000, shipped f.o.b. destination, are properly excluded from the inventory because the title to the goods does not pass to Oliva until the buyer (Oliva) receives them.

LO: 2, Bloom: AP, Difficulty: Moderate, Time: 10-15, AACSB: Analysis, Communication, AICPA BB: None, AICPA FC: Reporting, AICPA PC: Communication

### EXERCISE 8.3 (10–15 minutes)

1. **Include.** Ownership of the merchandise passes to customer only when it is shipped.
2. **Do not include.** Title did not pass until January 3.
3. **Include in inventory.** Product belonged to Harlowe Inc. at December 31, 2020.
4. **Include in inventory.** Under invoice terms, title passed when goods were shipped.
5. **Do not include.** Goods received on consignment remain the property of the consignor.

LO: 2, Bloom: AP, Difficulty: Moderate, Time: 10-15, AACSB: Analysis, AICPA BB: None, AICPA FC: Reporting, AICPA PC:, AICPA BB: None

### EXERCISE 8.4 (10–15 minutes)

1.	Raw Materials Inventory .....	8,100	
	Accounts Payable .....		8,100
2.	Raw Materials Inventory .....	28,000	
	Accounts Payable .....		28,000
3.	No adjustment necessary.		
4.	Accounts Payable .....	7,500	
	Raw Materials Inventory .....		7,500
5.	Raw Materials Inventory .....	19,800	
	Accounts Payable .....		19,800

LO: 2, Bloom: AP, Difficulty: Moderate, Time: 10-15, AACSB: Analysis, AICPA BB: None, AICPA FC: Reporting, AICPA PC:, AICPA BB: None

**EXERCISE 8.5 (15–20 minutes)**

<b>(a)</b>	<b>Inventory December 31, 2020 (unadjusted)</b>		<b>\$234,890</b>
	Transaction 2		<b>13,420</b>
	Transaction 3		<b>-0-</b>
	Transaction 4		<b>-0-</b>
	Transaction 5		<b>8,540</b>
	Transaction 6		<b>(10,438)</b>
	Transaction 7		<b>(10,520)</b>
	Transaction 8		<b>1,500</b>
	<b>Inventory December 31, 2020 (adjusted)</b>		<b><u>\$237,392</u></b>

<b>(b)</b>	<b>Transaction 3</b>		
	<b>Sales Revenue .....</b>	<b>12,800</b>	
	<b>Accounts Receivable.....</b>		<b>12,800</b>
	<b>(To reverse sale entry in 2020)</b>		

	<b>Transaction 4</b>		
	<b>Purchases (Inventory) .....</b>	<b>15,630</b>	
	<b>Accounts Payable.....</b>		<b>15,630</b>
	<b>(To record purchase of merchandise     in 2020)</b>		

	<b>Transaction 8</b>		
	<b>Sales Returns and Allowances .....</b>	<b>2,600</b>	
	<b>Accounts Receivable.....</b>		<b>2,600</b>

LO: 2, Bloom: AP, Difficulty: Hard, Time: 15-20, AACSB: Analysis, AICPA BB: None, AICPA FC: Reporting, AICPA PC:, AICPA BB: None

**EXERCISE 8.6 (10–20 minutes)**

	2019	2020	2021
Sales	\$290,000	\$360,000	\$410,000
Sales Returns	<u>(11,000)</u>	<u>(13,000)</u>	<u>(20,000)</u>
Net Sales	279,000	347,000	390,000
Beginning Inventory	20,000	32,000	37,000**
Ending Inventory	<u>(32,000*)</u>	<u>(37,000)</u>	<u>(44,000)</u>
Purchases	242,000	260,000	298,000
Purchase Returns and Allowances	(5,000)	(8,000)	(10,000)
Freight-in	<u>8,000</u>	<u>9,000</u>	<u>12,000</u>
Cost of Good Sold	<u>(233,000)</u>	<u>(256,000)</u>	<u>(293,000)</u>
Gross Profit	<u>\$ 46,000</u>	<u>\$ 91,000</u>	<u>\$ 97,000</u>

\*This was given as the beginning inventory for 2020.

\*\*This was calculated as the ending inventory for 2020.

LO: 2, Bloom: AN, Difficulty: Moderate, Time: 10-20, AACSB: Analysis, AICPA BB: None, AICPA FC: Reporting, AICPA PC: AICPA BB: None

**EXERCISE 8.7 (10–15 minutes)**

(a)	May 10	Purchases .....	14,700	
		Accounts Payable.....		14,700
		(\$15,000 X .98)		
	May 11	Purchases .....	13,068	
		Accounts Payable.....		13,068
		(\$13,200 X .99)		
	May 19	Accounts Payable.....	14,700	
		Cash .....		14,700
	May 24	Purchases .....	11,270	
		Accounts Payable		
		(\$11,500 X .98).....		11,270

## EXERCISE 8.7 (Continued)

(b)	May 31	Purchase Discounts Lost.....	132	
		Accounts Payable		
		(\$13,200 X .01).....		132
		(Discount lost on purchase of		
		May 11, \$13,200, terms 1/15, n/30)		

LO: 2, Bloom: AP, Difficulty: Simple, Time: 10-15, AACSB: Analysis, AICPA BB: None, AICPA FC: Reporting, AICPA PC:, AICPA BB: None

## EXERCISE 8.8 (20–25 minutes)

(a)	Feb. 1	Inventory [\$10,800 – (\$10,800 X .10)].....	9,720	
		Accounts Payable.....		9,720
	Feb. 4	Accounts Payable [\$2,500 –		
		(\$2,500 X .10)].....	2,250	
		Inventory .....		2,250
	Feb. 13	Accounts Payable (\$9,720 – \$2,250).....	7,470	
		Inventory (.03 X \$7,470).....		224.10
		Cash.....		7,245.90
(b)	Feb. 1	Purchases [\$10,800 – (\$10,800 X .10)]....	9,720	
		Accounts Payable.....		9,720
	Feb. 4	Accounts Payable [\$2,500 – (\$2,500 X		
		.10)] .....	2,250	
		Purchase Returns and Allowances..		2,250
	Feb. 13	Accounts Payable (\$9,720 – \$2,250).....	7,470	
		Purchase Discounts (.03 X \$7,470)...		224.10
		Cash.....		7,245.90
(c)		Purchase price (list)	\$10,800.00	
		Less: Trade discount (.10 X \$10,800)	<u>1,080.00</u>	
		Price on which cash discount based	9,720.00	
		Less: Cash discount (.03 X \$9,720)	<u>291.60</u>	
		Net price	<u>\$ 9,428.40</u>	

LO: 2, Bloom: AP, Difficulty: Moderate, Time: 20-25, AACSB: Analysis, AICPA BB: None Measurement, Reporting, AICPA PC:, AICPA BB: None

**EXERCISE 8.9 (15–25 minutes)**

(a)	Jan. 4	Accounts Receivable.....	640	
		Sales Revenue (80 X \$8).....		640
	Jan. 11	Purchases (\$150 X \$6).....	900	
		Accounts Payable.....		900
	Jan. 13	Accounts Receivable.....	1,050	
		Sales Revenue (120 X \$8.75)....		1,050
	Jan. 20	Purchases (160 X \$7).....	1,120	
		Accounts Payable.....		1,120
	Jan. 27	Accounts Receivable.....	900	
		Sales Revenue (100 X \$9).....		900
	Jan. 31	Inventory (\$7 X 110).....	770	
		Cost of Goods Sold .....	1,750*	
		Purchases (\$900 + \$1,120) .....		2,020
		Inventory (100 X \$5).....		500

\*( $\$500 + \$2,020 - \$770$ )

(b)	Sales revenue ( $\$640 + \$1,050 + \$900$ )	\$2,590
	Cost of goods sold	<u>1,750</u>
	Gross profit	<u>\$ 840</u>

## EXERCISE 8.9 (Continued)

(c)	Jan. 4	Accounts Receivable.....	640	
		Sales Revenue (80 X \$8).....		640
		Cost of Goods Sold .....	400	
		Inventory (80 X \$5).....		400
	Jan. 11	Inventory .....	900	
		Accounts Payable (150 X \$6).....		900
	Jan. 13	Accounts Receivable.....	1,050	
		Sales Revenue (120 X \$8.75)....		1,050
		Cost of Goods Sold .....	700	
		Inventory [(20 X \$5) + (100 X \$6)].....		700
	Jan. 20	Inventory .....	1,120	
		Accounts Payable (160 X \$7) ...		1,120
	Jan. 27	Accounts Receivable.....	900	
		Sales Revenue (100 X \$9).....		900
		Cost of Goods Sold .....	650	
		Inventory [(50 X \$6) + (50 X \$7)].....		650
(d)		Sales revenue	\$2,590	
		Cost of goods sold		
		(\$400 + \$700 + \$650)	<u>1,750</u>	
		Gross profit	<u>\$ 840</u>	

Note: FIFO periodic and FIFO perpetual provide the same gross profit and inventory value.

LO: 3, Bloom: AP, Difficulty: Moderate, Time: 15-25, AACSB: Analysis, AICPA BB: None Measurement, Reporting, AICPA PC:, AICPA BB: None



**EXERCISE 8.10 (15–20 minutes)**

**(a) Units in ending inventory**

Beginning balance	300	
Purchase	<u>1,300</u>	(800 + 500)
Goods available	1,600	
Sales	<u>(1,000)</u>	(200 + 500 + 300)
Ending balance	<u>600</u>	

**Cost of Goods Sold**

**Ending Inventory**

		<u>Cost of Goods Sold</u>		<u>Ending Inventory</u>	
(1)	LIFO	500 @ \$13 =	\$ 6,500	300 @ \$10 =	\$3,000
		500 @ \$12 =	<u>6,000</u>	300 @ \$12 =	<u>3,600</u>
			<u>\$12,500</u>		<u>\$6,600</u>
(2)	FIFO	300 @ \$10 =	\$ 3,000	500 @ \$13 =	\$6,500
		700 @ \$12 =	<u>8,400</u>	100 @ \$12 =	<u>1,200</u>
			<u>\$11,400</u>		<u>\$7,700</u>

**(b) LIFO**

100 @ \$10 =	\$ 1,000
300 @ \$12 =	3,600
200 @ \$13 =	<u>2,600</u>
	<u>\$ 7,200</u>

**(c)**

Sales revenue	\$25,400	= (\$24 @ 200) + (\$25 @ 500) + (\$27 @ 300)
Cost of Goods Sold	<u>11,400</u>	= (200 @ \$10) + (100 @ \$10)
Gross Profit (FIFO)	<u>\$14,000</u>	+ (400 @ \$12) + (300 @ \$12)

**Note:** FIFO periodic and FIFO perpetual provide the same gross profit and inventory value.

**(d)** LIFO matches the most current costs with revenue. When prices are rising (as is generally the case), this results in a higher amount for cost of goods sold and a lower gross profit. As indicated in this exercise, prices were rising and cost of goods sold under LIFO was higher.

LO: 3, Bloom: AP, Difficulty: Moderate, Time: 15-20, AACSB: Analysis, AICPA BB: None Measurement, Reporting, AICPA PC:, AICPA BB: None

**EXERCISE 8.11 (20–25 minutes)**

$$\begin{array}{r}
 \text{(a) (1) LIFO} \quad 600 @ \$6.00 = \$3,600 \\
 \quad \quad \quad 100 @ \$6.08 = \quad \underline{608} \\
 \quad \quad \quad \quad \quad \quad \underline{\$4,208}
 \end{array}$$

(2) Average cost

$$\frac{\text{Total cost}}{\text{Total units}} = \frac{\$33,655^*}{5,300} = \$6.35 \text{ average cost per unit}$$

$$\begin{array}{r}
 700 (5,300 - 4,600) @ \\
 \$6.35 = \underline{\$4,445}
 \end{array}$$

<u>*Units</u>		<u>Price</u>		<u>Total Cost</u>
600	@	\$6.00	=	\$ 3,600
1,500	@	\$6.08	=	9,120
800	@	\$6.40	=	5,120
1,200	@	\$6.50	=	7,800
700	@	\$6.60	=	4,620
<u>500</u>	@	\$6.79	=	<u>3,395</u>
<u>5,300</u>				<u>\$33,655</u>

$$\begin{array}{r}
 \text{(b) (1) FIFO} \quad 500 @ \$6.79 = \$3,395 \\
 \quad \quad \quad 200 @ \$6.60 = \quad \underline{1,320} \\
 \quad \quad \quad \quad \quad \quad \underline{\$4,715}
 \end{array}$$

$$\begin{array}{r}
 \text{(2) LIFO} \quad 100 @ \$6.00 = \$ 600 \\
 \quad \quad \quad 100 @ \$6.08 = \quad 608 \\
 \quad \quad \quad 500 @ \$6.79 = \quad \underline{3,395} \\
 \quad \quad \quad \quad \quad \quad \underline{\$4,603}
 \end{array}$$

(c) Total merchandise available for sale	\$33,655
Less: Inventory (FIFO)	<u>4,715</u>
Cost of goods sold	<u>\$28,940</u>

(d) FIFO.

LO: 3, Bloom: AP, Difficulty: Moderate, Time: 20-25, AACSB: Analysis, AICPA BB: None Measurement, Reporting, AICPA PC:, AICPA BB: None

**EXERCISE 8.12 (15–20 minutes)**

**(a) Shania Twain Company  
COMPUTATION OF INVENTORY FOR PRODUCT  
BAP UNDER FIFO INVENTORY METHOD  
March 31, 2020**

	<u>Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
March 26, 2020	600	\$12.00	\$ 7,200
February 16, 2020	800	11.00	8,800
January 25, 2020 (portion)	<u>200</u>	10.00	<u>2,000</u>
March 31, 2020, inventory	<u>1,600</u>		<u>\$18,000</u>

**(b) Shania Twain Company  
COMPUTATION OF INVENTORY FOR PRODUCT  
BAP UNDER LIFO INVENTORY METHOD  
March 31, 2020**

	<u>Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
Beginning inventory	600	\$8.00	\$ 4,800
January 5, 2020 (portion)	<u>1,000</u>	9.00	<u>9,000</u>
March 31, 2020, inventory	<u>1,600</u>		<u>\$13,800</u>

**(c) Shania Twain Company  
COMPUTATION OF INVENTORY FOR PRODUCT  
BAP UNDER WEIGHTED-AVERAGE INVENTORY METHOD  
March 31, 2020**

	<u>Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
Beginning inventory	600	\$ 8.00	\$ 4,800
January 5, 2020	1,200	9.00	10,800
January 25, 2020	1,300	10.00	13,000
February 16, 2020	800	11.00	8,800
March 26, 2020	<u>600</u>	12.00	<u>7,200</u>
	<u>4,500</u>		<u>\$44,600</u>

**Weighted average cost**

**(\$44,600 ÷ 4,500)**

**\$ 9.91\***

**March 31, 2020, inventory**

**1,600**

**\$ 9.91**

**\$15,856**

**\*Rounded.**

LO: 3, Bloom: AP, Difficulty: Moderate, Time: 15-20, AACSB: Analysis, AICPA BB: None Measurement, Reporting, AICPA PC:, AICPA BB: None

### EXERCISE 8.13 (15–20 minutes)

- (a) (1) 2,100 units available for sale – 1,400 units sold = 700 units in the ending inventory.

$$\begin{array}{r} 500 @ \$4.58 = \$2,290 \\ \underline{200 @ 4.60 = 920} \\ \underline{700} \qquad \qquad \underline{\$3,210} \end{array} \text{ Ending inventory at FIFO cost.}$$

$$\begin{array}{r} (2) 100 @ \$4.10 = \$ 410 \\ \underline{600 @ 4.20 = 2,520} \\ \underline{700} \qquad \qquad \underline{\$2,930} \end{array} \text{ Ending inventory at LIFO cost.}$$

- (3) \$9,240 cost of goods available for sale ÷ 2,100 units available for sale = \$4.40 weighted-average unit cost.  
700 units X \$4.40 = \$3,080 Ending inventory at weighted-average cost.

- (b) (1) LIFO will yield the lowest gross profit because this method will yield the highest cost of goods sold figure in the situation presented. The company has experienced rising purchase prices for its inventory acquisitions. In a period of rising prices, LIFO will yield the highest cost of goods sold because the most recent purchase prices (which are the higher prices in this case) are used to price cost of goods sold while the older (and lower) purchase prices are used to cost the ending inventory.

- (2) LIFO will yield the lowest ending inventory because LIFO uses the oldest costs to price the ending inventory units. The company has experienced rising purchase prices. The oldest costs in this case are the lower costs.

LO: 3, Bloom: AP, Difficulty: Moderate, Time: 15-20, AACSB: Analysis, Communication, AICPA BB: None Measurement, Reporting, AICPA PC: Communication

### EXERCISE 8.14 (10–15 minutes)

$$\begin{array}{r} (a) (1) 400 @ \$30 = \$12,000 \\ 160 @ \$25 = \underline{4,000} \\ \underline{\underline{\$16,000}} \end{array}$$

$$\begin{array}{r} (2) 400 @ \$20 = \$ 8,000 \\ 160 @ \$25 = \underline{4,000} \\ \underline{\underline{\$12,000}} \end{array}$$

## EXERCISE 8.14 (Continued)

(b) (1) FIFO	\$16,000 [same as (a)]
(2) LIFO	100 @ \$20 = \$ 2,000
	60 @ \$25 = 1,500
	400 @ \$30 = <u>12,000</u>
	<u>\$15,500</u>

LO: 3, Bloom: AP, Difficulty: Simple, Time: 10-15, AACSB: Analysis, AICPA BB: None Measurement, Reporting, AICPA PC:, AICPA BB: None

## EXERCISE 8.15 (15–20 minutes)

	First-in, first-out	Last-in, first-out
Sales revenue (21,000 × \$50)	\$1,050,000	\$1,050,000
Cost of goods sold:		
Inventory, Jan. 1	\$120,000	\$120,000
Purchases	<u>592,000*</u>	<u>592,000</u>
Cost of goods available	712,000	712,000
Inventory, Dec. 31	<u>(235,000**)</u>	<u>(164,000***)</u>
Cost of goods sold	<u>477,000</u>	<u>548,000</u>
Gross profit	573,000	502,000
Operating expenses	<u>200,000</u>	<u>200,000</u>
Net income	<u>\$ 373,000</u>	<u>\$ 302,000</u>

### \*Purchases

6,000 @ \$22 =	\$132,000
10,000 @ \$25 =	250,000
7,000 @ \$30 =	<u>210,000</u>
	<u>\$592,000</u>

### \*\*Computation of inventory, Dec. 31:

#### First-in, first-out:

7,000 units @ \$30 =	\$210,000
1,000 units @ \$25 =	<u>25,000</u>
	<u>\$235,000</u>

### \*\*\*Last-in, first-out:

6,000 units @ \$20 =	\$120,000
2,000 units @ \$22 =	<u>44,000</u>
	<u>\$164,000</u>

LO: 3, Bloom: AP, Difficulty: Moderate, Time: 15-20, AACSB: Analysis, AICPA BB: None Measurement, Reporting, AICPA PC:, AICPA BB: None

**EXERCISE 8.16 (20–25 minutes)**

**Sandy Alomar Corporation  
SCHEDULES OF COST OF GOODS SOLD  
For the First Quarter Ended March 31, 2020**

	Schedule 1 First-in, First-out	Schedule 2 Last-in, First-out
Beginning inventory	\$ 40,000	\$ 40,000
Plus purchases	<u>146,200*</u>	<u>146,200</u>
Cost of goods available for sale	186,200	186,200
Less: Ending inventory	<u>61,300</u>	<u>56,800</u>
Cost of goods sold	<u><u>\$124,900</u></u>	<u><u>\$129,400</u></u>

\*( $\$33,600 + \$25,500 + \$38,700 + \$48,400$ )

**Schedules Computing Ending Inventory**

	Units
Beginning inventory	10,000
Plus purchases	<u>34,000</u>
Units available for sale	44,000
Less sales ( $\$150,000 \div 5$ )	<u>30,000</u>
Ending inventory	<u><u>14,000</u></u>

The unit computation is the same for both assumptions, but the cost assigned to the units of ending inventory are different.

First-in, First-out (Schedule 1)	Last-in, First-out (Schedule 2)
11,000 at \$4.40 = \$48,400	10,000 at \$4.00 = \$40,000
<u>3,000 at \$4.30 = 12,900</u>	<u>4,000 at \$4.20 = 16,800</u>
<u><u>14,000</u></u> <u><u>\$61,300</u></u>	<u><u>14,000</u></u> <u><u>\$56,800</u></u>

LO: 3, Bloom: AP, Difficulty: Moderate, Time: 20-25, AACSB: Analysis, AICPA BB: None Measurement, Reporting, AICPA PC:, AICPA BB: None

### EXERCISE 8.17 (10–15 minutes)

(a) FIFO Ending Inventory 12/31/2020

76 @ \$10.89*	=	\$ 827.64
24 @ \$11.88**	=	<u>285.12</u>
		<u>\$1,112.76</u>

\*[\$11.00 – .01 (\$11.00)]

\*\*[\$12.00 – .01 (\$12.00)]

(b) LIFO Cost of Goods Sold—2020

76 @ \$10.89	=	\$ 827.64
84 @ \$11.88	=	997.92
90 @ \$14.85*	=	1,336.50
15 @ \$15.84**	=	<u>237.60</u>
		<u>\$3,399.66</u>

\*[\$15.00 – .01 (\$15.00)]

\*\*[\$16.00 – .01 (\$16.00)]

- (c) FIFO matches older costs with revenue. When prices are declining, as in this case, this results in a higher amount for cost of goods sold. Therefore, it is recommended that FIFO be used by Brady Sports to minimize taxable income.

LO: 3, Bloom: AP, Difficulty: Moderate, Time: 10-15, AACSB: Analysis, Communication, AICPA BB: None Measurement, Reporting, AICPA PC: Communication

### EXERCISE 8.18 (10–15 minutes)

- (a) The difference between the inventory used for internal reporting purposes and LIFO is referred to as the Allowance to Reduce Inventory to LIFO or the LIFO reserve. The change in the allowance balance from one period to the next is called the LIFO effect (or as shown in this example, the LIFO adjustment).
- (b) LIFO subtracts inflation from inventory costs by charging the items purchased recently to cost of goods sold. As a result, ending inventory (assuming increasing prices) will be lower than FIFO or average cost.

## EXERCISE 8.18 (Continued)

(c) Cash flow was computed as follows:

Revenue	\$3,200,000
Cost of goods sold	(2,800,000)
Operating expenses	(150,000)
Income taxes	<u>(75,600)</u>
Cash flow	<u>\$ 174,400</u>

If the company has any sales on account or payables, then the cash flow number is incorrect. It is assumed here that the cash basis of accounting is used.

(d) The company has extra cash because its taxes are less. The reason taxes are lower is because cost of goods sold (in a period of inflation) is higher under LIFO than FIFO. As a result, taxable income is lower which leads to lower income taxes. If prices are decreasing, the opposite effect results.

LO: 4, Bloom: AP, Difficulty: Moderate, Time: 10-15, AACSB: Analysis, Communication, AICPA BB: None Reporting, AICPA PC: Communication

## EXERCISE 8.19 (25–30 minutes)

(a) (1) Ending inventory—Specific Identification

Date	No. Units	Unit Cost	Total Cost
December 2	100	\$30	\$3,000
July 20	<u>50</u>	25	<u>1,250</u>
	<u>150</u>		<u>\$4,250</u>

(2) Ending inventory—FIFO

Date	No. Units	Unit Cost	Total Cost
December 2	100	\$30	\$3,000
September 4	<u>50</u>	28	<u>1,400</u>
	<u>150</u>		<u>\$4,400</u>

(3) Ending inventory—LIFO

Date	No. Units	Unit Cost	Total Cost
January 1	100	\$20	\$2,000
March 15	<u>50</u>	24	<u>1,200</u>
	<u>150</u>		<u>\$3,200</u>



## EXERCISE 8.19 (Continued)

### (4) Ending inventory—Average-Cost

Date	Explanation	No. Units	Unit Cost	Total Cost
January 1	Beginning inventory	100	\$20	\$ 2,000
March 15	Purchase	300	24	7,200
July 20	Purchase	300	25	7,500
September 4	Purchase	200	28	5,600
December 2	Purchase	100	30	3,000
		<u>1,000</u>		<u>\$25,300</u>

$$\$25,300 \div 1,000 = \$25.30$$

### Ending Inventory—Average-Cost

No. Units	Unit Cost	Total Cost
150	\$25.30	\$3,795

### (b) Double Extension Method

Base-Year Costs			Current Costs		
Units	Base-Year Cost Per Unit	Total	Units	Current-Year Cost Per Unit	Total
150	\$20	\$3,000	100	\$30	\$3,000
			50	\$28	1,400
					<u>\$4,400</u>

$$\frac{\text{Ending Inventory for the Period at Current Cost } \$4,400}{\text{Ending Inventory for the Period at Base-Year Cost } \$3,000} = 1.4667$$

Ending inventory at base-year prices ( $\$4,400 \div 1.4667$ )	\$3,000
Base layer (100 units at \$20)	<u>(2,000)</u>
Increment in base-year dollars	1,000
Current index	<u>1.4667</u>
Increment in current dollars	1,467
Base layer (100 units at \$20)	<u>2,000</u>
Ending inventory at dollar-value LIFO	<u>\$3,467</u>

LO: 3, 4, Bloom: AP, Difficulty: Moderate, Time: 25-30, AACSB: Analysis, AICPA BB: None Measurement, Reporting, AICPA PC: AICPA BB: None

### EXERCISE 8.20 (5–10 minutes)

$\$97,000 - \$92,000 = \$5,000$  increase at base prices.

$\$98,350 - \$92,600 = \$5,750$  increase in dollar-value LIFO value.

$\$5,000 \times \text{Index} = \$5,750$ .

$\text{Index} = \$5,750 \div \$5,000$ .

Index = 115

LO: 4, Bloom: AP, Difficulty: Moderate, Time: 5-10, AACSB: Analysis, AICPA BB: None Reporting, AICPA PC:, AICPA BB: None

### EXERCISE 8.21 (15–20 minutes)

(a) 12/31/20 inventory at 1/1/20 prices, $\$140,000 \div 1.12$	\$125,000
Inventory 1/1/20	<u>160,000</u>
Inventory decrease at base prices	<u>\$ 35,000</u>
Inventory at 1/1/20 prices	\$160,000
Less decrease at 1/1/20 prices	<u>35,000</u>
Inventory 12/31/20 under dollar-value LIFO method	<u>\$125,000</u>
(b) 12/31/21 inventory at base prices, $\$172,500 \div 1.15$	\$150,000
12/31/20 inventory at base prices	<u>125,000</u>
Inventory increment at base prices	<u>\$ 25,000</u>
Inventory at 12/31/20	\$125,000
Increment added during 2021 at 12/31/21 prices, \$25,000 X 1.15	<u>28,750</u>
Inventory 12/31/21	<u>\$153,750</u>

LO: 4, Bloom: AP, Difficulty: Moderate, Time: 15-20, AACSB: Analysis, AICPA BB: None Reporting, AICPA PC:, AICPA BB: None

### EXERCISE 8.22 (20–25 minutes)

	<u>Current \$</u>	<u>Price Index</u>	<u>Base Year \$</u>	<u>Change from Prior Year</u>
2017	\$ 80,000	1.00	\$ 80,000	—
2018	115,500	1.05	110,000	\$+30,000
2019	108,000	1.20	90,000	(20,000)
2020	122,200	1.30	94,000	+4,000
2021	154,000	1.40	110,000	+16,000
2022	176,900	1.45	122,000	+12,000

### Ending Inventory—Dollar-value LIFO:

2017	<u>\$80,000</u>		2021	\$80,000 @ 1.00 =	\$ 80,000
				10,000 @ 1.05 =	10,500
2018	\$80,000 @ 1.00 =	\$ 80,000		4,000 @ 1.30 =	5,200
	30,000 @ 1.05 =	<u>31,500</u>		16,000 @ 1.40 =	<u>22,400</u>
		<u>\$111,500</u>			<u>\$118,100</u>
2019	\$80,000 @ 1.00 =	\$ 80,000	2022	\$80,000 @ 1.00 =	\$ 80,000
	10,000 @ 1.05 =	<u>10,500</u>		10,000 @ 1.05 =	10,500
		<u>\$ 90,500</u>		4,000 @ 1.30 =	5,200
2020	\$80,000 @ 1.00 =	\$ 80,000		16,000 @ 1.40 =	22,400
	10,000 @ 1.05 =	10,500		12,000 @ 1.45 =	<u>17,400</u>
	4,000 @ 1.30 =	<u>5,200</u>			<u>\$135,500</u>
		<u>\$ 95,700</u>			

LO: 4, Bloom: AP, Difficulty: Moderate, Time: 20-25, AACSB: Analysis, AICPA BB: None Reporting, AICPA PC: , AICPA BB: None

### EXERCISE 8.23 (15–20 minutes)

<u>Date</u>	<u>Current \$</u>	<u>Price Index</u>	<u>Base-Year \$</u>	<u>Change from Prior Year</u>
Dec. 31, 2016	\$ 70,000	1.00	\$70,000	—
Dec. 31, 2017	90,300	1.05	86,000	\$+16,000
Dec. 31, 2018	95,120	1.16	82,000	(4,000)
Dec. 31, 2019	105,600	1.20	88,000	+6,000
Dec. 31, 2020	100,000	1.25	80,000	(8,000)

## EXERCISE 8.23 (Continued)

### Ending Inventory—Dollar-value LIFO:

Dec. 31, 2016 \$70,000

Dec. 31, 2017 \$70,000 @ 1.00 = \$70,000  
16,000 @ 1.05 = 16,800  
\$86,800

Dec. 31, 2018 \$70,000 @ 1.00 = \$70,000  
12,000 @ 1.05 = 12,600  
\$82,600

Dec. 31, 2019 \$70,000 @ 1.00 = \$70,000  
12,000 @ 1.05 = 12,600  
6,000 @ 1.20 = 7,200  
\$89,800

Dec. 31, 2020 \$70,000 @ 1.00 = \$70,000  
10,000 @ 1.05 = 10,500  
\$80,500

LO: 4, Bloom: AP, Difficulty: Moderate, Time: 15-20, AACSB: Analysis, AICPA BB: None Reporting, AICPA PC:, AICPA BB: None

### EXERCISE 8.24 (10–15 minutes)

	Current Year	Subsequent Year
1. Working capital	Overstated	No effect
Current ratio	Overstated	No effect
Retained earnings	Overstated	No effect
Net income	Overstated	Understated
2. Working capital	No effect	No effect
Current ratio	Overstated*	No effect
Retained earnings	No effect	No effect
Net income	No effect	No effect
3. Working capital	Overstated	No effect
Current ratio	Overstated	No effect
Retained earnings	Overstated	No effect
Net income	Overstated	Understated

\*Assume that the correct current ratio is greater than one.

LO: 5, Bloom: AP, Difficulty: Moderate, Time: 10-15, AACSB: Analysis, AICPA BB: None Reporting, AICPA PC:, AICPA BB: None

### EXERCISE 8.25 (10–15 minutes)

(a)  $\frac{\$370,000}{\$200,000} = \underline{1.85 \text{ to } 1}$

(b)  $\frac{\$370,000 + \$22,000 - \$13,000 + \$3,000}{\$200,000 - \$15,000} = \frac{\$382,000}{\$185,000} = \underline{2.06 \text{ to } 1}$

Event	Effect of Error	Adjust Income Increase (Decrease)
1. Understatement of ending inventory	Decreases net income	\$22,000
2. Overstatement of purchases	Decreases net income	15,000
3. Overstatement of ending inventory	Increases net income	(13,000)
4. Overstatement of advertising expense; understatement of cost of goods sold (assuming goods are sold).		<u>0</u>
		<u>\$24,000</u>

LO: 5, Bloom: AP, Difficulty: Moderate, Time: 10-15, AACSB: Analysis, AICPA BB: None Reporting, AICPA PC:, AICPA BB: None

## EXERCISE 8.26 (15–20 minutes)

### Errors in Inventories

<u>Year</u>	<u>Net Income Per Books</u>	<u>Add Overstate- ment Jan. 1</u>	<u>Deduct Understate- ment Jan. 1</u>	<u>Deduct Overstate- ment Dec. 31</u>	<u>Add Understate- ment Dec. 31</u>	<u>Corrected Net Income</u>
2015	\$ 50,000			\$3,000*		\$ 47,000
2016	52,000	\$3,000		9,000		46,000
2017	54,000	9,000			\$11,000	74,000
2018	56,000		\$11,000			45,000
2019	58,000				2,000	60,000
2020	<u>60,000</u>		2,000	8,000		<u>50,000</u>
	<u>\$330,000</u>					<u>\$322,000</u>

\*The error will reverse in 2016.

LO: 5, Bloom: AP, Difficulty: Moderate, Time: 15-20, AACSB: Analysis , AICPA BB: None Reporting, AICPA PC:, AICPA BB: None

# SOLUTIONS TO PROBLEMS

## PROBLEM 8.1

1.  $\$175,000 - (\$175,000 \times .20) = \$140,000$ ;  
 $\$140,000 - (\$140,000 \times .10) = \underline{\$126,000}$ , cost of goods purchased
  
2.  $\$1,100,000 + \$69,000 = \$1,169,000$ . The \$69,000 of goods in transit on which title had passed on December 24 (f.o.b. shipping point) should be added to 12/31/20 inventory. The \$29,000 of goods shipped (f.o.b. shipping point) on January 3, 2021, should remain part of the 12/31/20 inventory.
  
3. Because no date was associated with the units issued or sold, the periodic (rather than perpetual) inventory method must be assumed.

<u>FIFO inventory cost:</u>	1,000 units at \$24	\$ 24,000
	1,000 units at 23	<u>23,000</u>
	Total	<u>\$ 47,000</u>

<u>LIFO inventory cost:</u>	1,500 units at \$21	\$ 31,500
	500 units at 22	<u>11,000</u>
	Total	<u>\$ 42,500</u>

<u>Average cost:</u>	1,500 at \$21	\$ 31,500
	2,000 at 22	44,000
	3,500 at 23	80,500
	1,000 at 24	<u>24,000</u>
Totals	<u>8,000</u>	<u>\$180,000</u>

$\$180,000 \div 8,000 = \$22.50$

Ending inventory (2,000 X \$22.50) is \$45,000.

**PROBLEM 8.1 (Continued)**

**4. Computation of price indexes:**

$$12/31/20 \frac{\$264,000}{\$240,000} = 1.10 (110)$$

$$12/31/21 \frac{\$286,720}{\$256,000} = 1.12 (112)$$

**Dollar-value LIFO inventory 12/31/20:**

Increase \$240,000 – \$200,000 =	\$ 40,000	
12/31/20 price index	X 1.10	
Increase in terms of 110	44,000	2020 Layer
Base inventory	<u>200,000</u>	
Dollar-value LIFO inventory	<u>\$244,000</u>	

**Dollar-value LIFO inventory 12/31/21:**

Increase \$256,000 – \$240,000 =	\$ 16,000	
12/31/21 price index	X 1.12	
Increase in terms of 112	17,920	2021 Layer
2020 layer	44,000	
Base inventory	<u>200,000</u>	
Dollar-value LIFO inventory	<u>\$261,920</u>	

**5. The inventoriable costs for 2021 are:**

Merchandise purchased .....		\$909,400
Add: Freight-in .....		<u>22,000</u>
		931,400
Deduct: Purchase returns .....	\$16,500	
Purchase discounts .....	<u>6,800</u>	<u>23,300</u>
Inventoriable cost .....		<u>\$908,100</u>

LO: 2, 3, 4, Bloom: AP, Difficulty: Moderate, Time: 30-40, AACSB: Analysis, AICPA BB: None Measurement, Reporting, AICPA PC:, AICPA BB: None



<b>PROBLEM 8.2</b>
--------------------

**DIMITRI COMPANY**  
**Schedule of Adjustments**  
**December 31, 2020**

	Inventory	Accounts Payable	Net Sales
<b>Initial amounts</b>	<b><u>\$1,520,000</u></b>	<b><u>\$1,200,000</u></b>	<b><u>\$8,150,000</u></b>
<b>Adjustments:</b>			
1.	NONE	NONE	(40,000)
2.	76,000	76,000	NONE
3.	30,000	NONE	NONE
4.	32,000	NONE	(47,000)
5.	26,000	NONE	NONE
6.	27,000	NONE	NONE
7.	NONE	56,000	NONE
8.	<u>4,000</u>	<u>8,000</u>	<u>NONE</u>
<b>Total adjustments</b>	<b><u>195,000</u></b>	<b><u>140,000</u></b>	<b><u>(87,000)</u></b>
<b>Adjusted amounts</b>	<b><u>\$1,715,000</u></b>	<b><u>\$1,340,000</u></b>	<b><u>\$8,063,000</u></b>

1. The \$31,000 of tools on the loading dock were properly included in the physical count. The sale should not be recorded until the goods are picked up by the common carrier. Therefore, no adjustment is made to inventory, but sales must be reduced by the \$40,000 billing price.
  
2. The \$76,000 of goods in transit from a vendor to Dimitri were shipped f.o.b. shipping point on 12/29/20. Title passes to the buyer as soon as goods are delivered to the common carrier when sold f.o.b. shipping point. Therefore, these goods are properly includable in Dimitri's inventory and accounts payable at 12/31/20. Both inventory and accounts payable must be increased by \$76,000.
  
3. The work-in-process inventory sent to an outside processor is Dimitri's property and should be included in ending inventory. Since this inventory was not in the plant at the time of the physical count, the inventory column must be increased by \$30,000.

## PROBLEM 8.2 (Continued)

4. The tools costing \$32,000 were recorded as sales (\$47,000) in 2020. However, these items were returned by customers on December 31, so 2020 net sales should be reduced by the \$47,000 return. Also, \$32,000 has to be added to the inventory column since these goods were not included in the physical count.
5. The \$26,000 of Dimitri's tools shipped to a customer f.o.b. destination are still owned by Dimitri while in transit because title does not pass on these goods until they are received by the buyer. Therefore, \$26,000 must be added to the inventory column. No adjustment is necessary in the sales column because the sale was properly recorded in 2021 when the customer received the goods.
6. The goods received from a vendor at 5:00 p.m. on 12/31/20 should be included in the ending inventory, but were not included in the physical count. Therefore, \$27,000 must be added to the inventory column. No adjustment is made to accounts payable, since the invoice was included in 12/31/20 accounts payable.
7. The \$56,000 of goods received on 12/26/20 were properly included in the physical count of inventory; \$56,000 must be added to accounts payable since the invoice was not included in the 12/31/20 accounts payable balance.
8. Since one-half of the freight-in cost (\$8,000) pertains to merchandise properly included in inventory as of 12/31/20, \$4,000 should be added to the inventory column. The remaining \$4,000 debit should be reflected in cost of goods sold. The full \$8,000 must be added to accounts payable since the liability was not recorded.

LO: 2, Bloom: AP, Difficulty: Moderate, Time: 25-35, AACSB: Analysis, Communication, AICPA BB: None Reporting, AICPA PC: Communication

**PROBLEM 8.3**

(a)	1.	8/10		12,000	
			Purchases .....	12,000	
			Accounts Payable .....		12,000
		8/13		1,200	
			Accounts Payable .....	1,200	
			Purchase Returns and Allowances .....		1,200
		8/15		16,000	
			Purchases .....	16,000	
			Accounts Payable .....		16,000
		8/25		20,000	
			Purchases .....	20,000	
			Accounts Payable .....		20,000
		8/28		16,000	
			Accounts Payable .....	16,000	
			Cash .....		16,000

2. **Purchases—addition to beginning inventory in cost of goods sold section of income statement.**
- Purchase returns and allowances—deduction from purchases in cost of goods sold section of the income statement.**
- Accounts payable—current liability in the current liabilities section of the balance sheet.**

(b)	1.	8/10		11,760	
			Purchases .....	11,760	
			Accounts Payable (\$12,000 X .98) .....		11,760
		8/13		1,176	
			Accounts Payable .....	1,176	
			Purchase Returns and Allowances (\$1,200 X .98) .....		1,176

**PROBLEM 8.3 (Continued)**

	<b>8/15</b>		
<b>Purchases</b> .....		<b>15,840</b>	
<b>Accounts Payable (\$16,000 X .99)</b> .....			<b>15,840</b>

	<b>8/25</b>		
<b>Purchases</b>		<b>19,600</b>	
.....			
<b>Accounts Payable (\$20,000 X .98)</b> .....			<b>19,600</b>

	<b>8/28</b>		
<b>Accounts Payable</b> .....		<b>15,840</b>	
<b>Purchase Discounts Lost</b> .....		<b>160</b>	
<b>Cash</b> .....			<b>16,000</b>

<b>2.</b>	<b>8/31</b>		
<b>Purchase Discounts Lost</b> .....		<b>216</b>	
<b>Accounts Payable</b>			
<b>(.02 X [\$12,000 – \$1,200])</b> .....			<b>216</b>

**3. Same as part (a) (2) except:  
Purchase Discounts Lost—treat as financial expense in income statement.**

**(c) The second method is better theoretically because it results in the inventory being carried net of purchase discounts, and purchase discounts not taken are shown as an expense. The first method is normally used, however, for practical reasons.**

LO: 2, Bloom: AP, Difficulty: Moderate, Time: 20-25, AACSB: Analysis, Communication, AICPA BB: None Reporting, AICPA PC: Communication

**PROBLEM 8.4**

<b>(a)</b>	<b>Purchases Total Units</b>	<b>Sales Total Units</b>	
April 1 (balance on hand)	100	April 5	300
April 4	400	April 12	200
April 11	300	April 27	800
April 18	200	April 28	<u>150</u>
April 26	600	Total units	<u><u>1,450</u></u>
April 30	<u>200</u>		
Total units	1,800		
Total units sold	<u>1,450</u>		
Total units (ending inventory)	<u><u>350</u></u>		

Assuming costs are not computed for each withdrawal:

1. **First-in, first-out.**

<u>Date of Invoice</u>	<u>No. Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
April 30	200	\$5.80	\$1,160
April 26	150	5.60	<u>840</u>
			<u><u>\$2,000</u></u>

2. **Last-in, first-out.**

<u>Date of Invoice</u>	<u>No. Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
April 1	100	\$5.00	\$ 500
April 4	250	5.10	<u>1,275</u>
			<u><u>\$1,775</u></u>

**PROBLEM 8.4 (Continued)**

**3. Average-cost.**

**Cost of Part X available.**

<u>Date of Invoice</u>	<u>No. Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
April 1	100	\$5.00	\$ 500
April 4	400	5.10	2,040
April 11	300	5.30	1,590
April 18	200	5.35	1,070
April 26	600	5.60	3,360
April 30	<u>200</u>	5.80	<u>1,160</u>
<b>Total Available</b>	<b><u>1,800</u></b>		<b><u>\$9,720</u></b>

**Average cost per unit =  $\$9,720 \div 1,800 = \$5.40$ .**

**Inventory, April 30 =  $350 \times \$5.40 = \$1,890$ .**

**(b) Assuming costs are computed for each withdrawal:**

**1. First-in, first out.**

**The inventory would be the same in amount as in part (a), \$2,000.**

## PROBLEM 8.4 (Continued)

### 2. Last-in, first-out.

Date	Purchased		Sold		Balance*		
	No. of units	Unit cost	No. of units	Unit cost	No. of units	Unit cost	Amount
April 1	100	\$5.00			100	\$5.00	\$ 500
April 4	400	5.10			100	5.00	2,540
					400	5.10	
April 5			300	\$5.10	100	5.00	1,010
					100	5.10	
April 11	300	5.30			100	5.00	2,600
					100	5.10	
					300	5.30	
April 12			200	5.30	100	5.00	1,540
					100	5.10	
					100	5.30	
April 18	200	5.35			100	5.00	2,610
					100	5.10	
					100	5.30	
					200	5.35	
April 26	600	5.60			100	5.00	5,970
					100	5.10	
					100	5.30	
					200	5.35	
					600	5.60	
April 27			600 @	5.60			1,540
			800	200 @	5.35		
					100	5.00	
April 28			100 @	5.30	100	5.00	755
			150	50 @	5.10	50	
April 30	200	5.80			100	5.00	1,915
					50	5.10	
					200	5.80	

Inventory, April 30 is \$1,915.

\*The balance on hand is listed in detail after each transaction.

**PROBLEM 8.4 (Continued)**

**3. Average-cost.**

Date	Purchased		Sold		Balance		
	No. of units	Unit cost	No. of units	Unit cost	No. of units	Unit cost*	Amount
April 1	100	\$5.00			100	\$5.0000	\$ 500.00
April 4	400	5.10			500	5.0800	2,540.00
April 5			300	\$5.0800	200	5.0800	1,016.00
April 11	300	5.30			500	5.2120	2,606.00
April 12			200	5.2120	300	5.2120	1,563.60
April 18	200	5.35			500	5.2672	2,633.60
April 26	600	5.60			1,100	5.4487	5,993.57
April 27			800	5.4487	300	5.4487	1,634.61
April 28			150	5.4487	150	5.4487	817.30
April 30	200	5.80			350	5.6494	1,977.30

**Inventory, April 30 is \$1,977.30**

**\*Four decimal places are used to minimize rounding errors.**

LO: 3, Bloom: AP Complex, Time: 40-55, AACSB: Analysis, AICPA BB: None Measurement, Reporting, AICPA PC:, AICPA BB: None



<b>PROBLEM 8.5</b>
--------------------

(a) Assuming costs are not computed for each withdrawal (units received, 5,700, minus units issued, 4,700, equals ending inventory of 1,000 units):

1. First-in, first-out.

Date of Invoice	No. Units	Unit Cost	Total Cost
Jan. 28	1,000	\$3.50	<u>\$3,500</u>

2. Last-in, first-out.

Date of Invoice	No. Units	Unit Cost	Total Cost
Jan. 2	1,000	\$3.00	<u>\$3,000</u>

3. Average-cost.

Cost of goods available:

Date of Invoice	No. Units	Unit Cost	Total Cost
Jan. 2	1,200	\$3.00	\$ 3,600
Jan. 10	600	3.20	1,920
Jan. 18	1,000	3.30	3,300
Jan. 23	1,300	3.40	4,420
Jan. 28	<u>1,600</u>	3.50	<u>5,600</u>
Total Available	<u>5,700</u>		<u>\$18,840</u>

Average cost per unit =  $\$18,840 \div 5,700 = \$3.31$

Cost of inventory Jan. 31 =  $1,000 \times \$3.31 = \underline{\underline{\$3,310}}$

(b) Assuming costs are computed at the time of each withdrawal:

Under FIFO—Yes. The amount shown as ending inventory would be the same as in (a) above. In each case the units on hand would be assumed to be part of those purchased on Jan. 28.

Under LIFO—No. During the month the available balance dropped below the ending inventory quantity so that the layers of oldest costs were partially liquidated during the month.

**PROBLEM 8.5 (Continued)**

**Under Average-Cost—No.** A new average cost would be computed each time a purchase was made instead of only once for all items purchased during the year.

The calculations to determine the inventory on this basis are given below.

1. **First-in, first-out.**  
The inventory would be the same in amount as in part (a), \$3,500.
2. **Last-in, first-out.**

Date	Received		Issued		Balance		
	No. of units	Unit cost	No. of units	Unit cost	No. of units	Unit cost*	Amount
Jan. 2	1,200	\$3.00			1,200	\$3.00	\$3,600
Jan. 7			700	\$3.00	500	3.00	1,500
Jan. 10	600	3.20			500	3.00	3,420
					600	3.20	
Jan. 13			500	3.20	500	3.00	1,820
					100	3.20	
Jan. 18	1,000	3.30	300	3.30	500	3.00	4,130
					100	3.20	
					700	3.30	
Jan. 20			700	3.30			
			100	3.20			
			300	3.00	200	3.00	600
Jan. 23	1,300	3.40			200	3.00	5,020
					1,300	3.40	
Jan. 26			800	3.40	200	3.00	2,300
					500	3.40	
Jan. 28	1,600	3.50			200	3.00	7,900
					500	3.40	
					1,600	3.50	
Jan. 31			1,300	3.50	200	3.00	3,350
					500	3.40	
					300	3.50	

**Inventory, January 31 is \$3,350.**

## PROBLEM 8.5 (Continued)

### 3. Average-cost.

Date	Received		Issued		Balance		
	No. of units	Unit cost	No. of units	Unit cost	No. of units	Unit cost*	Amount
Jan. 2	1,200	\$3.00			1,200	\$3.0000	\$3,600
Jan. 7			700	\$3.0000	500	3.0000	1,500
Jan. 10	600	3.20			1,100	3.1091	3,420
Jan. 13			500	3.1091	600	3.1091	1,865
Jan. 18	1,000	3.30	300	3.2281	1,300	3.2281	4,197
Jan. 20			1,100	3.2281	200	3.2281	646
Jan. 23	1,300	3.40			1,500	3.3773	5,066
Jan. 26			800	3.3773	700	3.3773	2,364
Jan. 28	1,600	3.50			2,300	3.4626	7,964
Jan. 31			1,300	3.4626	1,000	3.4626	3,463

**Inventory, January 31 is \$3,463.**

**\*Four decimal places are used to minimize rounding errors.**

LO: 3, Bloom: AP Complex, Time: 40-55, AACSB: Analysis, AICPA BB: None Measurement, Reporting, AICPA PC:, AICPA BB: None

<b>PROBLEM 8.6</b>
--------------------

(a) Beginning inventory .....	1,000
Purchases (2,000 + 3,000) .....	<u>5,000</u>
Units available for sale .....	6,000
Sales (2,500 + 2,200) .....	<u>(4,700)</u>
Goods on hand .....	<u>1,300</u>

**Periodic FIFO**

1,000 X \$12 =	\$12,000
2,000 X \$18 =	36,000
<u>1,700 X \$23 =</u>	<u>39,100</u>
<u>4,700</u>	<u>\$87,100</u>

(b) **Perpetual FIFO**  
 Same as periodic: \$87,100

(c) **Periodic LIFO**

3,000 X \$23 =	\$69,000
<u>1,700 X \$18 =</u>	<u>30,600</u>
<u>4,700</u>	<u>\$99,600</u>

(d) **Perpetual LIFO**

Date	Purchased	Sold	Balance
1/1			1,000 X \$12 = \$12,000
2/4	2,000 X \$18 = \$36,000		1,000 X \$12 } 2,000 X \$18 } \$48,000
2/20		2,000 X \$18 } 500 X \$12 } \$42,000	500 X \$12 = \$ 6,000
4/2	3,000 X \$23 = \$69,000		500 X \$12 } 3,000 X \$23 } \$75,000
11/4		2,200 X \$23 = \$50,600	500 X \$12 } 800 X \$23 } \$24,400
		<u>\$92,600</u>	

## PROBLEM 8.6 (Continued)

### (e) Periodic weighted-average

1,000 X \$12 =	\$ 12,000		
2,000 X \$18 =	36,000		
3,000 X \$23 =	<u>69,000</u>		4,700
	<u>\$117,000</u>	÷ 6,000 =	<u>\$19.50</u>
			<u>\$91,650</u>

### (f) Perpetual moving average

Date	Purchased	Sold	Balance
1/1			1,000 X \$12 = \$12,000
2/4	2,000 X \$18 = \$36,000		3,000 X \$16 = 48,000
2/20		2,500 X \$16 = \$40,000	500 X \$16 = 8,000
4/2	3,000 X \$23 = \$69,000		3,500 X \$22 <sup>a</sup> = 77,000
11/4		2,200 X \$22 = <u>48,400</u>	1,300 X \$22 = 28,600
		<u>\$88,400</u>	

<sup>a</sup> 500 X \$16 = \$ 8,000

3,000 X \$23 = 69,000

3,500            \$77,000

(\$77,000 ÷ 3,500 = \$22)

LO: 3, Bloom: AP, Difficulty: Moderate, Time: 25-35, AACSB: Analysis, AICPA BB: None Measurement, Reporting, AICPA PC:, AICPA BB: None

## PROBLEM 8.7

The accounts in the 2021 financial statements which would be affected by a change to LIFO and the new amount for each of the accounts are as follows:

Account	New amount for 2021
(1) Cash	\$176,400
(2) Inventory	120,000
(3) Retained earnings	226,400
(4) Cost of goods sold	792,000
(5) Income taxes	101,600

The calculations for both 2020 and 2021 to support the conversion to LIFO are presented below.

Income for the Years Ended	12/31/20	12/31/21
Sales revenue	<u>\$900,000</u>	<u>\$1,350,000</u>
Less: Cost of goods sold	525,000	792,000
Other expenses	<u>205,000</u>	<u>304,000</u>
	<u>730,000</u>	<u>1,096,000</u>
Income before taxes	170,000	254,000
Income taxes (40%)	<u>68,000</u>	<u>101,600</u>
Net income	<u>\$102,000</u>	<u>\$ 152,400</u>

Cost of Goods Sold and Ending Inventory for the Years Ended	12/31/20	12/31/21
Beginning inventory ( 40,000 X \$3.00)	\$120,000	\$120,000
Purchases (150,000 X \$3.50)	<u>525,000</u>	<u>792,000</u>
Cost of goods available	645,000	912,000
Ending inventory ( 40,000 X \$3.00)	<u>(120,000)</u>	<u>(120,000)</u>
Cost of goods sold	<u>\$525,000</u>	<u>\$792,000</u>

Determination of Cash at	12/31/20	12/31/21
Income taxes under FIFO	\$ 76,000	\$116,000
Income taxes as calculated under LIFO	<u>68,000</u>	<u>101,600</u>
Increase in cash	8,000	14,400
Adjust cash at 12/31/21 for 2020 tax difference	<u>—</u>	<u>8,000</u>
Total increase in cash	8,000	22,400
Cash balance under FIFO	<u>130,000</u>	<u>154,000</u>
Cash balance under LIFO	<u>\$138,000</u>	<u>\$176,400</u>

## PROBLEM 8.7 (Continued)

<u>Determination of Retained Earnings at</u>	<u>12/31/20</u>	<u>12/31/21</u>
Net income under FIFO	\$114,000	\$174,000
Net income under LIFO	<u>(102,000)</u>	<u>(152,400)</u>
Reduction in retained earnings	12,000	21,600
Adjust retained earnings at 12/31/21 for 2020 reduction	<u>—</u>	<u>12,000</u>
Total reduction in retained earnings	12,000	33,600
Retained earnings under FIFO	<u>200,000</u>	<u>260,000</u>
Retained earnings under LIFO	<u>\$188,000</u>	<u>\$226,400</u>

LO: 3, Bloom: AP, Difficulty: Moderate, Time: 30-40, AACSB: Analysis, AICPA BB: None Reporting, AICPA PC:, AICPA BB: None

**PROBLEM 8.8**

- (a) 1. Ending inventory in units
- |             |                           |                      |
|-------------|---------------------------|----------------------|
| Portable    | 6,000 + 15,000 – 14,000 = | 7,000                |
| Midsize     | 8,000 + 20,000 – 24,000 = | 4,000                |
| Flat-screen | 3,000 + 10,000 – 6,000 =  | <u>7,000</u>         |
|             |                           | <u><b>18,000</b></u> |
2. Ending inventory at current cost
- |             |                 |                           |
|-------------|-----------------|---------------------------|
| Portable    | 7,000 X \$110 = | \$ 770,000                |
| Midsize     | 4,000 X \$300 = | 1,200,000                 |
| Flat-screen | 7,000 X \$500 = | <u>3,500,000</u>          |
|             |                 | <u><b>\$5,470,000</b></u> |
3. Ending inventory at base-year cost
- |             |                 |                           |
|-------------|-----------------|---------------------------|
| Portable    | 7,000 X \$100 = | \$ 700,000                |
| Midsize     | 4,000 X \$250 = | 1,000,000                 |
| Flat-screen | 7,000 X \$400 = | <u>2,800,000</u>          |
|             |                 | <u><b>\$4,500,000</b></u> |
4. Price index  
 $\$5,470,000 \div \$4,500,000 = 1.2156$
5. Ending inventory
- |                        |  |                           |
|------------------------|--|---------------------------|
| \$3,800,000 X 1.0000 = |  | \$3,800,000               |
| 700,000* X 1.2156 =    |  | <u>850,920</u>            |
|                        |  | <u><b>\$4,650,920</b></u> |
- \*(\$4,500,000 – \$3,800,000 = \$700,000)
6. Cost of goods sold
- |  |                            |
|--|----------------------------|
| Beginning inventory .....              | \$ 3,800,000               |
| Purchases                              |                            |
| [(15,000 X \$110) + (20,000 X \$300) + |                            |
| (10,000 X \$500)] .....                | <u>12,650,000</u>          |
| Cost of goods available .....          | 16,450,000                 |
| Ending inventory .....                 | <u>(4,650,920)</u>         |
| Cost of goods sold .....               | <u><b>\$11,799,080</b></u> |



**PROBLEM 8.8 (Continued)**

**7. Gross profit**

Sales revenue		
$[(14,000 \times \$150) + (24,000 \times \$405) +$		
$(6,000 \times \$600)]$ .....		<b>\$15,420,000</b>
Cost of goods sold .....		<b>11,799,080</b>
Gross profit .....		<b><u>\$ 3,620,920</u></b>

**(b) 1. Ending inventory at current cost restated to base cost**

Portable	\$ 770,000 ÷ 1.10 <sup>a</sup> =	<b><u>\$ 700,000</u></b>
Midsize	1,200,000 ÷ 1.20 <sup>b</sup> =	<b><u>\$ 1,000,000</u></b>
Flat-screen	3,500,000 ÷ 1.25 <sup>c</sup> =	<b><u>\$ 2,800,000</u></b>

a.  $\$110 \div \$100$

b.  $\$300 \div \$250$

c.  $\$500 \div \$400$

**2. Ending inventory**

Portable	\$ 600,000 X 1.00 =	<b>\$ 600,000</b>
	100,000 X 1.10 =	<b>110,000</b>
Midsize	1,000,000 X 1.00 =	<b>1,000,000</b>
Flat-screen	1,200,000 X 1.00 =	<b>1,200,000</b>
	1,600,000 X 1.25 =	<b><u>2,000,000</u></b>
		<b><u>\$ 4,910,000</u></b>

**3. Cost of good sold**

Cost of good available.....	<b>\$16,450,000</b>
Ending inventory.....	<b><u>(4,910,000)</u></b>
Cost of goods sold.....	<b><u>\$11,540,000</u></b>

**4. Gross profit**

Sales revenue.....	<b>\$15,420,000</b>
Cost of goods sold .....	<b><u>11,540,000</u></b>
Gross profit .....	<b><u>\$ 3,880,000</u></b>

LO: 4, Bloom: AP, Difficulty: Moderate, Time: 30-40, AACSB: Analysis , AICPA BB: None Reporting, AICPA PC:, AICPA BB: None

**PROBLEM 8.9**

**(a) BONANZA WHOLESALERS INC.**  
**Computation of Internal Conversion Price Index**  
**for Inventory Pool No. 1 Double Extension Method**

Current inventory at current-year cost		<u>2020</u>		<u>2021</u>	
Product A	17,000 X \$36 =	<u>\$612,000</u>	13,000 X \$40 =	<u>\$520,000</u>	
Product B	9,000 X \$26 =	<u>234,000</u>	10,000 X \$32 =	<u>320,000</u>	
		<u>\$846,000</u>		<u>\$840,000</u>	
Current inventory at base cost					
Product A	17,000 X \$30 =	<u>\$510,000</u>	13,000 X \$30 =	<u>\$390,000</u>	
Product B	9,000 X \$25 =	<u>225,000</u>	10,000 X \$25 =	<u>250,000</u>	
		<u>\$735,000</u>		<u>\$640,000</u>	
Conversion price index		$\$846,000 \div \$735,000 = 1.15$		$\$840,000 \div \$640,000 = 1.31$	

**(b) BONANZA WHOLESALERS INC.**  
**Computation of Inventory Amounts**  
**Under Dollar-Value LIFO Method for Inventory Pool No. 1**  
**at December 31, 2020 and 2021**

	<u>Current</u> <u>Inventory at</u> <u>base cost</u>	<u>Conversion</u> <u>price index</u>	<u>Inventory at</u> <u>LIFO cost</u>
<b>December 31, 2020</b>			
Base inventory	<u>\$525,000</u>	1.00	<u>\$525,000</u>
2020 layer (\$735,000 – \$525,000)	<u>210,000</u>	1.15 (a)	<u>241,500</u>
Total	<u>\$735,000</u> (a)		<u>\$766,500</u>
<b>December 31, 2021</b>			
Base inventory	<u>\$525,000</u>	1.00	<u>\$525,000</u>
2020 layer (remaining)	<u>115,000</u> (b)	1.15 (a)	<u>132,250</u>
Total	<u>\$640,000</u> (a)		<u>\$657,250</u>

(a) Per schedule for instruction (a).

(b) After liquidation of \$95,000 base cost (\$735,000 – \$640,000).

LO: 4, Bloom: AP, Difficulty: Moderate, Time: 25-35, AACSB: Analysis, AICPA BB: None Reporting, AICPA PC:, AICPA BB: None

**PROBLEM 8.10**

	Base-Year Cost	Index %	Dollar-Value LIFO
<b><u>December 31, 2019</u></b>			
January 1, 2019, base	\$45,000	100	\$45,000
December 31, 2019, layer	<u>11,000</u>	112*	<u>12,320</u>
	<u>\$56,000</u>		<u>\$57,320</u>
<b><u>December 31, 2020</u></b>			
January 1, 2019, base	\$45,000	100	\$45,000
December 31, 2019, layer	11,000	112	12,320
December 31, 2020, layer	<u>12,400</u>	128**	<u>15,872</u>
	<u>\$68,400</u>		<u>\$73,192</u>
<b><u>December 31, 2021</u></b>			
January 1, 2019, base	\$45,000	100	\$45,000
December 31, 2019, layer	11,000	112	12,320
December 31, 2020, layer	12,400	128	15,872
December 31, 2021, layer	<u>1,600</u>	130***	<u>2,080</u>
	<u>\$70,000</u>		<u>\$75,272</u>

\*\$62,700 ÷ \$56,000  
 \*\*\$87,300 ÷ \$68,400  
 \*\*\*\$90,800 ÷ \$70,000

LO: 4, Bloom: AP Complex, Time: 30-35, AACSB: Analysis, AICPA BB: None Reporting, AICPA PC:, AICPA BB: None

**PROBLEM 8.11**

(a)

**Schedule A**

	A	B	C	D
	<u>Current \$</u>	<u>Price Index</u>	<u>Base-Year \$</u>	<u>Change from Prior Year</u>
2016	\$ 80,000	1.00	\$ 80,000	—
2017	111,300	1.05	106,000	+\$26,000
2018	108,000	1.20	90,000	(16,000)
2019	128,700	1.30	99,000	+9,000
2020	147,000	1.40	105,000	+6,000
2021	174,000	1.45	120,000	+15,000

**Schedule B**

**Ending Inventory-Dollar-Value LIFO:**

2016		<u>\$ 80,000</u>		2020	\$80,000 @ \$1.00 =	\$ 80,000
2017	\$80,000 @ \$1.00 =	\$ 80,000			10,000 @ 1.05 =	10,500
	26,000 @ 1.05 =	<u>27,300</u>			9,000 @ 1.30 =	11,700
		<u>\$107,300</u>			6,000 @ 1.40 =	<u>8,400</u>
2018	\$80,000 @ 1.00 =	\$ 80,000				<u>\$110,600</u>
	10,000 @ 1.05 =	<u>10,500</u>		2021	\$80,000 @ 1.00 =	\$ 80,000
		<u>\$ 90,500</u>			10,000 @ 1.05 =	10,500
2019	\$80,000 @ 1.00 =	\$ 80,000			9,000 @ 1.30 =	11,700
	10,000 @ 1.05 =	10,500			6,000 @ 1.40 =	8,400
	9,000 @ 1.30 =	<u>11,700</u>			15,000 @ 1.45 =	<u>21,750</u>
		<u>\$102,200</u>				<u>\$132,350</u>

## **PROBLEM 8.11 (Continued)**

**(b)**

**To: Richardson Company**

**From: Accounting Student**

**Subject: Dollar-Value LIFO Pool Accounting**

**Dollar-value LIFO is an inventory method which values groups or “pools” of inventory in layers of costs. It assumes that any goods sold during a given period were taken from the most recently acquired group of goods in stock and, consequently, any goods remaining in inventory are assumed to be the oldest goods, valued at the oldest prices.**

**Because dollar-value LIFO combines various related costs in groups or “pools,” no attempt is made to keep track of each individual inventory item. Instead, each group of annual purchases forms a new cost layer of inventory. Further, the most recent layer will be the first one carried to cost of goods sold during this period.**

**However, inflation distorts any cost of purchases made in subsequent years. To counteract the effect of inflation, this method measures the incremental change in each year’s ending inventory in terms of the first year’s (base year’s) costs. This is done by adjusting subsequent cost layers, through the use of a price index, to the base year’s inventory costs. Only after this adjustment can the new layer be valued at current-year prices.**

**To do this valuation, you need to know both the ending inventory at year-end prices and the price index used to adjust the current year’s new layer. The idea is to convert the current ending inventory into base-year costs. The difference between the current year’s and the previous year’s ending inventory expressed in base-year costs usually represents any inventory which has been purchased but not sold during the year, that is, the newest LIFO layer. This difference is then readjusted to express this most recent layer in current-year costs.**

## PROBLEM 8.11 (Continued)

1. Refer to Schedule A. To express each year's ending inventory (Column A) in terms of base-year costs, simply divide the ending inventory by the price index (Column B). For 2016, this adjustment would be  $\$80,000/100\%$  or  $\$80,000$ ; for 2017, it would be  $\$111,300/105\%$ , etc. The quotient (Column C) is thus expressed in base-year costs.
2. Next, compute the difference between the previous and the current years' ending inventory in base-year costs. Simply subtract the current year's base-year inventory from the previous year's. In 2017, the change is  $+\$26,000$  (Column D).
3. Finally, express this increment in current-year terms. For the second year, this computation is straightforward: the base-year ending inventory value is added to the difference in #2 above multiplied by the price index. For 2017, the ending inventory for dollar-value LIFO would equal  $\$80,000$  of base-year inventory plus the increment ( $\$26,000$ ) times the price index (1.05) or  $\$107,300$ . The product is the most recent layer expressed in current-year prices. See Schedule B.

Be careful with this last step in subsequent years. Notice that, in 2018, the change from the previous year is  $-\$16,000$ , which causes the 2017 layer to be eroded during the period. Thus, the 2018 ending inventory is valued at the original base-year cost  $\$80,000$  plus the remainder valued at the 2017 price index,  $\$10,000$  times 1.05. See 2018 computation on Schedule B.

When valuing ending inventory, remember to include each yearly layer adjusted by that year's price index. Refer to Schedule B for 2019. Notice that the  $+\$9,000$  change from the 2019 ending inventory indicates that the 2017 layer was not further eroded. Thus, ending inventory for 2019 would value the first  $\$80,000$  worth of inventory at the base-year price index (1.00), the next  $\$10,000$  (the remainder of the 2017 layer) at the 2017 price index (1.05), and the last  $\$9,000$  at the 2019 price index (1.30).

**These instructions should help you implement dollar-value LIFO in your inventory valuation.**

LO: 4, Bloom: AP, Difficulty: Moderate, Time: 40-50, AACSB: Analysis, Communication, AICPA BB: None Reporting, AICPA PC: Communication