

CHAPTER 8

Valuation of Inventories: A Cost-Basis Approach

ASSIGNMENT CLASSIFICATION TABLE (BY TOPIC)

Topics	Questions	Brief Exercises	Exercises	Problems	Concepts for Analysis
1. Inventory accounts; determining quantities, costs, and items to be included in inventory; the inventory equation; statement of financial position disclosure.	1, 2, 3, 4, 5, 6, 7, 8, 11, 12, 14, 15, 16	1, 4, 5	1, 2, 3, 4, 5, 6	1, 2, 3	1, 2, 3, 6, 7
2. Perpetual vs. periodic.		2, 4	9, 13, 17, 20	4, 5, 6, 9	
3. Recording of discounts.	13, 16		7, 8	3	4
4. Inventory errors.	9, 10	3	5, 10, 11, 12	2	
5. Flow assumptions.	17, 18, 21	6, 7, 8, 9, 10	9, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25	1, 4, 5, 6, 7, 8, 9, 10	5, 6, 7, 8, 9
6. Inventory accounting changes.			16	10	8, 11
*7. LIFO, Dollar-value LIFO methods.	19, 20, 21, 22, 23, 24, 25	10, 11, 12	17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29	7, 8, 9, 10, 11, 12, 13, 14	7, 8, 9, 10

*This material is covered in an appendix to the chapter.

ASSIGNMENT CLASSIFICATION TABLE (BY LEARNING OBJECTIVE)

Learning Objectives	Brief Exercises	Exercises	Problems
1. Identify major classifications of inventory.	1		
2. Distinguish between perpetual and periodic inventory systems.	2	4, 9	4, 5, 6
3. Identify the effects of inventory errors on the financial statements.	3	5, 10, 11, 12	
4. Understand the items to include as inventory cost.	4, 5	1, 2, 3, 4, 5, 6, 7, 8	1, 2, 3
5. Describe and compare the methods used to price inventories.	6, 7, 8, 9	9, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25	1, 4, 5, 6, 7, 8, 9, 10
6. Describe the LIFO cost flow assumption.	10	17, 18, 19, 20, 21, 22, 23	7, 8, 9, 10
7. Explain the significance and use of a LIFO reserve.		24	
8. Understand the effect of LIFO liquidations.			
9. Explain the dollar-value LIFO method.	11, 12	25, 26, 27, 28, 29	11, 12, 13, 14
10. Explain the major advantages and disadvantages of LIFO.			
11. Understand why companies select given inventory methods.			

ASSIGNMENT CHARACTERISTICS TABLE

Item	Description	Level of Difficulty	Time (minutes)
E8-1	Inventoriable costs.	Moderate	15–20
E8-2	Inventoriable costs.	Moderate	10–15
E8-3	Inventoriable costs.	Simple	10–15
E8-4	Inventoriable costs—perpetual.	Simple	10–15
E8-5	Inventoriable costs—error adjustments.	Moderate	15–20
E8-6	Determining merchandise amounts—periodic.	Simple	10–20
E8-7	Purchases recorded net.	Simple	10–15
E8-8	Purchases recorded, gross method.	Simple	20–25
E8-9	Periodic versus perpetual entries.	Moderate	15–25
E8-10	Inventory errors, periodic.	Simple	10–15
E8-11	Inventory errors.	Simple	10–15
E8-12	Inventory errors.	Moderate	15–20
E8-13	FIFO and average cost determination.	Moderate	20–25
E8-14	FIFO and average cost inventory.	Moderate	15–20
E8-15	Compute FIFO and average cost—periodic.	Moderate	15–20
E8-16	FIFO and average cost—income statement presentation.	Simple	15–20
E8-17	FIFO and LIFO—periodic and perpetual.	Moderate	15–20
E8-18	FIFO, LIFO, and average cost determination.	Moderate	20–25
E8-19	FIFO, LIFO, average cost inventory.	Moderate	15–20
E8-20	FIFO and LIFO; periodic and perpetual.	Simple	10–15
E8-21	FIFO and LIFO; income statement presentation.	Simple	15–20
E8-22	FIFO and LIFO effects.	Moderate	20–25
E8-23	FIFO and LIFO—periodic.	Simple	10–15
E8-24	LIFO effect.	Moderate	10–15
E8-25	Alternate inventory methods—comprehensive.	Moderate	25–30
E8-26	Dollar-value LIFO.	Simple	5–10
E8-27	Dollar-value LIFO.	Simple	15–20
E8-28	Dollar-value LIFO.	Moderate	20–25
E8-29	Dollar-value LIFO.	Moderate	15–20
P8-1	Various inventory issues.	Moderate	25–35
P8-2	Inventory adjustments.	Moderate	25–35
P8-3	Purchases recorded gross and net.	Simple	20–25
P8-4	Compute specific identification, FIFO, and average cost.	Complex	30–40
P8-5	Compute FIFO and average cost.	Complex	25–35
P8-6	Compute FIFO average cost—periodic and perpetual.	Moderate	20–25

ASSIGNMENT CHARACTERISTICS TABLE (Continued)

Item	Description	Level of Difficulty	Time (minutes)
P8-7	Compute FIFO, LIFO, and average cost.	Complex	40–55
P8-8	Compute FIFO, LIFO, and average cost.	Complex	40–55
P8-9	Compute FIFO, LIFO, and average cost—periodic and perpetual.	Moderate	25–35
P8-10	Financial statement effects of FIFO and LIFO.	Moderate	30–40
P8-11	Dollar-value LIFO.	Moderate	30–40
P8-12	Internal indexes—dollar-value LIFO.	Moderate	25–35
P8-13	Internal indexes—dollar-value LIFO.	Complex	30–35
P8-14	Dollar-value LIFO.	Moderate	40–50
CA8-1	Inventoriable costs.	Moderate	15–20
CA8-2	Inventoriable costs.	Moderate	15–25
CA8-3	Inventoriable costs.	Moderate	25–35
CA8-4	Accounting treatment of purchase discounts.	Simple	15–25
CA8-5	Average cost and FIFO.	Simple	15–20
CA8-6	Inventory choices—ethical issues	Moderate	20–25
CA8-7	General inventory issues.	Moderate	20–25
CA8-8	LIFO inventory advantages.	Simple	15–20
CA8-9	LIFO application and advantages.	Moderate	25–30
CA8-10	Dollar-value LIFO issues.	Moderate	25–30
CA8-11	FIFO and LIFO.	Moderate	30–35

ANSWERS TO QUESTIONS

1. In a merchandising concern, inventory normally consists of only one category, that is the product awaiting resale. In a manufacturing concern, inventories consist of raw materials, work in process, and finished goods. Sometimes a manufacturing or factory supplies inventory account is also included.
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 earned during the period. Goods included in the ending inventory are unexpired costs to be carried forward to a future period, rather than expensed.
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 means that inventory is periodically counted (at least once a year) but that 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.
4. No. Mishima, Inc. should not report this amount on its statement of financial position. As consignee, it does not own this merchandise and therefore it is inappropriate for it to recognize this merchandise as part of its inventory.
5. 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 statement of financial position. A product financing arrangement should not be recorded as a sale. Rather, the inventory and related liability should be reported on the statement of financial position.
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.
7. Yang can consider the inventory sold if it can reasonably estimate the amount of returns. The generous return policy does not prohibit Yang from recording a sale unless returns are unpredictable.
8. Holland can consider goods sold through installment plans as revenue if it can reasonably estimate the percentage of bad debts. Even though legal title does not pass to the buyer, Holland will consider the goods sold as long as it can estimate bad debts accurately.
9. Beckham should explain to the Swiss president that an error in the ending inventory of 2010 also affects the beginning inventory of 2011. For example, understating the 2010 ending inventory would cause the 2011 beginning inventory to be understated also. This understatement would cause an understatement of the 2011 cost of goods sold and an overstatement of the 2011 net income.

Questions Chapter 8 (Continued)

10. 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.
11. 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.
12. 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.

13. Cash discounts (purchase discounts) should not be accounted for as income when payments are made. Income should be recognized when the earning process is complete (when the company sells the inventory). Furthermore, a company does not earn revenue from purchasing goods. Cash discounts should be considered as a reduction in the cost of the items purchased.
14. Companies usually expense interest costs. Interest costs are considered a cost of financing and are generally expensed as incurred. IFRS indicates that companies should only capitalize interest costs related to assets constructed for internal use or assets produced as discrete projects for sale or lease. This generally does not apply to inventory.
15. Biestek should account for the usual spoilage as a cost of its inventory, but the unusual spoilage should be charged to an expense in the period incurred.
16. €60.00, €63.00, €61.80. (Freight-In not included for discount because it might be paid to different party.)
17. 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.

Questions Chapter 8 (Continued)

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.

- 18.** 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 statement of financial position 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 weighted-average 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 weighted-average 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 weighted-average 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.

- *19.** 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.

Questions Chapter 8 (Continued)

- *20.** 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, 2010 inventory			<u>\$643,050</u>		<u>\$1,007,460</u>

$$\frac{\text{Current-Year Cost}}{\text{Base-Year Cost}} = \frac{\$1,007,460}{\$643,050} = 156.67, \text{ index at 12/31/10.}$$

- *21.** 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.
- *22.** 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 nor 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.

- *23.** (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.

Questions Chapter 8 (Continued)

*24. December 31, 2010 inventory at December 31, 2009 prices, \$1,053,000 ÷ 1.08	\$975,000
Less: Inventory, December 31, 2009	<u>800,000</u>
Increment added during 2010 at base prices.....	<u>\$175,000</u>
Increment added during 2010 at December 31, 2010 prices, \$175,000 X 1.08	\$189,000
Add: Inventory at December 31, 2009	<u>800,000</u>
Inventory, December 31, 2010, under dollar-value LIFO method.....	<u>\$989,000</u>

- *25. Phantom (paper) 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 LIFO 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.

SOLUTIONS TO BRIEF EXERCISES

BRIEF EXERCISE 8-1

RIVERA COMPANY Balance Sheet (Partial) December 31

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

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

BRIEF EXERCISE 8-3

Cost of goods sold as reported.....	\$1,400,000
Overstatement of 12/31/09 inventory.....	(110,000)
Overstatement of 12/31/10 inventory.....	<u>35,000</u>
Corrected cost of goods sold.....	<u>\$1,325,000</u>
12/31/10 retained earnings as reported	\$5,200,000
Overstatement of 12/31/10 inventory.....	<u>(35,000)</u>
Corrected 12/31/10 retained earnings.....	<u>\$5,165,000</u>

BRIEF EXERCISE 8-4

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	<u>\$247,000</u>

BRIEF EXERCISE 8-5

Purchase price	¥45,000,000
Import duties.....	375,000
Transportation costs.....	<u>125,000</u>
Cost of Inventory.....	<u>¥45,500,000</u>

BRIEF EXERCISE 8-6

Weighted average cost per unit	$\frac{\text{€}7,550}{1,150} =$	<u>€ 6.57</u>
Ending inventory 550 X €6.57 =		<u>€3,614</u>
Cost of goods available for sale		€7,550
Deduct ending inventory		<u>3,614</u>
Cost of goods sold		<u>€3,936</u>

BRIEF EXERCISE 8-7

Ending inventory	400 X €8 =	€3,200
June 23	150 X €6 =	<u>900</u>
		<u>€4,100</u>
Cost of goods available for sale		€7,550
Deduct ending inventory		<u>4,100</u>
Cost of goods sold		<u>€3,450</u>

BRIEF EXERCISE 8-8

Weighted average cost per unit	$\frac{\text{\$}11,850}{1,000} =$	<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>

BRIEF EXERCISE 8-9

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>

***BRIEF EXERCISE 8-10**

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>

***BRIEF EXERCISE 8-11**

2009		\$100,000
2010	$\$119,900 \div 1.10 =$	<u>\$109,000</u>
	\$100,000 X 1.00.....	\$100,000
	\$9,000* X 1.10.....	<u>9,900</u>
		<u>\$109,900</u>
	*\$109,000 – \$100,000	
2011	$\$134,560 \div 1.16 =$	<u>\$116,000</u>
	\$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	

***BRIEF EXERCISE 8-12**

2010 inventory at base amount ($\$22,140 \div 1.08$)		\$20,500
2009 inventory at base amount		<u>(19,750)</u>
Increase in base inventory		<u>\$ 750</u>
2010 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>
2011 inventory at base amount ($\$25,935 \div 1.14$)		\$22,750
2010 inventory at base amount		<u>(20,500)</u>
Increase in base inventory		<u>\$ 2,250</u>
2011 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>

SOLUTIONS TO EXERCISES

EXERCISE 8-1 (15–20 minutes)

Items 2, 3, 5, 8, 10, 13, 14, 16, and 17 would be reported as inventory in the financial statements.

The following items would not be reported as inventory:

1. 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.
11. Advertising expense in the income statement.
12. Office supplies in the current assets section of the statement of financial position.
15. Not reported in the financial statements.
18. Short-term investments in the current asset section of the statement of financial position.

EXERCISE 8-2 (10–15 minutes)

Inventory per physical count	\$441,000
Goods in transit to customer, f.o.b. destination.....	+ 33,000
Goods in transit from vendor, f.o.b. shipping point.....	+ <u>51,000</u>
Inventory to be reported on statement of financial position	<u>\$525,000</u>

The consigned goods of \$61,000 are not owned by Garza 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 (Garza) and therefore a sale and related cost of goods sold should be recorded in 2010.

The goods in transit from a vendor of \$73,000, shipped f.o.b. destination, are properly excluded from the inventory because the title to the goods does not pass to Garza until the buyer (Garza) receives them.

EXERCISE 8-3 (10–15 minutes)

- 1. Include. 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 Webber Inc. at December 31, 2010.**
- 4. Do not include. Goods received on consignment remain the property of the consignor.**
- 5. Include in inventory. Under invoice terms, title passed when goods were shipped.**

EXERCISE 8-4 (10–15 minutes)

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

EXERCISE 8-5 (15–20 minutes)

(a)	Inventory December 31, 2010 (unadjusted).....	\$234,890
	Transaction 2	10,420
	Transaction 3	–0–
	Transaction 4	–0–
	Transaction 5	8,540
	Transaction 6	(10,438)
	Transaction 7	(11,520)
	Transaction 8	<u>1,500</u>
	Inventory December 31, 2010 (adjusted).....	<u>\$233,392</u>

(b)	Transaction 3		
	Sales.....	12,800	
	Accounts Receivable		12,800
	(To reverse sale entry in 2010)		

	Transaction 4		
	Purchases (Inventory).....	15,630	
	Accounts Payable.....		15,630
	(To record purchase of merchandise in 2010)		

	Transaction 8		
	Sales Returns and Allowances	2,600	
	Accounts Receivable		2,600

EXERCISE 8-6 (10–20 minutes)

	<u>2009</u>	<u>2010</u>	<u>2011</u>
Sales	\$290,000	\$360,000	\$410,000
Sales Returns.....	6,000	13,000	10,000
Net Sales.....	284,000	347,000	400,000
Beginning Inventory	20,000	32,000	37,000**
Ending Inventory	32,000*	37,000	34,000
Purchases	247,000	260,000	298,000
Purchase Returns and Allowances	5,000	8,000	10,000
Transportation-in	8,000	9,000	12,000
Cost of Good Sold.....	238,000	256,000	303,000
Gross Profit on Sales	46,000	91,000	97,000

*This was given as the beginning inventory for 2010.

**This was calculated as the ending inventory for 2010.

EXERCISE 8-7 (10–15 minutes)

(a)	May 10	Purchases	19,600
		Accounts Payable	
		(\$20,000 X .98)	19,600
	May 11	Purchases	14,850
		Accounts Payable	
		(\$15,000 X .99)	14,850
	May 19	Accounts Payable	19,600
		Cash	19,600
	May 24	Purchases	11,270
		Accounts Payable	
		(\$11,500 X .98)	11,270

EXERCISE 8-7 (Continued)

(b)	May 31	Purchase Discounts Lost.....	150	
		Accounts Payable		
		(\$15,000 X .01).....		150
		(Discount lost on purchase		
		of May 11, \$15,000, terms		
		1/15, n/30)		

EXERCISE 8-8 (20–25 minutes)

(a)	Feb. 1	Inventory [¥12,000 – (¥12,000 X 10%)]	10,800	
		Accounts Payable		10,800
	Feb. 4	Accounts Payable		
		[¥3,000 – (¥3,000 X 10%)]	2,700	
		Inventory		2,700
	Feb. 13	Accounts Payable (¥10,800 – ¥2,700).....	8,100	
		Inventory (3% X ¥8,100).....		243
		Cash.....		7,857
(b)	Feb. 1	Purchases [¥12,000 – (¥12,000 X 10%)]	10,800	
		Accounts Payable		10,800
	Feb. 4	Accounts Payable		
		[¥3,000 – (¥3,000 X 10%)]	2,700	
		Purchase Returns and Allowances		2,700
	Feb. 13	Accounts Payable (¥10,800 – ¥2,700).....	8,100	
		Purchase Discounts (3% X ¥8,100)		243
		Cash.....		7,857

EXERCISE 8-8 (Continued)

(c)	Purchase price (list).....	¥12,000	
	Less: Trade discount (10% X ¥12,000)	<u>1,200</u>	
	Price on which cash discount based	10,800	
	Less: Cash discount (3% X ¥10,800).....	<u>324</u>	
	Net price.....	<u>¥10,476</u>	

EXERCISE 8-9 (15–25 minutes)

(a)	Jan. 4	Accounts Receivable	640	
		Sales (80 X \$8)		640
	Jan. 11	Purchases (\$150 X \$6.50).....	975	
		Accounts Payable.....		975
	Jan. 13	Accounts Receivable	1,050	
		Sales (120 X \$8.75)		1,050
	Jan. 20	Purchases (160 X \$7).....	1,120	
		Accounts Payable.....		1,120
	Jan. 27	Accounts Receivable	900	
		Sales (100 X \$9).....		900
	Jan. 31	Inventory (\$7 X 110).....	770	
		Cost of Goods Sold	1,925*	
		Purchases (\$975 + \$1,120).....		2,095
		Inventory (100 X \$6)		600

*(\$600 + \$2,095 – \$770)

EXERCISE 8-9 (Continued)

(b)	Sales (\$640 + \$1,050 + \$900).....	\$2,590
	Cost of goods sold.....	<u>1,925</u>
	Gross profit	<u>\$ 665</u>

(c)	Jan. 4	Accounts Receivable	640	
		Sales (80 X \$8).....		640
		Cost of Goods Sold	480	
		Inventory (80 X \$6)		480
	Jan. 11	Inventory	975	
		Accounts Payable (150 X \$6.50)		975
	Jan. 13	Accounts Receivable	1,050	
		Sales (120 X \$8.75).....		1,050
		Cost of Goods Sold	770	
		Inventory [(20 X \$6) + (100 X \$6.50)]		770
	Jan. 20	Inventory	1,120	
		Accounts Payable (160 X \$7).....		1,120
	Jan. 27	Accounts Receivable	900	
		Sales (100 X \$9).....		900
		Cost of Goods Sold	675	
		Inventory [(50 X \$6.50) + (50 X \$7)]		675

(d)	Sales	\$2,590
	Cost of goods sold	
	(\$480 + \$770 + \$675).....	<u>1,925</u>
	Gross profit	<u>\$ 665</u>

EXERCISE 8-10 (10–15 minutes)

	<u>Current Year</u>	<u>Subsequent Year</u>
1. Working capital	No effect	No effect
Current ratio	Overstated*	No effect
Retained earnings	No effect	No effect
Net income	No effect	No effect
2. Working capital	Overstated	No effect
Current ratio	Overstated	No effect
Retained earnings	Overstated	No effect
Net income	Overstated	Understated
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.

EXERCISE 8-11 (10–15 minutes)

(a) $\frac{€390,000}{€200,000} = \underline{1.95 \text{ to } 1}$

(b) $\frac{€390,000 + €22,000 - €13,000 + €3,000}{€200,000 - €20,000} = \frac{€402,000}{€180,000} = \underline{2.23 \text{ to } 1}$

(c)

<u>Event</u>	<u>Effect of Error</u>	<u>Adjust Income Increase (Decrease)</u>
1. Understatement of ending inventory	Decreases net income	€22,000
2. Overstatement of purchases	Decreases net income	20,000
3. Overstatement of ending inventory	Increases net income	(13,000)
4. Overstatement of advertising expense; understatement of cost of goods sold, assuming goods sold.		0
		<u>€29,000</u>

EXERCISE 8-12 (15–20 minutes)

Errors in Inventories

Year	Net Income Per Books	Add Overstate- ment Jan. 1	Deduct Understate- ment Jan. 1	Deduct Overstate- ment Dec. 31	Add Understate- ment Dec. 31	Corrected Net Income
2006	\$ 50,000			\$5,000		\$ 45,000
2007	52,000	\$5,000		9,000		48,000
2008	54,000	9,000			\$11,000	74,000
2009	56,000		\$11,000			45,000
2010	58,000				2,000	60,000
2011	<u>60,000</u>		2,000	10,000		<u>48,000</u>
	<u>\$330,000</u>					<u>\$320,000</u>

EXERCISE 8-13 (20–25 minutes)

(a) 1. FIFO

500 @ \$6.79 =	\$3,395
300 @ \$6.60 =	<u>1,980</u>
	<u>\$5,375</u>

2. Average cost

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

$$800 @ \$6.35 = \underline{\$5,080}$$

<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>	@	<u>\$6.79</u>	=	<u>3,395</u>
<u>5,300</u>				<u>\$33,655</u>

EXERCISE 8-13 (Continued)

(b) 1. FIFO 500 @ \$6.79 = \$3,395
 300 @ \$6.60 = 1,980
 \$5,375

2. Average cost.

Date	Purchased		Sold		Balance		
	No. of units	Unit cost	No. of units	Unit cost	No. of units	Unit cost	Amount
April 1					600	\$6.0000	\$3,600
3			500	\$6.0000	100	6.0000	600
4	1,500	\$6.08			1,600	6.0750	9,720
8	800	6.40			2,400	6.1833	14,840
9			1,300	6.1833	1,100	6.1833	6,802
11			600	6.1833	500	6.1833	3,092
13	1,200	6.50			1,700	6.4071	10,892
21	700	6.60			2,400	6.4633	15,512
23			1,200	6.4633	1,200	6.4633	7,756
27			900	6.4633	300	6.4633	1,939
29	500	6.79			800	6.6675	5,334

Inventory April 30 is \$5,334

(c) FIFO; older items with lower costs are assumed sold first.

EXERCISE 8-14 (15–20 minutes)

(a) ESPLANADE COMPANY
Computation of Inventory for Product
BAP Under Specific Identification Inventory Method
March 31, 2010

	<u>Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
Beginning inventory (portion).....	400	\$8.00	\$ 3,200
January 5, 2010 (portion).....	<u>1,100</u>	9.00	<u>9,900</u>
March 31, 2010, inventory	<u>1,500</u>		<u>\$13,100</u>

(b) ESPLANADE COMPANY
Computation of Inventory for Product
BAP Under FIFO Inventory Method
March 31, 2010

	<u>Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
March 26, 2010	600	\$12.00	\$ 7,200
February 16, 2010.....	800	11.00	8,800
January 25, 2010 (portion)	<u>100</u>	10.00	<u>1,000</u>
March 31, 2010, inventory	<u>1,500</u>		<u>\$17,000</u>

(c) ESPLANADE COMPANY
Computation of Inventory for Product
BAP Under Weighted-Average Inventory Method
March 31, 2010

	<u>Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
Beginning inventory.....	600	\$ 8.00	\$ 4,800
January 5, 2010	1,100	9.00	9,900
January 25, 2010.....	1,300	10.00	13,000
February 16, 2010.....	800	11.00	8,800
March 26, 2010	<u>600</u>	12.00	<u>7,200</u>
	<u>4,400</u>		<u>\$43,700</u>

Weighted-average cost

(\$43,700 ÷ 4,400) \$ 9.93*

March 31, 2010, inventory	<u>1,500</u>	<u>\$ 9.93</u>	<u>\$14,895</u>
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*Rounded off.

EXERCISE 8-15 (15–20 minutes)

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

$$500 @ \$4.58 = \$2,290$$

$$200 @ 4.60 = \underline{920}$$

$$\underline{700} \qquad \underline{\$3,210} \text{ Ending inventory at FIFO cost.}$$

2. \$9,324 cost of goods available for sale ÷ 2,100 units available for sale = \$4.44 weighted-average unit cost.

$$700 \text{ units} \times \$4.44 = \underline{\$3,108} \text{ Ending inventory at weighted-average cost.}$$

- (b) 1. FIFO will yield the highest gross profit because this method will yield the lowest 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, FIFO will yield the lowest cost of goods sold because the most recent purchase prices (which are the higher prices in this case) are used to cost the ending inventory while the older (and lower) purchase prices are used to price cost of goods sold.

2. FIFO will yield the highest ending inventory because FIFO uses the most recent purchase prices to cost the ending inventory units. The company has experienced rising purchase prices. The most recent costs in this case are the higher costs.

EXERCISE 8-16 (15–20 minutes)

	First-in, first-out	Average cost
Sales	€1,000,000	€1,000,000
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>(260,000**)</u>	<u>(220,950***)</u>
Cost of goods sold.....	<u>452,000</u>	<u>491,050</u>
Gross profit	548,000	508,950
Operating expenses	<u>200,000</u>	<u>200,000</u>
Net income.....	<u>€ 348,000</u>	<u>€ 308,950</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
2,000 units @ €25 =	<u>50,000</u>
	<u>€260,000</u>

***Average cost:

6,000 @ €20 =	€120,000
6,000 @ €22 =	132,000
10,000 @ €25 =	250,000
<u>7,000 @ €30 =</u>	<u>210,000</u>
<u>29,000</u>	<u>€712,000</u>

Average cost/unit = €712,000 ÷ 29,000 = €24.55 (rounded)

Ending inventory = €24.55 X 9,000 = €220,950

***EXERCISE 8-17 (15–20 minutes)**

(a)	Cost of Goods Sold			Ending Inventory		
1.	LIFO	500 @ \$13 =	\$ 6,500	300 @ \$10 =		\$3,000
		450 @ \$11 =	<u>4,950</u>	350 @ \$11 =		<u>3,850</u>
			<u>\$11,450</u>			<u>\$6,850</u>
2.	FIFO	300 @ \$10 =	\$ 3,000	500 @ \$13 =		\$6,500
		650 @ \$11 =	<u>7,150</u>	150 @ \$11 =		<u>1,650</u>
			<u>\$10,150</u>			<u>\$8,150</u>
(b)	LIFO	100 @ \$10 =	\$ 1,000			
		300 @ \$11 =	3,300			
		250 @ \$13 =	<u>3,250</u>			
			<u>\$ 7,550</u>			

(c)	Sales	\$24,050 = (\$24 X 200) + (\$25 X 500) + (\$27 X 250)
	Cost of Goods Sold	<u>10,150</u>
	Gross Profit (FIFO)	<u>\$13,900</u>

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

- (d) LIFO matches more 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.

***EXERCISE 8-18 (Continued)**

(c) Total merchandise available for sale	\$33,655
Less inventory (FIFO)	<u>5,375</u>
Cost of goods sold	<u>\$28,280</u>

(d) FIFO will show the highest income in an inflationary period.

***EXERCISE 8-19 (15–20 minutes)**

(a) **MILLS COMPANY**
Computation of Inventory for Product
Zone Under FIFO Inventory Method
March 31, 2010

	<u>Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
March 26, 2010.....	600	\$12.00	\$ 7,200
February 16, 2010	800	11.00	8,800
January 25, 2010 (portion).....	<u>100</u>	10.00	<u>1,000</u>
March 31, 2010, inventory	<u>1,500</u>		<u>\$17,000</u>

(b) **MILLS COMPANY**
Computation of Inventory for Product
Zone Under LIFO Inventory Method
March 31, 2010

	<u>Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
Beginning inventory	600	\$8.00	\$ 4,800
January 5, 2010 (portion)	<u>900</u>	9.00	<u>8,100</u>
March 31, 2010, inventory	<u>1,500</u>		<u>\$12,900</u>

***EXERCISE 8-19 (Continued)**

(c)

MILLS COMPANY
Computation of Inventory for Product
Zone Under Weighted Average Inventory Method
March 31, 2010

	Units	Unit Cost	Total Cost
Beginning inventory	600	\$ 8.00	\$ 4,800
January 5, 2010	1,100	9.00	9,900
January 25, 2010	1,300	10.00	13,000
February 16, 2010	800	11.00	8,800
March 26, 2010	600	12.00	7,200
	<u>4,400</u>		<u>\$43,700</u>
Weighted-average cost (\$43,700 ÷ 4,400)		<u>\$ 9.93*</u>	
March 31, 2010, inventory	<u>1,500</u>	<u>\$ 9.93</u>	<u>\$14,895</u>

*Rounded off.

***EXERCISE 8-20 (10–15 minutes)**

(a) (1) 400 @ \$30 = \$12,000
 110 @ \$25 = 2,750
 \$14,750

(2) 400 @ \$20 = \$ 8,000
 110 @ \$25 = 2,750
 \$10,750

(b) (1) FIFO \$14,750 [same as (a)]

(2) LIFO 100 @ \$20 = \$ 2,000
 10 @ \$25 = 250
 400 @ \$30 = 12,000
 \$14,250

***EXERCISE 8-21 (15–20 minutes)**

	First-in, first-out	Last-in, first-out
Sales	\$1,000,000	\$1,000,000
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>(260,000**)</u>	<u>(186,000***)</u>
Cost of goods sold.....	<u>452,000</u>	<u>526,000</u>
Gross profit	548,000	474,000
Operating expenses	<u>200,000</u>	<u>200,000</u>
Net income.....	<u>\$ 348,000</u>	<u>\$ 274,000</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
2,000 units @ \$25 =	<u>50,000</u>
	<u>\$260,000</u>

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

6,000 units @ \$20 =	\$120,000
3,000 units @ \$22 =	<u>66,000</u>
	<u>\$186,000</u>

***EXERCISE 8-22 (20–25 minutes)**

MICKIEWICZ CORPORATION
Schedules of Cost of Goods Sold
For the First Quarter Ended March 31, 2010

	Schedule 1 First-in, First-out	Schedule 2 Last-in, First-out
Beginning inventory.....	\$ 40,000	\$ 40,000
Plus purchases	<u>150,600*</u>	<u>150,600</u>
Cost of goods available for sale	190,600	190,600
Less ending inventory.....	<u>65,700</u>	<u>61,000</u>
Cost of goods sold	<u>\$124,900</u>	<u>\$129,600</u>

*($\$33,600 + \$25,500 + \$38,700 + \$52,800$)

Schedules Computing Ending Inventory

	Units
Beginning inventory.....	10,000
Plus purchases	<u>35,000</u>
Units available for sale.....	45,000
Less sales ($\$150,000 \div 5$).....	<u>30,000</u>
Ending inventory.....	<u>15,000</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)
12,000 at \$4.40 = \$52,800	10,000 at \$4.00 = \$40,000
<u>3,000 at \$4.30 = 12,900</u>	<u>5,000 at \$4.20 = 21,000</u>
<u>15,000 \$65,700</u>	<u>15,000 \$61,000</u>

***EXERCISE 8-23 (10–15 minutes)**

(a) **FIFO Ending Inventory 12/31/10**

76 @ \$10.89*	=	\$ 827.64
34 @ \$11.88**	=	<u>403.92</u>
		<u>\$1,231.56</u>

*\$11.00 – [.01 (\$11.00)]

**\$12.00 – [.01 (\$12.00)]

(b) **LIFO Cost of Goods Sold—2010**

76 @ \$10.89	=	\$ 827.64
84 @ \$11.88	=	997.92
90 @ \$14.85*	=	1,336.50
5 @ \$15.84**	=	<u>79.20</u>
		<u>\$3,241.26</u>

*\$15.00 – [.01 (\$15)]

**\$16.00 – [.01 (\$16)]

(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 Tom Brady Shop to minimize taxable income.**

***EXERCISE 8-24 (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 under FIFO or average cost.**

***EXERCISE 8-24 (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, net income is lower which leads to lower income taxes. If prices are decreasing, the opposite effect results.

***EXERCISE 8-25 (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>30</u>	25	<u>750</u>
	<u>130</u>		<u>\$3,750</u>

2. Ending inventory—FIFO

Date	No. Units	Unit Cost	Total Cost
December 2	100	\$30	\$3,000
September 4	<u>30</u>	28	<u>840</u>
	<u>130</u>		<u>\$3,840</u>

3. Ending inventory—LIFO

Date	No. Units	Unit Cost	Total Cost
January 1	100	\$20	\$2,000
March 15	<u>30</u>	24	<u>720</u>
	<u>130</u>		<u>\$2,720</u>

***EXERCISE 8-25 (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
130	\$25.30	\$3,289

(b) Double Extension Method

Base-Year Costs			Current Costs		
Units	Base-Year Cost Per Unit	Total	Units	Current-Year Cost Per Unit	Total
130	\$20	\$2,600	100	\$30	\$3,000
			30	\$28	840
					<u>\$3,840</u>

$$\frac{\text{Ending Inventory for the Period at Current Cost}}{\text{Ending Inventory for the Period at Base-Year Cost}} = \frac{\$3,840}{\$2,600} = 1.4769$$

Ending inventory at base-year prices ($\$3,840 \div 1.4769$)	\$ 2,600
Base layer (100 units at \$20)	(2,000)
Increment in base-year dollars	600
Current index	<u>1.4769</u>
Increment in current dollars	886
Base layer (100 units at \$20)	<u>2,000</u>
Ending inventory at dollar-value LIFO	<u>\$ 2,886</u>

***EXERCISE 8-26 (5–10 minutes)**

\$98,000 – \$92,000 = \$6,000 increase at base prices.

\$99,200 – \$92,600 = \$6,600 increase in dollar-value LIFO value.

\$6,000 X Index = \$6,600.

Index = \$6,600 ÷ \$6,000.

Index = 110

***EXERCISE 8-27 (15–20 minutes)**

(a)	12/31/10 inventory at 1/1/10 prices, \$151,200 ÷ 1.12	\$135,000
	Inventory 1/1/10.....	<u>160,000</u>
	Inventory decrease at base prices.....	<u>\$ 25,000</u>
	Inventory at 1/1/10 prices.....	\$160,000
	Less decrease at 1/1/10 prices.....	<u>25,000</u>
	Inventory 12/31/10 under dollar-value LIFO method	<u>\$135,000</u>
(b)	12/31/11 inventory at base prices, \$195,500 ÷ 1.15.....	\$170,000
	12/31/10 inventory at base prices	<u>(135,000)</u>
	Inventory increment at base prices.....	<u>\$ 35,000</u>
	Inventory at 12/31/10	\$135,000
	Increment added during 2011 at 12/31/11 prices, \$35,000 X 1.15.....	<u>40,250</u>
	Inventory 12/31/11	<u>\$175,250</u>

***EXERCISE 8-28 (20–25 minutes)**

	<u>Current \$</u>	<u>Price Index</u>	<u>Base Year \$</u>	<u>Change from Prior Year</u>
2007	\$ 80,000	1.00	\$ 80,000	—
2008	111,300	1.05	106,000	+\$26,000
2009	108,000	1.20	90,000	(16,000)
2010	122,200	1.30	94,000	+4,000
2011	147,000	1.40	105,000	+11,000
2012	176,900	1.45	122,000	+17,000

***EXERCISE 8-28 (Continued)**

Ending Inventory—Dollar-value LIFO:

2007	<u>\$80,000</u>		2011	\$80,000 @ 1.00 =	\$ 80,000
				10,000 @ 1.05 =	10,500
2008	\$80,000 @ 1.00 =	\$ 80,000		4,000 @ 1.30 =	5,200
	26,000 @ 1.05 =	<u>27,300</u>		11,000 @ 1.40 =	<u>15,400</u>
		<u>\$107,300</u>			<u>\$111,100</u>
2009	\$80,000 @ 1.00 =	\$ 80,000	2012	\$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
2010	\$80,000 @ 1.00 =	\$ 80,000		11,000 @ 1.40 =	15,400
	10,000 @ 1.05 =	10,500		17,000 @ 1.45 =	<u>24,650</u>
	4,000 @ 1.30 =	<u>5,200</u>			<u>\$135,750</u>
		<u>\$ 95,700</u>			

***EXERCISE 8-29 (15–20 minutes)**

Date	Current \$	Price Index	Base-Year \$	Change from Prior Year
Dec. 31, 2007	\$ 70,000	1.00	\$70,000	—
Dec. 31, 2008	88,200	1.05	84,000	+\$14,000
Dec. 31, 2009	95,120	1.16	82,000	(2,000)
Dec. 31, 2010	108,000	1.20	90,000	+8,000
Dec. 31, 2011	100,000	1.25	80,000	(10,000)

TIME AND PURPOSE OF PROBLEMS

Problem 8-1 (Time 25–35 minutes)

Purpose—to provide a multipurpose problem with trade discounts, goods in transit, comparative FIFO and average cost computations, and inventorable cost identification.

Problem 8-2 (Time 25–35 minutes)

Purpose—to provide the student with eight different situations that require analysis to determine their impact on inventory, accounts payable, and net sales.

Problem 8-3 (Time 20–25 minutes)

Purpose—to provide the student with an opportunity to prepare general journal entries to record purchases on a gross and net basis.

Problem 8-4 (Time 30–40 minutes)

Purpose—to provide a problem where the student must compute the inventory using a FIFO, specific identification, and average cost assumption. These inventory value determinations must be made under two differing assumptions: (1) perpetual inventory records are kept in units only and (2) perpetual records are kept in dollars. Many detailed computations must be made in this problem.

Problem 8-5 (Time 25–35 minutes)

Purpose—to provide a problem where the student must compute the inventory using a FIFO and average cost assumption. These inventory value determinations must be made under two differing assumptions: (1) perpetual inventory records are kept in units only and (2) perpetual records are kept in dollars. This problem is very similar to Problem 8-4, except that the differences in inventory values must be explained.

Problem 8-6 (Time 20–25 minutes)

Purpose—to provide a problem where the student must compute cost of goods sold using FIFO and average cost, under both a periodic and perpetual system.

***Problem 8-7** (Time 40–55 minutes)

Purpose—to provide a problem where the student must compute the inventory using a FIFO, LIFO, and average cost assumption. These inventory value determinations must be made under two differing assumptions: (1) perpetual inventory records are kept in units only and (2) perpetual records are kept in dollars. Many detailed computations must be made in this problem.

***Problem 8-8** (Time 40–55 minutes)

Purpose—to provide a problem where the student must compute the inventory using a FIFO, LIFO, and average cost assumption. These inventory value determinations must be made under two differing assumptions: (1) perpetual inventory records are kept in units only and (2) perpetual records are kept in dollars. This problem is very similar to Problem 8-7, except that the differences in inventory values must be explained.

***Problem 8-9** (Time 25–35 minutes)

Purpose—to provide a problem where the student must compute cost of goods sold using FIFO, LIFO, and weighted average, under both a periodic and perpetual system.

***Problem 8-10** (Time 30–40 minutes)

Purpose—to provide a problem where the student must identify the accounts that would be affected if LIFO had been used rather than FIFO for purposes of computing inventories.

Time and Purpose of Problems (Continued)

***Problem 8-11** (Time 30–40 minutes)

Purpose—to provide a problem which covers the use of inventory pools for dollar-value LIFO. The student is required to compute ending inventory, cost of goods sold, and gross profit using dollar-value LIFO, first with one inventory pool and then with three pools.

***Problem 8-12** (Time 25–35 minutes)

Purpose—to provide a problem in which the student computes the internal conversion price indexes for a LIFO inventory pool and then computes the inventory amounts using the dollar-value LIFO method.

***Problem 8-13** (Time 30–35 minutes)

Purpose—to provide the student with the opportunity to compute inventories using the dollar-value approach. An index must be developed in this problem to price the new layers. This problem will prove difficult for the student because the indexes are hidden.

***Problem 8-14** (Time 40–50 minutes)

Purpose—to provide the student with an opportunity to write a memo on how a dollar-value LIFO pool works. In addition, the student must explain the step-by-step procedure used to compute dollar value LIFO.

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 12/31/10 inventory. The \$29,000 of goods shipped (f.o.b. shipping point) on January 3, 2011, should remain part of the 12/31/10 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>Average cost:</u>	1,500 at \$21	\$ 31,500
	2,000 at 22	44,000
	3,500 at 23	80,500
	<u>1,000 at 24</u>	<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. The inventoriable costs for 2011 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>

PROBLEM 8-2

DIMITRI COMPANY
Schedule of Adjustments
December 31, 2010

	Inventory	Accounts Payable	Net Sales
Initial amounts	<u>\$1,520,000</u>	<u>\$1,200,000</u>	<u>\$8,150,000</u>
Adjustments:			
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>
Total adjustments	<u>195,000</u>	<u>140,000</u>	<u>(87,000)</u>
Adjusted amounts	<u>\$1,715,000</u>	<u>\$1,340,000</u>	<u>\$8,063,000</u>

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 12/29/10. 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 12/31/10. 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 2010. However, these items were returned by customers on December 31, so 2010 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 2011 when the customer received the goods.**
- 6. The goods received from a vendor at 5:00 p.m. on 12/31/10 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 12/31/10 accounts payable.**
- 7. The \$56,000 of goods received on 12/26/10 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 12/31/10 accounts payable balance.**
- 8. Since one-half of the freight-in cost (\$8,000) pertains to merchandise properly included in inventory as of 12/31/10, \$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.**

PROBLEM 8-3

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

2. **Purchases—addition 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 statement of financial position.

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

PROBLEM 8-3 (Continued)

	8/15	
Purchases		15,840
Accounts Payable (£16,000 X .99)		15,840

	8/25	
Purchases		19,600
Accounts Payable (£20,000 X .98)		19,600

	8/28	
Accounts Payable		15,840
Purchase Discounts Lost		160
Cash		16,000

2.	8/31	
	Purchase Discounts Lost	216
	Accounts Payable	
	(.02 X [£12,000 – £1,200])	216

- 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.

PROBLEM 8-4

(a)	Purchases		Sales
	Total Units		Total Units
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>1,450</u>
April 30	<u>200</u>		
Total units	1,800		
Total units sold	<u>(1,450)</u>		
Total units (ending inventory)	<u>350</u>		

Assuming costs are not computed for each withdrawal:

1. **Specific identification.**

<u>No. Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
100	\$5.00	\$ 500
250	5.60	<u>1,400</u>
		<u>\$1,900</u>

2. **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>\$2,000</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>
Total Available	<u>1,800</u>		<u>\$9,720</u>

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. Specific identification.

The inventory would be the same in amount as in part (a), \$1,900.

2. First-in, first out.

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

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	5,993.60
April 27			800	5.4487	300	5.4487	1,634.64
April 28			150	5.4487	150	5.4487	817.33
April 30	200	5.80			350	5.6495	1,977.33

Inventory April 30 is \$1,977.33

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

PROBLEM 8-5

(a) Assuming costs are not computed for each withdrawal (units received, 5,700, minus units issued, 4,700, equals ending inventory at 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. 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 = $¥18,840 \div 5,700 = ¥3.31$ (rounded)

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

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

PROBLEM 8-5 (Continued)

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. **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.**

PROBLEM 8-6

(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 weighted-average**

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

(d) **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 ^a = 77,000
11/4		2,200 X €22 = <u>48,400</u>	1,300 X €22 = 28,600
		<u>€88,400</u>	

^a 500 X €16 = € 8,000
 3,000 X €23 = 69,000
3,500 €77,000

(€77,000 ÷ 3,500 = €22)

***PROBLEM 8-7**

(a)	Purchases		Sales
	Total Units		Total Units
Sept. 1 (balance on hand)	100		Sept. 5 300
Sept. 4	400		Sept. 12 200
Sept. 11	300		Sept. 27 800
Sept. 18	200		Sept. 28 <u>150</u>
Sept. 26	600		Total units <u>1,450</u>
Sept. 30	<u>200</u>		
Total units	1,800		
Total units sold	<u>(1,450)</u>		
Total units (ending inventory)	<u>350</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>
Sept. 30	200	\$5.80	\$1,160
Sept. 26	150	5.60	<u>840</u>
			<u>\$2,000</u>

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

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

***PROBLEM 8-7 (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>
Sept. 1	100	\$5.00	\$ 500
Sept. 4	400	5.10	2,040
Sept. 11	300	5.30	1,590
Sept. 18	200	5.35	1,070
Sept. 26	600	5.60	3,360
Sept. 30	<u>200</u>	5.80	<u>1,160</u>
Total Available	<u>1,800</u>		<u>\$9,720</u>

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

Inventory, Sept. 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 8-7 (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
Sept. 1	100	\$5.00			100	\$5.00	\$ 500
Sept. 4	400	5.10			100	5.00	2,540
					400	5.10	
Sept. 5			300	\$5.10	100	5.00	1,010
					100	5.10	
Sept. 11	300	5.30			100	5.00	2,600
					100	5.10	
					300	5.30	
Sept. 12			200	5.30	100	5.00	1,540
					100	5.10	
					100	5.30	
Sept. 18	200	5.35			100	5.00	2,610
					100	5.10	
					100	5.30	
					200	5.35	
Sept. 26	600	5.60			100	5.00	5,970
					100	5.10	
					100	5.30	
					200	5.35	
					600	5.60	
Sept. 27			600 @	5.60	100	5.00	1,540
			800	<u>200 @</u>	100	5.10	
				5.35	100	5.30	
Sept. 28			100 @	5.30	100	5.00	755
			150	<u>50 @</u>	50	5.10	
Sept. 30	200	5.80			100	5.00	1,915
					50	5.10	
					200	5.80	

Inventory Sept. 30 is \$1,915.

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

***PROBLEM 8-7 (Continued)**

3. Average cost.

Date	Purchased		Sold		Balance		
	No. of units	Unit cost	No. of units	Unit cost	No. of units	Unit cost*	Amount
Sept. 1	100	\$5.00			100	\$5.0000	\$ 500.00
Sept. 4	400	5.10			500	5.0800	2,540.00
Sept. 5			300	\$5.0800	200	5.0800	1,016.00
Sept. 11	300	5.30			500	5.2120	2,606.00
Sept. 12			200	5.2120	300	5.2120	1,563.60
Sept. 18	200	5.35			500	5.2672	2,633.60
Sept. 26	600	5.60			1,100	5.4487	5,993.60
Sept. 27			800	5.4487	300	5.4487	1,634.64
Sept. 28			150	5.4487	150	5.4487	817.33
Sept. 30	200	5.80			350	5.6495	1,977.33

Inventory Sept. 30 is \$1,977.33

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

***PROBLEM 8-8**

(a) Assuming costs are not computed for each withdrawal (units received, 5,700, minus units issued, 4,700, equals ending inventory at 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 (rounded)

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 8-8 (Continued)**

Under Average Cost—No. A new average cost would be computed each time a withdrawal 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 8-8 (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.**

***PROBLEM 8-9**

(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 8-9 (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>	X <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 ^a = 77,000
11/4		2,200 X \$22 = <u>48,400</u>	1,300 X \$22 = 28,600
		<u>\$88,400</u>	

^a	500 X \$16 = \$ 8,000
	<u>3,000 X \$23 = 69,000</u>
	<u>3,500</u> <u>\$77,000</u>

(\$77,000 ÷ 3,500 = \$22)

***PROBLEM 8-10**

The accounts in the 2011 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 2011
(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 2010 and 2011 to support the conversion to LIFO are presented below.

Income for the Years Ended	12/31/10	12/31/11
Sales	\$900,000	\$1,350,000
Less: Cost of goods sold	525,000	792,000
Other expenses	205,000	304,000
	730,000	1,096,000
Income before taxes	170,000	254,000
Income taxes (40%)	68,000	101,600
Net income	\$102,000	\$ 152,400

Cost of Good Sold and Ending Inventory for the Years Ended	12/31/10	12/31/11
Beginning inventory (40,000 X \$3.00)	\$120,000	\$120,000
Purchases (150,000 X \$3.50)	525,000	792,000
Cost of goods available	645,000	912,000
Ending inventory (40,000 X \$3.00)	(120,000)	(120,000)
Cost of goods sold	\$525,000	\$792,000

Determination of Cash at	12/31/10	12/31/11
Income taxes under FIFO	\$ 76,000	\$116,000
Income taxes as calculated under LIFO	68,000	101,600
Increase in cash	8,000	14,400
Adjust cash at 12/31/11 for 2010 tax difference	—	8,000
Total increase in cash	8,000	22,400
Cash balance under FIFO	130,000	154,000
Cash balance under LIFO	\$138,000	\$176,400

***PROBLEM 8-10 (Continued)**

<u>Determination of Retained Earnings at</u>	<u>12/31/10</u>	<u>12/31/11</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 12/31/11 for 2010 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>

*PROBLEM 8-11

(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>18,000</u>

2. Ending inventory at current cost

Portable	$7,000 \times \$110 =$	\$ 770,000
Midsize	$4,000 \times \$300 =$	1,200,000
Flat-screen	$7,000 \times \$500 =$	<u>3,500,000</u>
		<u>\$5,470,000</u>

3. Ending inventory at base-year cost

Portable	$7,000 \times \$100 =$	\$ 700,000
Midsize	$4,000 \times \$250 =$	1,000,000
Flat-screen	$7,000 \times \$400 =$	<u>2,800,000</u>
		<u>\$4,500,000</u>

4. Price index

$$\$5,470,000 \div \$4,500,000 = 1.2156$$

5. Ending inventory

$\$3,800,000 \times 1.0000 =$		\$3,800,000
$700,000^* \times 1.2156 =$		<u>850,920</u>
		<u>\$4,650,920</u>

$$*(\$4,500,000 - \$3,800,000 = \$700,000)$$

6. Cost of goods sold

Beginning inventory		\$ 3,800,000
Purchases		
$[(15,000 \times \$110) + (20,000 \times \$300) +$		
$(10,000 \times \$500)]$		<u>12,650,000</u>
Cost of goods available.....		16,450,000
Ending inventory		<u>(4,650,920)</u>
Cost of goods sold.....		<u>\$11,799,080</u>

***PROBLEM 8-11 (Continued)**

7. Gross profit

Sales

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

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

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

2. Ending inventory

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

3. Cost of good sold

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

4. Gross profit

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

***PROBLEM 8-12**

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

Current inventory at current-year cost	2010		2011	
Product A	17,000 X \$36 =	\$612,000	13,000 X \$40 =	\$520,000
Product B	9,000 X \$26 =	234,000	10,000 X \$32 =	320,000
		\$846,000		\$840,000
Current inventory at base cost	2010		2011	
Product A	17,000 X \$30 =	\$510,000	13,000 X \$30 =	\$390,000
Product B	9,000 X \$25 =	225,000	10,000 X \$25 =	250,000
		\$735,000		\$640,000
Conversion price index	\$846,000 ÷ \$735,000 = 1.15		\$840,000 ÷ \$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, 2010 and 2011

	Current Inventory at base cost	Conversion price index	Inventory at LIFO cost
December 31, 2010			
Base inventory	\$525,000	1.00	\$525,000
2010 layer (\$735,000 – \$525,000)	210,000	1.15 (a)	241,500
Total	\$735,000 (a)		\$766,500
December 31, 2011			
Base inventory	\$525,000	1.00	\$525,000
2010 layer (remaining)	115,000 (b)	1.15 (a)	132,250
Total	\$640,000 (a)		\$657,250

- (a) Per schedule for instruction (a).
 (b) After liquidation of \$95,000 base cost (\$735,000 – \$640,000).

***PROBLEM 8-13**

	Base-Year Cost	Index %	Dollar-Value LIFO
<u>December 31, 2009</u>			
January 1, 2009, base	\$45,000	100	\$45,000
December 31, 2009, layer	<u>11,000</u>	112*	<u>12,320</u>
	<u>\$56,000</u>		<u>\$57,320</u>
 <u>December 31, 2010</u>			
January 1, 2009, base	\$45,000	100	\$45,000
December 31, 2009, layer	11,000	112	12,320
December 31, 2010, layer	<u>12,400</u>	128**	<u>15,872</u>
	<u>\$68,400</u>		<u>\$73,192</u>
 <u>December 31, 2011</u>			
January 1, 2009, base	\$45,000	100	\$45,000
December 31, 2009, layer	11,000	112	12,320
December 31, 2010, layer	12,400	128	15,872
December 31, 2011, 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

***PROBLEM 8-14**

(a)

Schedule A

	A	B	C	D
	<u>Current \$</u>	<u>Price Index</u>	<u>Base-Year \$</u>	<u>Change from Prior Year</u>
2006	\$ 80,000	1.00	\$ 80,000	—
2007	111,300	1.05	106,000	+\$26,000
2008	108,000	1.20	90,000	(16,000)
2009	128,700	1.30	99,000	+9,000
2010	147,000	1.40	105,000	+6,000
2011	174,000	1.45	120,000	+15,000

Schedule B

Ending Inventory-Dollar-Value LIFO:

2006		<u>\$ 80,000</u>	2010	\$80,000 @ \$1.00 =	\$ 80,000
2007	\$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>
2008	\$80,000 @ 1.00 =	\$ 80,000			<u>\$110,600</u>
	10,000 @ 1.05 =	<u>10,500</u>	2011	\$80,000 @ 1.00 =	\$ 80,000
		<u>\$ 90,500</u>		10,000 @ 1.05 =	10,500
2009	\$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 8-14 (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 8-14 (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 2006, this adjustment would be $\$80,000/100\%$ or $\$80,000$; for 2007, 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 2007, 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 2007, 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 2008, the change from the previous year is $-\$16,000$, which causes the 2007 layer to be eroded during the period. Thus, the 2008 ending inventory is valued at the original base-year cost $\$80,000$ plus the remainder valued at the 2007 price index, $\$10,000$ times 1.05. See 2008 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 2009. Notice that the $+\$9,000$ change from the 2009 ending inventory indicates that the 2007 layer was not further eroded. Thus, ending inventory for 2009 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 2007 layer) at the 2007 price index (1.05), and the last $\$9,000$ at the 2009 price index (1.30).

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

TIME AND PURPOSE OF CONCEPTS FOR ANALYSIS

CA 8-1 (Time 15–20 minutes)

Purpose—a short case designed to test the skills of the student in determining whether an item should be reported in inventory. In addition, the student is required to speculate as to why the company may wish to postpone recording this transaction.

CA 8-2 (Time 15–25 minutes)

Purpose—to provide the student with four questions about the carrying value of inventory. These questions must be answered and defended with rationale. The topics are shipping terms, freight-in, weighted-average cost vs. FIFO, and consigned goods.

CA 8-3 (Time 25–35 minutes)

Purpose—to provide a number of difficult financial reporting transactions involving inventories. This case is vague and much judgment is required in its analysis. Right or wrong answers should be discouraged; rather emphasis should be placed on the underlying rationale to defend a given position. Includes a product versus period cost transaction, proper classification of a possible inventory item, and a product financing arrangement.

CA 8-4 (Time 15–25 minutes)

Purpose—to provide the student with the opportunity to discuss the acceptability of alternative methods of reporting cash discounts.

CA 8-5 (Time 15–20 minutes)

Purpose—to provide the student with an opportunity to discuss the cost flow assumptions of average cost and FIFO. The student is also required to distinguish between weighted-average and moving-average and discuss the effect of average cost on the SFP and I/S in a period of rising prices.

CA 8-6 (Time 20–25 minutes)

Purpose—to provide the student with an opportunity to analyze the ethical implications of purchasing decisions under average cost.

***CA 8-7** (Time 20–25 minutes)

Purpose—to provide a broad overview to students as to why inventories must be included in the statement of financial position and income statement. In addition, students are asked to determine why taxable income and accounting income may be different. Finally, the conditions under which FIFO and LIFO may give different answers must be developed.

***CA 8-8** (Time 15–20 minutes)

Purpose—to provide the student with the opportunity to discuss the rationale for the use of the LIFO method of inventory valuation. The conditions that must exist before the tax benefits of LIFO will accrue also must be developed.

***CA 8-9** (Time 25–30 minutes)

Purpose—to provide the student with the opportunity to discuss the differences between traditional LIFO and dollar-value LIFO. In this discussion, the specific procedures employed in traditional LIFO and dollar-value LIFO must be examined. This case provides a good basis for discussing LIFO conceptual issues.

Time and Purposes of Concepts for Analysis (Continued)

***CA 8-10** (Time 25–30 minutes)

Purpose—to provide the student with an opportunity to discuss the concept of a LIFO pool and its use in various LIFO methods. The student is also asked to define LIFO liquidation, to explain the use of price indexes in dollar-value LIFO, and to discuss the advantages of using dollar-value LIFO.

***CA 8-11** (Time 30–35 minutes)

Purpose—to provide the student with an opportunity to analyze the effect of changing from the FIFO method to the LIFO method on items such as ending inventory, net income, earnings per share, and year-end cash balance. The student is also asked to make recommendations considering the results from computation and other relevant factors.

SOLUTIONS TO CONCEPTS FOR ANALYSIS

CA 8-1

(a) Purchased merchandise in transit at the end of an accounting period to which legal title has passed should be recorded as purchases within the accounting period. If goods are shipped f.o.b. shipping point, title passes to the buyer when the seller delivers the goods to the common carrier. Generally when the terms are f.o.b. shipping point, transportation costs must be paid by the buyer. This liability arises when the common carrier completes the delivery. Thus, the client has a liability for the merchandise and the freight.

(b) Inventory.....	35,300	
Accounts Payable—Supplier		35,300
Inventory.....	1,500	
Accounts Payable—Transportation Co.		1,500

- (c) Possible reasons to postpone the recording of the transaction might include:
1. Desire to maintain a current ratio at a given level which would be affected by the additional inventory and accounts payable.
 2. Desire to minimize the impact of the additional inventory on other ratios such as inventory turnover.
 3. Possible tax ramifications.

CA 8-2

(a) If the terms of the purchase are f.o.b. shipping point (manufacturer's plant), Strider Enterprises should include in its inventory goods purchased from its suppliers when the goods are shipped. For accounting purposes, title is presumed to pass at that time.

(b) Freight-in expenditures should be considered an inventoriable cost because they are part of the price paid or the consideration given to acquire the asset.

(c) Theoretically the net approach is the more appropriate because the net amount (1) provides a correct reporting of the cost of the asset and related liability and (2) presents the opportunity to measure the inefficiency of financial management if the discount is not taken. Many believe, however, that the difficulty involved in using the somewhat more complicated net method is not justified by the resulting benefits.

(d) Products on consignment represent inventories owned by Strider Enterprises, which are physically transferred to another enterprise. However, Strider Enterprises retains title to the goods until their sale by the other company (Chavez Inc.).

The goods consigned are still included by Strider Enterprises in the inventory section of its statement of financial position. Often the inventory is reclassified from regular inventory to consigned inventory.

CA 8-3

- (a) According to IFRS, cost generally means that the sum of the applicable expenditures and charges directly or indirectly incurred in bringing an article to its existing condition and location. With respect to inventory, selling expenses are not part of the inventory costs. To the extent that warehousing is a necessary function of importing merchandise before it can be sold, certain elements of warehousing costs might be considered an appropriate cost of inventory in the warehouse. For example, if goods must be brought into the warehouse before they can be made ready for sale, the cost of bringing such goods into the warehouse would be considered a cost of inventory. Similarly, if goods must be handled in the warehouse for assembly or for removal of foreign packaging, etc., it would be appropriate to include such costs in inventory. However, costs involved in storing the goods for any additional period would appear to be period costs. Costs of delivering the goods from the warehouse would appear to be selling expenses related to the goods sold, and should not under any circumstances be allocated to goods that are still in the warehouse.

In theory, warehousing costs are considered a product cost because these costs are incurred to maintain the product in a salable condition. However, in practice, warehousing costs are most frequently treated as a period cost.

- (b) It is correct to conclude that obsolete items are excludable from inventory. Cost attributable to such items is “nonuseful” and “nonrecoverable” cost (except for possible scrap value) and should be written off. If the cost of obsolete items was simply excluded from ending inventory, the resultant cost of goods sold would be overstated by the amount of these costs. The cost of obsolete items, if immaterial, should be commingled with cost of goods sold. If material, these costs should be separately disclosed.
- (c) The primary use of the airplanes should determine their treatment on the statement of financial position. Since the airplanes are held primarily for sale, and chartering is only a temporary use, the airplanes should be classified as current assets. Depreciation would not be appropriate if the planes are considered inventory.
- (d) The transaction is a product financing arrangement and should be reported by the company as inventory with a related liability. The substance of the transaction is that inventory has been purchased and the fact that a trust is established to purchase the goods has no economic significance. Given that the company agrees to buy the coal over a certain period of time at specific prices, it appears clear that the company has the liability and not the trust.

CA 8-4

- (a) Cash discounts should **not** be accounted for as financial income when payments are made. Income should be recognized when the earnings process is complete (when the company sells the inventory). Furthermore, cash discounts should not be recorded when the payments are made because in order to properly match a cash discount with the related purchase, the cash discount should be recorded when the related purchase is recorded.

CA 8-4 (Continued)

- (b) Cash discounts should not be accounted for as a reduction of cost of goods sold for the period when payments are made. Cost of goods sold should be reduced when the earnings process is complete (when the company sells the inventory which has been reduced by the cash discounts). Furthermore, cash discounts should not be recorded when the payments are made because in order to properly match a cash discount with the related purchase, the cash discount should be recorded when the related purchase is recorded.
- (c) Cash discounts should be accounted for as a direct reduction of purchase cost because they reduce the cost of acquiring the inventories. Purchases should be recorded net of cash discounts to reflect the net cash to be paid. The primary basis of accounting for inventories is cost, which represents the price paid or consideration given to acquire an asset.

CA 8-5

- (a) The average-cost method assumes that inventories are sold or issued evenly from the stock on hand; and the FIFO method assumes that goods are sold or used in the order in which they are purchased (i.e., the first goods purchased are the first sold or used).
- (b) The weighted-average cost method combines the cost of all the purchases in the period with the cost of beginning inventory and divides the total costs by the total number of units to determine the average cost per unit. The moving-average cost method, on the other hand, calculates a new average unit cost when a purchase is made. The moving-average cost method is used with perpetual inventory records.
- (c) When the purchase prices of inventoriable items are rising for a significant period of time, the use of the average cost method (instead of FIFO) will result in a lower net income figure. The reason is that the average cost method matches all purchases against revenue. Since the prices of goods are rising, the average cost method will result in higher cost of goods sold, thus lower net income. On the statement of financial position, the ending inventory tends to be understated (i.e., lower than the most recent replacement cost) because the older goods have lower costs during a period of rising prices. In addition, retained earnings under the average cost method will be lower than that of the FIFO method when inflation exists.

CA 8-6

- (a) Major stakeholders are investors, creditors, Wilkens' management (including the president and plant accountant), and other employees of Wilkens Company. The inventory purchase in this instance reduces net income substantially and lowers Wilkens Company's tax liability. Current shareholders and company management benefit during the current year by this decision. However, the purchasing department may be concerned about inventory management and complications such as storage costs and possible inventory obsolescence.

Assuming awareness of these benefits and possible complications, the plant accountant may follow the president's recommendation without violating IFRS. The plant accountant also must consider whether this action is in the long-term best interests of the company and whether inventory amounts would provide a meaningful picture of Wilkens Company's financial condition.

- (b) No, the president would not recommend a year-end inventory purchase because under FIFO there would be no effect on net income.

*CA 8-7

- (a) 1. Inventories are unexpired costs and represent future benefits to the owner. A statement of financial position includes a listing of unexpired costs and future benefits of the owner's 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 owner's financial position will be presented fairly.
2. 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 earned during the period. Goods included in the ending inventory are unexpired costs to be carried forward to a future period, rather than expensed.
- (b) Financial accounting has as its goal the proper reporting of financial transactions and events in accordance with international financial reporting standards. Income tax accounting has as its goal the reporting of taxable transactions and events in conformity with income tax laws and regulations. While the primary purpose of an income tax is the production of tax revenues to finance the operations of government, income tax laws and regulations are often produced by various forces. The income tax may be used as a tool of fiscal policy to stimulate all of the segments of the economy or to decelerate the economy. Some income tax laws may be passed because of political pressures brought to bear by individuals or industries. When the purposes of financial accounting and income tax accounting differ, it is often desirable to report transactions or events differently and to report the deferred tax consequences of any existing temporary differences as assets or liabilities.
- (c) FIFO and LIFO are inventory costing methods employed to measure the flow of costs. FIFO matches the first cost incurred with the first revenue produced while LIFO matches the last cost incurred with the first revenue produced after the cost is incurred. (This, of course, assumes a perpetual inventory system is in use and may not be precisely true if a periodic inventory system is employed.) If prices are changing, different costs would be matched with revenue for the same quantity sold depending upon whether the LIFO or FIFO system is in use. (In a period of rising or falling prices FIFO tends to value inventories at approximate fair value in the statement of financial position and LIFO tends to match approximately the current replacement cost of an item with the revenue produced.)

*CA 8-8

- (a) 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 net income is considered overstated. By using LIFO (rather than some method such as FIFO), more recent costs are matched against revenues and inventory profits are thereby reduced.
- (b) As long as the price level increases and inventory quantities do not decrease, a deferral of income taxes occurs under LIFO because the items most recently purchased at the higher price level are matched against revenues. It should be noted that where unit costs tend to decrease as production increases, the tax benefits that LIFO might provide are nullified. Also, where the inventory turnover is high, the difference between inventory methods is negligible.

*CA 8-9

- (a) 1. The LIFO method (periodic) allocates costs on the assumption that the last goods purchased are used first. If the amount of the inventory is computed at the end of the month under a periodic system, then it would be assumed that the total quantity sold or issued during the month would have come from the most recent purchases, and ordinarily no attempt would be made to compare the dates of purchases and sales.
2. The dollar-value method of LIFO inventory valuation is a procedure using dollars instead of units to measure increments or reductions in inventory. The method presumes that goods in the inventory can be classified into pools or homogenous groups. After the grouping into pools the ending inventory is priced at the end-of-year prices and a price index number is applied to convert the total pool to the base-year price level. Such a price index might be obtained from government sources, if available, or computed from the company's records. The pools or groupings of inventory are required where a single index number is inappropriate for all elements of the inventory.

After the closing inventory and the opening inventory have been placed on the same base-year price level, any difference between the two inventories is attributable to an increase or decrease in inventory quantity at the base-year price. An increase in quantity so determined is converted to the current-year price level and added to the amount of the opening inventory as a separate inventory layer. A decrease in quantity is deducted from the appropriate layer of opening inventory at the price level in existence when the layer was added.

- (b) The **advantages of the dollar-value method** over the traditional LIFO method are as follows:
1. The application of the LIFO method is simplified because, under the pooling procedure, it is not necessary to assign costs to opening and closing quantities of individual items. As a result, companies with inventories comprised of thousands of items may adopt the dollar-value method and minimize their bookkeeping costs.
 2. Base inventories are more easily maintained. The dollar-value method permits greater flexibility because each pool is made up of dollars rather than quantities. Thus, the problem of a LIFO liquidation is less possible.

The **disadvantages of the dollar-value method** as compared to the traditional LIFO method are as follows:

1. Due to technological innovations and improvements over time, material changes in the composition of inventory may occur. Items found in the ending inventory may not have existed during the base year. Thus, conversion of the ending inventory to base-year prices may be difficult to calculate or to justify conceptually. This may necessitate a periodic change in the choice of base year used.
2. Application of a year-end index, although widely used, implies use of the FIFO method. Other indexes used include beginning-of-year index and average indexes.
3. Determination of the degree of similarity between items for the purpose of grouping them into pools may be difficult and may be based upon arbitrary management decisions.

- (c) The basic **advantages of LIFO** are:
1. Matching—In LIFO, the more recent costs are matched against current revenues to provide a better measure of current earnings.
 2. Tax benefits—As long as the price level increases and inventory quantities do not decrease, a deferral of income taxes occurs.
 3. Improved cash flow—By receiving tax benefits from use of LIFO, the company may reduce its borrowings and related interest costs.

*CA 8-9 (Continued)

4. Future earnings hedge—With LIFO, a company's future reported earnings will not be affected substantially by future price declines. LIFO eliminates or substantially minimizes write-downs to market as a result of price decreases because the inventory value ordinarily will be much lower than net realizable value, unlike FIFO.

The major **disadvantages of LIFO** are:

1. Reduced earnings—Because current costs are matched against current revenues, net income is lower than it is under other inventory methods when price levels are increasing.
2. Inventory understated—The inventory valuation on the statement of financial position is ordinarily outdated because the oldest costs remain in inventory.
3. Physical flow—LIFO does not approximate physical flow of the items except in peculiar situations.
4. Real income not measured—LIFO falls short of measuring real income because it is often not an adequate substitute for replacement cost.
5. Involuntary liquidation—If the base or layers of old costs are partially liquidated, irrelevant costs can be matched against current revenues.
6. Poor buying habits—LIFO may cause poor buying habits because a company may simply purchase more goods and match the cost of these goods against revenue to insure that old costs are not charged to expense.

*CA 8-10

- (a) A LIFO pool is a group of similar items which are combined and accounted for together under the LIFO inventory method.
- (b) It is possible to use a LIFO pool concept without using dollar-value LIFO. For example, the specific goods pooled approach utilizes the concept of a LIFO pool with quantities as its measurement basis.
- (c) A LIFO liquidation occurs when a significant drop in inventory level leads to the erosion of an earlier or base inventory layer. In a period of inflation (as usually is the case) LIFO liquidation will distort net income (make it higher) and incur substantial tax payments.
- (d) Price indexes are used in the dollar-value LIFO method to: (1) convert the ending inventory at current year-end cost to base-year cost, and (2) determine the current-year cost for each inventory layer other than the base-year layer.
- (e) The dollar-value LIFO method measures the increases and decreases in a pool in terms of total dollar value, not by the physical quantity of the goods in the inventory pool. As a result, the dollar-value LIFO approach has the following advantages over specific goods LIFO pool. First, the pooled approach reduces record keeping and clerical costs. Second, replacement is permitted if it is a similar material, or similar in use, or interchangeable. Thus, it is more difficult to erode LIFO layers when using dollar-value LIFO techniques.

*CA 8-11

(a) **FIFO** (Amounts in thousands, except earnings per share)

	<u>2010</u>	<u>2011</u>	<u>2012</u>
Sales	<u>\$11,000</u>	<u>\$12,000</u>	<u>\$15,600</u>
Cost of goods sold			
Beginning inventory	8,000	7,200	9,000
Purchases	<u>8,000</u>	<u>9,900</u>	<u>12,000</u>
Cost of goods available for sale	16,000	17,100	21,000
1. Ending inventory*	<u>(7,200)</u>	<u>(9,000)</u>	<u>(9,000)</u>
Cost of goods sold	<u>8,800</u>	<u>8,100</u>	<u>12,000</u>
Gross profit	2,200	3,900	3,600
Operating expenses (15% of sales)	(1,650)	(1,800)	(2,340)
Depreciation expense	<u>(300)</u>	<u>(300)</u>	<u>(300)</u>
Income before taxes	250	1,800	960
Income tax expense (40%)	<u>100</u>	<u>720</u>	<u>384</u>
2. Net income	<u>\$ 150</u>	<u>\$ 1,080</u>	<u>\$ 576</u>
3. Earnings per share	<u>\$ 0.15</u>	<u>\$ 1.08</u>	<u>\$ 0.58</u>
4. Cash balance			
Beginning balance	\$ 400	\$ 1,150	\$ 230
Sales proceeds	11,000	12,000	15,600
Purchases	(8,000)	(9,900)	(12,000)
Operating expenses	(1,650)	(1,800)	(2,340)
Property, plant, and equipment	(350)	(350)	(350)
Income taxes	(100)	(720)	(384)
Dividends	<u>(150)</u>	<u>(150)</u>	<u>(150)</u>
Ending balance	<u>\$ 1,150</u>	<u>\$ 230</u>	<u>\$ 606</u>

*2010 = \$ 8 X (1,000 + 1,000 – 1,100) = \$7,200.

2011 = \$ 9 X (900 + 1,100 – 1,000) = \$9,000.

2012 = \$10 X (1,000 + 1,200 – 1,300) = \$9,000.

*CA 8-11 (Continued)

LIFO (Amounts in thousands, except earnings per share)

	<u>2010</u>	<u>2011</u>	<u>2012</u>
Sales	<u>\$11,000</u>	<u>\$12,000</u>	<u>\$15,600</u>
Cost of goods sold			
Beginning inventory	8,000	7,200	8,100
Purchases	<u>8,000</u>	<u>9,900</u>	<u>12,000</u>
Cost of goods available for sale	16,000	17,100	20,100
1. Ending inventory**	<u>(7,200)</u>	<u>(8,100)</u>	<u>(7,200)</u>
Cost of goods sold	<u>8,800</u>	<u>9,000</u>	<u>12,900</u>
Gross profit	2,200	3,000	2,700
Operating expenses	(1,650)	(1,800)	(2,340)
Depreciation expense	<u>(300)</u>	<u>(300)</u>	<u>(300)</u>
Income before taxes	250	900	60
Income tax expense	<u>100</u>	<u>360</u>	<u>24</u>
2. Net income	<u>\$ 150</u>	<u>\$ 540</u>	<u>\$ 36</u>
3. Earnings per share	<u>\$ 0.15</u>	<u>\$ 0.54</u>	<u>\$ 0.04</u>
4. Cash balance			
Beginning balance	\$ 400	\$ 1,150	\$ 590
Sales proceeds	11,000	12,000	15,600
Purchases	(8,000)	(9,900)	(12,000)
Operating expenses	(1,650)	(1,800)	(2,340)
Property, plant, and equipment	(350)	(350)	(350)
Income taxes	(100)	(360)	(24)
Dividends	<u>(150)</u>	<u>(150)</u>	<u>(150)</u>
Ending balance	<u>\$ 1,150</u>	<u>\$ 590</u>	<u>\$ 1,326</u>

**2010 = \$8 X (1,000 + 1,000 – 1,100) = \$7,200.

2011 = (\$8 X 900) + (\$9 X 100) = \$8,100.

2012 = \$8 X 900 = \$7,200.

***CA 8-11 (Continued)**

- (b) According to the computation in (a), Harrisburg Company can achieve the goal of income tax savings by switching to the LIFO method. As shown in the schedules, under the LIFO method, Harrisburg will have lower net income and thus lower income taxes for 2011 and 2012 (tax savings of \$360,000 in each year). As a result, Harrisburg will have a better cash position at the end of 2011 and especially 2012 (year-end cash balance will be higher by \$360,000 for 2011 and \$720,000 for 2012).**

However, since Harrisburg Company is in a period of rising purchase prices, the LIFO method will result in significantly lower net income and earnings per share for 2011 and 2012. The management may need to evaluate the potential impact that lower net income and earnings per share might have on the company before deciding on the change to the LIFO method.

FINANCIAL STATEMENT ANALYSIS CASE 1

(a)	Sales	\$618,876,000
	Cost of goods sold*	<u>476,746,000</u>
	Gross profit	142,130,000
	Selling and administrative expenses	<u>102,112,000</u>
	Income from operations.....	40,018,000
	Other expense	<u>(24,712,000)</u>
	Income before income tax.....	<u>\$ 15,306,000</u>
	*Cost of goods sold (per annual report)	\$475,476,000
	AC effect (\$5,263,000 – \$3,993,000).....	<u>1,270,000</u>
	Cost of goods sold (per average cost)	<u>\$476,746,000</u>

(b) \$15,306,000 income before income tax X 46.6% tax = \$7,132,596 tax;
 \$15,306,000 – \$7,132,596 tax = \$8,173,404 net income as compared to
 \$8,848,000 net income under average cost. This is \$674,596 or about
 8% different. The question as to materiality is to allow the students an
 opportunity to judge the significance of the difference between the
 two costing methods. Since it is less than 10% different, some students
 may feel that it is not material. An 8% change in net income, however,
 is probably material, but this would depend on the industry and
 perhaps on the company's own past averages.

(c) No, the use of different costing methods does not necessarily mean
 that there is a difference in the physical flow of goods. As explained
 in the text, the actual physical flow need have no relationship to the
 cost flow assumption. The management of Lumber Supply International
 has determined that average cost is appropriate only for a subset of its
 products, and these reasons have to do with economic characteristics,
 rather than the physical flow of the goods.

FINANCIAL STATEMENT ANALYSIS CASE 2

- (a) The most likely physical flow of goods for a pharmaceutical manufacturer would be FIFO; that is, the first goods manufactured would be the first goods sold. This is because pharmaceutical goods have an expiration date. The manufacturer would be careful to ship the goods made earliest first and thereby reduce the risk that outdated goods will remain in the warehouse.
- (b) Noven should consider first whether the inventory costing method will make a difference. If the prices in the economy, especially if the raw materials prices, are stable, then the inventory cost will be nearly the same under any of the measurement methods. If inventory levels are very small, then the method used will make little difference. Noven should also consider the cost of keeping records. A small company might not want to invest in complicated record keeping. The tax effects of any differences should be considered, as well as any international rules that might dictate Noven's measurement of part of its inventory.
- (c) This amount is likely not shown in a separate inventory account because it is immaterial; that is, it is not large enough to make a difference with investors. Another possible reason is that no goods have yet been offered for sale. This amount might be in the Inventory of supplies account, but it is more likely to be included with Prepaid and other current assets, since it clearly is not just an article of supplies. This will definitely be shown separately as soon as Noven begins to sell its products to outside customers.

***FINANCIAL STATEMENT ANALYSIS CASE 3**

	Feb. 26 2005	Feb. 25 2006	Feb. 24 2007
Revenues.....	\$19,543	\$19,864	\$37,406
Cost of sales.....	16,681	16,977	29,267
Ending inventories at FIFO.....	\$1,181	\$1,114	\$2,927
Ending inventories at LIFO.....	<u>(1,032)</u>	<u>(954)</u>	<u>(2,749)</u>
LIFO reserve.....	149	160	178
Change in LIFO reserve.....		<u>(11)</u>	<u>(18)</u>
FIFO adjusted cost of sales.....		<u>\$16,966</u>	<u>\$29,249</u>

(a)	2006	2007
(i) Inventory turnover @LIFO	17.10	15.81
(ii) Inventory turnover @FIFO	14.78	14.48

Recall that the formula for computing inventory turnover is Cost of Sales/Average Inventory

(b)	2006	2007
(i) Inventory turnover using sales and LIFO	20.00	20.20
(ii) Inventory turnover using sales and FIFO	17.31	18.51

Recall that the formula for computing inventory turnover in part (b) is Sales/Average Inventory

(c) It appears that Supervalu calculates its Inventory Turnover using LIFO inventory with the standard formula of Cost of Sales/Average Inventory.

(d) Using sales instead of cost of goods sold accounts for the mark-up in the inventory. By using cost of goods sold, there is a better matching of the costs associated with inventory, and should result in more useful information.

ACCOUNTING, ANALYSIS, AND PRINCIPLES

ACCOUNTING

(a) FIFO:

Residential pumps:

Ending inventory cost = $(300 \times \$500) + (200 \times \$475) = \$245,000$

Beginning inventory cost = $(200 \times \$400) = \$80,000$

Purchases = $\$225,000 + \$190,000 + \$150,000 = \$565,000$

Cost of goods sold = $\$80,000 + \$565,000 - \$245,000 = \$400,000$

Commercial pumps:

Ending inventory at cost = $(500 \times \$1,000) = \$500,000$

Beginning inventory at cost = $(600 \times \$800) = \$480,000$

Purchases = $\$540,000 + \$285,000 + \$500,000 = \$1,325,000$

Cost of goods sold = $\$480,000 + \$1,325,000 - \$500,000 = \$1,305,000$

Total ending inventory at cost = $\$245,000 + \$500,000 = \$745,000$

Total cost of goods sold = $\$1,305,000 + \$400,000 = \$1,705,000$

(b) Average Cost:

Residential pumps:

<u>Date</u>	<u>No. Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
Mar. 1	200	\$400	\$ 80,000
10	500	450	225,000
20	400	475	190,000
30	300	500	150,000
	<u>1,400</u>		<u>\$645,000</u>

Average cost/unit = $\$645,000 \div 1,400 = \460.71 (rounded)

Ending inventory cost = $\$460.71 \times 500 = \$230,355$

Cost of goods sold = $\$645,000 - \$230,355 = \$414,645$

ACCOUNTING, ANALYSIS, AND PRINCIPLES (Continued)

Commercial pumps:

<u>Date</u>	<u>No. Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
Mar. 1	600	\$800	\$ 480,000
3	600	900	540,000
12	300	950	285,000
21	500	1,000	500,000
	<u>2,000</u>		<u>\$1,805,000</u>

Average cost/unit = $\$1,805,000 \div 2,000 = \902.50

Ending inventory cost = $\$902.50 \times 500 = \$451,250$

Cost of goods sold = $\$1,805,000 - \$451,250 = \$1,353,750$

Total ending inventory at cost = $\$230,355 + \$451,250 = \$681,605$

Total cost of goods sold = $\$414,645 + \$1,353,750 = \$1,768,395$

ANALYSIS

- (a) The purpose of a current ratio is to provide some indication of the resources the company has available to meet short term obligations, if those obligations come due. FIFO, which generally approximates the current cost of inventory, usually better suits this objective. Average cost inventory numbers on a statement of financial position can sometimes be stated at lower values.
- (b) An analyst would be better able to compare results of companies using different inventory methods by attempting to convert one of the company's inventory amounts to the other company's inventory methods. This conversion may be difficult, but the analyst should be able to determine a reasonable estimate of the "converting" company's inventory amounts.

PRINCIPLES

- (a) **Companies can change from one inventory accounting method to another, but not back and forth. Changes in accounting method (when not mandated by a regulatory body such as the IASB or FASB) should be to improve the financial statement reader's ability to understand the companies financial results and position. The tradeoff is usually comparability for consistency. That is, if a company changes to a method that is used by most of its competitors, the change increases comparability. But, because the company now uses different methods across different years, consistency is sacrificed. Companies sometimes change accounting methods because they believe it improves the matching of expenses with revenues. Again, consistency across reporting periods is sacrificed, however.**
- (b) **U.S. GAAP allows use of LIFO. So, if U.S. companies adopt IFRS, companies that use LIFO would have to choose between average cost, FIFO, and specific identification.**

PROFESSIONAL RESEARCH

- (a) IAS 18 Revenue provides guidance for revenue recognition when right of return exists.**
- (b) This statement is important when returns have been historically high and there has been unusual frequency after the year-end.**
- (c) Returns are allowed to satisfy customers and to encourage them to order larger quantities. Yes, industries such as publishing, music, and toys often permit purchasers to return inventory for a full or partial refund.**
- (d) A reasonable estimate of returns would be difficult to make when new markets or new products are involved.**

PROFESSIONAL SIMULATION

	A	B	C	D	E	F	G	H	I	J
1										
2										
3										
4										
5		Unadjusted	Adjustment (a)	Adjustment (b)	Adjustment (c)	Adjusted				
6	Beginning Inventory	\$125.50	-	-	-	\$125.50				
7	Ending Inventory	116.70	\$2.00	\$5.00	\$46.00	169.70				
8	Average Inventory	121.10	-	-	-	147.60				
9	Cost of Goods Sold	1,776.40	(2.00)	(5.00)	(46.00)	1,723.40				
10	Inventory Turnover	14.67	-	-	-	11.68				
11										
12	Explanation		Norwel should count the goods it has consigned in other stores.	Goods officially change hands at the point of destination.	Ending inventory under FIFO would be \$770 (220@3.50) -- \$46 (\$770 - \$724) higher than average cost					
13										

This cell contains the following function: =SUM(B5:E5)

This cell contains the following formula: =+(F4+F5)/2

This cell contains the following function: =SUM(B7:E7)

This cell contains the following formula: =+F9/F8

Explanation

To: Norwel Management

From: Student

Re: Advantages of FIFO

The major advantages of the FIFO inventory method include the prevention of income manipulation and the valuation of ending inventory close to current cost. In times of declining prices, FIFO will result in lower taxable income, which in turn will reduce current taxes. As illustrated in the analysis above the switch to FIFO resulted in a higher ending inventory, which leads to a lower cost of goods sold and higher income; thus, Norwel's reported income will be higher but so will its taxes. Note that under average cost, future taxes may be higher when lower cost items of inventory are sold in future periods and matched with higher sales prices.