

# CHAPTER 8

## Valuation of Inventories: A Cost Basis Approach

### ASSIGNMENT CLASSIFICATION TABLE

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

## 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—perpetual	Simple	10-15
E8-4	Inventoriable costs.	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 LIFO—periodic and perpetual.	Moderate	15-20
E8-14	FIFO, LIFO and average cost determination.	Moderate	20-25
E8-15	FIFO, LIFO, average cost inventory.	Moderate	15-20
E8-16	Compute FIFO, LIFO, average cost—periodic.	Moderate	15-20
E8-17	FIFO and LIFO; periodic and perpetual.	Simple	10-15
E8-18	FIFO and LIFO; income statement presentation.	Simple	15-20
E8-19	FIFO and LIFO effects.	Moderate	15-20
E8-20	FIFO and LIFO—periodic.	Simple	10-15
E8-21	LIFO effect.	Moderate	10-15
E8-22	Alternate inventory methods—comprehensive.	Moderate	25-30
E8-23	Dollar-value LIFO.	Simple	5-10
E8-24	Dollar-value LIFO.	Simple	15-20
E8-25	Dollar-value LIFO.	Moderate	20-25
E8-26	Dollar-value LIFO.	Moderate	15-20
P8-1	Various inventory issues.	Moderate	30-40
P8-2	Inventory adjustments.	Moderate	25-35
P8-3	Purchases recorded gross and net.	Simple	20-25
P8-4	Compute FIFO, LIFO, and average cost—periodic and perpetual.	Complex	40-55
P8-5	Compute FIFO, LIFO, and average cost—periodic and perpetual.	Complex	40-55
P8-6	Compute FIFO, LIFO, and average cost—periodic and perpetual.	Moderate	25-35
P8-7	Financial statement effects of FIFO and LIFO.	Moderate	30-40
P8-8	Dollar-value LIFO.	Moderate	30-40

## ASSIGNMENT CHARACTERISTICS TABLE (Continued)

<b>Item</b>	<b>Description</b>	<b>Level of Difficulty</b>	<b>Time (minutes)</b>
P8-9	Internal indexes—dollar-value LIFO.	Moderate	25-35
P8-10	Internal indexes—dollar-value LIFO.	Complex	30-35
P8-11	Dollar-value LIFO.	Moderate	40-50
C8-1	Inventoriable costs.	Moderate	15-20
C8-2	Inventoriable costs.	Moderate	15-25
C8-3	Inventoriable costs.	Moderate	25-35
C8-4	Accounting treatment of purchase discounts.	Simple	15-25
C8-5	General inventory issues.	Moderate	20-25
C8-6	LIFO inventory advantages.	Simple	15-20
C8-7	Average cost, FIFO, and LIFO.	Simple	15-20
C8-8	LIFO application and advantages.	Moderate	25-30
C8-9	Dollar-value LIFO issues.	Moderate	25-30
C8-10	FIFO and LIFO.	Moderate	30-35
C8-11	LIFO Choices—Ethical Issues	Moderate	20-25

# ANSWERS TO QUESTIONS

1. In a retailing concern, inventory normally consists of only one category, that is the product awaiting resale. In a manufacturing enterprise, 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 owner's 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. Mariah Carey, Inc. should not report this amount on its balance sheet. As consignee, it does not own this merchandise and therefore it is inappropriate for it to recognize this merchandise as part of its inventory.
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 balance sheet. A product financing arrangement should not be recorded as a sale. Rather, the inventory and related liability should be reported on the balance sheet.
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. 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.
8. 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.

## Questions Chapter 8 (Continued)

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

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

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

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

10. Cash discounts (purchase discounts) should not be accounted for as financial 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.

11. \$100.00, \$105.00, \$103.00. (Transportation-In not included for discount.)

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

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

Arguments against the specific identification method include the following:

- (1) The cost of using it restricts its use to goods of high unit value.
  - (2) The method is impractical for manufacturing processes or cases in which units are commingled and identity lost.
  - (3) It allows an artificial determination of income by permitting arbitrary selection of the items to be sold from a homogeneous group.
  - (4) It may not be a meaningful method of assigning costs in periods of changing price levels.
13. 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

## Questions Chapter 8 (Continued)

unrealized gain or loss. A criticism of the FIFO method is that it maximizes the effects of price fluctuations upon reported income because current revenue is matched with the oldest costs which are probably least similar to current replacement costs. On the other hand, this method produces a balance sheet value for the asset close to current replacement costs. It is claimed that FIFO is deceptive when used in a period of rising prices because the reported income is not fully available since a part of it must be used to replace inventory at higher cost.

The results achieved by the 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.

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

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

14. 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.
15. 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	\$19.00	\$484,500
B	10,350	\$37.00	<u>382,950</u>	\$45.60	<u>471,960</u>
December 31, 2004 inventory			<u>\$643,050</u>		<u>\$956,460</u>

$$\frac{\text{Current-Year Cost}}{\text{Base-Year Cost}} = \frac{\$956,460}{\$643,050} = 148.74, \text{ index at 12/31/04.}$$

## Questions Chapter 8 (Continued)

16. 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.
17. 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 eliminates much detailed work. 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.

18. (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.

19.	December 31, 2004 inventory at December 31, 2003 prices, \$1,026,000 ÷ 1.08	\$950,000
	Less: Inventory, December 31, 2003	<u>800,000</u>
	Increment added during 2004 at base prices	<u>\$150,000</u>
	Increment added during 2004 at December 31, 2004 prices, \$150,000 X 1.08	\$162,000
	Add: Inventory at December 31, 2004	<u>800,000</u>
	Inventory, December 31, 2004, under dollar-value LIFO method	<u>\$962,000</u>

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

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

# SOLUTIONS TO BRIEF EXERCISES

## BRIEF EXERCISE 8-1

**Billie Joel Company  
Balance Sheet  
December 31**

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<b>Current assets</b>		
Cash		\$ 190,000
Receivables (net)		400,000
Inventories		
Finished goods	\$150,000	
Work in process	200,000	
Raw materials	<u>335,000</u>	685,000
Prepaid insurance		<u>41,000</u>
<b>Total Current Assets</b>		<b><u>\$1,316,000</u></b>

## BRIEF EXERCISE 8-2

Inventory (150 X \$30).....	4,500	
Accounts Payable .....		4,500
Accounts Payable (6 X \$30).....	180	
Inventory .....		180
Accounts Receivable (125 X \$50) .....	6,250	
Sales .....		6,250
Cost of Goods Sold (125 X \$30) .....	3,750	
Inventory .....		3,750



### BRIEF EXERCISE 8-3

December 31 inventory per physical count	\$200,000
Goods-in-transit purchased FOB shipping point	15,000
Goods-in-transit sold FOB destination	<u>22,000</u>
December 31 inventory	<u>\$237,000</u>

### BRIEF EXERCISE 8-4

Cost of goods sold as reported	\$1,400,000
Overstatement of 12/31/03 inventory	(110,000)
Overstatement of 12/31/04 inventory	<u>45,000</u>
Corrected cost of goods sold	<u>\$1,335,000</u>

12/31/04 retained earnings as reported	\$5,200,000
Overstatement of 12/31/04 inventory	<u>(45,000)</u>
Corrected 12/31/04 retained earnings	<u>\$5,155,000</u>

### BRIEF EXERCISE 8-5

$$\text{Weighted average cost per unit} \quad \frac{\$11,850}{1,000} = \underline{\underline{\$11.85}}$$

$$\text{Ending inventory } 300 \times \$11.85 = \underline{\underline{\$3,555}}$$

Cost of goods available for sale	\$11,850
Deduct ending inventory	<u>3,555</u>
Cost of goods sold	<u>\$ 8,295</u>

### BRIEF EXERCISE 8-6

Ending inventory (April 23)	300 X \$13 =	<u>\$3,900</u>
Cost of goods available for sale		\$11,850
Deduct ending inventory		<u>3,900</u>
Cost of goods sold		<u>\$ 7,950</u>

### BRIEF EXERCISE 8-7

April 1	250 X \$10 =	\$2,500
April 15	50 X \$12 =	<u>600</u>
Ending inventory		<u>\$3,100</u>
Cost of goods available for sale		\$11,850
Deduct ending inventory		<u>3,100</u>
Cost of goods sold		<u>\$ 8,750</u>

### BRIEF EXERCISE 8-8

2002		\$100,000
2003	$\$123,200 \div 1.10 =$	<u>\$112,000</u>
	\$100,000 X 1.00	\$100,000
	\$12,000 X 1.10	<u>13,200</u>
		<u>\$113,200</u>
2004	$\$134,560 \div 1.16 =$	<u>\$116,000</u>
	\$100,000 X 1.00	\$100,000
	\$12,000 X 1.10	13,200
	\$4,000 X 1.16	<u>4,640</u>
		<u>\$117,840</u>

## BRIEF EXERCISE 8-9

2003 inventory at base amount ( $\$21,708 \div 1.08$ )		<b>\$20,100</b>
2002 inventory at base amount		<u>19,750</u>
Increase in base inventory		350
2003 inventory under LIFO		
Layer one	\$19,750 X 1.00	19,750
Layer two	\$ 350 X 1.08	<u>378</u>
		<b><u>\$20,128</u></b>
2004 inventory at base amount ( $\$25,935 \div 1.14$ )		<b>\$22,750</b>
2003 inventory at base amount		<u>20,100</u>
Increase in base inventory		2,650
2004 inventory under LIFO		
Layer one	\$19,750 X 1.00	\$19,750
Layer two	\$ 350 X 1.08	378
Layer three	\$ 2,650 X 1.14	<u>3,021</u>
		<b><u>\$23,149</u></b>

# SOLUTIONS TO EXERCISES

## EXERCISE 8-1 (15-20 minutes)

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

The following items would not be reported as inventory:

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

## EXERCISE 8-2 (10-15 minutes)

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

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

The goods in transit to a customer of \$46,000, shipped f.o.b. shipping point, are properly excluded from the inventory because the title to the goods passed when they left the seller (Oliva) and therefore a sale and related cost of goods sold should be recorded in 2004.

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

**EXERCISE 8-3 (10-15 minutes)**

- 1. Do not include. Title to special order merchandise passes to customer on completion.**
- 2. Do not include. Title did not pass until January 3.**
- 3. Include in inventory. Product belonged to client at December 31, 2004.**
- 4. Include in inventory. Under invoice terms, title passed when goods were shipped.**
- 5. Do not include. Goods received on consignment remain the property of the consignor.**

**EXERCISE 8-4 (10-15 minutes)**

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

**EXERCISE 8-5 (15-20 minutes)**

(a)	Inventory December 31, 2004 (unadjusted)	\$234,890
	Transaction 2	13,420
	Transaction 3	-0-
	Transaction 4	-0-
	Transaction 5	8,540
	Transaction 6	(10,438)
	Transaction 7	(10,520)
	Transaction 8	<u>1,500</u>
	Inventory December 31, 2004 (adjusted)	<u>\$237,392</u>

(b)	Transaction 3		
	Sales	12,800	
	Accounts Receivable .....		12,800
	(To reverse sale entry in 2004)		

	Transaction 4		
	Purchases (Inventory) .....	15,630	
	Accounts Payable .....		15,630
	(To record purchase of merchandise in 2004)		

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

**EXERCISE 8-6 (10-20 minutes)**

	2002	2003	2004
Sales	\$290,000	\$360,000	\$410,000
Sales Returns	11,000	13,000	20,000
Net Sales	279,000	347,000	390,000
Beginning Inventory	20,000	32,000	37,000**
Ending Inventory	32,000*	37,000	44,000
Purchases	242,000	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	233,000	256,000	293,000
Gross Profit	46,000	91,000	97,000

\*This was given as the beginning inventory for 2003.

\*\*This was calculated as the ending inventory for 2003.

**EXERCISE 8-7 (10-15 minutes)**

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

**EXERCISE 8-7 (Continued)**

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

**EXERCISE 8-8**

<b>(a)</b>	<b>Feb. 1</b>	<b>Inventory [\$10,800 – (\$10,800 X 10%)]....</b>	<b>9,720</b>	
		<b>    Accounts Payable .....</b>		<b>9,720</b>
	<b>Feb. 4</b>	<b>    Accounts Payable [\$2,500 –</b>		
		<b>        (\$2,500 X 10%)] .....</b>	<b>2,250</b>	
		<b>        Inventory .....</b>		<b>2,250</b>
	<b>Feb. 13</b>	<b>    Accounts Payable (\$9,720 – \$2,250).....</b>	<b>7,470</b>	
		<b>        Inventory (3% X \$7,470).....</b>		<b>224.10</b>
		<b>        Cash .....</b>		<b>7,245.90</b>
<b>(b)</b>	<b>Feb. 1</b>	<b>Purchases [\$10,800 – (\$10,800 X 10%)]..</b>	<b>9,720</b>	
		<b>    Accounts Payable .....</b>		<b>9,720</b>
	<b>Feb. 4</b>	<b>    Accounts Payable [\$2,500 – (\$2,500 X</b>		
		<b>        10%)]</b>	<b>2,250</b>	
		<b>        Purchase Returns and Allowances</b>		<b>2,250</b>
	<b>Feb. 13</b>	<b>    Accounts Payable (\$9,720 – \$2,250).....</b>	<b>7,470</b>	
		<b>        Purchase Discounts (3% X</b>		
		<b>        \$7,470).....</b>		<b>224.10</b>
		<b>        Cash .....</b>		<b>7,245.90</b>



**EXERCISE 8-8 (Continued)**

(c) Purchase price (list)	\$10,800
Less: Trade discount (10% X \$10,800)	<u>1,080</u>
Price on which cash discount based	9,720
Less: Cash discount (3% X \$9,720)	<u>291.60</u>
Net price	<u><u>\$9,428.40</u></u>

**EXERCISE 8-9 (15-25 minutes)**

(a) Jan. 4	Accounts Receivable.....	640	
	Sales (80 X \$8) .....		640
Jan. 11	Purchases (\$150 X \$6).....	900	
	Accounts Payable .....		900
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 .....	1,750*	
	Purchases (\$900 + \$1,120).....		2,020
	Inventory (100 X \$5) .....		500

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

**EXERCISE 8-9 (Continued)**

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

<b>(c)</b>	<b>Jan. 4</b>	<b>Accounts Receivable .....</b>	<b>640</b>	
		<b>Sales (80 X \$8) .....</b>		<b>640</b>
		<b>Cost of Goods Sold .....</b>	<b>400</b>	
		<b>Inventory (80 X \$5) .....</b>		<b>400</b>
	<b>Jan. 11</b>	<b>Inventory .....</b>	<b>900</b>	
		<b>Accounts Payable (150 X \$6) ..</b>		<b>900</b>
	<b>Jan. 13</b>	<b>Accounts Receivable .....</b>	<b>1,050</b>	
		<b>Sales (120 X \$8.75) .....</b>		<b>1,050</b>
		<b>Cost of Goods Sold .....</b>	<b>700</b>	
		<b>Inventory [(20 X \$5) + (100 X \$6)] .....</b>		<b>700</b>
	<b>Jan. 20</b>	<b>Inventory .....</b>	<b>1,120</b>	
		<b>Accounts Payable (160 X \$7) ..</b>		<b>1,120</b>
	<b>Jan. 27</b>	<b>Accounts Receivable .....</b>	<b>900</b>	
		<b>Sales (100 X \$9) .....</b>		<b>900</b>
		<b>Cost of Goods Sold .....</b>	<b>650</b>	
		<b>Inventory [(50 X \$6) + (50 X \$7)] .....</b>		<b>650</b>

<b>(d)</b>	<b>Sales</b>	<b>\$2,590</b>	
	<b>Cost of goods sold</b>		
	<b>(\$400 + \$700 + \$650)</b>	<b><u>1,750</u></b>	
	<b>Gross profit</b>	<b><u>\$ 840</u></b>	

**EXERCISE 8-10 (10-15 minutes)**

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

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

**EXERCISE 8-11 (10-15 minutes)**

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

(b)  $\frac{\$370,000 + \$22,000 - \$13,000}{\$200,000 - \$15,000} = \frac{\$379,000}{\$185,000} = \underline{2.05 \text{ to } 1}$

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

## EXERCISE 8-12 (15-20 minutes)

### Errors in Inventories

<u>Year</u>	<u>Net Income Per Books</u>	<u>Add Overstate- ment Jan. 1</u>	<u>Deduct Understate- ment Jan. 1</u>	<u>Deduct Overstate- ment Dec. 31</u>	<u>Add Understate- ment Dec. 31</u>	<u>Corrected Net Income</u>
1999	\$ 50,000			\$3,000		\$ 47,000
2000	52,000	\$3,000		9,000		46,000
2001	54,000	9,000			\$11,000	74,000
2002	56,000		\$11,000			45,000
2003	58,000				2,000	60,000
2004	<u>60,000</u>		2,000	8,000		<u>50,000</u>
	\$330,000					\$322,000

## EXERCISE 8-13 (15-20 minutes)

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

### EXERCISE 8-13 (Continued)

(c) Sales	\$25,400	=	(\$24 X \$200) + (\$25 X \$500) + (\$27 X \$300)
Cost of Goods Sold	<u>11,400</u>		
Gross Profit (FIFO)	<u>\$14,000</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 8-14 (20-25 minutes)

(a) (1) LIFO	600 @ \$6.00 =	\$3,600
	100 @ \$6.08 =	<u>608</u>
		<u>\$4,208</u>

- (2) Average cost

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

$$700 @ \$6.35 = \underline{\underline{\$4,445}}$$

**EXERCISE 8-14 (Continued)**

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

(b) (1) FIFO 500 @ \$6.79 = \$3,395  
200 @ \$6.60 = 1,320  
\$4,715

(2) LIFO 100 @ \$6.00 = \$ 600  
100 @ \$6.08 = 608  
500 @ \$6.79 = 3,395  
\$4,603

(c) Total merchandise available for sale \$33,655  
Less inventory (FIFO) 4,715  
Cost of goods sold \$28,940

(d) FIFO.

**EXERCISE 8-15 (15-20 minutes)**

(a) **Shania Twain Company**  
**COMPUTATION OF INVENTORY FOR PRODUCT**  
**BAP UNDER FIFO INVENTORY METHOD**  
**March 31, 2004**

	<u>Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
March 26, 2004	600	\$12.00	\$ 7,200
February 16, 2004	800	11.00	8,800
January 25, 2004 (portion)	<u>200</u>	10.00	<u>2,000</u>
March 31, 2004, inventory	<u>1,600</u>		<u>\$18,000</u>

(b) **Shania Twain Company**  
**COMPUTATION OF INVENTORY FOR PRODUCT**  
**BAP UNDER LIFO INVENTORY METHOD**  
**March 31, 2004**

	<u>Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
Beginning inventory	600	\$8.00	\$ 4,800
January 5, 2004 (portion)	<u>1,000</u>	9.00	<u>9,000</u>
March 31, 2004, inventory	<u>1,600</u>		<u>\$13,800</u>

(c) **Shania Twain Company**  
**COMPUTATION OF INVENTORY FOR PRODUCT**  
**BAP UNDER WEIGHTED AVERAGE INVENTORY METHOD**  
**March 31, 2004**

	<u>Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
Beginning inventory	600	\$ 8.00	\$ 4,800
January 5, 2004	1,200	9.00	10,800
January 25, 2004	1,300	10.00	13,000
February 16, 2004	800	11.00	8,800
March 26, 2004	<u>600</u>	12.00	<u>7,200</u>
	<u>4,500</u>		<u>\$44,600</u>

Weighted average cost  
 (\$44,600 ÷ 4,500)

\$ 9.91\*

March 31, 2004, inventory	<u>1,600</u>	<u>\$ 9.91</u>	<u>\$15,856</u>
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\*Rounded off.

**EXERCISE 8-16 (15-20 minutes)**

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

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

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

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

(2) 100 @ \$4.10 = \$ 410

$$\underline{600 @ 4.20 = 2,520}$$

$$\underline{700} \qquad \underline{\$2,930} \text{ Ending inventory at LIFO cost.}$$

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

$$700 \text{ units} \times \$4.40 = \underline{\$3,080} \text{ Ending inventory at weighted-average cost.}$$

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

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



**EXERCISE 8-17 (10-15 minutes)**

(a) (1) 400 @ \$30 = \$12,000  
160 @ \$25 = 4,000  
\$16,000

(2) 400 @ \$20 = \$ 8,000  
160 @ \$25 = 4,000  
\$12,000

(b) (1) FIFO \$16,000 [same as (a)]

(2) LIFO 100 @ \$20 = \$ 2,000  
60 @ \$25 = 1,500  
400 @ \$30 = 12,000  
\$15,500

## EXERCISE 8-18 (15-20 minutes)

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

### \*Purchases

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

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

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

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

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

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

**EXERCISE 8-19 (20-25 minutes)**

**Sandy Alomar Corporation  
SCHEDULES OF COST OF GOODS SOLD  
For the First Quarter Ended March 31, 2004**

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

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

Schedules Computing Ending Inventory

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

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

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

### EXERCISE 8-20 (10-15 minutes)

(a) FIFO Ending Inventory 12/31/04

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

\*[\$11.00 – .01 (\$11.00)]

\*\*[\$12.00 – .01 (\$12.00)]

(b) LIFO Cost of Goods Sold—2004

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

\*[\$15.00 – .01 (\$15)]

\*\*[\$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 Howie Long Shop to minimize taxable income.

### EXERCISE 8-21 (10-15 minutes)

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

## EXERCISE 8-21 (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 8-22 (25-30 minutes)

(a) (1) Ending inventory—Specific Identification

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

(2) Ending inventory—FIFO

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

(3) Ending inventory—LIFO

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

**EXERCISE 8-22 (Continued)**

**(4) Ending inventory—Average Cost**

<u>Date</u>	<u>Explanation</u>	<u>No. Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
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	<u>100</u>	30	<u>3,000</u>
		<u>1,000</u>		<u>\$25,300</u>

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

**Ending Inventory—Average Cost**

<u>No. Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
150	\$25.30	\$3,795

**(b) Double Extension Method**

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

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

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

**EXERCISE 8-23 (5-10 minutes)**

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

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

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

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

Index = 115

**EXERCISE 8-24 (15-20 minutes)**

(a)	12/31/04 inventory at 1/1/04 prices, $\$140,000 \div 1.12$	<b>\$125,000</b>
	Inventory 1/1/04	<u>160,000</u>
	Inventory decrease at base prices	<u><b>\$ 35,000</b></u>

Inventory at 1/1/04 prices	<b>\$160,000</b>
Less decrease at 1/1/04 prices	<u>35,000</u>
Inventory 12/31/04 under dollar-value LIFO method	<u><b>\$125,000</b></u>

(b)	12/31/05 inventory at base prices, $\$172,500 \div 1.15$	<b>\$150,000</b>
	12/31/04 inventory at base prices	<u>125,000</u>
	Inventory increment at base prices	<u><b>\$ 25,000</b></u>

Inventory at 12/31/04	<b>\$125,000</b>
Increment added during 2005 at 12/31/05 prices, \$25,000 X 1.15	<u>28,750</u>
Inventory 12/31/05	<u><b>\$153,750</b></u>

**EXERCISE 8-25 (20-25 minutes)**

	<u>Current \$</u>	<u>Price Index</u>	<u>Base Year \$</u>	<u>Change from Prior Year</u>
2001	\$ 80,000	1.00	\$ 80,000	—
2002	115,500	1.05	110,000	\$+30,000
2003	108,000	1.20	90,000	(20,000)
2004	122,200	1.30	94,000	+4,000
2005	154,000	1.40	110,000	+16,000
2006	176,900	1.45	122,000	+12,000

## EXERCISE 8-25 (Continued)

### Ending Inventory—Dollar-value LIFO:

2001	<u>\$80,000</u>		2005	\$80,000 @ 1.00 =	\$ 80,000
				10,000 @ 1.05 =	10,500
2002	\$80,000 @ 1.00 =	\$ 80,000		4,000 @ 1.30 =	5,200
	30,000 @ 1.05 =	<u>31,500</u>		16,000 @ 1.40 =	<u>22,400</u>
		<u>\$111,500</u>			<u>\$118,100</u>
2003	\$80,000 @ 1.00 =	\$ 80,000	2006	\$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
2004	\$80,000 @ 1.00 =	\$ 80,000		16,000 @ 1.40 =	22,400
	10,000 @ 1.05 =	10,500		12,000 @ 1.45 =	<u>17,400</u>
	4,000 @ 1.30 =	<u>5,200</u>			<u>\$135,500</u>
		<u>\$ 95,700</u>			

## EXERCISE 8-26 (15-20 minutes)

<u>Date</u>	<u>Current \$</u>	<u>Price Index</u>	<u>Base-Year \$</u>	<u>Change from Prior Year</u>
Dec. 31, 2000	\$ 70,000	1.00	\$70,000	—
Dec. 31, 2001	90,300	1.05	86,000	\$+16,000
Dec. 31, 2002	95,120	1.16	82,000	(4,000)
Dec. 31, 2003	105,600	1.20	88,000	+6,000
Dec. 31, 2004	100,000	1.25	80,000	(8,000)



## EXERCISE 8-26 (Continued)

### Ending Inventory—Dollar-value LIFO:

Dec. 31, 2000 \$70,000

Dec. 31, 2001 \$70,000 @ 1.00 = \$70,000  
16,000 @ 1.05 = 16,800  
\$86,800

Dec. 31, 2002 \$70,000 @ 1.00 = \$70,000  
12,000 @ 1.05 = 12,600  
\$82,600

Dec. 31, 2003 \$70,000 @ 1.00 = \$70,000  
12,000 @ 1.05 = 12,600  
6,000 @ 1.20 = 7,200  
\$89,800

Dec. 31, 2004 \$70,000 @ 1.00 = \$70,000  
10,000 @ 1.05 = 10,500  
\$80,500

# TIME AND PURPOSE OF PROBLEMS

**Problem 8-1** (Time 30 –40 minutes)

Purpose—to provide a multipurpose problem with trade discounts, goods in transit, computing internal price indexes, dollar-value LIFO, comparative FIFO, LIFO, and average cost computations, and inventoriable 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 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 8-5** (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 8-4, except that the differences in inventory values must be explained.

**Problem 8-6** (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 8-7** (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.

**Problem 8-8** (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 8-9** (Time 25-35 minutes)

Purpose—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 8-10** (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 8-11** (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

<b>PROBLEM 8-1</b>
--------------------

1.  $\$150,000 - (\$150,000 \times .20) = \$120,000$ ;  
 $\$120,000 - (\$120,000 \times .10) = \underline{\$108,000}$ , 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 12/31/03 inventory. The \$29,000 of goods shipped (f.o.b. shipping point) on January 3, 2004, should remain part of the 12/31/03 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
	1,100 units at 23	<u>25,300</u>
	Total	<u>\$ 49,300</u>

<u>LIFO inventory cost:</u>	1,500 units at \$21	\$ 31,500
	600 units at 22	<u>13,200</u>
	Total	<u>\$ 44,700</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 (2,100 X \$22.50) is \$47,250.

## PROBLEM 8-1 (Continued)

### 4. Computation of price indexes:

$$12/31/03 \frac{\$252,000}{\$240,000} = 105$$

$$12/31/04 \frac{\$286,720}{\$256,000} = 112$$

#### Dollar-value LIFO inventory 12/31/03:

Increase \$240,000 – \$200,000 =	\$ 40,000	
12/31/03 price index	X 1.05	
Increase in terms of 105	42,000	2003 Layer
Base inventory	<u>200,000</u>	
Dollar-value LIFO inventory	<u>\$242,000</u>	

#### Dollar-value LIFO inventory 12/31/04:

Increase \$256,000 – \$240,000 =	\$ 16,000	
12/31/02 price index	X 1.12	
Increase in terms of 112	17,920	2004 Layer
2003 layer	42,000	
Base inventory	<u>200,000</u>	
Dollar-value LIFO inventory	<u>\$259,920</u>	

### 5. The inventoriable costs for 2004 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>

<b>PROBLEM 8-2</b>
--------------------

**James T. Kirk Company  
Schedule of Adjustments  
December 31, 2004**

	Inventory	Accounts Payable	Net Sales
<b>Initial amounts</b>	<b><u>\$1,520,000</u></b>	<b><u>\$1,200,000</u></b>	<b><u>\$8,150,000</u></b>
<b>Adjustments:</b>			
1.	NONE	NONE	(40,000)
2.	71,000	71,000	NONE
3.	30,000	NONE	NONE
4.	32,000	NONE	(47,000)
5.	21,000	NONE	NONE
6.	27,000	NONE	NONE
7.	NONE	56,000	NONE
8.	<u>3,000</u>	<u>6,000</u>	<u>NONE</u>
<b>Total adjustments</b>	<b><u>184,000</u></b>	<b><u>133,000</u></b>	<b><u>(87,000)</u></b>
<b>Adjusted amounts</b>	<b><u>\$1,704,000</u></b>	<b><u>\$1,333,000</u></b>	<b><u>\$8,063,000</u></b>

1. The \$31,000 of tools on the loading dock were properly included in the physical count. The sale should not be recorded until the goods are picked up by the common carrier. Therefore, no adjustment is made to inventory, but sales must be reduced by the \$40,000 billing price.
2. The \$71,000 of goods in transit from a vendor to James T. Kirk were shipped f.o.b. shipping point on 12/29/04. 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 Kirk's inventory and accounts payable at 12/31/04. Both inventory and accounts payable must be increased by \$71,000.
3. The work-in-process inventory sent to an outside processor is Kirk'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 2004. However, these items were returned by customers on December 31, so 2004 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 \$21,000 of Kirk's tools shipped to a customer f.o.b. destination are still owned by Kirk while in transit because title does not pass on these goods until they are received by the buyer. Therefore, \$21,000 must be added to the inventory column. No adjustment is necessary in the sales column because the sale was properly recorded in 2005 when the customer received the goods.**
- 6. The goods received from a vendor at 5:00 p.m. on 12/31/04 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 12/31/04 accounts payable.**
- 7. The \$56,000 of goods received on 12/26/04 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 12/31/04 accounts payable balance.**
- 8. Since one-half of the freight-in cost (\$6,000) pertains to merchandise properly included in inventory as of 12/31/04, \$3,000 should be added to the inventory column. The remaining \$3,000 debit should be reflected in cost of goods sold. The full \$6,000 must be added to accounts payable since the liability was not recorded.**

<b>PROBLEM 8-3</b>
--------------------

(a)	(1)	8/10	Purchases	9,000	
			Accounts Payable		9,000
		8/13	Accounts Payable	1,200	
			Purchase Returns and Allowances		1,200
		8/15	Purchases	12,000	
			Accounts Payable		12,000
		8/25	Purchases	15,000	
			Accounts Payable		15,000
		8/28	Accounts Payable	12,000	
			Cash		12,000

- (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 balance sheet.

(b)	(1)	8/10	Purchases	8,820	
			Accounts Payable (\$9,000 X .98)		8,820
		8/13	Accounts Payable	1,176	
			Purchase Returns and Allowances (\$1,200 X .98)		1,176

**PROBLEM 8-3 (Continued)**

	<b>8/15</b>		
<b>Purchases</b>		<b>11,880</b>	
<b>Accounts Payable (\$12,000 X .99)</b>			<b>11,880</b>
	<b>8/25</b>		
<b>Purchases</b>		<b>14,700</b>	
<b>Accounts Payable (\$15,000 X .98)</b>			<b>14,700</b>
	<b>8/28</b>		
<b>Accounts Payable</b>		<b>11,880</b>	
<b>Purchase Discounts Lost</b>		<b>120</b>	
<b>Cash</b>			<b>12,000</b>
<b>2.</b>	<b>8/31</b>		
<b>Purchase Discounts Lost</b>		<b>156</b>	
<b>Accounts Payable</b>			
<b>(.02 X [\$9,000 – \$1,200])</b>			<b>156</b>
<b>3.</b>			
<b>Same as part (a) (2) except:</b>			
<b>Purchase Discounts Lost—treat as financial expense in income statement.</b>			

- (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.



<b>PROBLEM 8-4</b>
--------------------

<b>(a)</b>	<b>Purchases</b>		<b>Sales</b>	
	<b>Total Units</b>		<b>Total Units</b>	
	April 1 (balance on hand)	100	April 5	300
	April 4	400	April 12	200
	April 11	300	April 27	800
	April 18	200	April 28	<u>100</u>
	April 26	500	Total units	<u><u>1,400</u></u>
	April 30	<u>200</u>		
	Total units	1,700		
	Total units sold	<u>1,400</u>		
	Total units (ending inventory)	<u><u>300</u></u>		

Assuming costs are not computed for each withdrawal:

(1) First-in, first-out.

Date of Invoice	No. Units	Unit Cost	Total Cost
April 30	200	\$5.80	\$1,160
April 26	100	5.60	<u>560</u>
			<u><u>\$1,720</u></u>

(2) Last-in, first-out.

Date of Invoice	No. Units	Unit Cost	Total Cost
April 1	100	\$5.00	\$ 500
April 4	200	5.10	<u>1,020</u>
			<u><u>\$1,520</u></u>

**PROBLEM 8-4 (Continued)**

**(3) Average cost.**

**Cost of Part X available.**

<u>Date of Invoice</u>	<u>No. Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
April 1	100	\$5.00	\$ 500
April 4	400	5.10	2,040
April 11	300	5.30	1,590
April 18	200	5.35	1,070
April 26	500	5.60	2,800
April 30	<u>200</u>	5.80	<u>1,160</u>
<b>Total Available</b>	<b><u>1,700</u></b>		<b><u>\$9,160</u></b>

**Average cost per unit =  $\$9,160 \div 1,700 = \$5.39$ .**

**Inventory, April 30 =  $300 \times \$5.39 = \$1,617$ .**

**(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), \$1,720.**

**PROBLEM 8-4 (Continued)**

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

Date	Purchased		Sold		Balance*		
	No. of units	Unit cost	No. of units	Unit cost	No. of units	Unit cost	Amount
April 1	100	\$5.00			100	\$5.00	\$ 500
April 4	400	5.10			100	5.00	2,540
					400	5.10	
April 5			300	\$5.10	100	5.00	1,010
					100	5.10	
April 11	300	5.30			100	5.00	2,600
					100	5.10	
					300	5.30	
April 12			200	5.30	100	5.00	1,540
					100	5.10	
					100	5.30	
April 18	200	5.35			100	5.00	2,610
					100	5.10	
					100	5.30	
					200	5.35	
April 26	500	5.60			100	5.00	5,410
					100	5.10	
					100	5.30	
					200	5.35	
					500	5.60	
April 27			500 @	5.60			1,010
			800	200 @	5.35		
				100 @	5.30		
April 28			100	5.10	100	5.00	500
April 30	200	5.80			100	5.00	1,660
					200	5.80	

**Inventory April 30 is \$1,660.**

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

**PROBLEM 8-4 (Continued)****(3) Average cost.**

<b>Date</b>	<b>Purchased</b>		<b>Sold</b>		<b>Balance</b>		
	<b>No. of units</b>	<b>Unit cost</b>	<b>No. of units</b>	<b>Unit cost</b>	<b>No. of units</b>	<b>Unit cost*</b>	<b>Amount</b>
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	500	5.60			1,000	5.4336	5,433.60
April 27			800	5.4336	200	5.4336	1,086.72
April 28			100	5.4336	100	5.4336	543.36
April 30	200	5.80			300	5.6779	1,703.36

**Inventory April 30 is \$1,703.**

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

<b>PROBLEM 8-5</b>
--------------------

(a) Assuming costs are not computed for each withdrawal (units received, 5,600, minus units issued, 4,700, equals ending inventory at 900 units):

(1) First-in, first-out.

Date of Invoice	No. Units	Unit Cost	Total Cost
Jan. 28	900	\$3.60	<u>\$3,240</u>

(2) Last-in, first-out.

Date of Invoice	No. Units	Unit Cost	Total Cost
Jan. 2	900	\$3.00	<u>\$2,700</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>1,500</u>	3.60	<u>5,400</u>
Total Available	<u>5,600</u>		<u>\$18,640</u>

Average cost per unit =  $\$18,640 \div 5,600 = \$ 3.33$

Cost of inventory Jan. 31 =  $900 \times \$3.33 = \underline{\$2,997}$

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

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

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

**PROBLEM 8-5 (Continued)**

**Under Average Cost—No.** A new average cost would be computed each time a 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), \$3,240.

(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	1,500	3.60			200	3.00	7,700
					500	3.40	
					1,500	3.60	
Jan. 31			1,300	3.60	200	3.00	3,020
					500	3.40	
					200	3.60	

**Inventory, January 31 is \$3,020.**

**PROBLEM 8-5 (Continued)**

**(3) Average cost.**

Date	Received		Issued		Balance		
	No. of units	Unit cost	No. of units	Unit cost	No. of units	Unit cost*	Amount
Jan. 2	1,200	\$3.00			1,200	\$3.0000	\$3,600
Jan. 7			700	\$3.0000	500	3.0000	1,500
Jan. 10	600	3.20			1,100	3.1091	3,420
Jan. 13			500	3.1091	600	3.1091	1,865
Jan. 18	1,000	3.30	300	3.2281	1,300	3.2281	4,197
Jan. 20			1,100	3.2281	200	3.2281	646
Jan. 23	1,300	3.40			1,500	3.3773	5,066
Jan. 26			800	3.3773	700	3.3773	2,364
Jan. 28	1,500	3.60			2,200	3.5291	7,764
Jan. 31			1,300	3.5291	900	3.5291	3,176

**Inventory, January 31 is \$3,176.**

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

<b>PROBLEM 8-6</b>
--------------------

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

**Periodic FIFO**

1,000 X \$12 =		\$12,000
2,000 X \$18 =		36,000
<u>1,500 X \$23 =</u>		<u>34,500</u>
<u>4,500</u>		<u>\$82,500</u>

(b) **Perpetual FIFO**  
 Same as periodic: \$82,500

(c) **Periodic LIFO**

3,000 X \$23 =		\$69,000
<u>1,500 X \$18 =</u>		<u>27,000</u>
<u>4,500</u>		<u>\$96,000</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		2,000 X \$23 = \$46,000	500 X \$12 } 1,000 X \$23 } \$29,000
		<u>\$88,000</u>	



## PROBLEM 8-6 (Continued)

### (e) Periodic weighted-average

1,000 X \$12 =	\$ 12,000		
2,000 X \$18 =	36,000		
3,000 X \$23 =	<u>69,000</u>		4,500
	<u>\$117,000</u>	÷ 6,000 =	<u>\$19.50</u>
			X <u>\$19.50</u>
			<u>\$87,750</u>

### (f) Perpetual moving average

<u>Date</u>	<u>Purchased</u>	<u>Sold</u>	<u>Balance</u>
1/1			1,000 X \$12 = \$12,000
2/4	2,000 X \$18 = \$36,000		3,000 X \$16 = 48,000
2/20		2,500 X \$16 = \$40,000	500 X \$16 = 8,000
4/2	3,000 X \$23 = \$69,000		3,500 X \$22 <sup>a</sup> = 77,000
11/4		2,000 X \$22 = <u>44,000</u>	1,500 X \$22 = 33,000
		<u>\$84,000</u>	

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

$$(\$77,000 \div 3,500 = \$22)$$

**PROBLEM 8-7**

The accounts in the 2005 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 2005
(1) Cash	\$165,600
(2) Inventory	120,000
(3) Retained earnings	215,600
(4) Cost of goods sold	810,000
(5) Income taxes	94,400

The calculations for both 2004 and 2005 to support the conversion to LIFO are presented below.

Income for the Years Ended	12/31/04	12/31/05
Sales	<u>\$900,000</u>	<u>\$1,350,000</u>
Less: Cost of goods sold	525,000	810,000
Other expenses	<u>205,000</u>	<u>304,000</u>
	<u>730,000</u>	<u>1,114,000</u>
Income before taxes	170,000	236,000
Income taxes (40%)	<u>68,000</u>	<u>94,400</u>
Net income	<u>\$102,000</u>	<u>\$ 141,600</u>

Cost of Good Sold and Ending Inventory for the Years Ended	12/31/04	12/31/05
Beginning inventory (40,000 X \$3.00)	\$120,000	(40,000 X \$3.00) \$120,000
Purchases (150,000 X \$3.50)	<u>525,000</u>	(180,000 X \$4.50) <u>810,000</u>
Cost of goods available	645,000	930,000
Ending inventory (40,000 X \$3.00)	<u>120,000</u>	(40,000 X \$3.00) <u>120,000</u>
Cost of goods sold	<u>\$525,000</u>	<u>\$810,000</u>

Determination of Cash at	12/31/04	12/31/05
Income taxes under FIFO	\$ 76,000	\$110,400
Income taxes as calculated under LIFO	<u>68,000</u>	<u>94,400</u>
Increase in cash	8,000	16,000
Adjust cash at 12/31/05 for 2004 tax difference	<u>—</u>	<u>8,000</u>
Total increase in cash	8,000	24,000
Cash balance under FIFO	<u>130,000</u>	<u>141,600</u>
Cash balance under LIFO	<u>\$138,000</u>	<u>\$165,600</u>

## PROBLEM 8-7 (Continued)

<u>Determination of Retained Earnings at</u>	<u>12/31/04</u>	<u>12/31/05</u>
Net income under FIFO	\$114,000	\$165,600
Net income under LIFO	<u>102,000</u>	<u>141,600</u>
Reduction in retained earnings	12,000	24,000
Adjust retained earnings at 12/31/05 for 2004 reduction	<u>—</u>	<u>12,000</u>
Total reduction in retained earnings	12,000	36,000
Retained earnings under FIFO	<u>200,000</u>	<u>251,600</u>
Retained earnings under LIFO	<u>\$188,000</u>	<u>\$215,600</u>

<b>PROBLEM 8-8</b>
--------------------

- (a) 1. Ending inventory in units
- |          |                             |                      |
|----------|-----------------------------|----------------------|
| Portable | $6,000 + 15,000 - 14,000 =$ | 7,000                |
| Midsize  | $8,000 + 20,000 - 24,000 =$ | 4,000                |
| Console  | $3,000 + 10,000 - 6,000 =$  | <u>7,000</u>         |
|          |                             | <u><b>18,000</b></u> |
2. Ending inventory at current cost
- |          |                        |                           |
|----------|------------------------|---------------------------|
| Portable | $7,000 \times \$120 =$ | \$ 840,000                |
| Midsize  | $4,000 \times \$300 =$ | 1,200,000                 |
| Console  | $7,000 \times \$460 =$ | <u>3,220,000</u>          |
|          |                        | <u><b>\$5,260,000</b></u> |
3. Ending inventory at base-year cost
- |          |                        |                           |
|----------|------------------------|---------------------------|
| Portable | $7,000 \times \$100 =$ | \$ 700,000                |
| Midsize  | $4,000 \times \$250 =$ | 1,000,000                 |
| Console  | $7,000 \times \$400 =$ | <u>2,800,000</u>          |
|          |                        | <u><b>\$4,500,000</b></u> |
4. Price index  
 $\$5,260,000 \div \$4,500,000 = 1.1689$
5. Ending inventory
- |                               |  |                           |
|-------------------------------|--|---------------------------|
| $\$3,800,000 \times 1.0000 =$ |  | \$3,800,000               |
| $700,000^* \times 1.1689 =$   |  | <u>818,230</u>            |
|                               |  | <u><b>\$4,618,230</b></u> |
- \* $(\$4,500,000 - \$3,800,000 = \$700,000)$
6. Cost of goods sold
- |  |  |                            |
|--|--|----------------------------|
| Beginning inventory                                |  | \$ 3,800,000               |
| Purchases  |  |                            |
| $[(15,000 \times \$120) + (20,000 \times \$300) +$ |  |                            |
| $(10,000 \times \$460)]$                           |  | <u>12,400,000</u>          |
| Cost of goods available                            |  | 16,200,000                 |
| Ending inventory                                   |  | <u>4,618,230</u>           |
| Cost of goods sold                                 |  | <u><b>\$11,581,770</b></u> |



**PROBLEM 8-9**

**(a)** **Adis Abeba Wholesalers Inc.**  
**Computation of Internal Conversion Price Index**  
**for Inventory Pool No. 1 Double Extension Method**

<b>Current inventory at current-year cost</b>			
Product A	17,000 X \$35 =	\$595,000	13,000 X \$40 = \$520,000
Product B	9,000 X \$26 =	<u>234,000</u>	10,000 X \$32 = <u>320,000</u>
		<u>\$829,000</u>	<u>\$840,000</u>
<b>Current inventory at base cost</b>			
Product A	17,000 X \$30 =	\$510,000	13,000 X \$30 = \$390,000
Product B	9,000 X \$25 =	<u>225,000</u>	10,000 X \$25 = <u>250,000</u>
		<u>\$735,000</u>	<u>\$640,000</u>
Conversion price index		$\$829,000 \div \$735,000 = 1.13$	$\$840,000 \div \$640,000 = 1.31$

**(b)** **Adis Abeba Wholesalers Inc.**  
**Computation of Inventory Amounts**  
**under Dollar-Value LIFO Method for Inventory Pool No. 1**  
**at December 31, 2003 and 2004**

	<u>Current Inventory at base cost</u>	<u>Conversion price index</u>	<u>Inventory at LIFO cost</u>
<b>December 31, 2003</b>			
Base inventory	\$525,000	1.00	\$525,000
2003 layer (\$735,000 – \$525,000)	<u>210,000</u>	1.13 (a)	<u>237,300</u>
Total	<u>\$735,000</u> (a)		<u>\$762,300</u>
<b>December 31, 2004</b>			
Base inventory	\$525,000	1.00	\$525,000
2003 layer (remaining)	<u>115,000</u> (b)	1.13 (a)	<u>129,950</u>
Total	<u>\$640,000</u> (a)		<u>\$654,950</u>

(a) Per schedule for instruction (a).

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

<b>PROBLEM 8-10</b>
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	<u>Base-Year Cost</u>	<u>Index %</u>	<u>Dollar-Value LIFO</u>
<b><u>December 31, 2002</u></b>			
January 1, 2002, base	\$45,000	100	\$45,000
December 31, 2002, layer	<u>11,000</u>	115*	<u>12,650</u>
	<u>\$56,000</u>		<u>\$57,650</u>
 <b><u>December 31, 2003</u></b>			
January 1, 2003, base	\$45,000	100	\$45,000
December 31, 2003, layer	11,000	115	12,650
December 31, 2004, layer	<u>12,400</u>	128**	<u>15,872</u>
	<u>\$68,400</u>		<u>\$73,522</u>
 <b><u>December 31, 2004</u></b>			
January 1, 2003, base	\$45,000	100	\$45,000
December 31, 2003, layer	11,000	115	12,650
December 31, 2004, layer	12,400	128	15,872
December 31, 2004, layer	<u>1,600</u>	130***	<u>2,080</u>
	<u>\$70,000</u>		<u>\$75,602</u>

\*\$64,500 ÷ \$56,000

\*\*\$87,300 ÷ \$68,400

\*\*\*\$90,800 ÷ \$70,000

<b>PROBLEM 8-11</b>
---------------------

(a)

**Schedule A**

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
	<u>Current \$</u>	<u>Price Index</u>	<u>Base-Year \$</u>	<u>Change from Prior Year</u>
2000	\$ 80,000	1.00	\$ 80,000	—
2001	115,500	1.05	110,000	\$+30,000
2002	108,000	1.20	90,000	(20,000)
2003	131,300	1.30	101,000	+11,000
2004	154,000	1.40	110,000	+9,000
2005	174,000	1.45	120,000	+10,000

**Schedule B**

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

2000	\$80,000		2004	\$80,000 @ \$1.00 =	\$ 80,000
2001	\$80,000 @ \$1.00 =	\$ 80,000		10,000 @ 1.05 =	10,500
	30,000 @ 1.05 =	<u>31,500</u>		11,000 @ 1.30 =	14,300
		<u>\$111,500</u>		9,000 @ 1.40 =	<u>12,600</u>
2002	\$80,000 @ 1.00 =	\$ 80,000			<u>\$117,400</u>
	10,000 @ 1.05 =	<u>10,500</u>	2005	\$80,000 @ 1.00 =	\$ 80,000
		<u>\$ 90,500</u>		10,000 @ 1.05 =	10,500
2003	\$80,000 @ 1.00 =	\$ 80,000		11,000 @ 1.30 =	14,300
	10,000 @ 1.05 =	10,500		9,000 @ 1.40 =	12,600
	11,000 @ 1.30 =	<u>14,300</u>		10,000 @ 1.45 =	<u>14,500</u>
		<u>\$104,800</u>			<u>\$131,900</u>



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

**(b)**

**To: Warren Dunn**

**From: Accounting Student**

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

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

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

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

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

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

- 1. Refer to Schedule A. To express each year's ending inventory (Column A) in terms of base-year costs, simply divide the ending inventory by the price index (Column B). For 2000, this adjustment would be  $\$80,000/100\%$  or  $\$80,000$ ; for 2001, it would be  $\$115,500/105\%$ , 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 2001, the change is  $+\$30,000$  (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 2001, the ending inventory for dollar-value LIFO would equal  $\$80,000$  of base-year inventory plus the increment ( $\$30,000$ ) times the price index (1.05) or  $\$111,500$ . 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 2002, the change from the previous year is  $-\$20,000$ , which causes the 2001 layer to be eroded during the period. Thus, the 2002 ending inventory is valued at the original base-year cost  $\$80,000$  plus the remainder valued at the 2001 price index,  $\$10,000$  times 1.05. See 2002 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 2001. Notice that the  $+\$11,000$  change from the 2003 ending inventory indicates that the 2001 layer was not further eroded. Thus, ending inventory for 2003 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 2001 layer) at the 2001 price index (1.05), and the last  $\$11,000$  at the 2003 price index (1.30).**

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

# TIME AND PURPOSE OF CASES

## **Case 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.

## **Case 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.

## **Case 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.

## **Case 8-4** (Time 15-25 minutes)

Purpose—the student discusses the acceptability of alternative methods of reporting cash discounts. Also, the student identifies the effects on financial statements of using LIFO instead of FIFO when prices are rising.

## **Case 8-5** (Time 20-25 minutes)

Purpose—to provide a broad overview to students as to why inventories must be included in the balance sheet 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.

## **Case 8-6** (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.

## **Case 8-7** (Time 15-20 minutes)

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

## **Case 8-8** (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.

## **Case 8-9** (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.

## **Case 8-10** (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.

**Time and Purposes of Cases** (Continued)

**Case 8-11** (Time 20-25 minutes)

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

# SOLUTIONS TO CASES

## CASE 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. Also 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.

## CASE 8-2

- (a) If the terms of the purchase are f.o.b. shipping point (manufacturer’s plant), Ditka 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 Ditka Enterprises, which are physically transferred to another enterprise. However, Ditka Enterprises retains title to the goods until their sale by the other company (Wannstedt Inc.).

The goods consigned are still included by Ditka Enterprises in the inventory section of its balance sheet. Often the inventory is reclassified from regular inventory to consigned inventory (**Note to instructor:** There is no reason why the student will know this last point given that only Chapter 8 has been covered.). The other company reports neither inventory nor a liability in its balance sheet.

## CASE 8-3

- (a) Statement 3 of Chapter 4, **ARB No. 43** states in part:

“As applied to inventories, cost means in principle the sum of the applicable expenditures and charges directly or indirectly incurred in bringing an article to its existing condition and location.”

The discussion includes the following: “Selling expenses constitute no 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.

Under the Tax Reform Act of 1986, warehousing and off-site storage of inventory, including finished goods, are specifically included in the “production and resale activities” that are to be capitalized for tax purposes.

- (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 balance sheet. 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. **Accounting Research Bulletin No. 43**, Chapter 4, Inventory Pricing Statement No. 1, states in part that the term Inventory “excludes long-term assets subject to depreciation accounting, or goods which, when put into use, will be so classified.”
- (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.

## CASE 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.

## **CASE 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.

## **CASE 8-5**

- (a)
  1. Inventories are unexpired costs and represent future benefits to the owner. A balance sheet 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 balance sheet 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 generally accepted accounting principles. 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 market value in the balance sheet and LIFO tends to match approximately the current replacement cost of an item with the revenue produced.)

## **CASE 8-6**

- (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.

## CASE 8-6 (Continued)

- (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.

## CASE 8-7

- (a) The average-cost method assumes that inventories are sold or issued evenly from the stock on hand; 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); and the LIFO method matches the cost of the last goods purchased against revenue.
- (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 LIFO method (instead of FIFO) will result in a lower net income figure. The reason is that the LIFO method matches most recent purchases against revenue. Since the prices of goods are rising, the LIFO method will result in higher cost of goods sold, thus lower net income. On the balance sheet, the ending inventory tends to be understated (i.e., lower than the most recent replacement cost) because the oldest goods have lower costs during a period of rising prices. In addition, retained earnings under the LIFO method will be lower than that of the FIFO method when inflation exists.

## CASE 8-8

- (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.



## CASE 8-8 (Continued)

- (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.
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 balance sheet 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.

## CASE 8-9

- (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.

## CASE 8-10

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

	<u>2004</u>	<u>2005</u>	<u>2006</u>
<b>Sales</b>	<b><u>\$11,000</u></b>	<b><u>\$10,000</u></b>	<b><u>\$15,600</u></b>
<b>Cost of Goods Sold</b>			
Beginning inventory	7,000	6,300	8,000
Purchases	<u>7,000</u>	<u>8,800</u>	<u>10,800</u>
Cost of goods available for sale	14,000	15,100	18,800
(1) Ending inventory*	<u>6,300</u>	<u>8,000</u>	<u>8,100</u>
Cost of goods sold	<u>7,700</u>	<u>7,100</u>	<u>10,700</u>
Gross profit	3,300	2,900	4,900
Operating expense (15% of sales)	(1,650)	(1,500)	(2,340)
Depreciation expense	<u>(300)</u>	<u>(300)</u>	<u>(300)</u>
Income before taxes	1,350	1,100	2,260
Income tax expense (40%)	<u>540</u>	<u>440</u>	<u>904</u>
(2) Net income	<b><u>\$ 810</u></b>	<b><u>\$ 660</u></b>	<b><u>\$ 1,356</u></b>

## CASE 8-10 (Continued)

(3) Earnings per share	<u>\$ 0.81</u>	<u>\$ 0.66</u>	<u>\$ 1.36</u>
(4) Cash balance			
Beginning balance	\$ 400	\$ 1,860	\$ 770
Sales proceeds	11,000	10,000	15,600
Purchases	(7,000)	(8,800)	(10,800)
Operating expenses	(1,650)	(1,500)	(2,340)
Property, plant, and equipment	(350)	(350)	(350)
Income taxes	<u>(540)</u>	<u>(440)</u>	<u>(904)</u>
Ending balance	<u>\$ 1,860</u>	<u>\$ 770</u>	<u>\$ 1,976</u>

\*2004 = \$7 X (1,000 + 1,000 – 1,100) = \$6,300.

2005 = \$8 X ( 900 + 1,100 – 1,000) = \$8,000.

2006 = \$9 X (1,000 + 1,200 – 1,300) = \$8,100.

### LIFO (Amounts in thousands, except earnings per share)

	<u>2004</u>	<u>2005</u>	<u>2006</u>
Sales	<u>\$11,000</u>	<u>\$10,000</u>	<u>\$15,600</u>
Cost of Goods Sold			
Beginning inventory	7,000	6,300	7,100
Purchases	<u>7,000</u>	<u>8,800</u>	<u>10,800</u>
Cost of goods available for sale	14,000	15,100	17,900
(1) Ending inventory**	<u>6,300</u>	<u>7,100</u>	<u>6,300</u>
Cost of goods sold	<u>7,700</u>	<u>8,000</u>	<u>11,600</u>
Gross profit	3,300	2,000	4,000
Operating expense	(1,650)	(1,500)	(2,340)
Depreciation expense	<u>(300)</u>	<u>(300)</u>	<u>(300)</u>
Income before taxes	1,350	200	1,360
Income tax expense	<u>540</u>	<u>80</u>	<u>544</u>
(2) Net income	<u>\$ 810</u>	<u>\$ 120</u>	<u>\$ 816</u>

## CASE 8-10 (Continued)

(3) Earnings per share	<u>\$ 0.81</u>	<u>\$ 0.12</u>	<u>\$ 0.82</u>
(4) Cash balance			
Beginning balance	\$ 400	\$ 1,860	\$ 1,130
Sales proceeds	11,000	10,000	15,600
Purchases	(7,000)	(8,800)	(10,800)
Operating expenses	(1,650)	(1,500)	(2,340)
Property, plant, and equipment	(350)	(350)	(350)
Income taxes	<u>(540)</u>	<u>(80)</u>	<u>(544)</u>
Ending balance	<u>\$ 1,860</u>	<u>\$ 1,130</u>	<u>\$ 2,696</u>

**\*\*2004 = \$7 X (1,000 + 1,000 – 1,100) = \$6,300.**

**2005 = (\$7 X 900) + (\$8 X 100) = \$7,100.**

**2006 = \$7 X 900 = \$6,300.**

- (b) According to the computation in (a), Günter Grass Company can achieve the goal of income tax savings by switching to the LIFO method. As shown in the schedules, under the LIFO method, Grass will have lower net income and thus lower income taxes for 2005 and 2006 (tax savings of \$360,000 in each year). As a result, Grass will have a better cash position at the end of 2005 and especially 2006 (year-end cash balance will be higher by \$360,000 for 2005 and \$720,000 for 2006).

However, since Grass Company is in a period of rising purchase prices, the LIFO method will result in significantly lower net income and earnings per share for 2005 and 2006. 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.

## **CASE 8-11**

- (a) Major stakeholders are investors, creditors, Gamble Company's management (including the president and plant accountant), and other employees of Gamble Company. The inventory purchase in this instance reduces net income substantially and lowers Gamble Company's tax liability. Current stockholders 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 GAAP. 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 Gamble 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.**

## FINANCIAL STATEMENT ANALYSIS CASE 1

<b>(a)</b>	<b>Sales</b>	<b>\$618,876,000</b>
	<b>Cost of goods sold*</b>	<u><b>474,206,000</b></u>
	<b>Gross profit</b>	<b>144,670,000</b>
	<b>Selling and administrative expense</b>	<u><b>102,112,000</b></u>
	<b>Income from operations</b>	<b>42,558,000</b>
	<b>Other expense</b>	<u><b>(24,712,000)</b></u>
	<b>Income before income tax</b>	<u><b>\$ 17,846,000</b></u>
	<b>*Cost of goods sold (per annual report)</b>	<b>\$475,476,000</b>
	<b>LIFO Effect (\$5,263,000 – \$3,993,000)</b>	<u><b>(1,270,000)</b></u>
	<b>Cost of goods sold (per LIFO)</b>	<u><b>\$474,206,000</b></u>

**(b) \$17,846,000 income before taxes X 46.6% tax = \$8,316,236 tax; \$17,846,000 – \$8,316,236 tax = \$9,529,764 net income as compared to \$8,848,000 net income under LIFO. This is \$681,764 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 T J International has determined that LIFO 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.

## RESEARCH CASES

### CASE 1

Answer depends on firm selected.

### CASE 2

- (a) Per the Fortune web site on 9/19/02, the rankings are: (1) by revenue (Wal-Mart, Exxon-Mobil, General Motors), (2) by profit (Exxon-Mobil, Citigroup, General Electric), (3) by assets (Citigroup, Fannie-Mae, JP Morgan Chase), (4) by market value (General Electric, Microsoft, Exxon-Mobil), and (5) by employees (Wal-Mart, McDonalds, United Parcel Service).
- (b) Depends on location.



# PROFESSIONAL SIMULATION

	A	B	C	D	E	F	G	H	I	J
1										
2										
3										
4										
5		<b>Unadjusted</b>	<b>Adjustment (a)</b>	<b>Adjustment (b)</b>	<b>Adjustment (c)</b>	<b>Adjusted</b>				
6	<b>Beginning Inventory</b>	\$125.50	-	-	-	\$125.50				
7	<b>Ending Inventory</b>	116.70	\$2.00	\$5.00	\$46.00	169.70				
8	<b>Average Inventory</b>	121.10	-	-	-	147.60				
9	<b>Cost of Goods Sold</b>	1,776.40	(2.00)	(5.00)	(46.00)	1,723.40				
10	<b>Inventory Turnover</b>	14.67	-	-	-	11.68				
11										
12	<b>Explanation</b>		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 LIFO.					
13										

## Explanation

**To: Norwel Management**

**From: Student**

**Re: Advantages of LIFO**

The major advantages of the LIFO inventory method include better matching of costs with revenues, deferral of income taxes, improved cash flow, and minimization of the impact of future price declines on future earnings. Better matching arises in the use of LIFO because the most recent costs are matched with current revenues. In times of rising prices, this matching will result in lower taxable income, which in turn will reduce current taxes. The deferral of taxes under LIFO contributes to a higher cash flow. 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 LIFO, future taxes may be higher when lower cost items of inventory are sold in future periods and matched with higher sales prices.

