# CHAPTER 6

## Reporting and Analyzing Inventory

### Learning Objectives

1. Describe how to classify inventory and inventory quantities.
2. Explain the basis of accounting for inventories and apply the inventory cost flow methods under a periodic inventory system.
3. Explain the financial statement and tax effects of each of the inventory cost flow assumptions.
4. Explain the lower-of-cost-or-market basis of accounting for inventories.
5. Compute and interpret the inventory turnover ratio.
6. Describe the LIFO reserve and explain its importance for comparing results of different companies.

*7. Apply the inventory cost flow methods to perpetual inventory records.

*8. Indicate the effects of inventory errors on the financial statements.

### Summary of Questions by Learning Objectives and Bloom's Taxonomy

| Item | LO | BT | Item | LO | BT | Item | LO | BT | Item | LO | BT | Item | LO | BT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Questions** | | | | | | | | | | | | | | |
| 1. | 1 | C | 7. | 2 | C | 12. | 3 | C | 17. | 4 | K | 22. | 5 | AN |
| 2. | 1 | K | 8. | 2 | C | 13. | 3 | C | 18. | 4 | AP | 23. | 6 | C |
| 3. | 1 | K | 9. | 2 | K | 14. | 3 | C | 19. | 4 | K | *24. | 7 | C |
| 4. | 1 | C | 10. | 2 | C | 15. | 3 | C | 20. | 2 | K | *25. | 7 | C |
| 5. | 1 | C | 11. | 2 | K | 16. | 4 | AP | 21. | 3 | C | *26. | 8 | AN |
| 6. | 2 | AP | | | | | | | | | | | | |
| **Brief Exercises** | | | | | | | | | | | | | | |
| 1. | 1 | C | 4. | 3 | C | 6. | 3 | C | 8. | 5 | AP | *10. | 7 | AP |
| 2. | 2 | AP | 5. | 3 | AP | 7. | 4 | AP | 9. | 6 | C | *11. | 8 | AN |
| 3. | 2 | AP | | | | | | | | | | | | |
| **DO IT! Review Exercises** | | | | | | | | | | | | | | |
| 1. | 1 | AN | 2. | 2 | AP | 3. | 4 | AP | 4. | 5 | AN | | | |
| **Exercises** | | | | | | | | | | | | | | |
| 1. | 1 | AN | 4. | 2 | AP | 7. | 2, 3 | AP | 10. | 5 | AP | *13. | 7 | AP |
| 2. | 1 | AN | 5. | 2 | AP | 8. | 3 | AP | 11. | 5, 6 | AP | *14. | 8 | AN |
| 3. | 1 | K | 6. | 2, 3 | AN | 9. | 4 | AP | *12. | 7 | AP | *15. | 8 | AN |
| **Problems: Set A** | | | | | | | | | | | | | | |
| 1. | 1 | AN | 3. | 2, 3 | AP | 5. | 2, 3 | AP | 7. | 5, 6 | AP | *9. | 3, 7 | AP |
| 2. | 2, 3 | AP | 4. | 2, 3 | AN | 6. | 2, 3 | AP | *8. | 3, 7 | AP | | | |
| **Problems: Set B** | | | | | | | | | | | | | | |
| 1. | 1 | AN | 3. | 2, 3 | AP | 5. | 2, 3 | AP | 7. | 5, 6 | AP | *9. | 3, 7 | AP |
| 2. | 2, 3 | AP | 4. | 2, 3 | AN | 6. | 2, 3 | AP | *8. | 3, 7 | AP | | | |

*Continuing Cookie Solutions for this chapter are available online.

# ASSIGNMENT CHARACTERISTICS TABLE

| Problem Number | Description | Difficulty Level | Time Allotted (min.) |
|---|---|---|---|
| 1A | Determine items and amounts to be recorded in inventory. | Moderate | 15–20 |
| 2A | Determine cost of goods sold and ending inventory using FIFO, LIFO, and average-cost with analysis. | Simple | 30–40 |
| 3A | Determine cost of goods sold and ending inventory using FIFO, LIFO, and average-cost in a periodic inventory system and assess financial statement effects. | Simple | 30–40 |
| 4A | Compute ending inventory, prepare income statements, and answer questions using FIFO and LIFO. | Moderate | 30–40 |
| 5A | Calculate ending inventory, cost of goods sold, gross profit, and gross profit rate under periodic method; compare results. | Moderate | 30–40 |
| 6A | Compare specific identification, FIFO, and LIFO under periodic method; use cost flow assumption to influence earnings. | Moderate | 20–30 |
| 7A | Compute inventory turnover and days in inventory; compute current ratio based on LIFO and after adjusting for LIFO reserve. | Moderate | 20–30 |
| *8A | Calculate cost of goods sold, ending inventory, and gross profit for LIFO, FIFO, and moving-average under the perpetual system; compare results. | Moderate | 30–40 |
| *9A | Determine ending inventory under a perpetual inventory system. | Moderate | 30–40 |
| 1B | Determine items and amounts to be recorded in inventory. | Moderate | 15–20 |
| 2B | Determine cost of goods sold and ending inventory using FIFO, LIFO, and average-cost with analysis. | Simple | 30–40 |
| 3B | Determine cost of goods sold and ending inventory using FIFO, LIFO, and average-cost in a periodic inventory system and assess financial statement effects. | Simple | 30–40 |
| 4B | Compute ending inventory, prepare income statements, and answer questions using FIFO and LIFO. | Moderate | 30–40 |
| 5B | Calculate ending inventory, cost of goods sold, gross profit, and gross profit rate under periodic method; compare results. | Moderate | 30–40 |

  

## ASSIGNMENT CHARACTERISTICS TABLE (Continued)

| Problem Number | Description | Difficulty Level | Time Allotted (min.) |
|---|---|---|---|
| 6B | Compare specific identification, FIFO, and LIFO under periodic method; use of cost flow assumption to influence earnings. | Moderate | 20–30 |
| 7B | Compute inventory turnover and days in inventory; compute current ratio based on LIFO and after adjusting for LIFO reserve. | Moderate | 20–30 |
| *8B | Calculate cost of goods sold, ending inventory, and gross profit under LIFO, FIFO, and moving-average under the perpetual system; compare results. | Moderate | 30–40 |
| *9B | Determine ending inventory under a perpetual inventory system. | Moderate | 30–40 |

# ANSWERS TO QUESTIONS

**1.** Agree. Effective inventory management is frequently the key to successful business operations. Management attempts to maintain sufficient quantities and types of goods to meet expected customer demand. It also seeks to avoid the cost of carrying inventories that are clearly in excess of anticipated sales.

**2.** Inventory items have two common characteristics: (1) they are owned by the company and (2) they are intended to be sold to customers in the ordinary course of business.

**3.** Just-in-time inventory management is the practice of manufacturing or purchasing inventory "just-in-time" to fill a sales order. Since inventory quantities are kept at very low amounts, just-in-time management reduces the costs associated with carrying inventory as well as the risk of obsolescence.

**4.** Taking a physical inventory involves actually counting, weighing, or measuring each kind of inventory on hand. Retailers, such as hardware stores, generally have thousands of different items to count. This is normally done when the store is closed. Jill will probably count items and mark the quantity, description, and inventory number on prenumbered inventory tags.

**5.** (a) (1) The goods will be included in Millar Company's inventory if the terms of sale are FOB destination.
(2) The goods will be included in Branyan Corporation's inventory if the terms of sale are FOB shipping point.

(b) Millar Company should include goods shipped to a consignee in its inventory. Goods held by Millar Company on consignment should not be included in inventory.

**6.** Inventoriable costs are $3,015 (invoice cost $3,000 + freight charges $75 – purchase discounts $60).

**7.** The primary basis of accounting for inventories is cost in accordance with the historical cost principle. The major objective of accounting for inventories is the proper determination of net income in accordance with the expense recognition principle.

**8.** Actual physical flow may be impractical because many items are indistinguishable from one another. Actual physical flow may be inappropriate because management may be able to manipulate net income through specific identification of items sold.

**9.** The major advantage of the specific identification method is that it tracks the actual physical flow of the goods available for sale. The major disadvantage is that management could manipulate net income.

**10.** No. Selection of an inventory costing method is a management decision. However, once a method has been chosen, it should be consistently applied.

**11.** (a) FIFO, (b) Average-cost, (c) LIFO.

  

**12.** Long Company is using the FIFO method of inventory costing, and Windsor Company is using the LIFO method. Under FIFO, the latest goods purchased remain in inventory. Thus, the inventory on the balance sheet should be close to current costs. The reverse is true of the LIFO method. Long Company will have the higher gross profit because cost of goods sold will include a higher proportion of goods purchased at earlier (lower) costs.

**13.** Espinosa Corporation may experience severe cash shortages if this policy continues. All of its net income is being paid out as dividends, yet some of the earnings must be reinvested in inventory to maintain inventory levels. Some earnings must be reinvested because net income is computed with cost of goods sold based on older, lower costs while the inventory must be replaced at current, higher costs. Because of this factor, net income under FIFO is sometimes referred to as including "phantom profits." In addition, Espinosa is also depleting cash more quickly under FIFO because FIFO results in higher income tax payments.

**14.** George is partially correct. In a period of inflation, FIFO produces higher net income because the lower unit costs of the first units purchased is matched against revenues. A switch from LIFO to FIFO will thus produce higher net income and a larger bonus for George, which he perceives as being "better off". It is more difficult to determine if the company would be "better off" if it used FIFO instead of LIFO. Using FIFO would mean higher reported income and higher inventory values which investors usually interpret as "better" results. On the other hand, the higher net income reported with FIFO would mean higher bonus and income tax expenses. Since both of these items require cash, switching to FIFO may leave the company with an inadequate amount of cash to meet normal operating needs.

**15.** When prices are increasing, LIFO results in higher cost of goods sold, and lower income relative to FIFO. Because LIFO income is lower the company pays lower taxes, which results in higher cash flows. The quality of earnings ratio is net cash provided by operating activities divided by income. The use of LIFO will increase the numerator (net cash provided by operating activities) and decrease the denominator (net income), both of which increase the value of the ratio.

**16.** Tootsie Roll uses LIFO for U.S. inventories and FIFO for foreign inventories. LIFO is not allowed in most countries outside the U.S., therefore Tootsie Roll uses a different method for foreign inventories.

**17.** Alison should know the following:

(a) A departure from the cost basis of accounting for inventories is justified when the value of the goods is no longer as great as its cost. The writedown to market should be recognized in the period in which the price decline occurs.

(b) Market means current replacement cost, not selling price. For a merchandising company, market is the cost at the present time from the usual suppliers in the usual quantities.

**18.** Rondeli Music Center should report the TVs at $350 each for a total of $1,750. $350 is the current replacement cost under the lower-of-cost-or-market (LCM) basis of accounting for inventories. A decline in replacement cost usually leads to a decline in the selling price of the item. Valuation at LCM is conservative.

**19.** Lower-of-cost-or-market can be applied after any of the cost flow assumptions has been used, including LIFO, FIFO, average-cost, or specific identification.

**20.** Freight-out expense is not a cost associated with purchasing goods, so it should not affect cost of goods sold. It is an expense incurred to sell goods already purchased, so it should be reported as a selling expense.

**21.** Dipoto Company should disclose (1) the major inventory classifications, (2) the basis of accounting (cost or lower-of-cost-or-market), and (3) the costing method (FIFO, LIFO, or average).

**22.** An inventory turnover that is too high may indicate that the company is losing sales opportunities because of inventory shortages. Inventory outages may also cause customer ill will and result in lost future sales.

**23.** The LIFO reserve is a required disclosure for companies that employ LIFO. It is the difference between ending inventory using LIFO and ending inventory if FIFO were used instead. Ignoring a large LIFO reserve when analyzing a company can distort any comparisons that an analyst might try to make with a company's competitors that used FIFO.

***24.** Disagree. The results under the FIFO method are the same but the results under the LIFO method may be different. The reason is that the pool of inventoriable costs (costs of goods available for sale) is not the same. Under a periodic system, the pool of costs is the goods available for sale for the entire period, whereas under a perpetual system, the pool is the goods available for sale up to the date of sale.

***25.** In a perpetual inventory system, the average is a moving average of goods available for sale after each purchase. In a periodic inventory system, the average is a weighted average based on total goods available for sale for the period.

***26.** (a) Marshall Company's 2013 net income will be understated $5,000; (b) 2014 net income will be overstated $5,000; and (c) the combined net income for the two years will be correct.

  

# SOLUTIONS TO BRIEF EXERCISES

## BRIEF EXERCISE 6-1

**(a) Ownership of the goods belongs to the consignor (Tiffee). Thus, these goods should be included in Tiffee's inventory.**

**(b) The goods in transit should not be included in the inventory count because ownership by Tiffee does not occur until the goods reach the buyer.**

**(c) The goods being held belong to the customer. They should not be included in Tiffee's inventory.**

**(d) Ownership of these goods rests with the other company (the consignor). Thus, these goods should not be included in the physical inventory.**

## BRIEF EXERCISE 6-2

**(a) The ending inventory under FIFO consists of 200 units at $9 for a total allocation of $1,800.**

**(b) The ending inventory under LIFO consists of 200 units at $6 for a total allocation of $1,200.**

## BRIEF EXERCISE 6-3

**Average unit cost is $7.917 computed as follows:**

| | | | | |
|---|---|---|---|---|
| 300 | X | $6 | = | $1,800 |
| 400 | X | $8 | = | 3,200 |
| 500 | X | $9 | = | 4,500 |
| 1,200 | | | | $9,500 |

**$9,500 ÷ 1,200 = $7.917**

**The cost of the ending inventory is $1,583 (200 X $7.917).**

## BRIEF EXERCISE 6-4

**(a) FIFO would result in the highest net income.**

**(b) FIFO would result in the highest ending inventory.**

**(c) LIFO would result in the lowest income tax expense (because it would result in the lowest taxable income).**

**(d) Average cost would result in the most stable income over a number of years because it averages out any big changes in the cost of inventory.**

## BRIEF EXERCISE 6-5

**Cost of goods sold under:**

| | LIFO | FIFO |
|---|---|---|
| Purchases | $6 X 100 | $6 X 100 |
| | $7 X 200 | $7 X 200 |
| | $8 X 140 | $8 X 140 |
| Cost of goods available for sale | $ 3,120 | $ 3,120 |
| Less: Ending inventory | $ 1,160* | $ 1,400** |
| Cost of goods sold | $ 1,960 | $ 1,720 |

*(100 X $6) + (80 X $7)

**(140 X $8) + (40 X $7)

**Since the cost of goods sold is $240 ($1,960 – $1,720) less under FIFO that is the amount of the phantom profit. It is referred to as "phantom profit" because FIFO matches current selling prices with old inventory costs. To replace the units sold the company will have to pay the current price of $8 per unit, rather than the $6 per unit which some of the units were priced at under FIFO. Therefore, profit under LIFO is more representative of what the company can expect to earn in future periods.**

  

## BRIEF EXERCISE 6-6

**(a) LIFO results in a higher quality of earnings ratio.**

**(b) FIFO results in higher phantom profits.**

**(c) FIFO results in higher net income.**

**(d) LIFO results in lower taxes.**

**(e) FIFO results in lower net cash provided by operating activities.**

## BRIEF EXERCISE 6-7

| Inventory Categories | Cost | Market | LCM |
|---|---|---|---|
| Cameras | $12,500 | $13,400 | $12,500 |
| Camcorders | 9,000 | 9,500 | 9,000 |
| DVDs | 13,000 | 12,200 | 12,200 |
| Total valuation | | | $33,700 |

**The lower-of-cost-of-market value is $33,700.**

## BRIEF EXERCISE 6-8

**Inventory turnover:** $$\frac{\$349,114}{(\$119,035+\$155,377)\div 2}=\frac{\$349,114}{\$137,206}=2.54 \text{ times}$$

**Days in inventory:** $$\frac{365}{2.54}=144 \text{ days}$$

## BRIEF EXERCISE 6-9

| | |
|---|---|
| 2014 ending inventory using LIFO..... | $46,850,000 |
| 2014 LIFO reserve ..... | 30,346,000 |
| 2014 ending inventory assuming FIFO..... | $77,196,000 |

***BRIEF EXERCISE 6-10**

**(1) FIFO**

| | | | | | Cost of Goods Sold |
|---|---|---|---|---|---|
| June 1 sale: | 25 units | @ | $10 | = | $250 |
| Aug. 27 sale: | 25 units | @ | $10 | = $250 | |
| | 5 units | @ | $15 | = 75 | 325 |
| | | | | | $575 |

**(2) LIFO**

| | | | | Cost of Goods Sold |
|---|---|---|---|---|
| June 1 sale: | 25 units | @ | $10 = | $250 |
| Aug. 27 sale: | 30 units | @ | $15 = | $450 |
| | | | | $700 |

**(3) MOVING-AVERAGE**

| | | | | Cost of Goods Sold |
|---|---|---|---|---|
| June 1 sale: | 25 units | @ | $10 = | $250 |
| Aug. 27 sale: | 30 units | @ | $12.727* = | 382 |
| | | | | $632 |

$$* \frac{[(50-25)\times \$10]+(30\times \$15)}{55 \text{ units}}$$

***BRIEF EXERCISE 6-11**

**The understatement of ending inventory caused cost of goods sold to be overstated $7,000 and net income to be understated $7,000. The correct net income for 2014 is $99,000 ($92,000 + $7,000).**

**Total assets in the balance sheet will be understated by the amount that ending inventory is understated, $7,000.**

  

## SOLUTIONS TO DO IT! REVIEW EXERCISES

### DO IT! 6-1

| | |
|---|---|
| Inventory per physical count | $300,000 |
| Inventory out on consignment | 28,000 |
| Inventory sold, in transit at year-end | 0 |
| Inventory purchases, in transit at year-end | 13,000 |
| Correct December 31 inventory | $341,000 |

### DO IT! 6-2

Cost of goods available for sale = (3,000 X $5) + (8,000 X $7) = $71,000
Ending inventory = 3,000 + 8,000 – 9,400 = 1,600 units

(a) FIFO: $71,000 – (1,600 X $7) = $59,800
(b) LIFO: $71,000 – (1,600 X $5) = $63,000
(c) Average-cost: $71,000/11,000 = $6.455 per unit
9,400 X $6.455 = $60,677

### DO IT! 6-3

The lowest value for each inventory type is: Small $61,000, Medium $260,000, and Large $152,000. The total inventory value under the lower-of-cost-or-market approach is the sum of these figures, $473,000.

### DO IT! 6-4

| | 2013 | | 2014 | |
|---|---|---|---|---|
| Inventory turnover | $\frac{\$1,200,000}{(\$170,000 + \$210,000)/2}$ | = 6.3 | $\frac{\$1,425,000}{(\$210,000 + \$90,000)/2}$ | = 9.5 |
| Days in inventory | 365 ÷ 6.3 = 57.9 days | | 365 ÷ 9.5 = 38.4 days | |

The company experienced a very significant decline in its ending inventory as a result of the just-in-time inventory. This decline improved its inventory turnover ratio and its days in inventory. Also, its sales increased by 19%. It is possible that this increase is the result of a more focused inventory policy. It appears that this change is a win-win situation for Defoor Company.

# SOLUTIONS TO EXERCISES

## EXERCISE 6-1

| | |
|---|---|
| **Ending inventory—physical count** | **$275,000** |
| **1. No effect–title passes to purchaser upon shipment when terms are FOB shipping point** | **0** |
| **2. No effect–title does not transfer to Gallup until goods are received** | **0** |
| **3. Add to inventory: Title passed to Gallup when goods were shipped** | **25,000** |
| **4. Add to inventory: Title remains with Gallup until purchaser receives goods** | **51,000** |
| **5. Subtract from inventory: The goods did not arrive prior to year-end. The goods,therefore, cannot be included in the inventory** | **(42,000)** |
| **Correct inventory** | **$309,000** |

  

## EXERCISE 6-2

| | | |
|---|---|---|
| **Ending inventory-as reported** | | **$740,000** |
| **1.** | **Subtract from inventory: The goods belong to Mather Corporation. Knight is merely holding them as a consignee** | **(228,000)** |
| **2.** | **Add to inventory: The goods belong to Knight as soon as they are shipped (December 28)** | **40,000** |
| **3.** | **Subtract from inventory: Office supplies should be carried in a separate account. They are not considered inventory held for resale.** | **(17,000)** |
| **4.** | **Add to inventory: The goods belong to Knight until they are shipped (Jan. 1).** | **29,000** |
| **5.** | **Add to inventory: Houchins Sales ordered goods with a cost of $6,000. Knight should record the corresponding sales revenue of $10,000. Knight's decision to ship extra "unordered" goods does not constitute a sale. The manager's statement that Houchins could ship the goods back indicates that Knight knows this over-shipment is not a legitimate sale. The manager acted unethically in an attempt to improve Knight's reported income by over-shipping** | **44,000*** |
| **6.** | **Subtract from inventory: GAAP requires that inventory be valued at the lower of cost or market. Obsolete parts should be adjusted from cost to zero if they have no other use.** | **(50,000)** |
| **Correct inventory** | | **$558,000** |

***($50,000 – $6,000)**

## EXERCISE 6-3

**(a) Do not include—Mateo does not own items held on consignment.**

**(b) Include in inventory—Mateo still owns the items as they were only shipped on consignment.**

**(c) Include in inventory—Shipping terms FOB destination means that Mateo owns the items until they reach the customer.**

**(d) Do not include in inventory—Because the shipping terms are FOB shipping point, ownership has transferred to the customer. Mateo should record this amount as a sale on the income statement.**

**(e) Do not include in inventory—Because the shipping terms are FOB destination, Mateo does not own the goods until they arrive at Mateo's premises.**

**(f) Include in inventory—Shipping terms FOB shipping point means that ownership transferred at the time of shipping and therefore, Mateo owns the goods in transit.**

**(g) Do not include in inventory. Record as Supplies on the balance sheet.**

  

**EXERCISE 6-4**

**FIFO**

| | | |
|---|---|---|
| Beginning inventory (12 X $100) | | $ 1,200 |
| Purchases | | |
| Sept. 12 (45 X $103) | $4,635 | |
| Sept. 19 (50 X $104) | 5,200 | |
| Sept. 26 (20 X $105) | 2,100 | 11,935 |
| Cost of goods available for sale | | 13,135 |
| Less: Ending inventory (20 X $105) + (5 X $104) | | 2,620 |
| Cost of goods sold | | $10,515 |

**PROOF**

| Date | Units | Unit Cost | Total Cost |
|---|---|---|---|
| 9/1 | 12 | $100 | $ 1,200 |
| 9/12 | 45 | 103 | 4,635 |
| 9/19 | 45 | 104 | 4,680 |
| | 102 | | $10,515 |

**LIFO**

| | |
|---|---|
| Cost of goods available for sale | $13,135 |
| Less: Ending inventory (12 X $100) + (13 X $103) | 2,539 |
| Cost of goods sold | $10,596 |

**PROOF**

| Date | Units | Unit Cost | Total Cost |
|---|---|---|---|
| 9/26 | 20 | $105 | $ 2,100 |
| 9/19 | 50 | 104 | 5,200 |
| 9/12 | 32 | 103 | 3,296 |
| | 102 | | $10,596 |

**AVERAGE-COST**

$13,135 ÷ 127 = $103.425 weighted-average unit cost

| | |
|---|---|
| Cost of goods available for sale | $13,135 |
| Less: Ending inventory (25 X $103.425) | 2,586 |
| Cost of goods sold | $10,549 |

**PROOF**

| Units | Unit Cost | Total Cost |
|---|---|---|
| 102 | $103.425 | $ 10,549 |

## EXERCISE 6-5

**(a)**

**FIFO**

| | | |
|---|---|---|
| Beginning inventory (30 X $9) | | $270 |
| Purchases | | |
| May 15 (25 X $10) | $250 | |
| May 24 (38 X $11) | 418 | 668 |
| Cost of goods available for sale (93 units) | | 938 |
| Less: Ending inventory [(93 – 74) X $11] | | 209 |
| Cost of goods sold | | $729 |

**PROOF**

| Date | Units | Unit Cost | Total Cost |
|---|---|---|---|
| 5/1 | 30 | $ 9 | $270 |
| 5/15 | 25 | 10 | 250 |
| 5/24 | 19 | 11 | 209 |
| | 74 | | $729 |

**(b)**

**LIFO**

| | |
|---|---|
| Cost of goods available for sale | $938 |
| Less: Ending inventory (19 X $9) | 171 |
| Cost of goods sold | $767 |

**PROOF**

| Date | Units | Unit Cost | Total Cost |
|---|---|---|---|
| 5/24 | 38 | $11 | $418 |
| 5/15 | 25 | 10 | 250 |
| 5/1 | 11 | 9 | 99 |
| | 74 | | $767 |

  

**EXERCISE 6-5 (Continued)**

**(c)**

**AVERAGE-COST**

**$938 ÷ 93 = $10.086 weighted-average unit cost**

| | |
|---|---|
| **Cost of goods available for sale** | **$938.00** |
| **Less: Ending inventory (19 X $10.086)** | **191.63** |
| **Cost of goods sold** | **$746.37** |

**PROOF**

| Units | Unit Cost | Total Cost |
|---|---|---|
| 74 | $10.086 | $746.36* |

***$.01 rounding difference.**

**EXERCISE 6-6**

**(a) FIFO Cost of Goods Sold**

**(#1012) $52 + (#1045) $48 = $100**

**(b) It could choose to sell specific units purchased at specific costs if it wished to impact earnings selectively. If it wished to minimize earnings it would choose to sell the units purchased at higher costs–in which case the Cost of Goods Sold would be $100. If it wished to maximize earnings it would choose to sell the units purchased at lower costs–in which case the cost of goods sold would be $88 ($40 + $48).**

**(c) The FIFO method provides a more appropriate balance sheet valuation and reduces the opportunity to manipulate earnings.**

**(The answer may vary depending on the method the student chooses.)**

## EXERCISE 6-7

**(a)** **(1) FIFO**

| | | |
|---|---|---|
| Beginning inventory (120 X $5) ..... | | $ 600 |
| Purchases | | |
| June 12 (370 X $6) ..... | $2,220 | |
| June 23 (200 X $7) ..... | 1,400 | 3,620 |
| Cost of goods available for sale..... | | 4,220 |
| Less: Ending inventory (200 X $7) + (30 X $6) ..... | | 1,580 |
| Cost of goods sold ..... | | $2,640 |

**(2) LIFO**

| | |
|---|---|
| Cost of goods available for sale..... | $4,220 |
| Less: Ending inventory (120 X $5) + (110 X $6) ..... | 1,260 |
| Cost of goods sold ..... | $2,960 |

**(3) AVERAGE-COST**

| Cost of Goods Available for Sale | ÷ | Total Units Available for Sale | = | Weighted-Average Unit Cost |
|---|---|---|---|---|
| $4,220 | | 690 | | $6.116 |

Ending inventory (230 X $6.116) $1,407
Cost of goods sold (460 X $6.116) $2,813
or $4,220 – $1,407 = $2,813

**(b)** The FIFO method will produce the highest ending inventory because costs have been rising. Under this method, the earliest costs are assigned to cost of goods sold, and the latest costs remain in ending inventory. The LIFO method will produce the highest cost of goods sold for Eggers Company. Under LIFO the most recent costs are charged to cost of goods sold and the earliest costs are included in the ending inventory.

**(c)** The average-cost ending inventory ($1,407) is higher than LIFO ($1,260) but lower than FIFO ($1,580). For cost of goods sold, average cost ($2,813) is higher than FIFO ($2,640) but lower than LIFO ($2,960).

**(d)** The simple average would be (($5 + $6 + $7)/3) = $6. However, the average cost method uses a weighted average unit cost, not a simple average of unit costs.

  

## EXERCISE 6-8

| | | LIFO | FIFO |
|---|---|---|---|
| (a) | Sales | $86,000 | $86,000 |
| | Cost of goods sold | 38,000 | 29,000 |
| | Operating expenses (including depreciation) | 27,000 | 27,000 |
| | Income before income taxes | 21,000 | 30,000 |
| | Income tax expense | 6,300 | 9,000 |
| | Net income | $14,700 | $21,000 |

| | | LIFO | FIFO |
|---|---|---|---|
| (b) | Sales | $86,000 | $86,000 |
| | Less: Cash paid for inventory purchases | 32,000 | 32,000 |
| | Cash paid for operating expenses ($27,000 – $10,000) | 17,000 | 17,000 |
| | Cash paid for income tax | 6,300 | 9,000 |
| | Net cash provided by operating activities | $30,700 | $28,000 |

| | | LIFO | FIFO |
|---|---|---|---|
| (c) | Net cash provided by operating activities | $30,700 | $28,000 |
| | ÷ Net income | $14,700 | $21,000 |
| | Quality of earnings ratio | 2.09 | 1.33 |

**LIFO results in a higher quality of earnings ratio because, assuming rising prices, it results in lower taxes, and thus higher net cash provided by operating activities. This increases the numerator of the ratio relative to FIFO. Also, LIFO results in lower net income, which decreases the denominator of the ratio relative to FIFO. Both effects result in a higher quality of earnings ratio.**

## EXERCISE 6-9

| | Cost/Unit | Market Value/Unit | Lower-of-Cost-or-Market | Units | Inventory at Lower-of-Cost-or-Market |
|---|---|---|---|---|---|
| **Cameras:** | | | | | |
| Minolta | $170 | $158 | $158 | 5 | $ 790 |
| Canon | 145 | 152 | 145 | 7 | 1,015 |
| **Light Meters:** | | | | | |
| Vivitar | 125 | 114 | 114 | 12 | 1,368 |
| Kodak | 120 | 135 | 120 | 10 | 1,200 |
| **Total** | | | | | $4,373 |

## EXERCISE 6-10

| | 2012 | 2013 | 2014 |
|---|---|---|---|
| Inventory turnover | $\frac{\$18,038}{(\$1,926+\$2,290)\div 2}$ | $\frac{\$20,351}{(\$2,290+\$2,522)\div 2}$ | $\frac{\$20,099}{(\$2,522+\$2,618)\div 2}$ |
| | $\frac{\$18,038}{\$2,108}=8.6$ times | $\frac{\$20,351}{\$2,406}=8.5$ times | $\frac{\$20,099}{\$2,570}=7.8$ times |
| Days in inventory | $\frac{365}{8.6}=42.4$ days | $\frac{365}{8.5}=42.9$ days | $\frac{365}{7.8}=46.8$ days |
| Gross profit rate | $\frac{\$39,474-\$18,038}{\$39,474}=54.3\%$ | $\frac{\$43,251-\$20,351}{\$43,251}=52.9\%$ | $\frac{\$43,232-\$20,099}{\$43,232}=53.5\%$ |

**The inventory turnover decreased by approximately 10% from 2012 to 2014 while the days in inventory increased by a similar amount (10%) over the same time period. Both of these changes would be considered unfavorable since it's better to have a higher inventory turnover with a corresponding lower days in inventory. PepsiCo., Inc.'s gross profit rate decreased by 1.5% from 2012 to 2014.**

  

## EXERCISE 6-11

**(a) Inventory turnover** $\dfrac{\$16{,}255}{(\$3{,}042 + \$2{,}397) \div 2} = \dfrac{\$16{,}255}{\$2{,}719.5} = 5.98$

**Days in inventory** $\dfrac{365}{5.98} = 61 \text{ days}$

**(b) Based on data presented:**

Current ratio $30,857 ÷ $12,753 = 2.42 : 1

**After adjusting for LIFO reserve:**

Current ratio ($30,857 + $1,367) ÷ $12,753 = 2.53 : 1

**(c) After adjusting for the LIFO reserve, Deere's current ratio increases from 2.42 : 1 to 2.53 : 1. Deere's liquidity looks slightly better after the adjustment.**

## *EXERCISE 6-12

**(a)**

**FIFO**

| Date | Purchases | Cost of goods sold | | Balance | |
|---|---|---|---|---|---|
| June 1 | | | | (120 @ $5) | $ 600 |
| June 12 | (370 @ $6) $2,220 | | | (120 @ $5)<br>(370 @ $6) | $2,820 |
| June 15 | | (120 @ $5) | $ 600 | | |
| | | (290 @ $6) | $1,740 | (80 @ $6) | $ 480 |
| June 23 | (200 @ $7) $1,400 | | | (80 @ $6)<br>(200 @ $7) | $1,880 |
| June 27 | | (50 @ $6) | $ 300 | | |
| | | | $2,640 | (30 @ $6)<br>(200 @ $7) | $1,580 |

**Ending inventory: $1,580. Cost of goods sold: $2,640.**

***EXERCISE 6-12 (Continued)**

**LIFO**

| Date | Purchases | Cost of Goods Sold | | Balance | |
|---|---|---|---|---|---|
| June 1 | | | | (120 @ $5) | $ 600 |
| June 12 | (370 @ $6) $2,220 | | | (120 @ $5)<br>(370 @ $6) | $2,820 |
| June 15 | | (370 @ $6) | $2,220 | | |
| | | (40 @ $5) | $ 200 | (80 @ $5) | $ 400 |
| June 23 | (200 @ $7) $1,400 | | | (80 @ $5)<br>(200 @ $7) | $1,800 |
| June 27 | | (50 @ $7) | $ 350 | (80 @ $5)<br>(150 @ $7) | $1,450 |
| | | | $2,770 | | |

**Ending inventory: $1,450. Cost of goods sold: $2,770.**

**Moving-Average**

| Date | Purchases | Cost of Goods Sold | | Balance | |
|---|---|---|---|---|---|
| June 1 | | | | (120 @ $5) | $ 600 |
| June 12 | (370 @ $6) $2,220 | | | (490 @ $5.755) | $2,820 |
| June 15 | | (410 @ $5.755) | $2,360* | (80 @ $5.755) | $ 460* |
| June 23 | (200 @ $7) $1,400 | | | (280 @ $6.643*) | $1,860 |
| June 27 | | (50 @ $6.643) | $ 332* | (230 @ $6.643) | $1,528 |
| | | | $2,692 | | |

***rounded**

**Ending inventory: $1,528. Cost of goods sold: $2,692.**

  

***EXERCISE 6-12 (Continued)**

**(b) FIFO gives the same ending inventory and cost of goods sold values under both the periodic and perpetual inventory system. LIFO and moving-average give different ending inventory and cost of goods sold values under the periodic and perpetual inventory systems.**

**(c) The simple average would be [($5 + $6 + $7) ÷ 3] or $6. However, the moving-average method uses a weighted-average unit cost that changes each time a purchase is made rather than a simple average.**

***EXERCISE 6-13**

**FIFO**

| Date | Purchases | Cost of Goods Sold | | Balance | |
|---|---|---|---|---|---|
| 9/1 | | | | (12 @ $100) | $1,200 |
| 9/5 | | (8 @ $100) | $ 800 | (4 @ $100) | $ 400 |
| 9/12 | (45 @ $103) $4,635 | | | (4 @ $100)<br>(45 @ $103) | $5,035 |
| 9/16 | | (4 @ $100)<br>(44 @ $103) | $ 4,932 | (1 @ $103) | $ 103 |
| 9/19 | (50 @ $104) $5,200 | | | (1 @ $103)<br>(50 @ $104) | $5,303 |
| 9/26 | (20 @ $105) $2,100 | | | (1 @ $103)<br>(50 @ $104)<br>(20 @ $105) | $7,403 |
| 9/29 | | (1 @ $103)<br>(45 @ $104) | $ 4,783<br>$10,515 | (5 @ $104)<br>(20 @ $105) | 2,620 |

**Ending inventory = $2,620**

**LIFO**

| Date | Purchases | Cost of Goods Sold | | Balance | |
|---|---|---|---|---|---|
| 9/1 | | | | (12 @ $100) | $1,200 |
| 9/5 | | (8 @ $100) | $ 800 | (4 @ $100) | $ 400 |
| 9/12 | (45 @ $103) $4,635 | | | (4 @ $100)<br>(45 @ $103) | $5,035 |
| 9/16 | | (45 @ $103)<br>(3 @ $100) | $ 4,935 | (1 @ $100) | $ 100 |
| 9/19 | (50 @ $104) $5,200 | | | (1 @ $100)<br>(50 @ $104) | $5,300 |
| 9/26 | (20 @ $105) $2,100 | | | (1 @ $100)<br>(50 @ $104)<br>(20 @ $105) | $7,400 |
| 9/29 | | (20 @ $105)<br>(26 @ $104) | $ 4,804<br>$10,539 | (1 @ $100)<br>(24 @ $104) | $2,596 |

**Ending inventory = $2,596**

  

***EXERCISE 6-13 (Continued)**

**MOVING-AVERAGE**

| Date | Purchases | Cost of Goods Sold | | Balance | |
|---|---|---|---|---|---|
| 9/1 | | | | (12 @ $100) | $1,200 |
| 9/5 | | (8 @ $100) | $ 800 | (4 @ $100) | $ 400 |
| 9/12 | (45 @ $103) $4,635 | | | (49 @ $102.755)[a] | $5,035 |
| 9/16 | | (48 @ $102.755) | $ 4,932* | (1 @ $102.755) | $ 103 |
| 9/19 | (50 @ $104) $5,200 | | | (51 @ $103.980)[b] | $5,303 |
| 9/26 | (20 @ $105) $2,100 | | | (71 @ $104.268)[c] | $7,403 |
| 9/29 | | (46 @ $104.268) | $ 4,796* | (25 @ $104.268) | $2,607 |
| | | | $10,528 | | |

**Ending inventory = $2,607**

***Rounded**
**[a]5,035 ÷ 49 = $102.755**
**[b]5,303 ÷ 51 = $103.980**
**[c]7,403 ÷ 71 = $104.268**

***EXERCISE 6-14**

| | 2013 | 2014 |
|---|---|---|
| Beginning inventory | $ 20,000 | $ 28,000 |
| Cost of goods purchased | 164,000 | 175,000 |
| Cost of goods available for sale | 184,000 | 203,000 |
| Less: Corrected ending inventory | 28,000[a] | 42,000[b] |
| Cost of goods sold | $156,000 | $161,000 |

**[a]$30,000 – $2,000 = $28,000**
**[b]$37,000 + $5,000 = $42,000**

***EXERCISE 6-15**

**(a)**

| | 2013 | 2014 |
|---|---|---|
| Sales | $210,000 | $250,000 |
| Cost of goods sold | | |
| Beginning inventory | 32,000 | 32,000 |
| Cost of goods purchased | 173,000 | 202,000 |
| Cost of goods available for sale | 205,000 | 234,000 |
| Less: Ending inventory ($40,000 – $8,000) | 32,000 | 55,000 |
| Cost of goods sold | 173,000 | 179,000 |
| Gross profit | $ 37,000 | $ 71,000 |

**(b) The cumulative effect on total gross profit for the two years is zero as shown below:**

| | | |
|---|---|---|
| Incorrect gross profits: | $45,000 + $63,000 = | $108,000 |
| Correct gross profits: | $37,000 + $71,000 = | 108,000 |
| Difference | | $ 0 |

**(c) Dear Mr./Ms. President:**

**Because your ending inventory of December 31, 2013 was overstated by $8,000, your net income for 2013 was overstated and net income for 2014 was understated by $8,000.**

**In a periodic system, the cost of goods sold is calculated by deducting the cost of ending inventory from the total cost of goods you have available for sale in the period. Therefore, if this ending inventory figure is overstated, as it was in December 2013, the cost of goods sold is understated and therefore net income will be overstated by that amount. Consequently, this overstated ending inventory figure goes on to become the next period's beginning inventory amount and is a part of the total cost of goods available for sale. Therefore, the mistake repeats itself in the reverse.**

**Thank you for allowing me to bring this to your attention. If you have any questions, please contact me at your convenience.**

**Sincerely,**

  

# SOLUTIONS TO PROBLEMS

## PROBLEM 6-1A

**(a) The goods should not be included in inventory as they were shipped FOB shipping point and shipped February 26. Title to the goods transfers to the customer February 26. Aber should have recorded the transaction in the Sales Revenue and Accounts Receivable accounts at the sales price.**

**(b) The amount should not be included in inventory as they were shipped FOB destination and not received until March 2. The seller still owns the inventory. No entry is recorded.**

**(c) Include $500 in inventory.**

**(d) Include $400 in inventory.**

**(e) $750 should be included in inventory as the goods were shipped FOB shipping point.**

**(f) The sale will be recorded on March 2. The goods should be included in inventory at the end of February at their cost of $280.**

**(g) The damaged goods should not be included in inventory. They should be recorded in a loss account since they are not saleable.**

## PROBLEM 6-2A

**(a)**

### COST OF GOODS AVAILABLE FOR SALE

| Date | Explanation | Units | Unit Cost | Total Cost |
|---|---|---|---|---|
| March 1 | Beginning inventory | 2,500 | $ 7 | $ 17,500 |
| 5 | Purchase | 2,000 | 8 | 16,000 |
| 13 | Purchase | 3,500 | 9 | 31,500 |
| 21 | Purchase | 5,000 | 10 | 50,000 |
| 26 | Purchase | 2,000 | 11 | 22,000 |
| | Total | 15,000 | | $137,000 |

**(b)**

### FIFO

**(1) Ending Inventory**

| Date | Units | Unit Cost | Total Cost |
|---|---|---|---|
| March 26 | 2,000 | $11 | $22,000 |
| 21 | 1,000 | 10 | 10,000 |
| | 3,000* | | $32,000 |

**(2) Cost of Goods Sold**

| | |
|---|---|
| Cost of goods available for sale | $137,000 |
| Less: Ending inventory | 32,000 |
| Cost of goods sold | $105,000 |

*15,000 – 12,000 = 3,000

**Proof of Cost of Goods Sold**

| Date | Units | Unit Cost | Total Cost |
|---|---|---|---|
| March 1 | 2,500 | $ 7 | $ 17,500 |
| 5 | 2,000 | 8 | 16,000 |
| 13 | 3,500 | 9 | 31,500 |
| 21 | 4,000 | 10 | 40,000 |
| | 12,000 | | $105,000 |

  

**LIFO**

**(1) Ending Inventory**

| Date | Units | Unit Cost | Total Cost |
|---|---|---|---|
| March 1 | 2,500 | $7 | $17,500 |
| 5 | 500 | 8 | 4,000 |
| | 3,000 | | $21,500 |

**(2) Cost of Goods Sold**

| | |
|---|---|
| Cost of goods available for sale | $137,000 |
| Less: Ending inventory | 21,500 |
| Cost of goods sold | $115,500 |

**Proof of Cost of Goods Sold**

| Date | Units | Unit Cost | Total Cost |
|---|---|---|---|
| March 26 | 2,000 | $ 11 | $ 22,000 |
| 21 | 5,000 | 10 | 50,000 |
| 13 | 3,500 | 9 | 31,500 |
| 5 | 1,500 | 8 | 12,000 |
| | 12,000 | | $115,500 |

**AVERAGE-COST**

**(1) Ending Inventory**

$137,000 ÷ 15,000 = $9.133

| Units | Unit Cost | Total Cost |
|---|---|---|
| 3,000 | $9.133 | $27,399 |

**(2) Cost of Goods Sold**

| | |
|---|---|
| Cost of goods available for sale | $137,000 |
| Less: Ending inventory | 27,399 |
| Cost of goods sold | $109,601 |

**(c) (1) As shown in (b), FIFO produces the highest inventory amount, $32,000.**

**(2) As shown in (b), LIFO produces the highest cost of goods sold, $115,500.**

## PROBLEM 6-3A

**(a) COST OF GOODS AVAILABLE FOR SALE**

| Date | Explanation | Units | Unit Cost | Total Cost |
|---|---|---|---|---|
| Jan. 1 | Beginning inventory | 100 | $ 8 | $ 800 |
| Feb. 20 | Purchase | 600 | 9 | 5,400 |
| May 5 | Purchase | 500 | 10 | 5,000 |
| Aug. 12 | Purchase | 400 | 11 | 4,400 |
| Dec. 8 | Purchase | 100 | 12 | 1,200 |
| | Total | 1,700 | | $16,800 |

**(b)**

**FIFO**

**(1) Ending Inventory**

| Date | Units | Unit Cost | Total Cost |
|---|---|---|---|
| Dec. 8 | 100 | $12 | $1,200 |
| Aug. 12 | 100 | 11 | 1,100 |
| | 200* | | $2,300 |

**(2) Cost of Goods Sold**

| | |
|---|---|
| Cost of goods available for sale | $16,800 |
| Less: Ending inventory | 2,300 |
| Cost of goods sold | $14,500 |

*1,700 – 1,500 = 200

**Proof of Cost of Goods Sold**

| Date | Units | Unit Cost | Total Cost |
|---|---|---|---|
| Jan. 1 | 100 | $ 8 | $ 800 |
| Feb. 20 | 600 | 9 | 5,400 |
| May 5 | 500 | 10 | 5,000 |
| Aug. 12 | 300 | 11 | 3,300 |
| | 1,500 | | $14,500 |

  

**PROBLEM 6-3A (Continued)**

**LIFO**

**(1) Ending Inventory**

| Date | Units | Unit Cost | Total Cost |
|---|---|---|---|
| Jan. 1 | 100 | $8 | $ 800 |
| Feb. 20 | 100 | 9 | 900 |
| | 200 | | $1,700 |

**(2) Cost of Goods Sold**

| | |
|---|---|
| Cost of goods available for sale | $16,800 |
| Less: Ending inventory | 1,700 |
| Cost of goods sold | $15,100 |

**Proof of Cost of Goods Sold**

| Date | Units | Unit Cost | Total Cost |
|---|---|---|---|
| Dec. 8 | 100 | $12 | $ 1,200 |
| Aug. 12 | 400 | 11 | 4,400 |
| May 5 | 500 | 10 | 5,000 |
| Feb. 20 | 500 | 9 | 4,500 |
| | 1,500 | | $15,100 |

**AVERAGE-COST**

**(1) Ending Inventory**

$16,800 ÷ 1,700 = $9.882

| Units | Unit Cost | Total Cost |
|---|---|---|
| 200 | $9.882 | $1,976 |

**(2) Cost of Goods Sold**

| | |
|---|---|
| Cost of goods available for sale | $16,800 |
| Less: Ending inventory | 1,976 |
| Cost of goods sold | $14,824 |

**Proof of Cost of Goods Sold**

1,500 @ $9.882 = $14,824*

*Rounded up $1

(c) LIFO results in the lowest inventory amount for the balance sheet, $1,700.

FIFO results in the lowest cost of goods sold for the income statement $14,500.

## PROBLEM 6-4A

**(a)**

**TINKER, INC.**
**Condensed Income Statements**
**For the Year Ended December 31, 2014**

| | FIFO | LIFO |
|---|---|---|
| Sales | $750,000 | $750,000 |
| Cost of goods sold | | |
| Beginning inventory | 35,000 | 35,000 |
| Cost of goods purchased | 468,500 | 468,500 |
| Cost of goods available for sale | 503,500 | 503,500 |
| Less: Ending inventory | 132,300[a] | 116,400[b] |
| Cost of goods sold | 371,200 | 387,100 |
| Gross profit | 378,800 | 362,900 |
| Operating expenses | 124,000 | 124,000 |
| Income before income taxes | 254,800 | 238,900 |
| Income tax expense (28%) | 71,344 | 66,892 |
| Net income | $183,456 | $172,008 |

[a](25,000 @ $4.20) + (7,000 @ $3.90) = $132,300.
[b](10,000 @ $3.50) + (22,000 @ $3.70) = $116,400.

**(b) Answers to questions:**

**(1) The FIFO method produces the inventory amount that most closely approximates the amount that would have to be paid to replace the inventory because the units are costed at the most recent purchase's cost.**

**(2) The LIFO method produces the net income amount that is a more likely induction of next period's net income because the costs of the most recent purchases are matched against sales.**

**(3) The FIFO method is most likely to approximate actual physical flow because the oldest goods are usually sold first to minimize spoilage and obsolescence.**

  

**PROBLEM 6-4A (Continued)**

**(4) There will be $4,452 additional cash available under LIFO because income taxes are $66,892 under LIFO and $71,344 under FIFO.**

**(5) The illusionary gross profit is $15,900 ($378,800 – $362,900) under FIFO. Under LIFO, Tinker Inc. has recovered the current replacement cost of the units ($387,100), whereas under FIFO, it has only recovered the earlier costs ($371,200). This means that under FIFO, the company must reinvest $15,900 of the gross profit to replace the units used.**

**Answer in business-letter form:**

**Dear Tinker Inc.**

**After preparing the comparative condensed income statements for 2014 under the FIFO and LIFO methods, we have found the following:**

**The FIFO method produces the most meaningful inventory amount for the balance sheet because the units are costed at the most recent purchases. This method is most likely to approximate actual physical flow because the oldest goods are usually sold first to minimize spoilage and obsolescence.**

**The LIFO method produces the most meaningful net income because the costs of the most recent purchases are matched against sales. There will be $4,452 additional cash available under LIFO because income taxes are $66,892 under LIFO and $71,344 under FIFO.**

**There exists an illusionary gross profit of $15,900 ($378,800 – $362,900). Under LIFO, you have recovered the current replacement cost of the units ($387,100) whereas under FIFO you have only recovered the earlier costs ($371,200). This means that under FIFO, the company must reinvest $15,900 of the gross profit to replace the units used.**

**Sincerely,**

## PROBLEM 6-5A

**Cost of Goods Available for Sale**

| Date | Explanation | Units | Unit Cost | Total Cost |
|---|---|---|---|---|
| October 1 | Beginning inventory | 60 | $24 | $1,440 |
| 9 | Purchase | 120 | 26 | 3,120 |
| 17 | Purchase | 100 | 27 | 2,700 |
| 25 | Purchase | 70 | 29 | 2,030 |
| | | 350 | | $9,290 |

**Ending Inventory in Units**

| | |
|---|---|
| Units available for sale | 350 |
| Sales (100 + 60 + 110) | 270 |
| Units remaining in ending inventory | 80 |

**Sales revenue**

| Date | Units | Unit Price | Total Sales |
|---|---|---|---|
| October 11 | 100 | $35 | $ 3,500 |
| 22 | 60 | 40 | 2,400 |
| 29 | 110 | 40 | 4,400 |
| | 270 | | $10,300 |

**(a)**

**(1) LIFO**

**(i) Ending inventory**

| | | |
|---|---|---|
| October 1 | 60 @ $24 = | $1,440 |
| 9 | 20 @ $26 = | $ 520 |
| | 80 | $1,960 |

**(ii) Cost of goods sold**

| | |
|---|---|
| Cost of goods available for sale | $9,290 |
| Less: Ending inventory | 1,960 |
| Cost of goods sold | $7,330 |

**(iii) Gross profit**

| | |
|---|---|
| Sales revenue | $10,300 |
| Cost of goods sold | 7,330 |
| Gross profit | $ 2,970 |

**(iv) Gross profit rate**

$$\frac{\text{Gross profit}}{\text{Net Sales}} \quad \frac{\$2,970}{\$10,300} = 28.8\%$$

  

**PROBLEM 6-5A (Continued)**

**(2) FIFO**

**(i) Ending inventory**

| | | |
|---|---|---|
| October 25 | 70 @ $29 = | $2,030 |
| October 17 | 10 @ $27 = | $ 270 |
| | 80 | $2,300 |

**(ii) Cost of goods sold**

| | |
|---|---|
| Cost of goods available for sale | $9,290 |
| Less: Ending inventory | 2,300 |
| Cost of goods sold | $6,990 |

**(iii) Gross profit**

| | |
|---|---|
| Sales revenue | $10,300 |
| Cost of goods sold | 6,990 |
| Gross profit | $ 3,310 |

**(iv) Gross profit rate**

$$\frac{\text{Gross profit}}{\text{Net sales}} = \frac{\$3,310}{\$10,300} = 32.1\%$$

**(3) Average-Cost**

**Weighted-average cost per unit:**

$$\frac{\text{Cost of goods available for sale}}{\text{Units available for sale}}$$

$$\frac{\$9,290}{350} = \$26.543$$

**(i) Ending inventory**

80 @ $26.543 = $2,123*

*rounded to nearest dollar

**(ii) Cost of goods sold**

| | |
|---|---|
| Cost of goods available for sale | $9,290 |
| Less: Ending inventory | 2,123 |
| Cost of goods sold | $7,167 |

**(iii) Gross profit**

| | |
|---|---|
| Sales revenue | $10,300 |
| Cost of goods sold | 7,167 |
| Gross profit | $ 3,133 |

**(iv) Gross profit rate**

$$\frac{\text{Gross profit}}{\text{Net sales}} = \frac{\$3,133}{\$10,300} = 30.4\%$$

**(b) LIFO produces the lowest ending inventory value, gross profit, and gross profit rate because its cost of goods sold is higher than FIFO or average-cost.**

## PROBLEM 6-6A

**(a) (1) To maximize gross profit, Wooderson Gems should sell the diamonds with the lowest cost.**

| Sale Date | Cost of goods sold | | Sales Revenue | |
|---|---|---|---|---|
| March 5 | 150 @ $310 | $ 46,500 | 180 @ $600 | $108,000 |
| | 30 @ $350 | 10,500 | | |
| March 25 | 170 @ $350 | 59,500 | 390 @ 650 | 253,500 |
| | 220 @ $375 | 82,500 | 570 | $361,500 |
| | 570 | $199,000 | | |

**Gross profit $361,500 – $199,000 = $162,500**

**(2) To minimize gross profit, Wooderson Gems should sell the diamonds with the highest cost.**

| Sale Date | Cost of goods sold | | Sales Revenue | |
|---|---|---|---|---|
| March 5 | 180 @ $350 | $ 63,000 | 180 @ $600 | $108,000 |
| March 25 | 330 @ $375 | 123,750 | 390 @ 650 | 253,500 |
| | 20 @ $350 | 7,000 | 570 | $361,500 |
| | 40 @ $310 | 12,400 | | |
| | 570 | $206,150 | | |

**Gross profit: $361,500 – $206,150 = $155,350**

**(b) FIFO**

**Cost of goods available for sale**

| | | | |
|---|---|---|---|
| March 1 | Beginning inventory | 150 @ $310 | $ 46,500 |
| 3 | Purchase | 200 @ $350 | 70,000 |
| 10 | Purchase | 330 @ $375 | 123,750 |
| | | 680 | $240,250 |

| | | |
|---|---|---|
| Goods available for sale | 680 | |
| Units sold | 570 | |
| Ending inventory | 110 @ $375 | $41,250 |

  

**PROBLEM 6-6A (Continued)**

| | |
|---|---|
| **Cost of goods available for sale** | **$240,250** |
| **– Ending inventory** | **41,250** |
| **Cost of goods sold** | **$199,000** |

**Gross profit: $361,500 – $199,000 = $162,500.**

**(c) LIFO**

| | |
|---|---|
| **Cost of goods available for sale (from part b)** | **$240,250** |
| **– Ending inventory 110 @ $310** | **34,100** |
| **Cost of goods sold** | **$206,150** |

**Gross profit: $361,500 – $206,150 = $155,350.**

**(d) The choice of inventory method depends on the company's objectives. Since the diamonds are marked and coded, the company could use specific identification. This could, however, result in "earnings management" by the company because, as shown, it could carefully choose which diamonds to sell to result in the maximum or minimum income. Employing a cost flow assumption, such as LIFO or FIFO, would reduce record-keeping costs; FIFO would result in higher income, but LIFO would reduce income taxes and provide better matching of current sales revenue with current costs.**

## PROBLEM 6-7A

**(a) Inventory turnover**

$$\frac{\$166,259}{(\$13,921 + \$14,939) \div 2}$$

$$\frac{\$166,259}{\$14,430} = 11.5 \text{ times}$$

**Days in inventory**

$$\frac{365}{11.5} = 31.7 \text{ days}$$

**(b) Current ratio**

$$\frac{\$60,135}{\$70,308} = .86:1$$

**(c)**

| | |
|---|---|
| Current assets using LIFO | $60,135 |
| LIFO reserve | 1,423 |
| Current assets assuming FIFO | $61,558 |

**Current ratio**

$$\frac{\$61,558}{\$70,308} = .88:1$$

**(d) The current ratio was slightly higher in (c) compared to (b) because current assets (i.e., inventory) are larger in (c).**

  

## *PROBLEM 6-8A

**(a)**

**Sales:**

| Date | | |
|---|---|---|
| January 6 | 180 @ $40 | $ 7,200 |
| January 10 | 50 @ $45 | 2,250 |
| January 30 | 130 @ $48 | 6,240 |
| Total sales | | $15,690 |

**(1) LIFO**

| Date | Purchases | Cost of goods sold | | Balance | |
|---|---|---|---|---|---|
| January 1 | | | | (160 @ $20) | $3,200 |
| January 2 | (100 @ $22) $2,200 | | | (160 @ $20)<br>(100 @ $22) | $5,400 |
| January 6 | | (100 @ $22)<br>(80 @ $20) | $3,800 | (80 @ $20) | $1,600 |
| January 9 | (75 @ $24) $1,800 | | | (80 @ $20)<br>(75 @ $24) | $3,400 |
| January 10 | | (50 @ $24) | $1,200 | (80 @ $20)<br>(25 @ $24) | $2,200 |
| January 23 | (100 @ $25) $2,500 | | | (80 @ $20)<br>(25 @ $24)<br>(100 @ $25) | $4,700 |
| January 30 | | (100 @ $25)<br>(25 @ $24)<br>(5 @ $20) | $3,200 | (75 @ $20) | $1,500 |
| | | | $8,200 | | |

**(i) Cost of goods sold: $8,200. (ii) Ending inventory = $1,500. (iii) Gross profit = $15,690 – $8,200 = $7,490.**

***PROBLEM 6-8A (Continued)**

**(2) FIFO**

| Date | Purchases | Cost of goods sold | | Balance | |
|---|---|---|---|---|---|
| January 1 | | | | (160 @ $20) | $3,200 |
| January 2 | (100 @ $22) $2,200 | | | (160 @ $20)<br>(100 @ $22) | $5,400 |
| January 6 | | (160 @ $20)<br>(20 @ $22) | $3,640 | (80 @ $22) | $1,760 |
| January 9 | (75 @ $24) $1,800 | | | (80 @ $22)<br>(75 @ $24) | $3,560 |
| January 10 | | (50 @ $22) | $1,100 | (30 @ $22)<br>(75 @ $24) | $2,460 |
| January 23 | (100 @ $25) $2,500 | | | (30 @ $22)<br>(75 @ $24)<br>(100 @ $25) | $4,960 |
| January 30 | | (30 @ $22)<br>(75 @ $24)<br>(25 @ $25) | $3,085 | (75 @ $25) | $1,875 |
| | | | $7,825 | | |

**(i) Cost of goods sold: $7,825. (ii) Ending inventory = $1,875. (iii) Gross profit = $15,690 – $7,825 = $7,865.**

**(3) Moving-Average:**

| Date | Purchases | Cost of goods sold | | Balance | |
|---|---|---|---|---|---|
| January 1 | | | | (160 @ $20) | $3,200 |
| January 2 | (100 @ $22) $2,200 | | | (260 @ $20.769)[a] | $5,400 |
| January 6 | | (180 @ $20.769) | $3,738* | (80 @ $20.769) | $1,662 |
| January 9 | (75 @ $24) $1,800 | | | (155 @ $22.335)[b] | $3,462 |
| January 10 | | (50 @ $22.335) | $1,117 | (105 @ $22.335) | $2,345 |
| January 23 | (100 @ $25) $2,500 | | | (205 @ $23.634)[c] | $4,845 |
| January 30 | | (130 @ $23.634) | $3,072 | (75 @ $23.634) | $1,773 |
| | | | $7,927 | | |

[a] $5,400 ÷ 260 = $20.769
[b] $3,462 ÷ 155 = $22.335
[c] $4,845 ÷ 205 = $23.634
*Rounded

**(i) Cost of goods sold: $7,927. (ii) Ending inventory = $1,773. (iii) Gross profit = $15,690 – $7,927 = $7,763.**

  

***PROBLEM 6-8A (Continued)**

**(b)**

| Gross profit: | LIFO | FIFO | Moving-Average |
|---|---|---|---|
| Sales | $15,690 | $15,690 | $15,690 |
| – Cost of goods sold | 8,200 | 7,825 | 7,927 |
| Gross profit | $ 7,490 | $ 7,865 | $ 7,763 |
| Ending Inventory | $ 1,500 | $ 1,875 | $ 1,773 |

**In a period of rising costs, the LIFO cost flow assumption results in the highest cost of goods sold and lowest gross profit. FIFO gives the lowest cost of goods sold and highest gross profit. The moving-average cost flow assumption results in amounts between the other two.**

**On the balance sheet, FIFO gives the highest ending inventory (representing the most current costs); LIFO gives the lowest ending inventory (representing the oldest costs); and moving-average cost results in an ending inventory falling between the other two.**

## *PROBLEM 6-9A

**(a) (1) FIFO**

| Date | Purchases | Cost of Goods Sold | Balance |
|---|---|---|---|
| July 1 | (7 @ $ 62) $434 | | (7 @ $ 62) $434 |
| 6 | | (5 @ $62) $310 | (2 @ $ 62) $124 |
| 11 | (3 @ $ 66) $198 | | (2 @ $ 62) } $322<br>(3 @ $ 66) } |
| 14 | | (2 @ $62) } $190<br>(1 @ $66) } | (2 @ $ 66) $132 |
| 21 | (4 @ $ 71) $284 | | (2 @ $ 66) } $416<br>(4 @ $ 71) } |
| 27 | | (2 @ $66) } $203<br>(1 @ $71) } | (3 @ $ 71) $213 |

**(2) MOVING-AVERAGE**

| Date | Purchases | Cost of Goods Sold | Balance |
|---|---|---|---|
| July 1 | (7 @ $ 62) $434 | | (7 @ $62) $434 |
| 6 | | (5 @ $62) $310 | (2 @ $62) $124 |
| 11 | (3 @ $ 66) $198 | | (5 @ $64.40)* $322 |
| 14 | | (3 @ $64.40) $193 | (2 @ $64.40) $129 |
| 21 | (4 @ $ 71) $284 | | (6 @ $68.83)** $413 |
| 27 | | (3 @ $68.83) $206*** | (3 @ $68.83) $207*** |

*$322 ÷ 5 = $64.40.
**$413 ÷ 6 = $68.83.
***rounded

**(3) LIFO**

| Date | Purchases | Cost of Goods Sold | Balance |
|---|---|---|---|
| July 1 | (7 @ $ 62) $434 | | (7 @ $ 62) $434 |
| 6 | | (5 @ $ 62) $310 | (2 @ $ 62) $124 |
| 11 | (3 @ $ 66) $198 | | (2 @ $ 62) } $322<br>(3 @ $ 66) } |
| 14 | | (3 @ $ 66) $198 | (2 @ $ 62) $124 |
| 21 | (4 @ $ 71) $284 | | (2 @ $ 62) } $408<br>(4 @ $ 71) } |
| 27 | | (3 @ $ 71) $213 | (2 @ $ 62) } $195<br>(1 @ $ 71) } |

**(b) The highest ending inventory is $213 under the FIFO method.**

  

# SOLUTIONS TO PROBLEMS—SET B

## PROBLEM 6-1B

**(a) Include $1,000 in inventory.**

**The goods should be included in inventory as they were shipped FOB destination and were not received by the customer until April 1. Title to the goods transfers to the customer April 1.**

**(b) Include $620 in inventory.**

**The amount should be included in inventory as the goods were shipped FOB shipping point March 28. Sun, the buyer, owns the inventory as soon as it is shipped.**

**(c) Exclude the goods from Sun's inventory. The consigned goods are owned by Frederick Inc. No entry is recorded.**

**(d) Include $380 in inventory.**

**(e) Exclude from inventory as the goods were shipped FOB destination and not received until April 3. The seller still owns the inventory. No entry is recorded.**

**(f) The returned goods should be included in inventory and removed from cost of goods sold at $400. Sales returns and allowances should be increased and accounts receivable reduced by $640.**

## PROBLEM 6-2B

**(a)** **COST OF GOODS AVAILABLE FOR SALE**

| Date | | Explanation | Units | Unit Cost | Total Cost |
|---|---|---|---|---|---|
| June | 1 | Beginning inventory | 1,200 | $3 | $ 3,600 |
| | 3 | Purchase | 4,000 | 3 | 12,000 |
| | 18 | Purchase | 7,500 | 5 | 37,500 |
| | 29 | Purchase | 4,000 | 6 | 24,000 |
| | | Total | 16,700 | | $77,100 |

**(b)** **FIFO**

**(1) Ending Inventory**

| Date | | Units | Unit Cost | Total Cost |
|---|---|---|---|---|
| June | 29 | 4,000 | $6 | $24,000 |
| | 18 | 2,200 | 5 | 11,000 |
| | | 6,200* | | $35,000 |

**(2) Cost of Goods Sold**

| | |
|---|---|
| Cost of goods available for sale | $77,100 |
| Less: Ending inventory | 35,000 |
| Cost of goods sold | $42,100 |

*16,700 – 10,500 = 6,200

**Proof of Cost of Goods Sold**

| Date | | Units | Unit Cost | Total Cost |
|---|---|---|---|---|
| June | 1 | 1,200 | $3 | $ 3,600 |
| | 3 | 4,000 | 3 | 12,000 |
| | 18 | 5,300 | 5 | 26,500 |
| | | 10,500 | | $42,100 |

  

**LIFO**

**(1) Ending Inventory**

| Date | | Units | Unit Cost | Total Cost |
|---|---|---|---|---|
| June | 1 | 1,200 | $3 | $ 3,600 |
| | 3 | 4,000 | 3 | 12,000 |
| | 18 | 1,000 | 5 | 5,000 |
| | | 6,200 | | $20,600 |

**(2) Cost of Goods Sold**

| | |
|---|---|
| Cost of goods available for sale | $77,100 |
| Less: Ending inventory | 20,600 |
| Cost of goods sold | $56,500 |

**Proof of Cost of Goods Sold**

| Date | | Units | Unit Cost | Total Cost |
|---|---|---|---|---|
| June | 29 | 4,000 | $6 | $24,000 |
| | 18 | 6,500 | 5 | 32,500 |
| | | 10,500 | | $56,500 |

**AVERAGE-COST**

**(1) Ending Inventory**

$77,100 ÷ 16,700 = $4.617

| Units | Unit Cost | Total Cost |
|---|---|---|
| 6,200 | $4.617 | $28,625* |

**(2) Cost of Goods Sold**

| | |
|---|---|
| Cost of goods available for sale | $77,100 |
| Less: Ending inventory | 28,625 |
| Cost of goods sold | $48,475 |

*Rounded

(c) (1) As shown in (b), due to rising prices, FIFO produces the highest inventory amount, $35,000.

(2) As shown in (b), due to rising prices, LIFO produces the highest cost of goods sold, $56,500.

## PROBLEM 6-3B

**(a) COST OF GOODS AVAILABLE FOR SALE**

| Date | Explanation | Units | Unit Cost | Total Cost |
|---|---|---|---|---|
| Jan. 1 | Beginning inventory | 200 | $ 6 | $ 1,200 |
| Jan. 24 | Purchase | 800 | 7 | 5,600 |
| Apr. 12 | Purchase | 400 | 8 | 3,200 |
| Aug. 19 | Purchase | 600 | 9 | 5,400 |
| Nov. 30 | Purchase | 350 | 10 | 3,500 |
| | Total | 2,350 | | $18,900 |

**(b) FIFO**

**(1) Ending Inventory**

| Date | Units | Unit Cost | Total Cost |
|---|---|---|---|
| Nov. 30 | 350 | $10 | $3,500 |
| Aug. 19 | 100 | 9 | 900 |
| | 450* | | $4,400 |

**(2) Cost of Goods Sold**

| | |
|---|---|
| Cost of goods available for sale | $18,900 |
| Less: Ending inventory | 4,400 |
| Cost of goods sold | $14,500 |

*2,350 – 1,900 = 450

**Proof of Cost of Goods Sold**

| Date | Units | Unit Cost | Total Cost |
|---|---|---|---|
| Jan. 1 | 200 | $6 | $ 1,200 |
| Jan. 24 | 800 | 7 | 5,600 |
| Apr. 12 | 400 | 8 | 3,200 |
| Aug. 19 | 500 | 9 | 4,500 |
| | 1,900 | | $14,500 |

**LIFO**

**(1) Ending Inventory**

| Date | Units | Unit Cost | Total Cost |
|---|---|---|---|
| Jan. 1 | 200 | $6 | $1,200 |
| Jan. 24 | 250 | 7 | 1,750 |
| | 450 | | $2,950 |

**(2) Cost of Goods Sold**

| | |
|---|---|
| Cost of goods available for sale | $18,900 |
| Less: Ending inventory | 2,950 |
| Cost of goods sold | $15,950 |

**Proof of Cost of Goods Sold**

| Date | Units | Unit Cost | Total Cost |
|---|---|---|---|
| Nov. 30 | 350 | $10 | $ 3,500 |
| Aug. 19 | 600 | 9 | 5,400 |
| Apr. 12 | 400 | 8 | 3,200 |
| Jan. 24 | 550 | 7 | 3,850 |
| | 1,900 | | $15,950 |

**AVERAGE-COST**

**(1) Ending Inventory**

$18,900 ÷ 2,350 = $8.042

| Units | Unit Cost | Total Cost |
|---|---|---|
| 450 | $8.042 | $3,619 |

**(2) Cost of Goods Sold**

| | |
|---|---|
| Cost of goods available for sale | $18,900 |
| Less: Ending inventory | 3,619 |
| Cost of goods sold | $15,281 |

**(c) Due to rising prices, LIFO results in the lowest inventory amount for the balance sheet, $2,950.**

**FIFO results in the lowest cost of goods sold for the income statement $14,500.**

## PROBLEM 6-4B

**(a)**

**WEIGEL INC.**
**Condensed Income Statements**
**For the Year Ended December 31, 2014**

| | FIFO | LIFO |
|---|---|---|
| Sales | $900,000 | $900,000 |
| Cost of goods sold | | |
| Beginning inventory | 16,000 | 16,000 |
| Cost of goods purchased | 470,500 | 470,500 |
| Cost of goods available for sale | 486,500 | 486,500 |
| Less: Ending inventory | 42,550[a] | 37,050[b] |
| Cost of goods sold | 443,950 | 449,450 |
| Gross profit | 456,050 | 450,550 |
| Operating expenses | 185,000 | 185,000 |
| Income before income taxes | 271,050 | 265,550 |
| Income tax expense (30%) | 81,315 | 79,665 |
| Net income | $189,735 | $185,885 |

[a](5,000 @ $4.83) + (4,000 @ $4.60) = $42,550.
[b](4,000 @ $4.00) + (5,000 @ $4.21) = $37,050.

**(b) Answers to questions:**

**(1) The FIFO method produces the most meaningful inventory amount for the balance sheet because the units are costed at the most recent purchase's cost.**

**(2) The LIFO method produces the most meaningful net income because the costs of the most recent purchases are matched against sales.**

**(3) The FIFO method is most likely to approximate actual physical flow because the oldest goods are usually sold first to minimize spoilage and obsolescence.**

**(4) There will be $1,650 additional cash available under LIFO because income taxes are $79,665 under LIFO and $81,315 under FIFO.**

  

**(5) The illusionary gross profit is $5,500 ($456,050 – $450,550) under FIFO. Under LIFO, Weigel Inc. has recovered the current replacement cost of the units ($449,450), whereas under FIFO, it has only recovered the earlier costs ($443,950). This means that under FIFO, the company must reinvest $5,500 of the gross profit to replace the units used.**

**Answer in business-letter form:**

**Dear Weigel Inc.**

**After preparing the comparative condensed income statements for 2014 under the FIFO and LIFO methods, we have found the following:**

**The FIFO method produces the most meaningful inventory amount for the balance sheet because the units are costed at the most recent purchases. This method is most likely to approximate actual physical flow because the oldest goods are usually sold first to minimize spoilage and obsolescence.**

**The LIFO method produces the most meaningful net income because the costs of the most recent purchases are matched against sales. There will be $1,650 additional cash available under LIFO because income taxes are $79,665 under LIFO and $81,315 under FIFO.**

**There exists an illusionary gross profit of $5,500 ($456,050 – $450,550). Under LIFO, you have recovered the current replacement cost of the units ($449,450) whereas under FIFO you have only recovered the earlier costs ($443,950). This means that under FIFO, the company must reinvest $5,500 of the gross profit to replace the units used.**

**Sincerely,**

## PROBLEM 6-5B

**Cost of Goods Available for Sale**

| Date | | Explanation | Units | Unit Cost | Total Cost |
|---|---|---|---|---|---|
| May | 1 | Beginning inventory | 40 | $20 | $ 800 |
| | 6 | Purchase | 110 | 23 | 2,530 |
| | 15 | Purchase | 70 | 25 | 1,750 |
| | 24 | Purchase | 60 | 26 | 1,560 |
| | | | 280 | | $6,640 |

**Ending Inventory in Units**

| | |
|---|---|
| Units available for sale | 280 |
| Sales (90 + 40 + 80) | 210 |
| Units remaining in ending inventory | 70 |

**Sales revenue**

| Date | | Units | Unit Price | Total Sales |
|---|---|---|---|---|
| May | 7 | 90 | $32 | $2,880 |
| | 18 | 40 | 37 | 1,480 |
| | 30 | 80 | 38 | 3,040 |
| | | 210 | | $7,400 |

**(a)**

**(1) LIFO**

**(i) Ending inventory**

| | | |
|---|---|---|
| May 1 | 40 @ $20 = | $ 800 |
| 6 | 30 @ $23 = | 690 |
| | 70 | $1,490 |

**(ii) Cost of goods sold**

| | |
|---|---|
| Cost of goods available for sale | $6,640 |
| Less: Ending inventory | 1,490 |
| Cost of goods sold | $5,150 |

**(iii) Gross profit**

| | |
|---|---|
| Sales revenue | $7,400 |
| Cost of goods sold | 5,150 |
| Gross profit | $2,250 |

**(iv) Gross profit rate**

$$\frac{\text{Gross profit}}{\text{Net sales}} \quad \frac{\$2,250}{\$7,400} = 30.4\%$$

  

**(2) FIFO**

**(i) Ending inventory**

| | | | |
|---|---|---|---|
| May | 24 | 60 @ $26 = | $1,560 |
| | 15 | 10 @ $25 = | 250 |
| | | 70 | $1,810 |

**(ii) Cost of goods sold**

| | |
|---|---|
| Cost of goods available for sale | $6,640 |
| Less: Ending inventory | 1,810 |
| Cost of goods sold | $4,830 |

**(iii) Gross profit**

| | |
|---|---|
| Sales revenue | $7,400 |
| Cost of goods sold | 4,830 |
| Gross profit | $2,570 |

**(iv) Gross profit rate**

$$\frac{\text{Gross profit}}{\text{Net sales}} = \frac{\$2,570}{\$7,400} = 34.7\%$$

**(3) Average-Cost**

Weighted-average cost per unit: $\frac{\text{cost of goods available for sale}}{\text{units available for sale}}$

$$\frac{\$6,640}{280} = \$23.714$$

**(i) Ending inventory**

70 @ $23.714 = $1,660*

*rounded to nearest dollar

**(ii) Cost of goods sold**

| | |
|---|---|
| Cost of goods available for sale | $6,640 |
| Less: Ending inventory | 1,660 |
| Cost of goods sold | $4,980 |

**(iii) Gross profit**

| | |
|---|---|
| Sales revenue | $7,400 |
| Cost of goods sold | 4,980 |
| Gross profit | $2,420 |

**(iv) Gross profit rate**

$$\frac{\text{Gross profit}}{\text{Net sales}} = \frac{\$2,420}{\$7,400} = 32.7\%$$

**(b) LIFO produces the lowest ending inventory value, gross profit, and gross profit rate because its cost of goods sold is higher than FIFO or average cost.**

## PROBLEM 6-6B

**(a) (1) To maximize gross profit, Limex Watches should sell the watches with the lowest cost.**

| Sale Date | Cost of goods sold | | Sales Revenue | |
|---|---|---|---|---|
| July 5 | 180 @ $420 | $ 75,600 | 180 @ $700 | $126,000 |
| July 28 | 40 @ 420 | 16,800 | 480 @ 720 | 345,600 |
| | 200 @ 450 | 90,000 | 660 | $471,600 |
| | 240 @ 480 | 115,200 | | |
| | 660 | $297,600 | | |

**Gross profit $471,600 – $297,600 = $174,000**

**(2) To minimize gross profit, Limex Watches should sell the watches with the highest cost.**

| Sale Date | Cost of goods sold | | Sales Revenue | |
|---|---|---|---|---|
| July 5 | 180 @ $450 | $ 81,000 | 180 @ $700 | $126,000 |
| July 28 | 350 @ $480 | 168,000 | 480 @ 720 | 345,600 |
| | 20 @ $450 | 9,000 | 660 | $471,600 |
| | 110 @ $420 | 46,200 | | |
| | 660 | $304,200 | | |

**Gross profit: $471,600 – $304,200 = $167,400**

**(b) FIFO**

**Cost of goods available for sale**

| | | | | |
|---|---|---|---|---|
| July 1 | Beginning inventory | 220 @ $420 | $ 92,400 |
| 2 | Purchase | 200 @ $450 | 90,000 |
| 14 | Purchase | 350 @ $480 | 168,000 |
| | | 770 | $350,400 |

| | | |
|---|---|---|
| Goods available for sale | 770 | |
| Units sold | 660 | |
| Ending inventory | 110 @ $480 | $52,800 |

  

| | |
|---|---|
| **Cost of goods available for sale** | **$350,400** |
| **– Ending inventory** | **52,800** |
| **Cost of goods sold** | **$297,600** |

**Gross profit: $471,600 – $297,600 = $174,000.**

**(c) LIFO**

| | |
|---|---|
| **Cost of goods available for sale (from part b)** | **$350,400** |
| **– Ending inventory 110 @ $420** | **46,200** |
| **Cost of goods sold** | **$304,200** |

**Gross profit: $471,600 – $304,200 = $167,400.**

**(d) The choice of inventory method depends on the company's objectives. Since the watches are marked and coded, the company could use specific identification. This could, however, result in "earnings management" by the company because, as shown, it could carefully choose which watches to sell to result in the maximum or minimum income. Employing a cost flow assumption, such as LIFO or FIFO, would reduce record-keeping costs; FIFO would result in higher income, but LIFO would reduce income taxes and provide better matching of current sales revenue with current costs.**

## PROBLEM 6-7B

**(a)**

| | 2014 |
|---|---|
| Inventory turnover | $\frac{\$130,460}{(\$10,017 + \$10,121) \div 2}$ |
| | $\frac{\$130,460}{\$10,069} = 13.0$ |
| Days in inventory | $\frac{365}{13} = 28.1$ days |

**(b)** Current ratio $\frac{\$54,243}{\$50,218} = 1.08 : 1$

**(c)**

| | 2014 |
|---|---|
| Current assets using LIFO | $54,243 |
| LIFO reserve | 1,100 |
| Current assets assuming FIFO | $55,343 |

Current ratio $\frac{\$55,343}{\$50,218} = 1.10 : 1$

**(d)** The current ratio was slightly higher in (c) compared to (b) because current assets (i.e., inventory) are larger in (c).

  

## *PROBLEM 6-8B

**(a)**

**Cost of goods available for sale:**

| | | |
|---|---|---|
| Inventory | 140 units @ $14 | $1,960 |
| Purchases | | |
| January 2 | 120 units @ $15 | 1,800 |
| January 9 | 85 units @ $17 | 1,445 |
| January 23 | 100 units @ $20 | 2,000 |
| | 445 units | $7,205 |

**Sales:**

| Date | | |
|---|---|---|
| January 6 | 150 @ $30 | $ 4,500 |
| January 10 | 70 @ $35 | 2,450 |
| January 30 | 110 @ $42 | 4,620 |
| Total sales | | $11,570 |

**(1) LIFO**

| Date | Purchases | Cost of goods sold | Balance |
|---|---|---|---|
| January 1 | | | (140 @ $14) $1,960 |
| January 2 | (120 @ $15) $1,800 | | (140 @ $14), (120 @ $15) $3,760 |
| January 6 | | (120 @ $15), (30 @ $14) $2,220 | (110 @ $14) $1,540 |
| January 9 | (85 @ $17) $1,445 | | (110 @ $14), (85 @ $17) $2,985 |
| January 10 | | (70 @ $17) $1,190 | (110 @ $14), (15 @ $17) $1,795 |
| January 23 | (100 @ $20) $2,000 | | (110 @ $14), (15 @ $17), (100 @ $20) $3,795 |
| January 30 | | (100 @ $20), (10 @ $17) $2,170 | (110 @ $14), (5 @ $17) $1,625 |
| | | $5,580 | |

***PROBLEM 6-8B (Continued)**

**(i) Cost of goods sold: $7,205 – $1,625 = $5,580. (ii) Ending inventory = $1,625. (iii) Gross profit = $11,570 – $5,580 = $5,990.**

**(2) FIFO**

| Date | Purchases | Cost of goods sold | | Balance | |
|---|---|---|---|---|---|
| January 1 | | | | (140 @ $14) | $1,960 |
| January 2 | (120 @ $15) $1,800 | | | (140 @ $14)<br>(120 @ $15) | $3,760 |
| January 6 | | (140 @ $14)<br>(10 @ $15) | $2,110 | (110 @ $15) | $1,650 |
| January 9 | (85 @ $17) $1,445 | | | (110 @ $15)<br>(85 @ $17) | $3,095 |
| January 10 | | (70 @ $15) | $1,050 | (40 @ $15)<br>(85 @ $17) | $2,045 |
| January 23 | (100 @ $20) $2,000 | | | (40 @ $15)<br>(85 @ $17)<br>(100 @ $20) | $4,045 |
| January 30 | | (40 @ $15)<br>(70 @ $17) | $1,790 | (15 @ $17)<br>(100 @ $20) | $2,255 |
| | | | $4,950 | | |

**(i) Cost of goods sold: $7,205 – $2,255 = $4,950. (ii) Ending inventory = $2,255. (iii) Gross profit = $11,570 – $4,950 = $6,620.**

**(3) Moving-Average:**

| Date | Purchases | Cost of goods sold | | Balance | |
|---|---|---|---|---|---|
| January 1 | | | | (140 @ $14) | $1,960 |
| January 2 | (120 @ $15) $1,800 | | | (260 @ $14.462)[a] | $3,760 |
| January 6 | | (150 @ $14.462) | $2,169* | (110 @ $14.462) | $1,591 |
| January 9 | (85 @ $17) $1,445 | | | (195 @ $15.569)[b] | $3,036 |
| January 10 | | (70 @ $15.569) | $1,090* | (125 @ $15.569) | $1,946 |
| January 23 | (100 @ $20) $2,000 | | | (225 @ $17.538)[c] | $3,946 |
| January 30 | | (110 @ $17.538) | $1,929* | (115 @ $17.538) | $2,017* |
| | | | $5,188 | | |

[a] **$3,760 ÷ 260 = $14.462**

[b] **$3,036 ÷ 195 = $15.569**

[c] **$3,946 ÷ 225 = $17.538**

***Rounded**

  

***PROBLEM 6-8B (Continued)**

**(i) Cost of goods sold: $7,205 – $2,017 = $5,188. (ii) Ending inventory = $2,017. (iii) Gross profit = $11,570 – $5,188 = $6,382.**

**(b)**

| **Gross profit:** | **LIFO** | **FIFO** | **Moving-Average** |
|---|---|---|---|
| **Sales** | **$11,570** | **$11,570** | **$11,570** |
| **– Cost of goods sold** | **5,580** | **4,950** | **5,188** |
| **Gross profit** | **$ 5,990** | **$ 6,620** | **$ 6,382** |
| **Ending Inventory** | **$ 1,625** | **$ 2,255** | **$ 2,017** |

**In a period of rising costs, the LIFO cost flow assumption results in the highest cost of goods sold and lowest gross profit. FIFO gives the lowest cost of goods sold and highest gross profit. The moving-average cost flow assumption results in amounts between the other two.**

**On the balance sheet, FIFO gives the highest ending inventory (representing the most current costs); LIFO gives the lowest ending inventory (representing the oldest costs); and moving-average cost results in an ending inventory falling between the other two.**

## *PROBLEM 6-9B

**(a) (1) FIFO**

| Date | Purchases | Cost of Goods Sold | Balance |
|---|---|---|---|
| Feb. 1 | (12 @ $150) $1,800 | | (12 @ $150) $1,800 |
| 6 | | (9 @ $150) $1,350 | (3 @ $150) $ 450 |
| 11 | (8 @ $168) $1,344 | | (3 @ $150)<br>(8 @ $168) } $1,794 |
| 14 | | (3 @ $150)<br>(2 @ $168) } $ 786 | (6 @ $168) $1,008 |
| 21 | (6 @ $182) $1,092 | | (6 @ $168)<br>(6 @ $182) } $2,100 |
| 27 | | (4 @ $168) $ 672 | (2 @ $168)<br>(6 @ $182) } $1,428 |

**(2) MOVING-AVERAGE**

| Date | Purchases | Cost of Goods Sold | Balance |
|---|---|---|---|
| Feb. 1 | (12 @ $150) $1,800 | | (12 @ $150) $1,800 |
| 6 | | (9 @ $150) $1,350 | (3 @ $150) $ 450 |
| 11 | (8 @ $168) $1,344 | | (11 @ $163.091)* $1,794 |
| 14 | | (5 @ $163.091) $ 815*** | (6 @ $163.091) $ 979 |
| 21 | (6 @ $182) $1,092 | | (12 @ $172.583)** $2,071 |
| 27 | | (4 @ $172.583) $ 690*** | (8 @ $172.583) $1,381*** |

*$1,794 ÷ 11 = $163.091.

**$2,071 ÷ 12 = $172.583.

***rounded

**(3) LIFO**

| Date | Purchases | Cost of Goods Sold | Balance |
|---|---|---|---|
| Feb. 1 | (12 @ $150) $1,800 | | (12 @ $150) $1,800 |
| 6 | | (9 @ $150) $1,350 | (3 @ $150) $ 450 |
| 11 | (8 @ $168) $1,344 | | (3 @ $150)<br>(8 @ $168) } $1,794 |
| 14 | | (5 @ $168) $ 840 | (3 @ $150)<br>(3 @ $168) } $ 954 |
| 21 | (6 @ $182) $1,092 | | (3 @ $150)<br>(3 @ $168)<br>(6 @ $182) } $2,046 |
| 27 | | (4 @ $182) $ 728 | (3 @ $150)<br>(3 @ $168)<br>(2 @ $182) } $1,318 |

**(b) The highest ending inventory is $1,428 under the FIFO method.**

  

## COMPREHENSIVE PROBLEM SOLUTION

| | | | | | |
|---|---|---|---|---|---|
| (a) | Dec. | 3 | Inventory (4,000 X $0.72) | 2,880 | |
| | | | Accounts Payable | | 2,880 |
| | | 5 | Accounts Receivable (4,400 X $0.90) | 3,960 | |
| | | | Sales Revenue | | 3,960 |
| | | | Cost of Good Sold | 2,808 | |
| | | | Inventory (3,000 X $0.60) + (1,400 X $0.72) | | 2,808 |
| | | 7 | Sales Returns and Allowances | 180 | |
| | | | Accounts Receivable | | 180 |
| | | | Inventory | 150 | |
| | | | Cost of Good Sold | | 150 |
| | | 17 | Inventory (2,200 X $0.80) | 1,760 | |
| | | | Cash | | 1,760 |
| | | 22 | Accounts Receivable (2,000 X $0.95) | 1,900 | |
| | | | Sales Revenue | | 1,900 |
| | | | Cost of Goods Sold (2,000 X $0.72) | 1,440 | |
| | | | Inventory | | 1,440 |
| | | 31 | Salaries and Wages Expense | 400 | |
| | | | Salaries and Wages Payable | | 400 |
| | | | Depreciation Expense | 200 | |
| | | | Accumulated Depreciation—Equipment | | 200 |
| | | | Income Tax Expense | 215 | |
| | | | Income Taxes Payable | | 215 |

## COMPREHENSIVE PROBLEM SOLUTION (Continued)

**(b)** **General Ledger**

**Cash**

| | | |
|---|---|---|
| Bal. | 4,800 | 1,760 |
| Bal. | 3,040 | |

**Accounts Receivable**

| | | |
|---|---|---|
| Bal. | 3,900 | 180 |
| | 3,960 | |
| | 1,900 | |
| Bal. | 9,580 | |

**Inventory**

| | | |
|---|---|---|
| Bal. | 1,800 | 2,808 |
| | 2,880 | 1,440 |
| | 150 | |
| | 1,760 | |
| Bal. | 2,342 | |

**Equipment**

| | | |
|---|---|---|
| Bal. | 21,000 | |

**Accumulated Depreciation—Equipment**

| | | |
|---|---|---|
| | Bal. | 1,500 |
| | | 200 |
| | Bal. | 1,700 |

**Accounts Payable**

| | | |
|---|---|---|
| | Bal. | 3,000 |
| | | 2,880 |
| | Bal. | 5,880 |

**Salaries and Wages Payable**

| | | |
|---|---|---|
| | | 400 |
| | Bal. | 400 |

**Income Taxes Payable**

| | | |
|---|---|---|
| | | 215 |
| | Bal. | 215 |

**Common Stock**

| | | |
|---|---|---|
| | Bal. | 10,000 |

**Retained Earnings**

| | | |
|---|---|---|
| | Bal. | 17,000 |

**Sales Revenue**

| | | |
|---|---|---|
| | | 3,960 |
| | | 1,900 |
| | Bal. | 5,860 |

**Cost of Goods Sold**

| | | |
|---|---|---|
| | 2,808 | 150 |
| | 1,440 | |
| Bal. | 4,098 | |

**Depreciation Expense**

| | | |
|---|---|---|
| | 200 | |
| Bal. | 200 | |

**Salaries and Wages Expense**

| | | |
|---|---|---|
| | 400 | |
| Bal. | 400 | |

**Sales Returns & Allowances**

| | | |
|---|---|---|
| | 180 | |
| Bal. | 180 | |

**Income Tax Expense**

| | | |
|---|---|---|
| | 215 | |
| Bal. | 215 | |

  

## COMPREHENSIVE PROBLEM SOLUTION (Continued)

**(c)**

**HARRISEN COMPANY**
**Adjusted Trial Balance**
**December 31, 2014**

| | DR. | CR. |
|---|---|---|
| Cash | $ 3,040 | |
| Accounts Receivable | 9,580 | |
| Inventory | 2,342 | |
| Equipment | 21,000 | |
| Accumulated Depreciation—Equipment | | $ 1,700 |
| Accounts Payable | | 5,880 |
| Salaries and Wages Payable | | 400 |
| Income Taxes Payable | | 215 |
| Common Stock | | 10,000 |
| Retained Earnings | | 17,000 |
| Sales Revenue | | 5,860 |
| Sales Returns & Allowances | 180 | |
| Cost of Goods Sold | 4,098 | |
| Salaries and Wages Expense | 400 | |
| Depreciation Expense | 200 | |
| Income Tax Expense | 215 | |
| | $41,055 | $41,055 |

**(d)**

**HARRISEN COMPANY**
**Income Statement**
**For the Month Ending December 31, 2014**

| | | |
|---|---|---|
| Sales revenue | $5,860 | |
| Less: Sales returns and allowances | 180 | |
| Net sales | | $5,680 |
| Cost of goods sold | | 4,098 |
| Gross profit | | 1,582 |
| Operating expenses | | |
| Salaries and wages expense | 400 | |
| Depreciation expense | 200 | 600 |
| Income before income tax | | $982 |
| Income tax expense | | 215 |
| Net income | | $ 767 |

## COMPREHENSIVE PROBLEM SOLUTION (Continued)

**HARRISEN COMPANY**
**Balance Sheet**
**December 31, 2014**

| | | |
|---|---|---|
| **Assets** | | |
| **Current assets** | | |
| Cash | $ 3,040 | |
| Accounts receivable | 9,580 | |
| Inventory | 2,342 | |
| Total current assets | | $14,962 |
| **Property, plant, and equipment** | | |
| Equipment | 21,000 | |
| Less: Accumulated depreciation—Equipment | 1,700 | 19,300 |
| **Total assets** | | $34,262 |
| **Liabilities and Stockholders' Equity** | | |
| **Current liabilities** | | |
| Accounts payable | $ 5,880 | |
| Salaries and wages payable | 400 | |
| Income taxes payable | 215 | |
| Total current liabilities | | $ 6,495 |
| **Stockholders' equity** | | |
| Common stock | 10,000 | |
| Retained earnings ($17,000 + $767) | 17,767 | |
| Total stockholders' equity | | 27,767 |
| **Total liabilities and stockholders' equity** | | $34,262 |

  

## COMPREHENSIVE PROBLEM SOLUTION (Continued)

### (e) FIFO Method

| | Units | Unit Cost | Cost of Goods Available for Sales |
|---|---|---|---|
| Beg. Inventory | 3,000 | $0.60 | $1,800 |
| Dec. 3 purchase | 4,000 | $0.72 | 2,880 |
| Dec. 17 purchase | 2,200 | $0.80 | 1,760 |
| | 9,200 | | $6,440 |

| Ending Inventory | | | | Cost of Goods Sold | |
|---|---|---|---|---|---|
| Dec. 17 | 2,200 | X $0.80 = | $1,760 | Cost of goods available for sale | $6,440 |
| Dec. 3 | 800* | X $0.72 = | 576 | Less: Ending inventory | 2,336 |
| | 3,000 | | $2,336 | Cost of goods sold | $4,104 |

*(9,200 – 4,400 + 200 – 2,000) – 2,200

### (f) LIFO Method

| Ending Inventory | | Cost of Goods Sold | |
|---|---|---|---|
| Dec. 1 | 3,000 X $0.60 = $1,800 | Cost of goods available for sale | $6,440 |
| | | Less: Ending inventory | 1,800 |
| | | Cost of goods sold | $4,640 |

## BYP 6-1 FINANCIAL REPORTING PROBLEM

**(Note: All dollar amounts are in thousands)**

**(a) Inventories were $71,760 ($42,676 + $29,084) in 2011 and $56,652 ($35,416 + $21,236) in 2010.**

**(b) Inventories increased $15,108 in 2011. Using 2010 as the base year, the increase was approximately 26.7% ($15,108 ÷ $56,652). In 2011, inventories were approximately 33.8% of current assets ($71,760 ÷ $212,201).**

**(c) Product cost of goods sold was: 2011, $365,225; 2010, $349,334; and 2009, $319,775. In 2011, product cost of goods sold was 69.1% of net product sales ($365,225 ÷ $528,369).**

  

## BYP 6-2 COMPARATIVE ANALYSIS PROBLEM

**(a)**

| | Tootsie Roll | Hershey Company |
|---|---|---|
| 1. Inventory turnover | $365,225 / ($56,652* + $71,760**) ÷ 2 | $3,548,896 / ($648,953 + $533,622) ÷ 2 |
| | $365,225 / $64,206 = 5.7 times | $3,548,896 / $591,287.5 = 6.0 times |
| 2. Days in inventory | 365 / 5.7 = 64.0 days | 365 / 6.0 = 60.8 days |

*($35,416 + $21,236) **($42,676 + $29,084)

**(b) Generally, companies that are able to keep their inventory at lower levels and higher turnovers and still satisfy customer needs are the most successful. Tootsie Roll's and Hershey Company's days in inventory are approximately the same at about 61-64 days. This means that both companies maintain more than two months of inventory on hand.**

## BYP 6-3 RESEARCH CASE

**(a) Companies with slow moving inventory, such as industrial manufacturers, benefit most from the use of LIFO, because the extended time that they hold their inventory make them more susceptible to price changes.**

**(b) A proposed 2011 budget estimated that eliminating the use of LIFO for tax purposes would increase federal tax receipts by $59 billion over 10 years.**

**(c) If the U.S. decides to adopt IFRS for financial reporting purposes, LIFO usage would probably end. This is because IFRS does not allow LIFO for financial reporting. Current tax laws require that if LIFO is used for taxes it must also be used for financial reporting. Therefore, unless this so called "conformity rule" was eliminated, the use of LIFO would end.**

**(d) Proponents of LIFO argue that without LIFO, there is mismatch between the price that was paid for the inventory many months earlier, and the price that would now have to be paid to replenish the inventory at the current, higher, price. They argue that this mismatch makes it appear that their profits are higher than they really are, because it is including an inflation component that is not really profit.**

**(e) FIFO tends to be preferred by retailers and manufacturers of fast-moving inventory such as electronics or perishable goods. They say that it better reflects the current values of their inventories.**

  

## BYP 6-4 INTERPRETING FINANCIAL STATEMENTS

**(a) Finished goods are manufactured inventory items that are ready for resale. Work in process is inventory that has been put into production but is not complete. Raw materials are the basic materials that will be used in production.**

**(b) American Greetings may use LIFO for U.S. operations because of its tax advantages. Since many foreign countries do not allow the use of LIFO, American Greetings may use FIFO for non-domestic inventories. Using FIFO will result in higher reported profit and inventory values than LIFO.**

**(c)**

| | 2014 | 2013 |
|---|---|---|
| Inventory turnover: | $\frac{\$809,956}{(\$216,671 + \$203,873)/2}$ | $\frac{\$780,771}{(\$182,618 + \$216,671)/2}$ |
| | $\frac{\$809,956}{\$210,272} = 3.9$ times | $\frac{\$780,771}{\$199,644.5} = 3.9$ times |
| Days in inventory: | 365/3.9 = 93.6 days | 365/3.9 = 93.6 days |

**The inventory turnover remain unchanged from 2013 to 2014.**

**(d) The LIFO reserve, $86,025, represents 42% of total inventory ($86,025/$203,873 = .42).**

| | |
|---|---|
| Ending inventory using LIFO..... | $203,873 |
| Ending LIFO reserve ..... | 86,025 |
| Ending inventory assuming FIFO ..... | $289,898 |

**This difference is probably considered "material" since it exceeds 10 percent. Since the reserve is disclosed, analysts can include both FIFO and LIFO amounts when analyzing performance.**

**The FIFO value better represents the current value of American Greetings' inventory.**

**(e) Current ratio:** $\frac{\$561,395}{\$343,405} = 1.63:1$

| | |
|---|---|
| Current assets using LIFO | $561,395 |
| Ending LIFO reserve | 86,025 |
| Current assets assuming FIFO | $647,420 |

**Current ratio:** $\frac{\$647,420}{\$343,405} = 1.89:1$

  

## BYP 6-5 REAL-WORLD FOCUS

**Answers will vary depending on the company chosen.**

## BYP 6-6 DECISION MAKING ACROSS THE ORGANIZATION

**(a)**

| | 2014 | 2013 | 2012 |
|---|---|---|---|
| Current ratio | $\frac{\$1,800}{\$600} = 3.00:1$ | $\frac{\$1,423}{\$590} = 2.41:1$ | $\frac{\$1,183}{\$525} = 2.25:1$ |
| Gross profit rate | $\frac{\$9,428 - \$6,328}{\$9,428} = 32.9\%$ | $\frac{\$8,674 - \$5,474}{\$8,674} = 36.9\%$ | $\frac{\$7,536 - \$4,445}{\$7,536} = 41.0\%$ |
| Profit margin | $\frac{\$754}{\$9,428} = 8.0\%$ | $\frac{\$987}{\$8,674} = 11.4\%$ | $\frac{\$979}{\$7,536} = 13.0\%$ |
| Inventory turnover | $\frac{\$6,328}{(\$925 + \$757)/2} = 7.5$ times | $\frac{\$5,474}{(\$757 + \$602)/2} = 8.1$ times | $\frac{\$4,445}{(\$602 + \$418)/2} = 8.7$ times |
| Days in inventory | $\frac{365}{7.5} = 48.7$ days | $\frac{365}{8.1} = 45.1$ days | $\frac{365}{8.7} = 42.0$ days |

**(b) The company's current ratio has increased steadily over this period. While this might be interpreted as a positive, since it would normally represent improved liquidity, the company started this period with a current ratio in excess of 2, thus it already had good liquidity. With its current ratio now 3 it would appear that the company has too many funds tied up in current assets. In particular, it would appear that the company has a surplus of unsold inventory. This is supported by the fact that inventory as a percent of total assets has increased significantly.**

**The gross profit rate has been steadily declining. From the CEO's comments we learned that the company has frequently been forced to discount its products in order to move them off the shelves. This discounting will directly reduce the gross profit rate.**

**The profit margin has also declined. Originally the company made a profit of 13 cents on each dollar of sales. Now it only makes 8 cents per sales dollar. A significant portion of this decline is most likely the result of the decline in the gross profit rate.**

  

**Inventory turnover, as measured by the days in inventory has worsened considerably during this period. At the beginning of this period it took 42 days to sell the average inventory item, now it takes 49.**

**(c) The evaluation above suggests that many of the company's problems stem from poor inventory management. As the company has grown, its ability to manage its inventory has declined. This has caused a decline in its profitability. By implementing a just-in-time inventory system the company could reduce the amount of resources that it has tied up in inventory, thus reducing its storage and handling costs. Also, it should reduce the need for product discounting, since the company will be less likely to be stuck with surplus inventory.**

**(d) The marketing and sales department may well be concerned that a just-in-time inventory system will result in more stock-outs. The company already is having stock-out problems, even though it has a lot of inventory. The company's current inventory system appears to lack good technological support, which would allow it to identify which products are selling well. As discussed in the case of both Caterpillar and Dell computers in the chapter, a well implemented just-in-time system, supported by technology and coordination with suppliers, would enable the company to reduce its inventory balance while actually increasing its ability to deliver products to customers in a timely fashion.**

## BYP 6-7 COMMUNICATION ACTIVITY

**In a period of changing prices, the cost flow assumption can have a significant impact on income and on evaluations based on income. Under the FIFO method, the costs of the earliest goods purchased are the first to be recognized as cost of goods sold. Under the average-cost method, the calculation of cost of goods sold is made on the basis of the weighted-average unit cost incurred. In a period of rising prices, FIFO will produce a lower cost of goods sold and a higher net income.**

**Starbucks' change from FIFO to average-cost will result in a higher cost of goods sold and a lower net income. Because of increasing competition, Starbucks probably is not able to pass the coffee bean price increase on to its customers. Using the average-cost method allows Starbucks to average its changing inventory prices and avoid a distortion of income.**

**A possible disadvantage of the change is the related balance sheet effect. Since inventory is a current asset, Starbucks' current ratio will be lower because of the change. In addition, the company's inventory turnover and days in inventory could be adversely affected.**

  

## *BYP 6-8 COMMUNICATION ACTIVITY

**MEMO**

**To: K. L. Howard, President**

**From: Student**

**Subject: 2013 ending inventory error**

**As you know, 2013 ending inventory was overstated by $1 million. Of course, this error will cause 2013 net income to be incorrect because the ending inventory is used to compute 2013 cost of goods sold. Since the ending inventory is subtracted in the computation of cost of goods sold, an overstatement of ending inventory results in an understatement of cost of goods sold and therefore an overstatement of net income.**

**Unfortunately, unless corrected, this error will also affect 2014 net income. The 2013 ending inventory is also the 2014 beginning inventory. Therefore, 2014 beginning inventory is also overstated, which causes an overstatement of cost of goods sold and an understatement of 2014 net income.**

## BYP 6-9 ETHICS CASE

**(a) The higher cost of the items ordered, received, and on hand at year-end will be charged to cost of goods sold, thereby lowering current year's income and income taxes. Next year's income will be increased because the inventory carried at lower costs from the earlier year will be charged to next year's cost of goods sold. If the purchase at year-end had been made in the next year, the next year's cost of goods sold would have absorbed the higher cost.**

**(b) No. The president would not have given the same directive because the purchase under FIFO would have had no effect on net income of the current year.**

**(c) The accountant has no grounds for not ordering the goods if the president insists. The purchase is legal and ethical, even though it allows the company to "manage" this year's net income.**

  

## BYP 6-10 ALL ABOUT YOU

**Students responses to this question will vary depending on the inventory fraud they choose to investigate. Here are responses for the two examples given in the activity.**

**The fraud at Leslie Fay involved a number of illegal actions, all of which increased net income. The company intentionally overstated ending inventory, which has the effect of understating cost of goods sold. It also understated or completely omitted discounts and allowances that it gave to retailers. In addition, it recorded inventory costs at amounts that differed from the invoice amount. It also reported sales in incorrect periods.**

**McKesson Corporation increased its reported net income through manipulation of inventory and sales records. It back-dated many transactions to increase current period results. It also swapped inventory to increase reported revenue. Many of the transactions that it reported as sales, and which resulted in reductions in inventory, were actually not sales because they had negotiated side agreements which allowed the buyer to return the merchandise.**

**(a) The primary basis of accounting for inventories is cost, which has been defined generally as the price paid or consideration given to acquire an asset. 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. It is understood to mean acquisition and production cost, and its determination involves many considerations. (330-10-30-1)**

**(b) The basis of stating inventories shall be consistently applied and shall be disclosed in the financial statements; whenever a significant change is made therein, there shall be disclosure of the nature of the change and, if material, the effect on income. A change of such basis may have an important effect upon the interpretation of the financial statements both before and after that change, and hence, in the event of a change, a full disclosure of its nature and of its effect, if material, upon income shall be made. Codification reference (330-10-50-1).**

**(c) A departure from the cost basis of pricing the *inventory* is required when the utility of the goods is no longer as great as their cost. Where there is evidence that the utility of goods, in their disposal in the ordinary course of business, will be less than cost, whether due to physical deterioration, obsolescence, changes in price levels, or other causes, the difference shall be recognized as a loss of the current period. This is generally accomplished by stating such goods at a lower level commonly designated as *market*. Codification reference (330-10-35-1).**

  

## BYP6-12 CONSIDERING PEOPLE, PLANT, AND PROFIT

**(a) By the end of 2011, Caterpillar had turbines up and running that eliminate the equivalent of 540,000 metric tons of $CO^2$ emissions per year. The application is sustainable in several ways. First, pollutants are reduced in the combustion process. Second, electricity is produced which allows reduction in the coal consumed (and the emissions generated) by the local power plant. Third, the exhaust heat from the turbine is used to make steam to quench the coke and is used in other chemical processes at the plant. Caterpillar's success on this project has opened up new business opportunities for the growing number of natural gas fired CHP projects currently being developed in that market.**

**(b) The company's goals were separated into two groups as follows:**

**2020 Goals for Operations**

- **Reduce recordable workplace Injury rate to 0.6 and lost-time case rate due to Injury to 0.15**
- **Increase energy efficiency by 25%**
- **Reduce absolute greenhouse gas emissions from existing facilities by 25%**
- **Use alternative/renewable sources to meet 20% of our energy needs**
- **Eliminate waste by reducing waste generation and reusing or recycling all that remains**
- **Hold water consumption flat**
- **Design all new construction to meet Leadership in Energy and Environmental Design (LEED) or comparable green building criteria**

**2020 Goals for Product, Services and Solutions**

- **Provide leadership in the safety of people in, on and around our products.**
- **Reduce customer greenhouse gas emissions by 20%**
- **Increase customer energy efficiency by 20%**
- **Increase customer materials efficiency by 20%**

**BYP 6-12 (Continued)**

**(c) The company improved its Recordable Injury Frequency rate by 83 percent from our 2003 baseline year and 13 percent from its last reporting period. It improved its Lost-Time Case Frequency rate by 91 percent from our 2003 baseline year and 20 percent from our last reporting period. Both of these would appear to be significant improvements in the area of worker conditions and safety.**

**(d) The company measures its energy efficiency by dividing its total revenue in dollars by a measure of its total energy used. This then provides a measure of how much energy it uses to generate revenue. Based on this measure, the company showed significant improvement relative to the base year of 2006.**

  

## IFRS CONCEPTS AND APPLICATION

**IFRS6-1**

***Key Similarities are*** **(1) the definitions for inventory are essentially the same, (2) the guidelines on who owns the goods—goods in transit, consigned goods, and the costs to include in inventory are essentially accounted for the same under IFRS and U.S. GAAP; (3) use of specific identification cost flow assumption, where appropriate; (4) unlike property, plant, and equipment, IFRS does not permit the option of valuing inventories at fair value; (5) certain agricultural products and minerals and mineral products can be reported at net realizable value using IFRS.**

***Key differences are*** **related to (1) the LIFO cost flow assumption—U.S. GAAP permits the use of LIFO for inventory valuation, but IFRS prohibits its use. FIFO and average-cost are the only two acceptable cost flow assumptions permitted under IFRS; (2) lower-of-cost-or-market test for inventory valuation—IFRS defines market as net realizable value. U.S. GAAP on the other hand defines market as replacement cost; (3) inventory write-downs—under U.S. GAAP, if inventory is written down under the lower-of-cost-or-market valuation, the new basis is now considered its cost. As a result, the inventory may not be written back up to its original cost in a subsequent period. Under IFRS, the write-down may be reversed in a subsequent period up to the amount of the previous write-down. Both the write-down and any subsequent reversal should be reported on the income statement; (4) The requirements for accounting and reporting for inventories are more principles-based under IFRS. That is, U.S. GAAP provides more detailed guidelines for inventory accounting.**

**IFRS6-2**

**Under IFRS, LaTour's inventory turnover is computed as follows:**
**Cost of Goods Sold/Average Inventory**
**€578/€154 = 3.75 or approximately 97 days (365 ÷ 3.75).**

**Difficulties in comparison to a company using U.S. GAAP could arise if the U.S. company uses the LIFO cost flow assumption, which is prohibited under IFRS. Generally in times of rising prices, LIFO results in a lower inventory balance reported on the balance sheet (assume more recently purchased items are sold first). Thus, the U.S. GAAP company will report higher inventory turnovers. The LIFO reserve can be used to adjust the reported LIFO numbers to FIFO and to permit an "apples to apples" comparison.**

**IFRS6-3**

| Item No. | Cost | Net Realizable Value | LCNRV |
|---|---|---|---|
| AB | $ 1,700 | $ 1,400 | $ 1,400 |
| TRX | 2,200 | 2,300 | 2,200 |
| NWA | 7,800 | 7,100 | 7,100 |
| SGH | 3,000 | 3,700 | 3,000 |
| | $14,700 | $14,500 | $13,700 |

  

## IFRS6-4 INTERNATIONAL FINANCIAL REPORTING PROBLEM

**(a) Inventories are stated at the lower-of-cost-or-net realizable value, using first-in-first out cost flow assumption.**
**(b) During 2011, Zetar wrote off £437,000 of inventory.**
**(c) As of April 30, 2011, Zetar reported raw materials of £9,805, work-in-progress of £1,236, and finished goods inventory of £5,412.**