CHAPTER 8
INVENTORIES AND THE COST OF GOODS SOLD

OVERVIEW OF BRIEF EXERCISES, EXERCISES, PROBLEMS, AND CRITICAL THINKING CASES

Brief Exercises	Topic	Learning Objectives	Skills
B. Ex. 8.1	FIFO inventory	1, 4	Analysis
B. Ex. 8.2	LIFO inventory	1, 4	Analysis
B. Ex. 8.3	Average inventory	4	Analysis
B. Ex. 8.4	FIFO and LIFO inventory	4	Analysis
B. Ex. 8.5	FIFO and Average inventory	4	Analysis
B. Ex. 8.6	Inventory shrinkage	3	Analysis
B. Ex. 8.7	Inventory error	5	Analysis
B. Ex. 8.8	Inventory error	5	Analysis
B. Ex. 8.9	Inventory turnover	7	Analysis
B. Ex. 8.10	Inventory turnover	7	Analysis

Exercises	Topic	Learning Objectives	Skills
8.1	Accounting terminology	1–7	Analysis
8.2	Cost flow assumptions	1	Analysis
8.3	Physical flows vs. cost flows	4	Analysis
8.4	Effects of different cost flows	4	Analysis
8.5	Transfer of title	2	Analysis
8.6	Inventory write-downs	3	Analysis
8.7	Periodic inventory systems	4	Analysis
8.8	Inventory errors	5	Analysis
8.9	Gross profit method	6	Analysis
8.10	Retail method	6	Analysis
8.11	**Real World: General Motors Corporation** Evaluating cost flow assumptions	1, 7	Analysis, judgment
8.12	**Real World: Ford Motor Company** FIFO vs. LIFO analysis	1, 7	Analysis, communication, judgment
8.13	**Real World: Kraft Foods, Inc.** Inventory turnover	7	Analysis
8.14	**Real World: Wal-Mart** LIFO reserves	7	Analysis, communication
8.15	**Real World: Home Depot, Inc.** Examining an annual report	7	Analysis, communication, judgment

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Problems Sets A, B	Topic	Learning Objectives	Skills
8.1 A,B	Inventory cost flow assumptions	1	Analysis, judgment
8.2 A,B	Cost flow assumptions: Perpetual	1	Analysis, judgment
8.3 A,B	Cost flow assumptions: Periodic	4	Analysis, judgment
8.4 A,B	Inventory shrinkage	1–3	Analysis, communication, judgment
8.5 A,B	Periodic inventory systems	4	Analysis, judgment
8.6 A,B	Effects of inventory errors	5	Analysis, communication
8.7 A,B	Retail method	2, 3, 6	Analysis
8.8 A,B	**Real World: Wal-Mart/J.C. Penney** FIFO vs. LIFO comparisons	1, 7	Analysis, communication, judgment
Critical Thinking Cases			
8.1	Inventory errors	5	Analysis, communication, judgment
8.2	LIFO Liquidation	4	Analysis, communication, judgment
8.3	Dealing with the bank (Ethics, fraud & corporate governance)	3	Analysis, communication, judgment
8.4	**Real World: EMC Corporation** Inventory turnover *(Business Week)*	7	Analysis, communication, judgment
8.5	**Real World: Safeway, Inc., and Staples, Inc.** Inventory turnover rates (Internet)	7	Analysis, communication, technology

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DESCRIPTIONS OF PROBLEMS AND CRITICAL THINKING CASES

Below are brief descriptions of each problem and case. These descriptions are accompanied by the estimated time (in minutes) required for completion and by a difficulty rating. The time estimates assume use of the partially filled-in working papers.

Problems (Sets A and B)

8.1 A,B **BassTrack/Dome, Inc. (Perpetual)** **35 Medium**
A comprehensive problem calling for measurement of the cost of goods sold and valuation of inventory by specific identification and three different flow assumptions. Requires both journal entries and maintenance of inventory subsidiary ledger records.

8.2 A,B **Speed World Cycles/Sea Travel (Perpetual)** **30 Strong**
Compute the cost of goods sold and ending inventory by three different flow assumptions, and answer questions regarding the characteristics of these assumptions.

8.3 A,B **Speed World Cycles/Sea Travel (Periodic)** **20 Medium**
Computations similar to those in Problem 8-2 except that periodic costing procedures are used in place of a perpetual inventory system.

8.4 A,B **Mario's Nursery/Sam's Lawn Mowers** **20 Medium**
Adjustments under various flow assumptions to reflect the taking of a physical inventory. Also requires a write-down of the remaining inventory to a market value below cost.

8.5 A,B **Mach IV Audio/Roman Sound** **25 Easy**
FIFO, LIFO, and average cost in a periodic inventory system. Students also are asked to answer questions about the characteristics of these flow assumptions.

8.6 A,B **Hexagon Health Foods/City Software** **20 Medium**
A series of income statements for a business being offered for sale indicates a rising trend in gross profit. The student is given information on errors in inventory and asked to prepare revised income statements and to evaluate the trend of gross profit.

8.7 A,B **Between the Ears/Sing Along** **25 Medium**
Illustration of the retail method and its use in estimating inventory shrinkage.

8.8 A,B **Wal-Mart/J.C. Penney** **20 Strong**
Using data compiled from the company's financial statements under LIFO, students must make necessary adjustments such that resulting financial ratios will be comparable to those computed under FIFO. Requires a review of ratios introduced in previous chapters.

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Critical Thinking Cases

8.1 Inventory Errors — **30 Strong**

While interviewing for a position as controller, the job applicant learns that the employer has an inventory "problem." Inventories have been understated consistently in past income tax returns.

8.2 LIFO Liquidation — **20 Medium**

Dramatic illustration of the potential effect of a LIFO liquidation. Excellent case for illustrating why finance and marketing majors should understand accounting.

8.3 Dealing with the Bank — **15 Medium**

Ethics, Fraud & Corporate Governance

Students are required to evaluate ethical implications of manipulating financial statement information in order to be in compliance with bank covenants. Also requires analytical understanding of working capital relationships.

8.4 EMC Corporation — **10 Easy**

Business Week

Students are asked to consider trade-offs between inventory turnover and product quality.

8.5 Safeway and Staples — **No time limit**

Internet — **Strong**

Requires an analytical interpretation of inventory performance measures reported by a grocery chain and an office supply chain.

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SUGGESTED ANSWERS TO DISCUSSION QUESTIONS

1. The cost of merchandise represents an asset—inventory—until the merchandise is sold. At the date of sale, the cost of the merchandise is reclassified as an expense—cost of goods sold—which is "matched" against the related sales revenue.

2. The use of a cost flow assumption eliminates the need for separately identifying each unit sold and looking up its cost. Thus, the time and effort involved in recording the cost of goods sold can be reduced significantly. In addition, the use of a flow assumption enables management to match sales revenue with relatively current merchandise costs and also to minimize the company's income taxes expense.

3. Generally accepted accounting principles permit the use of inventory cost flow assumptions whenever the items comprising the inventory are similar in terms of cost, function, and sales price.

   In measuring the results of operations, accountants consider the flow of costs to be more important than the physical flow of specific units of merchandise. Therefore, a cost flow assumption *need not* correspond to the physical movement of the company's merchandise.

4. a. Under the average-cost method, all units in the inventory are valued at the same *average cost.* (The average cost is recomputed after every purchase transaction.) Therefore, the cost of goods sold is based upon this average cost per unit.

   b. The FIFO flow assumption means "first-in, first-out." Therefore, each sale is assumed to consist of the oldest units in the inventory, and the unit costs in the oldest cost layers are transferred to the cost of goods sold.

   c. LIFO means "last-in, first-out." Thus, the most recently acquired units are assumed to be the first sold, and the cost of goods sold is based upon the most recent cost layers.

5. The specific identification method should be used by the art gallery. Each item is unique and prices vary widely. Therefore, the gross profit on a sale can be determined logically only by a method that offsets the cost of a specific painting against its sales price. The ending inventory will be stated at the cost incurred for the individual paintings on hand at the end of the year.

6. During a period of rising purchase costs, FIFO results in the highest reported profits, as the cost of goods sold is measured using the oldest (and lowest) costs. LIFO results in the lowest taxable income, as the cost of goods sold consists of the most recent (and highest) purchase costs.

   As the FIFO method assigns the oldest costs to the cost of goods sold, the most recent purchase costs remain in the Inventory account. Therefore, FIFO results in a valuation of inventory that is closest to current replacement costs.

7. Under these unusual circumstances of unchanging purchase prices throughout the year, FIFO and LIFO would produce exactly the same results in the financial statements. The ending inventory under both methods would be equal to the number of units on hand at year-end multiplied by the same unit price.

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8. No, Apex is not violating the accounting principle of consistency by using different accounting methods for different segments of its inventories. The varying nature of inventory items explains in part why several methods of valuation are generally acceptable. The principle of consistency is violated when a company changes inventory methods from one year to the next, because such changes cause net income to differ from what it would have been if the change in accounting method had not occurred. Consistency is an important aid in making financial statements comparable from one year to the next.

9. The phrase "just-in-time inventory system" relates primarily to the management of inventories within manufacturing companies. With respect to purchase of raw materials, just-in-time means that materials arrive just in time for use in the production process. With respect to finished goods, the just-in-time concept means that goods are shipped to customers (sold) immediately upon completion of production.

   An advantage of the just-in-time concept is that it reduces or eliminates the amounts of the manufacturer's inventories of materials and finished goods. This reduces the amount of capital that the business must invest in these inventories and also any related costs such as storage and insurance. The primary risk of the just-in-time approach for goods to be shipped to customers is that promised delivery dates may not be met due to unavoidable production delays.

10. The primary reason for taking a physical inventory is to adjust the perpetual inventory records for *shrinkage losses* such as theft, spoilage, or breakage. The physical inventory usually is taken near the end of the fiscal year, so that the balance sheet will reflect the correct amount of inventory on hand, and the income statement will reflect the shrinkage losses for the year.

11. A company might write down its inventory to a carrying value below cost if the inventory has become obsolete (or otherwise unsalable), or to reflect a current replacement cost below historical cost.

12. A *cutoff* of transactions means determining that transactions occurring near year-end are recorded in the proper accounting period.

    If merchandise is in transit at year-end, the ownership of this merchandise is determined by the terms of shipment. If the terms are *F.O.B. destination* , the goods belong to the seller until they reach their destination. If the terms of shipment are *F.O.B. shipping point,* the merchandise in transit belongs to the buyer.

13. In a periodic inventory system, the cost of merchandise purchased during the year is debited to a *Purchases* account, rather than to the Inventory account. When merchandise is sold, an entry is made recognizing the sales revenue, but no entry is made reducing the Inventory account or recognizing the cost of goods sold.

    The inventory on hand and the cost of goods sold are not determined until year-end. At the end of the year, a complete physical inventory is taken to determine the amount of inventory on hand. The cost of goods sold then is determined by a *computation,* as shown below:

Beginning Inventory	
+ Purchases	
Cost of Goods Available for Sale	
- Ending Inventory	
Cost of Goods Sold	

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14. a. The average-cost method begins with a determination of the average per-unit cost of all units available for sale during the year (cost of goods available for sale divided by the number of units available for sale). The units in the year-end inventory then are priced at this average per-unit cost.

    b. Under the FIFO flow assumption, the oldest goods (first-in) are assumed to be the first sold. Therefore, the ending inventory is assumed to consist of the *most recently* purchased units.

    c. Under the LIFO method, the most recently acquired merchandise is assumed to be the first sold. Therefore, the ending inventory is assumed to consist of the *oldest* units (including the beginning inventory).

15. Relative to a perpetual inventory system, periodic LIFO costing procedures usually result in more recent (higher) costs being assigned to the cost of goods sold. In fact, even goods purchased on the last day of the year are assumed to have been sold under periodic costing procedures. A higher cost of goods sold, in turn, means less taxable income. Thus, a company usually can maximize the income tax benefits of LIFO by restating its year-end inventory to the costs indicated by *periodic* LIFO costing procedures.

16. Errors in the valuation of ending inventory are said to be "counterbalancing" or "self-correcting" because these errors have *opposite effects* upon the gross profit (and net income) reported in each of two successive years. The *cumulative* amount of gross profit reported over the two-year period will be correct, and the balance sheet will be correct at the end of the second year.

    This "counterbalancing" effect stems from the fact that an error in the valuation of the *ending* inventory of one year represents an error in the *beginning* inventory of the following year. Ending and beginning inventory amounts have opposite effects on the calculation of cost of goods sold.

17. Under the gross profit method, the cost of goods sold is estimated by applying the historical *cost ratio* (100% minus the gross profit rate) to the net sales of the current period. Subtracting this estimated cost of goods sold from the cost of goods available for sale (beginning inventory plus purchases) provides an estimate of ending inventory.

    Companies that use a periodic inventory system find the gross profit method useful in preparing interim financial statements. These companies also may use this method in estimating the inventory on hand at the date of a fire, theft, or other casualty. The method also may be used to confirm the reasonableness of the amount determined by a year-end physical inventory.

18. Ending inventory *$56,000*, computed as follows: $40,000 + $100,000 – ($112,000 × .75) = $56,000.

19. No. The inventory must be presented in the balance sheet at cost. The inventory stated at retail price will be reduced to a cost basis by applying the cost percentage, which is the ratio prevailing between cost and selling price during the current period.

20. The inventory turnover is computed by dividing the cost of goods sold by the average amount of inventory maintained during the period. The higher the inventory turnover, the more efficient is management's use of the asset to generate sales. This measurement is of interest to short-term creditors because it indicates how quickly the company is able to sell its merchandise. This is a major step in converting the inventory into cash, which, in turn, can be used to pay the short-term creditors' claims.

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21. a. Using LIFO during a period of rising costs should result in a *lower* net income than would be reported under the FIFO method. LIFO assigns the most recent purchase costs to the cost of goods sold. When costs are rising, the most recent costs also tend to be the highest costs.

b. LIFO assigns the more recent (higher) costs to the cost of goods sold, and the older (lower) costs to inventory. The inventory turnover rate is computed by dividing the cost of goods sold by the average inventory. Therefore, use of the LIFO method should indicate a *higher* inventory turnover rate than would the FIFO method.

c. By assigning the more recent (higher) purchase prices to the cost of goods sold, LIFO minimizes taxable income and income taxes expense. This is, perhaps, the primary reason for the popularity of the LIFO method.

22. a. In a period of *declining* prices, use of the FIFO method will *minimize* the reported rate of gross profit. This is because the *oldest* (and therefore highest) purchase costs will be assigned to the cost of goods sold.

b. The net cash flow from operating activities will be *higher* than if Computer Products had used LIFO. This is because the flow assumption in use has *no effect* upon the cash receipts from customers or cash payments to suppliers, but it *does* affect income taxes. By using FIFO in this period of declining prices, the older and higher costs will be assigned to the cost of goods sold, thereby minimizing taxable income. This, in turn, will minimize income tax payments—a cash outflow that enters into the determination of net cash flow from operating activities.

(*Note to instructor:* In the more common situation of *rising* replacement costs, it would be *LIFO* that would minimize the gross profit rate and increase net cash flow from operating activities.)

23. a. The first company is using the more conservative method—LIFO—in pricing its inventory. The LIFO (last-in, first-out) method of pricing inventory assigns older costs to inventory and more recent costs to the cost of goods sold. The FIFO method (first-in, first-out), in contrast, assigns the more recent costs to inventory and the older costs to the cost of goods sold. Thus, during a period of rising prices, the LIFO method results in a lower valuation of inventory and a higher valuation of the cost of goods sold than does the FIFO method.

b. Again the answer is the first company. As LIFO minimizes net income during a period of rising prices, it also minimizes the amount of income taxes that a company must pay. The Internal Revenue Service allows a company to use the LIFO method in its income tax returns only if the company also uses the LIFO method in its financial statements. Thus, only the company using LIFO is eligible to receive the income tax benefits of the LIFO method. By using FIFO in its financial statements, the second company is precluded from using the LIFO method in its income tax returns.

c. No. An inventory flow assumption affects only the *allocation* of costs between ending inventory and the cost of goods sold. It has no *effect* upon the amounts of cash, either collected from customers or paid to merchandise suppliers.

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SOLUTIONS TO BRIEF EXERCISES

B.Ex. 8.1 **50 units @ $2.00 = $100 (the oldest costs)**

B.Ex. 8.2 **(12 units @ $21) + (3 units @ $20) = $312 (the most recent costs)**

B.Ex. 8.3

100 units @ $3.05 =	**$**	**305**
150 units @ $3.10 =		**465**
120 units @ $3.15 =		**378**
370		**$1,148**

$1,148/370 units = $3.10 per unit

Ending inventory: (370 units - 125 units) x $3.10 = $760

B.Ex. 8.4 **Units in ending inventory: 100 + 100 - 75 = 125 units**

LIFO: (25 @ $5.05) + (100 @ $5.00) = $626.25
FIFO: (25 @ $5.00) + (100 @ $5.05) = $630.00

The difference is only $3.75 due to the relatively small difference in price of the two purchases ($.05).

B.Ex. 8.5 **Units in ending inventory: 10 + 20 - 25 = 5 units**

Average cost:	**10 @ $10 =**	**$100**
	20 @ $11 =	**220**
	30	**$320**

$320/30 = $10.67

LIFO inventory: 5 units @ $10 = $50 (oldest costs)

Average cost inventory: 5 units @ $10.67 = $53.35 (average cost)

B.Ex. 8.6

Inventory Shrinkage Loss	**5,000**	
Inventory		**5,000**

($100,000 x 5%)

B.Ex. 8.7

Sales	**$990,000**
Cost of goods sold	**(460,000)**
Gross profit	**$530,000**

B.Ex. 8.8 **Rather than ending inventory being $670,000, it is correctly restated at $620,000 ($670,000 - $50,000). Correction of this error will cause cost of goods sold to increase by $50,000.**

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B.Ex. 8.9 **Inventory turnover: $500,000 / $128,000 = 3.91**

Average number of days to sell inventory: 365 / 3.91 = 93.35

B.Ex. 8.10 **Inventory turnover for 2008: $85 / $27 = 3.15**
Inventory turnover for 2009: $90 / $35 = 2.57

The turnover inventory is higher in 2008, indicating that management did a better job of managing its inventory in 2008 than in 2009. This same relationship can be seen by calculating the average number of days to sell inventory, which is lower in 2008, as indicated below:

Average days to sell inventory:
2008 365 / 3.15 = 115.9
2009 365 / 2.57 = 142.0

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SOLUTIONS TO EXERCISES

Ex. 8.1

a. Flow assumption
b. Average-cost method
c. Specific identification
d. LIFO method
e. FIFO method
f. Retail method

Ex. 8.2

a.

Cost of Goods Sold ……	**137,800**	
Inventory ……		**137,800**

To record the cost of 90 Millenium computers sold to Apex Publishers. Cost determined by the specific identification method:

62 @ $1,500 ……	**$93,000**
28 @ $1,600 ……	**44,800**
Cost of goods sold ……	**$137,800**

b.

Cost of Goods Sold ……	**137,700**	
Inventory ……		**137,700**

To record the cost of 90 Millenium computers sold to Apex Publishers. Cost determined by the average-cost method:

90 @ $1,530 ($153,000 ÷ 100 units)

c.

Cost of Goods Sold ……	**137,000**	
Inventory ……		**137,000**

To record the cost of 90 Millenium computers sold to Apex Publishers. Cost determined by the FIFO flow assumption:

70 @ $1,500 ……	**$105,000**
20 @ $1,600 ……	**32,000**
Cost of goods sold ……	**$137,000**

d.

Cost of Goods Sold ……	**138,000**	
Inventory ……		**138,000**

To record the cost of 90 Millenium computers sold to Apex Publishers. Cost determined by the LIFO flow assumption:

30 @ $1,600 ……	**$48,000**
60 @ $1,500 ……	**90,000**
Cost of goods sold ……	**$138,000**

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e. **Under FIFO, the cost of goods sold is based on the oldest costs. Thus, relative to using LIFO, the FIFO method will result in higher net income during periods of rising prices, which will increase a company's income tax liability. In the balance sheet, the FIFO method reports inventory at the most current costs. The LIFO method, on the other hand, reports the same inventory at older, more conservative, and perhaps out-of-date costs.**

Ex. 8.3 **a.** **1.** **As heating oil is purchased and put into storage tanks, it mixes completely with the heating oil remaining in these tanks from prior purchases. As oil is pumped into the company's delivery trucks, it actually represents a blend of multiple purchase costs. Thus, the average-cost method appears to best describe the physical flow of the heating oil inventory.**

2. **The company's large coal storage bins are loaded and emptied from the top by giant machines, making the most recent coal acquired the most recent coal sold. Thus, the LIFO method best describes the physical flow of the coal inventory.**

3. **The kerosene inventory is stored on shelves in 5-gallon containers. Management probably "rotates" this stock on a regular basis. Thus, the FIFO method best describes the physical flow of the kerosene inventory.**

b. **The LIFO method would probably result in the lowest income tax liability for the company (assuming that fuel prices are rising). The LIFO method allocates the most recent purchase prices to the cost of goods sold for the period. Thus, in periods of rising prices, LIFO usually results in a higher cost of goods sold and, consequently, a lower taxable income than other allocation methods.**

c. **In order for a company to account for its entire inventory as a single, combined, "pool," all items should be relatively homogeneous. Obviously, the physical properties of heating oil, coal, and kerosene differ significantly. Keeping separate inventory records for each fuel type makes the reported figures more meaningful and gives management more control over the operations of the business. If management determined, for example, that one of its product lines is unprofitable, it might decide to discontinue selling that product and focus attention on the profitable products.**

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Ex. 8.4 **a.** **LIFO results in a higher cost of goods sold than does FIFO when the replacement costs of merchandise are *rising.* Under LIFO, the most recent (higher) costs are assigned to the cost of goods sold, and the oldest (lower) costs to inventory. This situation reverses under FIFO.**

Because LIFO assigns the oldest (lowest) costs to inventory, it is reasonable to expect that the LIFO inventory would be *lower* than that resulting from FIFO valuation, not higher.

b. **Dollar amounts stated in thousands:**

1.	**Income before income taxes (as reported under FIFO) …….**	**$125,000**
	Less: Additional cost of goods sold had LIFO been in use use ($1,865,000 - $1,850,000)……	**15,000**
	Income before income taxes (assuming LIFO) ……	**$110,000**
2.	**Income taxes expense under LIFO ($110,000 income before taxes x 40%)……**	**$44,000**
3.	**Income before income taxes (LIFO basis, part *1*) ……**	**$110,000**
	Less: Income taxes expense under LIFO (part *2*) ……	**44,000**
	Net income (assuming LIFO) ……	**$66,000**
4.	**Net cash provided by operating activities (as reported) under FIFO)……**	**$123,250**
	Add: Income tax savings had LIFO been in use ($52,500 paid, minus $44,000 from part 2)……	**8,500**
	Net cash provided by operating activities (assuming LIFO) …	**$131,750**

Ex. 8.5 **The inventory at December 31 amounts to $725,000, computed by adding the $125,000 inbound shipment of merchandise to $600,000 of merchandise on hand. Terms of the $125,000 shipment were F.O.B. shipping point; therefore, title passed at the point of shipment on December 28 and the goods were the property of the buyer (Jensen) while in transit.**

The $95,000 outbound shipment was correctly handled. Title to these goods passed to the customer on December 30 when the goods were shipped, so they are not part of the Jensen inventory at December 31. This shipment was billed on December 30, so the account receivable is properly included in the balance sheet.

In addition to the $125,000 increase in inventory, accounts payable should be increased by $125,000. Jensen owns the merchandise at December 31 and has a liability to pay for it.

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Ex. 8.6 a. 1. Loss from Write-down of Inventory …… 2,400
Inventory …… 2,400

To write down the inventory of 28 units of WordCrafter to the lower-of-cost-or-market:

Cost ……	$9,400
Replacement cost (28 units @ $250) ….	7,000
Reduction in carrying value ……	$2,400

2. Cash …… 5,250
Sales …… 5,250

To recognize the sales revenue from the sale of 15 WordCrafter programs @ $350, cash.

Cost of Goods Sold …… 3,750
Inventory …… 3,750

To record cost of 15 WordCrafter programs sold on January 9 using the FIFO flow assumption. (All units are carried in inventory at $250 following the year-end reduction to the lower-of-cost-or-market.)

b. 1. Cost of Goods Sold …… 1,200
Inventory …… 1,200

To record shrinkage loss of 3 units of WordCrafter software using the FIFO flow assumption (3 units @ $400).

2. Cost of Goods Sold …… 930
Inventory …… 930

To record shrinkage loss of 3 units of WordCrafter software using the LIFO flow assumption (3 units @ $310).

3. Using the FIFO method would result in a $270 lower net income figure than using the LIFO method ($1,200 – $930 = $270). This is due to the reduction in price paid for the second purchase. Although the company would report a lower net income figure using FIFO, it would not really be any less *efficient* in conducting operations. An inventory valuation method affects only the allocation of costs between ending inventory and cost of goods sold. It has no effect upon the total costs actually incurred in purchasing or manufacturing inventory.

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Ex. 8.7 **a. Average cost *$79.60* (20 units @ $3.98). (Average cost = $438/110 units = $3.98)**

b. FIFO, *$99.00* (19 units @ $5.00 + 1 unit @ $4.00).

c. LIFO, *$65.50* (9 units @ $3.00 + 11 units @ $3.50).

d. Only the FIFO method results in the same ending inventory valuation in both periodic and perpetual costing environments. Under the average cost and LIFO methods, periodic and perpetual systems usually result in different valuations due to the *timing* of inventory purchases and sales. Under FIFO, the value assigned to ending inventory is the same using periodic or perpetual procedures, regardless of when purchases or sales occur during the period.

Ex. 8.8 **a. Compute corrected net income figures:**

	2009	2008
Net income as reported ……	$ 350,000	$ 250,000
Correction of understatement of inventory at end of 2008 …..	(40,000)	40,000
Net income as corrected ……	$ 310,000	$ 290,000

b. Compute gross profit amounts and gross profit percentages for each year based on corrected data:

For 2008:	Adjusted gross profit ($600,000 + $40,000) ……	$640,000
	Gross profit percentage ($640,000 ÷ $1,500,000) ……	42.67%
For 2009:	Adjusted gross profit ($750,000 – $40,000) ……	$710,000
	Gross profit percentage ($710,000 ÷ $2,000,000) ……	35.50%

c. Correction of owner's equity:

Owner's equity at the end of 2008 should be increased by $40,000 to $540,000. At the end of 2009 the owner's equity of $580,000 requires no correction because the inventory error counterbalanced, as evidenced by the fact that the combined net income for the two years was $600,000, both before and after the correction of net income for the individual years.

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Ex. 8.9

a. Inventory at time of theft is $91,500, computed as follows:

Beginning inventory, January 1 ……		**$ 50,000**
Net purchases, January 1–29 ……		**80,000**
Cost of goods available for sale……		**$ 130,000**
Deduct: Estimated cost of goods sold:		
Net sales……	**$ 70,000**	
Cost percentage (100% - 45%)……	**55%**	
Estimated cost of goods sold……		**38,500**
Estimated ending inventory (at cost):……		**$ 91,500**

b. Rapp must use the periodic inventory method. Had the perpetual method been used, Rapp would have had the *actual* inventory figure at January 29, making it unnecessary to compute an estimated figure using the gross profit method.

Ex. 8.10

a.

Cost ratio during July ($522,000 ÷ $900,000) ……	**58%**
Estimated cost of goods sold ($600,000 × 58%) ……	**$348,000**
Estimated ending inventory (at cost):	
Cost of goods available for sale during July ……	**$522,000**
Less: Estimated cost of goods sold (above) ……	**348,000**
Estimated ending inventory ……	**$174,000**

b. It appears that the cost of Phillips' inventory as a percentage of retail sales in July is lower than it was in June. At June 30, the percentage was 60% ($300,000 ÷ $500,000). During July, however, the percentage was only 55.5%, based upon Phillips' purchases ($222,000 ÷ $400,000).

Ex. 8.11

a. No. A company may use different inventory methods for different types of inventory. With respect to inventories, the consistency principle means only that the method used to value a particular type of inventory should not be changed from one year to the next.

b. The notes accompanying the company's financial statements reveal that total inventories would have been $1.4 billion higher had the LIFO method not been used. Accordingly, the company's cost of goods sold would have been lower, and gross profit would have been *higher* had the LIFO method not been used.

c. By using LIFO, the company's inventories are reported in the balance sheet at an amount $1.4 billion *lower* than if LIFO had not been used. The LIFO method assigns the most recent inventory replacement costs to the cost of goods sold, and reports the older inventory cost layers in the balance sheet. Thus, if the LIFO method *decreases* the company's ending inventory reported in the balance sheet, replacement costs must be *increasing* .

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Ex. 8.12

a. 1. **The gross profit rate would have been *higher* had the company been using FIFO because older (and therefore lower) costs would have been charged to the Cost of Goods Sold account. This would have resulted in a higher dollar amount of gross profit and a higher gross profit rate.**

2. **Net income would have been *higher* under FIFO for the same reason as explained above. However, net income would not have been increased as much as gross profit, because income tax expense would have been higher had FIFO been in use.**

3. **The current ratio also would have been *higher* under FIFO because inventory would have been valued at more current costs, which are higher than the older costs included in a LIFO inventory valuation.**

4. **The inventory turnover rate would have been *lower* had the company used FIFO. This rate is the cost of goods sold, divided by average inventory. Under FIFO, the cost of goods sold would have been lower, and the average inventory value would have been higher. Both factors result in a lower inventory turnover rate.**

5. **The accounts receivable turnover rate (net sales divided by average accounts receivable) would be *unaffected* by the inventory flow assumption in use. A flow assumption allocates the cost of merchandise purchases between the Cost of Goods Sold account and the Inventory account. It has no effect upon sales revenue or accounts receivable.**

6. **Cash payments to suppliers are *unaffected* by the inventory flow assumption in use. These cash flows are affected by the terms of purchase, not the manner in which the purchaser chooses to account for the acquisition costs.**

7. **Net cash flow from operating activities would have been *lower* had the company used FIFO. The only cash flow affected by the inventory flow assumption in use is income taxes. By recording a lower cost of goods sold, the use of FIFO would have resulted in higher taxable income and, therefore, larger tax payments.**

b. **The only manner in which an inventory flow assumption affects solvency is through its effect upon cash flows. The higher or lower cost that might be assigned to inventory is *not relevant*, as it does not affect the amount for which that inventory can be sold.**

As explained in item *7*, above, the only cash flow affected by inventory flow assumptions is income tax payments. As LIFO has resulted in lower tax payments, it has left the company *more solvent* than it would have been if it were using FIFO.

Although Ford has reported less net income as a result of using LIFO, it actually is *better off* than if it had used FIFO. There are only two differences in the company's financial position that result from the flow assumption in use. One is a difference in cash position. As explained above, Ford has made lower tax payments and therefore retained more cash as a result of using LIFO. This indeed makes the company "better off."

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b. (continued)
The other difference in financial position is the carrying value of the asset inventory. But this is just a "book value"—it does not represent what the inventory will be sold for. Ford has the same physical inventory on hand, with the same sales value, regardless of the flow assumption it has been using.

Ex. 8.13 a. Inventory turnover rate (dollar amounts in millions):

$$\frac{\text{Cost of Goods Sold}}{\text{Average Inventory}} = \frac{\$24{,}651}{(\$3{,}506 + \$4{,}096) \div 2} = \frac{\$24{,}651}{\$3{,}801} = \underline{\textbf{6.5 times}}$$

b. Number of days required to sell the average amount of inventory:

$$\frac{\text{Days in Year}}{\text{Inventory Turnover Rate}} = \frac{365}{6.5} = 56 \text{ days}$$

c. Operating cycle:

Days Required to Sell Amount of Avg. Inventory		Days Required to Collect Amount of Avg. Receivable		
56 days	+	45 days	=	**101 days**

d. You would like to have two types of information: a. The historical pattern for Kraft. Is the operating cycle in this year longer, shorter, or the same as recent years? b. The operating cycle of Kraft's competitors. Is Kraft's operating cycle longer, shorter or about the same as competing companies?

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*** Ex. 8.14 a. Inventory turnover:**

Year ended January 31, 2008:

Cost of goods sold ($286,515)/Inventory ($35,180) = 8.14

Year ended January 31, 2007:

Cost of goods sold ($264,152)/Inventory ($33,685) =7.84

b. Average number of days required to sell inventory:

Year ended January 31, 2008:

365 days / 8.14 = 44.8

Year ended January 31, 2007:

365 days / 7.84 = 46.6

c. The company was more efficient in managing its inventory in the year ended January 31, 2008. The inventory turnover in the most recent year was 8.14, compared to 7.84 in the previous year. This resulted in an average number of days required to sell inventory being approximately two days less in the current year (44.8) compared to the most recent prior year (46.6). The shorter the time required to sell inventory, the more efficient the company is.

**** Supplemental Topic ,*** **"LIFO Reserves."**

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Ex. 8.15

a.	**(1)**	**Cost of sales year ended 2/3/08**	**$51,352**
		Inventories 1/28/07	**12,822**
		Inventories 2/3/08	**11,731**
			$24,553
			÷ 2
	(2)	**Average inventories year ended 2/3/08**	**$12,277**
	(3)	**Inventory turnover (1) ÷ (2)**	**4.18 times**
b.	**(1)**	**Days in a year**	**365 days**
		Average days in inventory (365 ÷ 4.18)	**87.3 days**
c.		**Average days merchandise is in inventory (see b)**	**87.3 days**
		Average days receivables remain outstanding	**10.6 days ***
		Days in operating cycle	**97.9 days**

Given an operating cycle of approximately 98 days, inventory accounts for almost 90% of the company's total operating cycle. Accounts receivable days account for only about 11% of the total time in the operating cycle. Thus, the accounts receivable turnover influences the company's operating cycle much less than does its inventory turnover.

*** The average days a receivable remains outstanding is computed as follows:**

(1)	**Net sales year ended 2/3/08**	**$77,349**
	Accounts receivable 1/28/07	**3,223**
	Accounts receivable 2/3/08	**1,259**
		$4,482
		÷ 2
(2)	**Average inventories year ended 2/3/08**	**$2,241**
	Receivables turnover rate (1) ÷ (2)	**34.5 times**
	Average days outstanding 365 ÷ 34.5	**10.6 days**

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SOLUTIONS TO PROBLEM SET A
PROBLEM 8.1A
BASSTRACK

35 Minutes, Medium

a.

General Journal

2009				
		(1) Specific identification method:		
Jan	15	Cost of Goods Sold	30,500	
		Inventory		30,500
		To record cost of 1,000 Ace-5 reels sold to Angler's Warehouse: 500 units @ $29; 500 units @$32.		
		(2) Average-cost method:		
Jan	15	Cost of Goods Sold	30,800	
		Inventory		30,800
		To record cost of 1,000 Ace-5 reels sold to Angler's Warehouse by the average-cost method: 1,000 units @$30.80 ($46,200 total cost, divided by 1,500 units).		
		(3) First-in, First-out (FIFO) method:		
Jan	15	Cost of Goods Sold	30,200	
		Inventory		30,200
		To record cost of 1,000 Ace-5 reels sold to Angler's Warehouse. Cost determined by the FIFO flow assumption: 600 units @$29, plus 400 units @ $32 = $30,200.		
		(4) Last-in, First-out (LIFO) method:		
Jan	15	Cost of Goods Sold	31,700	
		Inventory		31,700
		To record cost of 1,000 Ace-5 reels sold to Angler's Warehouse. Cost determined by the LIFO flow assumption: 900 units @$32, plus 100 units @ $29 = $31,700.		

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b. Inventory subsidiary ledger records:

PROBLEM 8.1A
BASSTRACK (continued)

(1) Specific identification method:

	PURCHASED			SOLD			BALANCE		
Date	Units	Unit Cost	Total	Units	Unit Cost	Cost of Goods Sold	Units	Unit Cost	Balance
Dec 12	600	$ 29	$ 17,400				600	$ 29	$ 17,400
Jan 09	900	32	$ 28,800				600	29	
							900	32	46,200
Jan 15				500	$ 29		100	29	
				500	32	$ 30,500	400	32	15,700

(2) Average-cost method:

	PURCHASED			SOLD			BALANCE		
Date	Units	Unit Cost	Total	Units	Unit Cost	Cost of Goods Sold	Units	Unit Cost	Balance
Dec 12	600	$ 29	$ 17,400				600	$ 29.00	$ 17,400
Jan 09	900	32	28,800				1,500	30.80	46,200
Jan 15				1,000	$ 30.80	$ 30,800	500	30.80	15,400

*** $46,200 total cost ÷ 1,500 units = $30.80 average unit cost.**

(3) First-in, first-out (FIFO) method:

	PURCHASED			SOLD			BALANCE		
Date	Units	Unit Cost	Total	Units	Unit Cost	Cost of Goods Sold	Units	Unit Cost	Balance
Dec 12	600	$ 29	$ 17,400				600	$ 29	$ 17,400
Jan 09	900	32	28,800				600	29	
							900	32	46,200
Jan 15				600	$ 29				
				400	32	$ 30,200	500	32	16,000

(4) Last-in, first-out (LIFO) method:

	PURCHASED			SOLD			BALANCE		
Date	Units	Unit Cost	Total	Units	Unit Cost	Cost of Goods Sold	Units	Unit Cost	Balance
Dec 12	600	$ 29	$ 17,400				600	$ 29	$ 17,400
Jan 09	900	32	$ 28,800				600	29	
							900	32	46,200
Jan 15				900	$ 32				
				100	29	$ 31,700	500	29	14,500

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c. No. As shown in part *a*, the LIFO method resulted in the highest cost of goods sold figure, whereas the FIFO method resulted in the lowest. If the LIFO method is used for tax purposes, income tax regulations require that it also be used for financial reporting purposes.

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30 Minutes, Strong

PROBLEM 8.2A
SPEED WORLD CYCLES: PERPETUAL SYSTEM

a. Cost of goods sold and ending inventory		
(1) Average-cost method:		
(a) Cost of goods sold on July 28:		
Average cost (as of July 22; $24,900 ÷ 5 units)	**$ 4,980**	
Cost of goods sold (4 units @ $4,980)		**$ 19,920**
(b) Ending inventory (4 units) at September 30:		
Average unit cost following August 3 purchase:		
1 unit at July 22 average cost of $4,980	**$ 4,980**	
3 units purchased on August 3	**15,300**	
Total	**$ 20,280**	
Average unit cost as of August 3 ($20,280 ÷ 4 units)	**$ 5,070**	
Ending inventory, September 30 (4 units @ $5,070)		**$ 20,280**
(2) First-in, first-out (FIFO) method:		
(a) Cost of goods sold on July 28:		
		$ 9,900
2 units from July 22 purchase @ $5,000		**10,000**
Cost of goods sold (4 units)		**$ 19,900**
(b) Ending inventory (4 units) at September 30:		
1 unit from July 22 purchase @$5,000	**$ 5,000**	
3 units from August 3 purchase @ $5,100	**15,300**	
Ending inventory, September 30		**$ 20,300**
(3) Last-in, first-out (LIFO) method:		
(a) Cost of goods sold on July 28:		
3 units from purchase of July 22 @ $5,000	**$ 15,000**	
1 unit from purchase of July 1 @ $4,950	**4,950**	
Cost of goods sold (4 units)		**$ 19,950**
(b) Ending inventory (4 units) at September 30:		
1 unit from purchase on July 1 @ $4,950	**$ 4,950**	
3 units from purchase on August 3 @ $5,100	**15,300**	
Ending inventory, September 30		**$ 20,250**

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SPEED WORLD CYCLES: PERPETUAL SYSTEM (concluded)

b. **(1) The FIFO method will result in the highest net income, as it assigns the oldest (lowest) costs to the cost of goods sold. FIFO will result in the highest net income whenever the oldest purchase costs are also the lowest—that is, in the common situation of rising prices.**

(2) In this situation, the LIFO method will minimize income taxes, as it assigns the most recent (and highest) costs to the cost of goods sold. The high cost of goods sold, in turn, minimizes taxable income. The LIFO method will minimize taxes whenever the most recent purchase costs are the highest, which, as mentioned above, is the normal situation in an inflationary environment.

(3) No. Speed World may *not* use FIFO in its financial statements and LIFO in its income tax returns. Normally a company *may* use different accounting methods in its financial statements and income tax returns. However, tax laws *require* a taxpayer using LIFO in its income tax return also to use the LIFO method in its financial statements.

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20 Minutes, Medium

PROBLEM 8.3A
SPEED WORLD CYCLES: PERIODIC SYSTEM

a. Cost of goods sold and ending inventory

(1) Average-cost method:		
Ending inventory at September 30:		
Average cost ($40,200 ÷ 8 units)	$ 5,025	
Ending inventory (4 units @ $5,025)		$ 20,100
Cost of goods sold through September 30:		
Cost of goods available for sale		$ 40,200
Less: Ending inventory at September 30 (above)		20,100
Cost of goods sold		$ 20,100
(2) First-in, first-out (FIFO) method:		
Ending inventory (4 units) at September 30:		
3 units from purchase on August 3 (@$5,100)		$ 15,300
1 unit from purchase on July 22 (@$5,000)		5,000
		$ 20,300
Cost of goods sold through September 30:		
Cost of goods available for sale		$ 40,200
Less: Ending inventory at September 30 (above)		20,300
Cost of goods sold		$ 19,900
(3) Last-in, first-out (LIFO) method:		
Ending inventory at September 30:		
2 units from purchase on July 1 (@$4,950)		$ 9,900
2 units from purchase on July 22 (@$5,000)		10,000
Ending inventory		$ 19,900
Cost of goods sold		
Cost of goods available for sale		$ 40,200
Less: Ending inventory at September 30 (above)		19,900
Cost of goods sold		$ 20,300

Note to instructor: **Students may point out that ending inventory computed under LIFO is the same figure as the cost of goods sold computed under FIFO. Likewise, the cost of goods sold figure computed under LIFO is the same as the ending inventory figure computed under FIFO. The fact that these numbers are the same is merely a coincidence.**

b. **Yes. Income tax regulations influence the inventory method used in financial reports *only* when the LIFO method is used for income tax purposes. If the company selects the FIFO method for income tax reporting, it is free to choose another method for financial reporting purposes.**

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20 Minutes, Medium

PROBLEM 8.4A
MARIO'S NURSERY

a. Shrinkage loss-40 trees		
(1) Average-cost method:		
Cost of Goods Sold	**1,208**	
Inventory		**1,208**
To record shrinkage loss of 40 trees using average cost of		
$30.20 ($10,570 ÷ 350 trees = $30.20 per tree).		
(2) Last-in first-out (LIFO) method:		
Cost of Goods Sold	**1,560**	
Inventory		**1,560**
To record shrinkage loss of 40 trees using the LIFO flow		
assumption (40 trees @ $39).		
b. Shrinkage loss and LCM adjustment		
(1) Shrinkage loss, first-in, first-out (FIFO) method:		
Cost of Goods Sold	**1,000**	
Inventory		**1,000**
To record shrinkage loss of 40 trees using the FIFO flow		
assumption (40 trees @ $25).		
(2) Write-down of inventory to the lower-of-cost-or-market:		
Cost of Goods Sold	**3,370**	
Inventory		**3,370**
To write down inventory to a market value below cost:		
Cost (after shrinkage loss: $10,570 - $1,000)	**$ 9,570**	
Market (310 trees x $20 per tree)	**6,200**	
Loss from write-down to market value	**$ 3,370**	

c. The only unethical act in this situation was committed by the employee against his employer. There is nothing unethical about using a hidden security camera to protect one's assets. The camera was not used to *entice* (or entrap) the employee. In short, he made a conscious decision to steal trees from his employer and should be held completely responsible for doing so.

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25 Minutes, Easy

PROBLEM 8.5A
MACH IV AUDIO

	Units	Unit Cost	Total Cost
a. Inventory and cost of goods sold:			
(1) FIFO:			
Inventory:			
Fourth purchase (Dec.18)	19	$ 320	$ 6,080
Third purchase (Oct. 4)	2	315	630
Ending inventory, FIFO	21		$ 6,710
Cost of goods sold:			
Cost of goods available for sale			$ 22,340
Less: Ending inventory, FIFO			6,710
Cost of goods sold, FIFO			$ 15,630
(2) LIFO:			
Inventory:			
Beginning inventory	10	$ 299	$ 2,990
First purchase (May 12)	11	306	3,366
Ending inventory, LIFO	21		$ 6,356
Cost of goods sold:			
Cost of goods available for sale			$ 22,340
Less: Ending inventory, LIFO			6,356
Cost of goods sold, LIFO			$ 15,984
(3) Average cost:			
Inventory:			
Total goods available for sale	72		$ 22,340
Average unit cost ($22,340 ÷ 72 units)		$ 310.28	
Ending inventory, weighted average of $310.28 per unit	21	310.28	$ 6,516
Cost of goods sold, weighted average of $310.28 per unit	51	310.28	$ 15,824

b. The FIFO method, by assigning the costs of the most recent purchases to inventory, provides the most realistic balance sheet amount for inventory in terms of replacement costs. A weakness in the FIFO method, however, is that the costs assigned to the cost of goods sold are relatively old costs. Because the replacement costs of the units has been rising throughout the year, the FIFO method tends to understate the cost of goods sold in terms of the costs actually being incurred by MACH IV to replenish its inventory. The LIFO inventory method assigns the more recent costs to the cost of goods sold and therefore provides a more realistic measure of income, in terms of current replacement costs, than does the FIFO method.

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20 Minutes, Medium

PROBLEM 8.6A
HEXAGON HEALTH FOODS

a.			
	2009	2008	2007
Net sales	$ 875,000	$ 840,000	$ 820,000
Cost of goods sold	563,000	527,200	$ 440,000
Gross profit on sales	$ 312,000	$ 312,800	$ 380,000
Gross profit percentage	36%	37%	46%
Cost of Goods Sold:			
2007: $480,000 - $40,000 = $440,000			
2008: $487,200 + $40,000 = $527,200			
2009: $481,250 + $81,750 = $563,000			

b. The current owners of this business have no reason to be enthusiastic over the trend of gross profit or gross profit percentage. After correction of the inventory errors, it is apparent that both the dollar amount of gross profit and the gross profit percentage have declined, rather than increased, during the last three years.

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25 Minutes, Medium

PROBLEM 8.7A
BETWEEN THE EARS

a.		
(1) Estimated cost of goods sold:		
Cost ratio for the current year:		
Cost of goods available for sale		**$ 462,000**
Retail prices of goods available for sale		**840,000**
Cost ratio ($462,000 ÷ $840,000)		**55%**
Estimated cost of goods sold (net sales, $744,000 x cost ratio, 55%)		**$ 409,200**
(2) Estimated ending inventory:		
Cost of goods available for sale (given)		**$ 462,000**
Less: Estimated cost of goods sold (above)		**409,200**
Estimated ending inventory		**$ 52,800**
b.		
(1) Restating physical inventory from retail prices to cost:		
Physical inventory stated in retail prices		**$ 84,480**
Cost ratio (per part a, above)		**55%**
Ending inventory at cost ($84,480 x 55%)		**$ 46,464**
(2) Estimated shrinkage losses at cost:		
Estimated ending inventory per part a		**$ 52,800**
Physical count of ending inventory, restated at cost (per part b)		**46,464**
Estimated shrinkage loss, stated at cost		**$ 6,336**
(3) Computation of gross profit:		
Net sales		**$ 744,000**
Cost of goods sold:		
Cost of goods available for sale	**$ 462,000**	
Less: Ending inventory per physical count, at cost	**46,464**	**415,536**
Gross profit		**$ 328,464**

c. Tapes and CDs can easily fit into someone's pocket and "walk out of the warehouse." Thus, it is important that effective controls be in place to reduce inventory shrinkage. Four common controls include: (1) security cameras, (2) security personnel, (3) shelves for safeguarding employee handbags while they work, and (4) magnetic sensor strips to sound an alarm if someone leaves the warehouse in possession of a tape or CD. The sensor strips would be deactivated when units of inventory are packed for shipment to customers.

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20 Minutes, Strong

PROBLEM 8.8A
WAL-MART

a.	**Computations based on LIFO valuation of inventory:**			
	(1) Inventory turnover rate:			
	Cost of Goods Sold	**=**	**$ 286,515**	**8.32 times**
	Average inventory		**$ 34,433**	
	(2) Current ratio:			
	Current Assets	**=**	**$ 47,585**	**0.81 : 1%**
	Current Liabilities		**$ 58,454**	
	(3) Gross profit rate:			
	Gross Profit	**=**	**$ 92,284**	**24.6%**
	Net Sales		**$ 374,526**	

b. **The company must have encountered increasing replacement costs for its merchandise during the year.**

c. **You would expect the ratios to be different under FIFO as follows:**

Inventory turnover rate: Cost of goods sold lower, inventory higher, turnover lower

Current ratio: Inventory would be higher, current ratio higher

Gross profit rate: Gross profit higher (due to lower cost of goods sold). Gross profit rate higher.

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PROBLEM 8.8A
WAL-MART (concluded)

d. **The average days required to collect outstanding receivables is computed by dividing 365 days by a company's accounts receivable turnover rate. The turnover rate is computed by dividing net sales by average accounts receivable. Thus, the *lower* a company's average accounts receivable, the *higher* its accounts receivable turnover rate will be, and the *lower* its average collection time will be.**

Wal-Mart turns over its accounts receivable at a rate of 122 times per year (365 days ÷ 122 times = 3 days average collection time). In short, the company's impressive collection performance results from its accounts receivable being *very low* relative to its total sales. This makes sense, given that most of Wal-Mart's revenue is in the form of *cash sales* or credit card sales which are quickly turned into cash.

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SOLUTIONS TO PROBLEMS SET B
PROBLEM 8.1B
DOME, INC.

35 Minutes, Medium

a.

General Journal

2009				
		(1) Specific identification method:		
Jan	22	Cost of Goods Sold	14,800	
		Inventory		14,800
		To record cost of 700 cartridges sold to Maxine		
		Supplies: 300 units @ $20; 400 units @ $22.		
		(2) Average-cost method:		
Jan	22	Cost of Goods Sold	15,050	
		Inventory		15,050
		To record cost of 700 cartridges sold to Maxine		
		Supplies by the average-cost method: 700		
		units @$21.50 ($34,400 total cost, divided by 1,600		
		units).		
		(3) First-in, First-out (FIFO) method:		
Jan	22	Cost of Goods Sold	14,600	
		Inventory		14,600
		To record cost of 700 cartridges sold to Maxine		
		Supplies by the FIFO flow assumption:		
		400 units @$20, plus 300 units @ $22.		
		(4) Last-in, First-out (LIFO) method:		
Jan	22	Cost of Goods Sold	15,400	
		Inventory		15,400
		To record cost of 700 cartridges sold to Maxine		
		Supplies by the LIFO flow assumption		
		700 units @$22.		

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b. Inventory subsidiary ledger records:

PROBLEM 8.1B
DOME, INC. (continued)

(1) Specific identification method:

	PURCHASED			SOLD			BALANCE		
Date	Units	Unit Cost	Total	Units	Unit Cost	Cost of Goods Sold	Units	Unit Cost	Balance
Dec 12	400	$ 20	$ 8,000				400	$ 20	$ 8,000
Jan 16	1,200	22	26,400				400	20	
							1,200	22	34,400
Jan 22				300	$ 20		100	20	
				400	22	$ 14,800	800	22	19,600

(2) Average-cost method:

	PURCHASED			SOLD			BALANCE		
Date	Units	Unit Cost	Total	Units	Unit Cost	Cost of Goods Sold	Units	Unit Cost	Balance
Dec 12	400	$ 20	$ 8,000				400	$ 20.00	$ 8,000
Jan 16	1,200	22	26,400				1,600	21.50	34,400
Jan 22				700	$ 21.50	$ 15,050	900	21.50	19,350

*** $34,400 total cost ÷ 1,600 units = $21.50 average unit cost.**

(3) First-in, first-out (FIFO) method:

	PURCHASED			SOLD			BALANCE		
Date	Units	Unit Cost	Total	Units	Unit Cost	Cost of Goods Sold	Units	Unit Cost	Balance
Dec 12	400	$ 20	$ 8,000				400	$ 20	$ 8,000
Jan 16	1,200	22	26,400				400	20	
							1,200	22	34,400
Jan 22				400	$ 20				
				300	22	$ 14,600	900	22	19,800

(4) Last-in, first-out (LIFO) method:

	PURCHASED			SOLD			BALANCE		
Date	Units	Unit Cost	Total	Units	Unit Cost	Cost of Goods Sold	Units	Unit Cost	Balance
Dec 12	400	$ 20	$ 8,000				400	$ 20	$ 8,000
Jan 16	1,200	22	26,400				400	20	
							1,200	22	34,400
Jan 22				700	$ 22	$ 15,400	400	20	
							500	22	19,000

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c. Yes. As shown in part *a*, the LIFO method resulted in the highest cost of goods sold figure, whereas the FIFO method resulted in the lowest. If the FIFO method is used for tax purposes, income tax regulations do not require that it also be used for financial reporting purposes.

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30 Minutes, Strong

PROBLEM 8.2B
SEA TRAVEL: PERPETUAL SYSTEM

a. Cost of goods sold and ending inventory		
(1) Average-cost method:		
(a) Cost of goods sold on April 28:		
Average cost (as of April 28; $73,000 ÷ 9 units)	**$ 8,111**	
Cost of goods sold (5 units @ $8,111)		**$ 40,555**
(b) Ending inventory (7 units) at June 30:		
Average unit cost following April 19 purchase:		
4 units at April 19 average cost of $8,111	**$ 32,444**	
3 units purchased on May 8 at $8,500 each	**25,500**	
Total	**$ 57,944**	
Average unit cost as of May 8 ($57,944 ÷ 7 units)	**$ 8,278**	
Ending inventory, June 30 (7 units @ $8,278)		**$ 57,946**
(2) First-in, first-out (FIFO) method:		
(a) Cost of goods sold on April 28:		
4 units from April 1 purchase @ $8,000		**$ 32,000**
1 unit from April 19 purchase @ $8,200		**8,200**
Cost of goods sold (5 units)		**$ 40,200**
(b) Ending inventory (7 units) at June 30:		
4 units from April 19 purchase @ $8,200	**$ 32,800**	
3 units from May 8 purchase @ $8,500	**25,500**	
Ending inventory, June 30		**$ 58,300**
(3) Last-in, first-out (LIFO) method:		
(a) Cost of goods sold on April 28:		
5 units purchased on April 19 @ $8,200	**$ 41,000**	
Cost of goods sold (5 units)		**$ 41,000**
(b) Ending inventory (7 units) at June 30:		
4 units from purchase of April 1 @ $8,000	**$ 32,000**	
3 units from purchase on May 8 @ $8,500	**25,500**	
Ending inventory, June 30		**$ 57,500**

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Problem 8.2B
SEA TRAVEL: PERPETUAL SYSTEM
(concluded)

b. **(1) The LIFO method will result in the lowest net income, as it assigns the most recent (highest) costs to the cost of goods sold. LIFO will result in the lowest net income whenever the most recent purchase costs are also the highest—that is, in the common situation of rising prices.**

(2) In this situation, the FIFO method will maximize income taxes, as it assigns the oldest (and lowest) costs to the cost of goods sold. The low cost of goods sold, in turn, increases taxable income. The FIFO method will increase taxes whenever the oldest purchase costs are the lowest, which as mentioned above is the normal situation in an inflationary environment.

(3) Yes. Sea Travel may use LIFO in its financial statements and FIFO in its income tax returns. Normally a company *may* use different accounting methods in its financial statements and income tax returns. However, tax laws do *require* that taxpayers using LIFO for tax purposes must also use the LIFO method for financial reporting purposes.

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20 Minutes, Medium

PROBLEM 8.3B
SEA TRAVEL: PERIODIC SYSTEM

a. Cost of goods sold and ending inventory		
(1) Average-cost method:		
Ending inventory at June 30:		
Average cost ($98,500 ÷ 12 units)	**$ 8,208**	
Ending inventory (7 units @ $8,208)		**$ 57,456**
Cost of goods sold through June 30:		
Cost of goods available for sale		**$ 98,500**
Less: Ending inventory at June 30 (above)		**57,456**
Cost of goods sold		**$ 41,044**
(2) First-in, first-out (FIFO) method:		
Ending inventory at June 30:		
3 units from purchase on May 8 (@ $8,500)		**$ 25,500**
4 units from purchase on April 19 (@$8,200)		**32,800**
		$ 58,300
Cost of goods sold through June 30:		
Cost of goods available for sale		**$ 98,500**
Less: Ending inventory at June 30 (above)		**58,300**
Cost of goods sold		**$ 40,200**
(3) Last-in, first-out (LIFO) method:		
Ending inventory at June 30:		
4 units from purchase on April 1 (@ $8,000)		**$ 32,000**
3 units from purchase on April 19 (@ $8,200)		**24,600**
Ending inventory		**$ 56,600**
Cost of goods sold		
Cost of goods available for sale		**$ 98,500**
Less: Ending inventory at June 30 (above)		**56,600**
Cost of goods sold		**$ 41,900**

b. No. Tax laws require that taxpayers using LIFO for tax purposes must also use the LIFO method for financial reporting purposes. If, however, the company selects the FIFO method for income tax reporting, it is free to choose another method for financial statement purposes.

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20 Minutes, Medium

PROBLEM 8.4B
SAM'S LAWN MOWERS

a. Shrinkage loss-one lawn mower		
(1) Average-cost method:		
Cost of Goods Sold	**107**	
Inventory		**107**
To record shrinkage loss of one lawn mower using average		
cost of $107 ($21,400 ÷ 200 mowers - $107 per mower).		
(2) Last-in first-out (LIFO) method:		
Cost of Goods Sold	**120**	
Inventory		**120**
To record shrinkage loss of one lawn mower using the LIFO		
flow assumption (one mower @ $120).		
b. Shrinkage loss and LCM adjustment		
(1) Shrinkage loss, first-in, first-out (FIFO) method:		
Cost of Goods Sold	**100**	
Inventory		**100**
To record shrinkage loss of one lawn mower using the FIFO		
flow assumption (one mower @ $100).		
(2) Write-down of inventory to the lower-of-cost-or-market:		
Cost of Goods Sold	**3,390**	
Inventory		**3,390**
To write down inventory to a market value below cost:		
Cost (after shrinkage loss: $21,400 - $100)	**$ 21,300**	
Market (199 mowers @ $90 per lawn mower)	**17,910**	
Loss from write-down to market value	**$ 3,390**	

c. The only unethical act in this situation was committed by the employee against his employer. There is nothing unethical about using a hidden security camera to protect one's assets. The camera was not used to *entice* (or entrap) the employee. In short, he made a conscious decision to steal lawn mowers from his employer and should be held completely responsible for doing so.

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25 Minutes, Easy

PROBLEM 8.5B
ROMAN SOUND

	Units	Unit Cost	Total Cost
a. Inventory and cost of goods sold:			
(1) FIFO:			
Inventory:			
Fourth purchase	15	$ 110	$ 1,650
Third purchase	5	106	530
Ending inventory, FIFO	20		$ 2,180
Cost of goods sold:			
Cost of goods available for sale			$ 10,370
Less: Ending inventory, FIFO			2,180
Cost of goods sold, FIFO			$ 8,190
(2) LIFO:			
Inventory:			
Beginning inventory	10	$ 100	$ 1,000
First purchase	10	101	1,010
Ending inventory, LIFO	20		$ 2,010
Cost of goods sold:			
Cost of goods available for sale			$ 10,370
Less: Ending inventory, LIFO			2,010
Cost of goods sold, LIFO			$ 8,360
(3) Average cost:			
Inventory:			
Total goods available for sale	100		$ 10,370
Average unit cost ($10,370 ÷ 100 units)		$ 103.70	
Ending inventory, weighted average of $103.70 per unit	20	103.70	$ 2,074
Cost of goods sold, weighted $103.70 per unit	80	103.70	$ 8,296

b. The FIFO method, by assigning the costs of the most recent purchases to inventory, provides the most realistic balance sheet amount for inventory in terms of replacement costs. A weakness of the FIFO method, however, is that the costs assigned to the cost of goods sold are relatively old costs. Because the replacement costs of the units has been rising throughout the year, the FIFO method tends to understate the cost of goods sold in terms of the costs actually being incurred by Roman Sound to replenish its inventory. The LIFO inventory method assigns the more recent costs to the cost of goods sold and therefore provides a more realistic measure of income, in terms of current replacement costs, than does the FIFO method.

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20 Minutes, Medium

PROBLEM 8.6B
CITY SOFTWARE

a.			
	2009	2008	2007
Net sales	$ 1,000,000	$ 920,000	$ 840,000
Cost of goods sold	680,000	590,400	$ 526,000
Gross profit on sales	$ 320,000	$ 329,600	$ 314,000
Gross profit percentage	32%	35.83%	37.38%
Cost of Goods Sold:			
2007: $546,000 - $20,000 = $526,000			
2008: $570,400 + $20,000 = $590,400			
2009: $600,000 + $80,000 = $680,000			

b. The current owners of this business have no reason to be enthusiastic over the trend of gross profit or gross profit percentage. After correction of the inventory errors, it is apparent that both the dollar amount of gross profit and the gross profit percentage have declined, rather than increased, during the last three years.

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25 Minutes, Medium

PROBLEM 8.7B
SING ALONG

a.		
(1) Estimated cost of goods sold:		
Cost ratio for the current year:		
Cost of goods available for sale		**$ 330,000**
Retail prices of goods available for sale		**600,000**
Cost ratio ($330,000 ÷ $600,000)		**55%**
Estimated cost of goods sold (net sales, $520,000 x cost ratio, 55%)		**$ 286,000**
(2) Estimated ending inventory:		
Cost of goods available for sale (given)		**$ 330,000**
Less: Estimated cost of goods sold (above)		**286,000**
Estimated ending inventory		**$ 44,000**
b.		
(1) Restating physical inventory from retail prices to cost:		
Physical inventory stated in retail prices		**$ 75,000**
Cost ratio (per part a, above)		**55%**
Ending inventory at cost ($75,000 x 55%)		**$ 41,250**
(2) Estimated shrinkage losses at cost:		
Estimated ending inventory (per part a)		**$ 44,000**
Physical count of ending inventory, restated at cost (per part b)		**41,250**
Estimated shrinkage loss, stated at cost		**$ 2,750**
(3) Computation of gross profit:		
Net sales		**$ 520,000**
Cost of goods sold:		
Cost of goods available for sale	**$ 330,000**	
Less: Ending inventory per physical count, at cost	**41,250**	**288,750**
Gross profit		**$ 231,250**

c. Tapes and CDs can easily fit into someone's pocket and "walk out of the store." Thus, it is important that effective controls be in place to reduce inventory shrinkage. Four common controls include: (1) security cameras, (2) security personnel, (3) shelves for safeguarding employee handbags while they work, and (4) magnetic sensor strips to sound an alarm if someone leaves the store in possession of a tape or CD. The sensor strips would be deactivated when units of inventory are sold to customers.

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20 Minutes, Strong

PROBLEM 8.8B
J.C. Penney

a.	**Computations based on LIFO valuation of inventory:**			
	(1) Inventory turnover rate:			
	Cost of Goods Sold	**=**	**$ 12,078**	**3.65 times**
	Average inventory		**$ 3,305**	
	(2) Current ratio:			
	Current Assets	**=**	**$ 6,648**	**1.90 : 1**
	Current Liabilities		**$ 3,492**	
	(3) Gross profit rate:			
	Gross Profit	**=**	**$ 7,825**	**39.3%**
	Net Sales		**$ 19,903**	

b. **The company must have encountered increasing replacement costs for its merchandise during the year.**

c. **You would expect the ratios to be different under FIFO as follows:**
Inventory turnover rate: Cost of goods sold lower, inventory higher, turnover lower
Current ratio: Inventory would be higher, current ratio higher
Gross profit rate: Gross profit higher (due to lower cost of goods sold).
Gross profit rate higher.

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PROBLEM 8.8B
J.C. Penney (concluded)

d. **The average days required to collect outstanding receivables is computed by dividing 365 days by a company's accounts receivable turnover rate. The turnover rate is computed by dividing net sales by average accounts receivable. Thus, the *lower* a company's average accounts receivable, the *higher* its accounts receivable turnover rate will be, and the *lower* its average collection time will be.**

J.C. Penney turned over its accounts receivables at a rate of every 4.9 days or 74 times per year (365 days/4.9). The company's impressive performance in this area results from its accounts receivable being very low relative to its sales. This is explained by the fact that most of the company's sales are for cash or on bank credit cards which are quickly turned into cash for the retailer.

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SOLUTIONS TO CASES

30 Minutes, Strong

CASE 8.1
OUR LITTLE SECRET

a. Lee confronts three related ethical issues. The first is that Our Little Secret's past tax practices have been both unethical and illegal. Lee cannot be involved in such practices or, if she is in a position of responsibility, allow them to continue.

Second, Lee has good reason to question the basic integrity of her prospective employer. Is Frost's statement that "no one knows how this all got started, or who was responsible" really true? After all, Frost is suggesting that the fraud continue after Amy comes "on board."

Third, there is the issue of confidentiality. Both CPAs and CMAs are ethically bound to treat as confidential all information obtained in the course of their professional activities. This means that the accountant should not disclose confidential information without the employer's (or client's) permission.

Technically, Our Little Secret is neither Lee's employer nor client. Nonetheless, these authors would consider a job interview as part of an accountant's "professional activities." Thus, we believe that Lee should treat what she has learned about the company's inventory "problem" as confidential information. Thus, she should *not* take it upon herself to notify the Internal Revenue Service or any other third party about the company's actions.

b. The solution proposed by Frost is unacceptable. To knowingly understate inventory in an income tax return would be unethical and illegal. Lee may not be a party to such action.

c. Lee basically has two ethical courses of action to consider. First, she may decide that she does not wish to associate herself with the company. Therefore, she simply may decline the job. If she chooses this course, she should treat Frost's disclosures during this interview as confidential information.

A second course of action would be to accept the position *contingent* upon the company agreeing to take immediate steps to rectify the problem. This would include filing amended income tax returns for any years known to be in error, and taking steps to ensure that inventory is reported properly in future returns. A consideration in making this decision should be whether this is an isolated instance or symptomatic of a recurring pattern of unethical behavior.

A third course of action would be to be certain that inventory was correctly stated in the *next* year's tax return, but not amend any returns already filed. This would cause an overstatement of 2010 taxable income which would offset the understatement of taxable income in all past years. These authors can see the practical appeal of such a "simple solution," but we cannot support it. Our Little Secret owes not only income taxes on its understated taxable income, but also interest and penalties for failing to report this income in prior years. Saying nothing and allowing the error to "flow through" is, in essence, a scheme for evading these interest charges and penalties.

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20 Minutes, Medium

CASE 8.2
JACKSON SPECIALTIES

a. **While LIFO assigns old acquisition costs to inventory, it *does not* purport to coincide with the physical movement of merchandise in and out of the business. Therefore, the units in inventory are *not* over 50 years old. In fact, they may have been purchased quite recently.**

b. **(1) Gross profit if the units on order *arrive before year-end:***

Sales (4,000 units × $47 per unit) ……	**$188,000**
Cost of goods sold—LIFO basis (4,000 units from year-end purchase @ $30 per unit)……	**120,000**
Gross profit ……	**$68,000**

(2) Gross profit if the units on order *do not* arrive before year-end:

Sales (4,000 units × $47 per unit) ……	**$188,000**
Cost of goods sold—LIFO basis (2,000 units from April 12, 1957 purchase @ $8 per unit, plus 2,000 units from Nov. 14, 1956 purchase at $6 per unit) ……	**28,000**
Gross profit ……	**$160,000**

c. **If the units on order do not arrive before year-end, Jackson Specialties' gross profit on its year-end sale will be greatly increased. This increase would result from the liquidation of the company's old, low, and out-of-date costs.**

d. **By executing this sale on December 30, management runs a great risk of increasing the amount of income subject to income taxes by $92,000 (by reporting a $160,000 gross profit on this sale instead of only $68,000). Under periodic LIFO costing procedures, the cost of goods sold is based upon the most recent acquisition costs incurred *during the fiscal year.* If Jackson Specialties makes its 4,000-unit sale on December 30, the cost of goods sold will be $120,000 *only if the units on order arrive by year-end* (which is almost here). Otherwise, the cost of goods sold must be reported as only $28,000.**

If this sale can be delayed *just two days* , it will occur in 2010. Jackson Specialties then may use the current $30 per-unit cost in determining the cost of this sale, regardless of when during 2010 the 8,000 units on order actually arrive. (The only limitation is that the year-end inventory must exceed the 5,000 units carried at the old acquisition costs.)

Note to instructor: **Assuming a tax rate of 33%, this strategy could save the company more than $30,000 in income taxes applicable to this sale. ($92,000 reduction in taxable gross profit × 33% = $30,360 tax savings.)**

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15 Minutes, Medium

CASE 8.3
DEALING WITH THE BANK
ETHICS, FRAUD & CORPORATE GOVERNANCE

a. The inventory has been lost. It would be unethical to delay recognition of this loss in the hope that it may someday be reduced by an insurance settlement. At present, recovery from the insurance company appears too uncertain to be considered a receivable.

b. It is impossible for the company to increase its current ratio from 0.8 to 1 to 1.2 to 1 by purchasing more inventory on account. Purchasing inventory on account will increase the current ratio *only* when it is below 1 to 1. If the current ratio exceeds 1 to 1, the purchase of additional inventory on account would decrease the ratio.

c. The company should be open and honest in dealing with the bank. Most banks work hard to foster ongoing relationships with their clients and, therefore, are willing to be flexible in situations such as these.

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10 Minutes, Medium

CASE 8.4
EMC CORPORATION
BUSINESS WEEK

Inventory can be a significant investment. As explained in Chapter 6, a company's operating cycle is the period of time required to convert cash into inventory, inventory into accounts receivable, and accounts receivable into cash. The more slowly a company's inventory turns over, the longer its operating cycle, and the more likely it is to encounter cash flow problems. Thus, in most situations, improvements in inventory turnover have a positive impact on a company's financial success.

In making its decision to shorten its product testing period, and thereby improve its inventory turnover, EMC's management had to consider the impact of its decision on product quality. Shorter testing periods could potentially compromise product quality, resulting in higher costs related to warranties, product returns, and customer dissatisfaction.

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No time limit, Strong

CASE 8.5
INVENTORY TURNOVER RATES
INTERNET

Turnover rates of those companies vary, depending on the year of the most recent 10-K reports used. The inventory turnover rate for Safeway often averages between 12 and 13 times per year, whereas that of Staples averages only about 5 or 6 times per year. The fact is, both companies manage their inventories very well, given the industries in which they operate. Safeway's rate is higher because grocery goods, on average, sell much more quickly than office supplies.

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