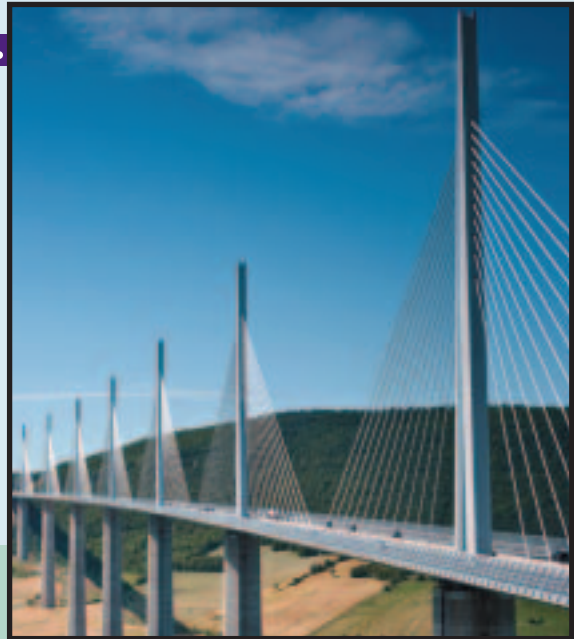


## CHAPTER 9

# INVENTORIES: ADDITIONAL VALUATION ISSUES



### LEARNING OBJECTIVES

After studying this chapter, you should be able to:

- 1 Describe and apply the lower-of-cost-or-market rule.
- 2 Explain when companies value inventories at net realizable value.
- 3 Explain when companies use the relative sales value method to value inventories.
- 4 Discuss accounting issues related to purchase commitments.
- 5 Determine ending inventory by applying the gross profit method.
- 6 Determine ending inventory by applying the retail inventory method.
- 7 Explain how to report and analyze inventory.

### WHAT DO INVENTORY CHANGES TELL US?

to accumulate too much inventory. If demand falls short of expectations, the department store may be forced to reduce prices on its existing inventory, thus losing sales revenue.

For example, the following table shows annual sales and inventory trends for major retailers, compared to the prior year.

Company	Sales	Inventory
<b>Nordstrom</b>	+10.59%	+ 1.73%
<b>Federated Department Stores</b>	+ 2.40%	- 2.95%
<b>JCPenney</b>	+ 3.59%	+ 0.41%
<b>Wal-Mart</b>	+11.63%	+ 9.06%
<b>May Department Stores</b>	+ 8.23%	+13.34%
<b>Target</b>	+11.62%	+18.83%
<b>Best Buy</b>	+17.21%	+25.52%
<b>Circuit City</b>	- 1.97%	+ 7.63%
<b>Sears</b>	-12.22%	+ 4.01%

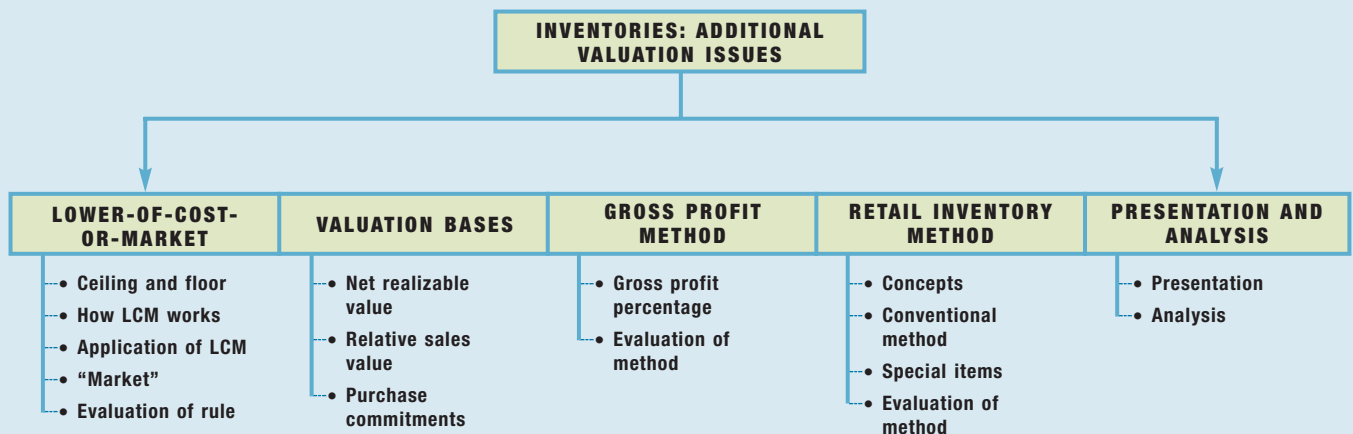
Source: Company reports.

For over half of these retailers, inventories grew faster than sales from one year to the next—a trend that should raise warning flags for investors. Rising levels of inventories indicate that fewer shoppers are turning out to buy merchandise compared to activity in the prior period. As one analyst remarked, “. . . when inventory grows faster than sales, profits drop.” That is, when retailers face slower sales and growing inventory, markdowns in prices are usually not far behind. These markdowns, in turn, lead to lower sales revenue and income.

Bankruptcies of retailers like **Ames Department Stores**, **Montgomery Ward**, and **Bradlees Stores** indicate the consequences of poor inventory management. And more recently, **Kmart**, which filed for bankruptcy and is now part of **Sears Holdings**, was in an inventory “Catch-22.” In order to work out of bankruptcy, Kmart needed to keep its shelves stocked so that customers would continue to shop in its remaining stores. However, vendors who were worried about Kmart’s ability to manage its inventory were reluctant to ship goods without assurances that they would get paid. Thus, investors, creditors, and vendors keep an eye on information about inventories in the retail industry.

## PREVIEW OF CHAPTER 9

As our opening story indicates, information on inventories and changes in inventory helps to predict financial performance—in particular, profits. In this chapter we discuss some of the valuation and estimation concepts that companies use to develop relevant inventory information. The content and organization of the chapter are as follows.



## LOWER-OF-COST-OR-MARKET

### Objective 1

Describe and apply the lower-of-cost-or-market rule.

Inventories are recorded at their cost. However, if inventory declines in value below its original cost, a major departure from the historical cost principle occurs. Whatever the reason for a decline—obsolescence, price-level changes, or damaged goods—a company should write down the inventory to market to report this loss. **A company abandons the historical cost principle when the future utility (revenue-producing ability) of the asset drops below its original cost.** Companies therefore **report inventories at the lower-of-cost-or-market** at each reporting period.

Illustration 9-1 shows how **Eastman Kodak** and **Best Buy** reported this information.

**ILLUSTRATION 9-1**  
Lower-of-Cost-or-Market Disclosures



### EASTMAN KODAK

#### Notes to Financial Statements

The company reduces the carrying value to a lower-of-cost-or-market basis for those items that are excess, obsolete, or slow moving based on management's analysis of inventory levels and future sales forecasts.



### BEST BUY

#### Notes to Financial Statements

Merchandise inventories are recorded at the lower of average cost or market.

Recall that **cost** is the acquisition price of inventory computed using one of the historical cost-based methods—specific identification, average cost, FIFO, or LIFO. The term **market** in the phrase “the lower-of-cost-or-market” (LCM) generally means the cost to replace the item by purchase or reproduction. For a retailer like **Nordstrom**, the term “market” refers to the market in which it purchases goods, not the market in which it sells them. For a manufacturer like **William Wrigley Jr.**, the term “market” refers to the cost to reproduce. Thus the rule really means that **companies value goods at cost or cost to replace, whichever is lower.**

For example, say **Target** purchased a **Timex** calculator wristwatch for \$30 for resale. Target can sell the wristwatch for \$48.95 and replace it for \$25. It should therefore value the wristwatch at \$25 for inventory purposes under the lower-of-cost-or-market rule. Target can use the lower-of-cost-or-market rule of valuation after applying any of the cost flow methods discussed above to determine the inventory cost.

A departure from cost is justified because **a company should charge a loss of utility against revenues in the period in which the loss occurs**, not in the period of sale. Note also that the lower-of-cost-or-market method is **a conservative approach to inventory valuation**. That is, when doubt exists about the value of an asset, a company should use the lower value for the asset, which also reduces net income.

## Ceiling and Floor

Why use replacement cost to represent market value? Because a decline in the replacement cost of an item usually reflects or predicts a decline in selling price. Using

### INTERNATIONAL INSIGHT

iGAAP defines *market* as net realizable value; U.S. GAAP defines *market* as replacement cost subject to certain constraints.



replacement cost allows a company to maintain a consistent rate of gross profit on sales (normal profit margin). Sometimes, however, a reduction in the replacement cost of an item fails to indicate a corresponding reduction in its utility. This requires using two additional valuation limitations to value ending inventory—net realizable value and net realizable value less a normal profit margin.

**Net realizable value (NRV)** is the estimated selling price in the ordinary course of business, less reasonably predictable costs of completion and disposal (often referred to as net selling price). A normal profit margin is subtracted from that amount to arrive at **net realizable value less a normal profit margin**.

To illustrate, assume that Jerry Mander Corp. has unfinished inventory with a sales value of \$1,000, estimated cost of completion and disposal of \$300, and a normal profit margin of 10 percent of sales. Jerry Mander determines the following net realizable value.

Inventory—sales value	\$1,000
Less: Estimated cost of completion and disposal	<u>300</u>
<b>Net realizable value</b>	<b>700</b>
Less: Allowance for normal profit margin (10% of sales)	<u>100</u>
<b>Net realizable value less a normal profit margin</b>	<b><u>\$ 600</u></b>

**ILLUSTRATION 9-2**  
Computation of Net Realizable Value

The general **lower-of-cost-or-market** rule is: A company values inventory at the lower-of-cost-or-market, with market limited to an amount that is not more than net realizable value or less than net realizable value less a normal profit margin. [1]

The **upper (ceiling)** is the net realizable value of inventory. The **lower (floor)** is the net realizable value less a normal profit margin. What is the rationale for these two limitations? Establishing these limits for the value of the inventory prevents companies from over- or understating inventory.

The maximum limitation, **not to exceed the net realizable value (ceiling)**, prevents overstatement of the value of obsolete, damaged, or shopworn inventories. That is, if the replacement cost of an item exceeds its net realizable value, a company should not report inventory at replacement cost. The company can receive only the selling price less cost of disposal. To report the inventory at replacement cost would result in an overstatement of inventory and understatement of the loss in the current period.

To illustrate, assume that **Staples** paid \$1,000 for a color laser printer that it can now replace for \$900. The printer's net realizable value is \$700. At what amount should Staples report the laser printer in its financial statements? To report the replacement cost of \$900 overstates the ending inventory and understates the loss for the period. Therefore, Staples should report the printer at \$700.

The minimum limitation (floor) is **not to be less than net realizable value reduced by an allowance for an approximately normal profit margin**. The floor establishes a value below which a company should not price inventory, regardless of replacement cost. It makes no sense to price inventory below net realizable value less a normal margin. This minimum amount (floor) measures what the company can receive for the inventory and still earn a normal profit. Use of a floor deters understatement of inventory and overstatement of the loss in the current period.

Illustration 9-3 (on page 440) graphically presents the guidelines for valuing inventory at the lower-of-cost-or-market.

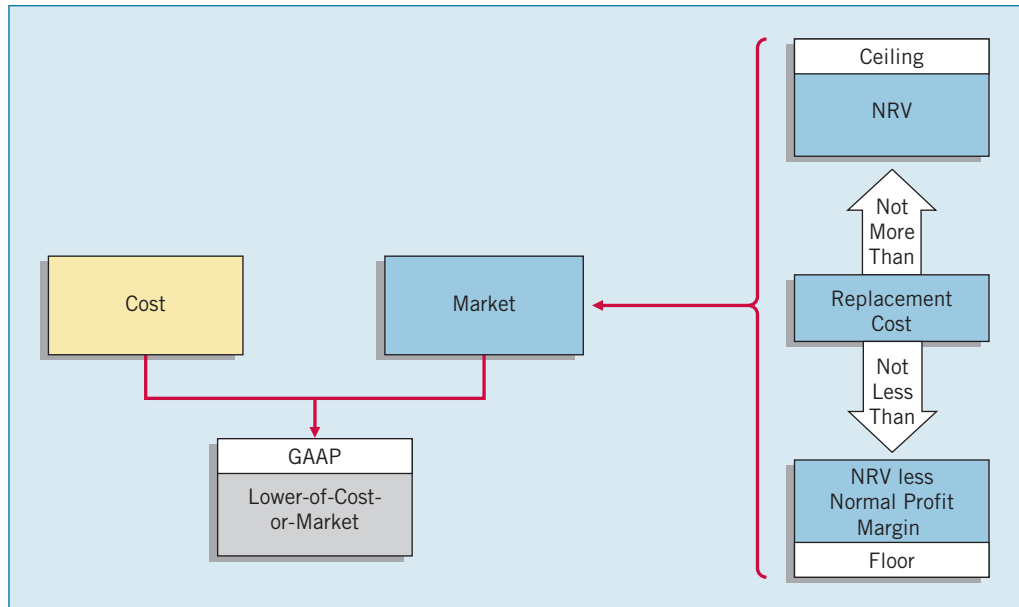
 See the FASB Codification section (page 467).

**INTERNATIONAL INSIGHT**

iGAAP does not use a ceiling or floor to determine market.



**ILLUSTRATION 9-3**  
Inventory Valuation—  
Lower-of-Cost-or-Market



### How Lower-of-Cost-or-Market Works

The **designated market value** is the amount that a company compares to cost. It is **always the middle value of three amounts**: replacement cost, net realizable value, and net realizable value less a normal profit margin. To illustrate how to compute designated market value, assume the information relative to the inventory of Regner Foods, Inc., as shown in Illustration 9-4.

**ILLUSTRATION 9-4**  
Computation of  
Designated Market Value

Food	Replacement Cost	Net Realizable Value (Ceiling)	Net Realizable Value Less a Normal Profit Margin (Floor)	Designated Market Value
Spinach	\$ 88,000	\$120,000	\$104,000	\$104,000
Carrots	90,000	100,000	70,000	90,000
Cut beans	45,000	40,000	27,500	40,000
Peas	36,000	72,000	48,000	48,000
Mixed vegetables	105,000	92,000	80,000	92,000

**Designated Market Value Decision:**

Spinach	Net realizable value less a normal profit margin is selected because it is the middle value.
Carrots	Replacement cost is selected because it is the middle value.
Cut beans	Net realizable value is selected because it is the middle value.
Peas	Net realizable value less a normal profit margin is selected because it is the middle value.
Mixed vegetables	Net realizable value is selected because it is the middle value.

Regner Foods then compares designated market value to cost to determine the lower-of-cost-or-market. It determines the final inventory value as shown in Illustration 9-5 (on page 441).

The application of the lower-of-cost-or-market rule incorporates only losses in value that occur in the normal course of business from such causes as style changes, shift in demand, or regular shop wear. A company reduces damaged or deteriorated goods to net realizable value. When material, it may carry such goods in separate inventory accounts.

**ILLUSTRATION 9-5**  
Determining Final Inventory Value

Food	Cost	Replacement Cost	Net Realizable Value (Ceiling)	Net Realizable Value Less a Normal Profit Margin (Floor)	Designated Market Value	Final Inventory Value
Spinach	\$ 80,000	\$ 88,000	\$120,000	\$104,000	\$104,000	\$ 80,000
Carrots	100,000	90,000	100,000	70,000	90,000	90,000
Cut beans	50,000	45,000	40,000	27,500	40,000	40,000
Peas	90,000	36,000	72,000	48,000	48,000	48,000
Mixed vegetables	95,000	105,000	92,000	80,000	92,000	92,000
						<u>\$350,000</u>

Final Inventory Value:

Spinach	Cost (\$80,000) is selected because it is lower than designated market value (net realizable value less a normal profit margin).
Carrots	Designated market value (replacement cost, \$90,000) is selected because it is lower than cost.
Cut beans	Designated market value (net realizable value, \$40,000) is selected because it is lower than cost.
Peas	Designated market value (net realizable value less a normal profit margin, \$48,000) is selected because it is lower than cost.
Mixed vegetables	Designated market value (net realizable value, \$92,000) is selected because it is lower than cost.

### Methods of Applying Lower-of-Cost-or-Market

In the Regner Foods illustration, we assumed that the company applied the lower-of-cost-or-market rule to each individual type of food. However, companies may apply the lower-of-cost-or-market rule either directly to each item, to each category, or to the total of the inventory. If a company follows a major category or total inventory approach in applying the lower-of-cost-or-market rule, increases in market prices tend to offset decreases in market prices. To illustrate, assume that Regner Foods separates its food products into two major categories, frozen and canned, as shown in Illustration 9-6.

**ILLUSTRATION 9-6**  
Alternative Applications of Lower-of-Cost-or-Market

	Cost	Designated Market	Lower-of-Cost-or-Market By:		
			Individual Items	Major Categories	Total Inventory
Frozen					
Spinach	\$ 80,000	\$104,000	\$ 80,000		
Carrots	100,000	90,000	90,000		
Cut beans	50,000	40,000	40,000		
Total frozen	<u>230,000</u>	<u>234,000</u>		\$230,000	
Canned					
Peas	90,000	48,000	48,000		
Mixed vegetables	95,000	92,000	92,000		
Total canned	<u>185,000</u>	<u>140,000</u>		140,000	
Total	<u>\$415,000</u>	<u>\$374,000</u>	<u>\$350,000</u>	<u>\$370,000</u>	<u>\$374,000</u>

If Regner Foods applied the lower-of-cost-or-market rule to individual items, the amount of inventory is \$350,000. If applying the rule to major categories, it jumps to \$370,000. If applying LCM to the total inventory, it totals \$374,000. Why this difference? When a company uses a major categories or total inventory approach, market values higher than cost offset market values lower than cost. For Regner Foods, using the major categories approach partially offsets the high market value for spinach. Using the total inventory approach totally offsets it.

Companies usually price inventory on an item-by-item basis. In fact, tax rules require that companies use an individual-item basis barring practical difficulties. In addition, the individual-item approach gives the most conservative valuation for balance sheet purposes.<sup>1</sup> Often, a company prices inventory on a total-inventory basis when it offers only one end product (comprised of many different raw materials). If it produces several end products, a company might use a category approach instead. The method selected should be the one that most clearly reflects income. **Whichever method a company selects, it should apply the method consistently from one period to another.**<sup>2</sup>

### Recording “Market” Instead of Cost

One of two methods is used for recording inventory at market. One method, referred to as the **direct method**, substitutes the (lower) market value figure for cost when valuing the inventory. As a result, the company does not report a loss in the income statement because the cost of goods sold already includes the amount of the loss. The second method, referred to as the **indirect method** or **allowance method**, does not change the cost amount. Rather, it establishes a separate contra asset account and a loss account to record the write-off.

We use the following inventory data to illustrate entries under both methods.

Cost of goods sold (before adjustment to market)	\$108,000
Ending inventory (cost)	82,000
Ending inventory (at market)	70,000

Illustration 9-7 shows the entries for both the direct and indirect methods, assuming the use of a **perpetual** inventory system.

**ILLUSTRATION 9-7**  
Accounting for the Reduction of Inventory to Market—Perpetual Inventory System

Direct Method		Indirect or Allowance Method	
<b>To reduce inventory from cost to market:</b>			
Cost of Goods Sold	12,000	Loss Due to Market	
Inventory	12,000	Decline of Inventory	12,000
		Allowance to Reduce Inventory to Market	12,000



#### Underlying Concepts

The income statement under the direct method presentation lacks *representational faithfulness*. The cost of goods sold does not represent what it purports to represent. However, allowing this presentation illustrates the concept of materiality. That is, the presentation does not affect net income and would not “change the judgment of a reasonable person.”

Identifying the loss due to market decline shows the loss separate from cost of goods sold in the income statement (but not as an extraordinary item). The advantage of this approach is that it does not distort the cost of goods sold.

Illustration 9-8 (on page 443) contrasts the differing amounts reported in the income statements under the two methods, using data from the preceding illustration.

The direct-method presentation buries the loss in the cost of goods sold. The indirect-method presentation is preferable, because it clearly discloses the loss resulting from the market decline of inventory prices.

Using the indirect method, the company would report the Allowance to Reduce Inventory to Market on the balance sheet as a \$12,000 deduction from the inventory. This deduction permits both the income statement and the balance

<sup>1</sup>If a company uses dollar-value LIFO, determining the LIFO cost of an individual item may be more difficult. The company might decide that it is more appropriate to apply the lower-of-cost-or-market rule to the total amount of each pool. The AICPA Task Force on LIFO Inventory Problems concluded that the most reasonable approach to applying the lower-of-cost-or-market provisions to LIFO inventories is to base the determination on reasonable groupings of items. A pool constitutes a reasonable grouping.

<sup>2</sup>Inventory accounting for financial statement purposes can be different from income tax purposes. For example, companies cannot use the lower-of-cost-or-market rule with LIFO for tax purposes. However, companies may use the lower-of-cost-or-market and LIFO for financial accounting purposes.

Direct Method	
Sales revenue	\$200,000
Cost of goods sold (after adjustment to market*)	<u>120,000</u>
Gross profit on sales	<u>\$ 80,000</u>
Indirect or Allowance Method	
Sales revenue	\$200,000
Cost of goods sold	<u>108,000</u>
Gross profit on sales	92,000
Loss due to market decline of inventory	<u>12,000</u>
	<u>\$ 80,000</u>
*Cost of goods sold (before adjustment to market) \$108,000	
Difference between inventory at cost and market (\$82,000–\$70,000) <u>12,000</u>	
Cost of goods sold (after adjustment to market) <u>\$120,000</u>	

**ILLUSTRATION 9-8**  
Income Statement  
Presentation—Direct and  
Indirect Methods of  
Reducing Inventory to  
Market

sheet to show the ending inventory of \$82,000, although the balance sheet shows a net amount of \$70,000. It also keeps subsidiary inventory ledgers and records in correspondence with the control account without changing unit prices.

Use of an allowance account permits balance sheet disclosure of the inventory at cost and at the lower-of-cost-or-market. However, it raises the problem of how to dispose of the balance of the allowance account in the following period. If the company still has on hand the merchandise in question, it should retain the allowance account. If it does not keep that account, the company will overstate beginning inventory and cost of goods. However, **if the company has sold the goods**, then it should close the account. It then establishes a “new allowance account” for any decline in inventory value that takes place in the current year.<sup>3</sup>

**Some accountants leave the allowance account on the books. They merely adjust the balance at the next year-end to agree with the discrepancy between cost and the lower-of-cost-or-market at that balance sheet date.** Thus, if prices are falling, the company records a loss. If prices are rising, the company recovers a loss recorded in prior years, and it records a “gain,” as shown in Illustration 9-9. Note that this “gain” is not really a gain, but a recovery of a previously recognized loss.

Date	Inventory at Cost	Inventory at Market	Amount Required in Valuation Account	Adjustment of Valuation Account Balance	Effect on Net Income
Dec. 31, 2009	\$188,000	\$176,000	\$12,000	\$12,000 inc.	Loss
Dec. 31, 2010	194,000	187,000	7,000	5,000 dec.	Gain
Dec. 31, 2011	173,000	174,000	0	7,000 dec.	Gain
Dec. 31, 2012	182,000	180,000	2,000	2,000 inc.	Loss

**ILLUSTRATION 9-9**  
Effect on Net Income of  
Reducing Inventory to  
Market

We can think of this net “gain” under the indirect method as the excess of the credit effect of closing the beginning allowance balance over the debit effect of setting up the current year-end allowance account. Recognizing a gain or loss has the same effect on net income as closing the allowance balance to beginning inventory or to cost of goods sold.

**Underlying Concepts**

The inconsistency in the presentation of inventory is an example of the trade-off between *relevancy and reliability*. Market is more relevant than cost, and cost is more reliable than market. Apparently, relevance takes precedence in a down market, and reliability is more important in an up market.

<sup>3</sup>The AICPA Task Force on LIFO Inventory Problems concluded that for LIFO inventories, companies should close the allowance from the prior year and should base the allowance at the end of the year on a new lower-of-cost-or-market computation. *Issues Paper* (New York: AICPA, November 30, 1984), pp. 50–55.



### What do the numbers mean?

#### “PUT IT IN REVERSE”

The lower-of-cost-or-market rule is designed to provide timely information about the decline in the value of inventory. When the value of inventory declines, income takes a hit in the period of the write-down.

What happens in the periods after the write-down? For some companies, gross margins and bottom lines get a boost when they sell inventory that had been written down in a previous period. For example, as the following table shows, **Vishay Intertechnology**, **Transwitch**, and **Cisco Systems** reported gains from selling inventory that had previously been written down. The table also evaluates how clearly these companies disclosed the effects of the reversal of inventory write-downs.

Company	Gain from reversal	Disclosure
<b>Vishay Intertechnology</b>	Not available	Poor—The semiconductor company did not mention the gain in its earnings announcement. Two weeks later in an SEC filing, Vishay disclosed the gain on the inventory that it had written down.
<b>Transwitch</b>	\$600,000	Poor—The company did not mention the gain in its earnings announcement. Three weeks later in an SEC filing, the company disclosed the gain on the inventory that it had written down.
<b>Cisco Systems</b>	\$525 million	Good—The networking giant detailed in its earnings release and in SEC filings the gains from selling inventory it had previously written off.

For Transwitch, the reversal of fortunes amounted to 23 percent of net income. The problem is that the \$600,000 credit had little to do with the company’s ongoing operations, and the company did not do a good job disclosing the effect of the reversal on current-year profitability.

Even when companies do disclose a reversal, it is sometimes hard to determine the impact on income. For example, **Intel** disclosed that it had sold inventory that had been written down in prior periods but did not specify how much reserved inventory was sold.

After the recent accounting scandals, transparency of financial reporting has become a top priority. With better disclosure of the reversals that boost profits in the current period, financial transparency would also get a boost.

Source: S. E. Ante, “The Secret Behind Those Profit Jumps,” *Business Week Online* (December 8, 2003).

### Evaluation of the Lower-of-Cost-or-Market Rule

The lower-of-cost-or-market rule suffers some conceptual deficiencies:

1. A company recognizes decreases in the value of the asset and the charge to expense in the period in which the loss in utility occurs—not in the period of sale. On the other hand, it recognizes increases in the value of the asset only at the point of sale. This inconsistent treatment can distort income data.
2. Application of the rule results in inconsistency because a company may value the inventory at cost in one year and at market in the next year.
3. Lower-of-cost-or-market values the inventory in the balance sheet conservatively, but its effect on the income statement may or may not be conservative. Net income for the year in which a company takes the loss is definitely lower. Net income of the subsequent period may be higher than normal if the expected reductions in sales price do not materialize.
4. Application of the lower-of-cost-or-market rule uses a “normal profit” in determining inventory values. Since companies estimate “normal profit” based on past experience (which they may not attain in the future), this subjective measure presents an opportunity for income manipulation.

Many financial statement users appreciate the lower-of-cost-or-market rule because they at least know that it prevents overstatement of inventory. In addition, recognizing all losses but anticipating no gains generally results in lower income.

## VALUATION BASES

### Valuation at Net Realizable Value

For the most part, companies record inventory at cost or at the lower-of-cost-or-market.<sup>4</sup> However, many believe that for purposes of applying the lower-of-cost-or-market rule, companies should define “market” as **net realizable value** (selling price less estimated costs to complete and sell), rather than as replacement cost. This argument is based on the fact that the amount that companies will collect from this inventory in the future is the net realizable value.<sup>5</sup>

Under limited circumstances, support exists for **recording inventory at net realizable value**, even if that amount is above cost. GAAP permits this exception to the normal recognition rule under the following conditions: (1) when there is a controlled market with a quoted price applicable to all quantities, and (2) when no significant costs of disposal are involved. For example, mining companies ordinarily report inventories of certain minerals (rare metals, especially) at selling prices because there is often a controlled market without significant costs of disposal. Similar treatment is given agricultural products that are immediately marketable at quoted prices.

A third reason for allowing valuation at net realizable value is that sometimes it is too difficult to obtain the cost figures. Cost figures are not difficult to determine in, say, a manufacturing plant, where the company combines various raw materials and purchased parts to create a finished product. The manufacturer can use the cost basis to account for various items in inventory, because it knows the cost of each individual component part. The situation is different in a meat-packing plant, however. The “raw material” consists of, say, cattle, each unit of which the company purchases as a whole and then divides into parts that are the products. Instead of one product out of many raw materials or parts, the meat-packing company makes many products from one “unit” of raw material. To allocate the cost of the animal “on the hoof” into the cost of, say, ribs, chuck, and shoulders, is a practical impossibility. It is much easier and more useful for the company to determine the market price of the various products and value them in the inventory at selling price less the various costs necessary to get them to market (costs such as shipping and handling). Hence, because of a peculiarity of the industry, meat-packing companies sometimes carry **inventories at sales price less distribution costs**.

<sup>4</sup>Manufacturing companies frequently employ a **standardized cost system** that predetermines the unit costs for material, labor, and manufacturing overhead and that values raw materials, work in process, and finished goods inventories at their standard costs. For financial reporting purposes, it is acceptable to price inventories at standard costs if there is no significant difference between the actual costs and standard costs. If there is a significant difference, companies should adjust the inventory amounts to actual cost. In *Accounting Research and Terminology Bulletin, Final Edition*, the profession notes that “**standard costs are acceptable if adjusted at reasonable intervals to reflect current conditions.**” **Burlington Industries** and **Hewlett-Packard** use standard costs for valuing at least a portion of their inventories.

<sup>5</sup>“The Accounting Basis of Inventories,” *Accounting Research Study No. 13* (New York: AICPA, 1973) recommends that companies adopt net realizable value. We also should note that companies frequently fail to apply the rules of lower-of-cost-or-market in practice. For example, companies rarely compute and apply the lower limit—net realizable value less a normal markup—because it is a fairly subjective computation. In addition, companies often do not reduce inventory to market unless its disposition is expected to result in a loss. Furthermore, if the net realizable value of finished goods exceeds cost, companies usually assume that both work in process and raw materials do also. In practice, therefore, authoritative literature [2] is considered a guide, and accountants often exercise professional judgment in lieu of following the pronouncements literally.

#### Objective 2

Explain when companies value inventories at net realizable value.

#### INTERNATIONAL INSIGHT

Similar to U.S. GAAP, certain agricultural products and mineral products can be reported at net realizable value using iGAAP.



### Valuation Using Relative Sales Value

**Objective 3**

Explain when companies use the relative sales value method to value inventories.

A special problem arises when a company buys a group of varying units in a single **lump-sum purchase**, also called a **basket purchase**.

To illustrate, assume that Woodland Developers purchases land for \$1 million that it will subdivide into 400 lots. These lots are of different sizes and shapes but can be roughly sorted into three groups graded A, B, and C. As Woodland sells the lots, it apportions the purchase cost of \$1 million among the lots sold and the lots remaining on hand.

You might wonder why Woodland would not simply divide the total cost of \$1 million by 400 lots, to get a cost of \$2,500 for each lot. This approach would not recognize that the lots vary in size, shape, and attractiveness. Therefore, to accurately value each unit, the common and most logical practice is to allocate the total among the various units on the basis of their **relative sales value**.

Illustration 9-10 shows the allocation of relative sales value for the Woodland Developers example.

**ILLUSTRATION 9-10**  
Allocation of Costs, Using Relative Sales Value

Lots	Number of Lots	Sales Price per Lot	Total Sales Price	Relative Sales Price	Total Cost	Cost Allocated to Lots	Cost per Lot
A	100	\$10,000	\$1,000,000	100/250	\$1,000,000	\$ 400,000	\$4,000
B	100	6,000	600,000	60/250	1,000,000	240,000	2,400
C	200	4,500	900,000	90/250	1,000,000	360,000	1,800
			<u>\$2,500,000</u>			<u>\$1,000,000</u>	

Using the amounts given in the “Cost Per Lot” column, Woodland can determine the cost of lots sold and the gross profit as follows.

**ILLUSTRATION 9-11**  
Determination of Gross Profit, Using Relative Sales Value

Lots	Number of Lots Sold	Cost per Lot	Cost of Lots Sold	Sales	Gross Profit
A	77	\$4,000	\$308,000	\$ 770,000	\$ 462,000
B	80	2,400	192,000	480,000	288,000
C	100	1,800	180,000	450,000	270,000
			<u>\$680,000</u>	<u>\$1,700,000</u>	<u>\$1,020,000</u>

The ending inventory is therefore \$320,000 (\$1,000,000 – \$680,000).

Woodland also can compute this inventory amount another way. The ratio of cost to selling price for all the lots is \$1 million divided by \$2,500,000, or 40 percent. Accordingly, if the total sales price of lots sold is, say \$1,700,000, then the cost of the lots sold is 40 percent of \$1,700,000, or \$680,000. The inventory of lots on hand is then \$1 million less \$680,000, or \$320,000.

The petroleum industry widely uses the relative sales value method to value (at cost) the many products and by-products obtained from a barrel of crude oil.

### Purchase Commitments—A Special Problem

**Objective 4**

Discuss accounting issues related to purchase commitments.

In many lines of business, a company’s survival and continued profitability depends on its having a sufficient stock of merchandise to meet customer demand. Consequently, it is quite common for a company to make **purchase commitments**, which are agreements to buy inventory weeks, months, or even years in advance. Generally, the seller retains title to the merchandise or materials covered in the

purchase commitments. Indeed, the goods may exist only as natural resources as unplanted seed (in the case of agricultural commodities), or as work in process (in the case of a product).<sup>6</sup>

Usually it is neither necessary nor proper for the buyer to make any entries to reflect commitments for purchases of goods that the seller has not shipped. Ordinary orders, for which the buyer and seller will determine prices at the time of shipment and **which are subject to cancellation**, do not represent either an asset or a liability to the buyer. Therefore the buyer need not record such purchase commitments or report them in the financial statements.

What happens, though, if a buyer enters into a formal, noncancelable purchase contract? Even then, the buyer recognizes no asset or liability at the date of inception, **because the contract is “executory” in nature**: Neither party has fulfilled its part of the contract. However, if material, the buyer should disclose such contract details in a note to its financial statements. Illustration 9-12 shows an example of a purchase commitment disclosure.

**Note 1:** Contracts for the purchase of raw materials in 2008 have been executed in the amount of \$600,000. The market price of such raw materials on December 31, 2007, is \$640,000.

**ILLUSTRATION 9-12**  
Disclosure of Purchase Commitment

In the disclosure in Illustration 9-12, the contract price was less than the market price at the balance sheet date. **If the contract price is greater than the market price, and the buyer expects that losses will occur when the purchase is effected, the buyer should recognize losses in the period during which such declines in market prices take place. [3]**

As an example, at one time many Northwest forest-product companies such as **Boise Cascade**, **Georgia-Pacific**, and **Weyerhaeuser** signed long-term timber-cutting contracts with the **U.S. Forest Service**. These contracts required that the companies pay \$310 per thousand board feet for timber-cutting rights. Unfortunately, the market price for timber-cutting rights in late 1984 dropped to \$80 per thousand board feet. As a result, a number of these companies had long-term contracts that, if fulfilled, would result in substantial future losses.

To illustrate the accounting problem, assume that St. Regis Paper Co. signed timber-cutting contracts to be executed in 2012 at a price of \$10,000,000. Assume further that the market price of the timber cutting rights on December 31, 2011, dropped to \$7,000,000. St. Regis would make the following entry on December 31, 2011.

Unrealized Holding Gain or Loss—Income (Purchase Commitments)	3,000,000	
Estimated Liability on Purchase Commitments		3,000,000

St. Regis would report this unrealized holding loss in the income statement under “Other expenses and losses.” And because the contract is to be executed within the next fiscal year, St. Regis would report the Estimated Liability on Purchase Commitments in the current liabilities section on the balance sheet. When St. Regis cuts the timber at a cost of \$10 million, it would make the following entry.

Purchases (Inventory)	7,000,000	
Estimated Liability on Purchase Commitments	3,000,000	
Cash		10,000,000

<sup>6</sup>One study noted that about 30 percent of public companies have purchase commitments outstanding, with an estimated value of \$725 billion (“SEC Staff Report on Off-Balance Sheet Arrangements, Special Purpose Entities, and Related Issues,” <http://www.sec.gov/news/studies/soxoffbalancerpt.pdf>, June 2005). Purchase commitments are popular because the buyer can secure a supply of inventory at a known price. The seller also benefits in these arrangements by knowing how much to produce.

**Underlying Concepts**

Reporting the loss is *conservative*. However, reporting the decline in market price is debatable because no asset is recorded. This area demonstrates the need for good definitions of assets and liabilities.

The result of the purchase commitment was that St. Regis paid \$10 million for a contract worth only \$7 million. It recorded the loss in the previous period—when the price actually declined.

If St. Regis can partially or fully recover the contract price before it cuts the timber, it reduces the Estimated Liability on Purchase Commitments. In that case, it then reports in the period of the price increase a resulting gain for the amount of the partial or full recovery. For example, Congress permitted some of the forest-products companies to buy out of their contracts at reduced prices in order to avoid potential bankruptcies. To illustrate, assume that Congress permitted St. Regis to reduce its contract price and therefore its commitment by \$1,000,000. The entry to record this transaction is as follows.

Estimated Liability on Purchase Commitments	1,000,000	
Unrealized Holding Gain or Loss—Income (Purchase Commitments)		1,000,000

If the market price at the time St. Regis cuts the timber is more than \$2,000,000 below the contract price, St. Regis will have to recognize an additional loss in the period of cutting and record the purchase at the lower-of-cost-or-market.

Are purchasers at the mercy of market price declines? Not totally. Purchasers can protect themselves against the possibility of market price declines of goods under contract by hedging. In **hedging**, the purchaser in the purchase commitment simultaneously enters into a contract in which it agrees to sell in the future the same quantity of the same (or similar) goods at a fixed price. Thus the company holds a *buy position* in a purchase commitment and a *sell position* in a futures contract in the same commodity. The purpose of the hedge is to offset the price risk of the buy and sell positions: The company will be better off under one contract by approximately (maybe exactly) the same amount by which it is worse off under the other contract.

For example, St. Regis Paper Co. could have hedged its purchase commitment contract with a futures contract for timber rights of the same amount. In that case, its loss of \$3,000,000 on the purchase commitment could have been offset by a \$3,000,000 gain on the futures contract.<sup>7</sup>

As easy as this makes it sound, accounting for purchase commitments is still unsettled and controversial. Some argue that companies should report purchase commitments as assets and liabilities at the time they sign the contract.<sup>8</sup> Others believe that the present recognition at the delivery date is more appropriate. *FASB Concepts Statement No. 6* states, “a purchase commitment involves both an item that might be recorded as an asset and an item that might be recorded as a liability. That is, it involves both a right to receive assets and an obligation to pay. . . . If both the right to receive assets and the obligation to pay were recorded at the time of the purchase commitment, the nature of the loss and the valuation account that records it when the price falls would be clearly seen.” Although the discussion in *Concepts Statement No. 6* does not exclude the possibility of recording assets and liabilities for purchase commitments, it contains no conclusions or implications about whether companies should record them.<sup>9</sup>

<sup>7</sup>Appendix 17A provides a complete discussion of hedging and the use of derivatives such as futures.

<sup>8</sup>See, for example, Yuji Ijiri, *Recognition of Contractual Rights and Obligations*, Research Report (Stamford, Conn.: FASB, 1980), who argues that companies should capitalize firm purchase commitments. “Firm” means that it is unlikely that companies can avoid performance under the contract without a severe penalty.

Also, see Mahendra R. Gujarathi and Stanley F. Biggs, “Accounting for Purchase Commitments: Some Issues and Recommendations,” *Accounting Horizons* (September 1988), pp. 75–78. They conclude, “Recording an asset and liability on the date of inception for the noncancelable purchase commitments is suggested as the first significant step towards alleviating the accounting problems associated with the issue. At year-end, the potential gains and losses should be treated as contingencies which provides a coherent structure for the reporting of such gains and losses.”

<sup>9</sup>“Elements of Financial Statements,” *Statement of Financial Accounting Concepts No. 6* (Stamford, Conn.: FASB, 1985), pars. 251–253.

## THE GROSS PROFIT METHOD OF ESTIMATING INVENTORY

Companies take a physical inventory to verify the accuracy of the perpetual inventory records or, if no records exist, to arrive at an inventory amount. Sometimes, however, taking a physical inventory is impractical. In such cases, companies use substitute measures to approximate inventory on hand.

**Objective 5**  
Determine ending inventory by applying the gross profit method.

One substitute method of verifying or determining the inventory amount is the **gross profit method** (also called the **gross margin method**). Auditors widely use this method in situations where they need only an estimate of the company's inventory (e.g., interim reports). Companies also use this method when fire or other catastrophe destroys either inventory or inventory records. The gross profit method relies on three assumptions:

1. The beginning inventory plus purchases equal total goods to be accounted for.
2. Goods not sold must be on hand.
3. The sales, reduced to cost, deducted from the sum of the opening inventory plus purchases, equal ending inventory.

To illustrate, assume that Cetus Corp. has a beginning inventory of \$60,000 and purchases of \$200,000, both at cost. Sales at selling price amount to \$280,000. The gross profit on selling price is 30 percent. Cetus applies the gross margin method as follows.

Beginning inventory (at cost)		\$ 60,000	
Purchases (at cost)		200,000	
		260,000	
Goods available (at cost)		260,000	
Sales (at selling price)	\$280,000		
Less: Gross profit (30% of \$280,000)	84,000		
Sales (at cost)		196,000	
Approximate inventory (at cost)		\$ 64,000	

**ILLUSTRATION 9-13**  
Application of Gross Profit Method

The current period's records contain all the information Cetus needs to compute inventory at cost, except for the gross profit percentage. Cetus determines the gross profit percentage by reviewing company policies or prior period records. In some cases, companies must adjust this percentage if they consider prior periods unrepresentative of the current period.<sup>10</sup>

<sup>10</sup>An alternative method of estimating inventory using the gross profit percentage is considered by some to be less complicated than the traditional method. This alternative method uses the standard income statement format as follows. (Assume the same data as in the Cetus example above.)

Sales		\$280,000		\$280,000
Cost of sales				
Beginning inventory	\$ 60,000		\$ 60,000	
Purchases	200,000		200,000	
Goods available for sale	260,000		260,000	
Ending inventory	(3) ?		(3) 64,000 Est.	
Cost of goods sold		(2) ?		(2) 196,000 Est.
Gross profit on sales (30%)		(1) ?		(1) 84,000 Est.

Compute the unknowns as follows: first the gross profit amount, then cost of goods sold, and finally the ending inventory, as shown below.

- (1)  $\$280,000 \times 30\% = \$84,000$  (gross profit on sales).
- (2)  $\$280,000 - \$84,000 = \$196,000$  (cost of goods sold).
- (3)  $\$260,000 - \$196,000 = \$64,000$  (ending inventory).

## Computation of Gross Profit Percentage

In most situations, the **gross profit percentage** is stated as a percentage of selling price. The previous illustration, for example, used a 30 percent gross profit on sales. Gross profit on selling price is the common method for quoting the profit for several reasons: (1) Most companies state goods on a retail basis, not a cost basis. (2) A profit quoted on selling price is lower than one based on cost. This lower rate gives a favorable impression to the consumer. (3) The gross profit based on selling price can never exceed 100 percent.<sup>11</sup>

In Illustration 9-13, the gross profit was a given. But how did Cetus derive that figure? To see how to compute a gross profit percentage, assume that an article cost \$15 and sells for \$20, a gross profit of \$5. As shown in the computations in Illustration 9-14, this markup is  $\frac{1}{4}$  or 25 percent of retail, and  $\frac{1}{3}$  or 33 $\frac{1}{3}$  percent of cost.

**ILLUSTRATION 9-14**  
Computation of Gross Profit Percentage

$$\frac{\text{Markup}}{\text{Retail}} = \frac{\$5}{\$20} = 25\% \text{ at retail} \qquad \frac{\text{Markup}}{\text{Cost}} = \frac{\$5}{\$15} = 33\frac{1}{3}\% \text{ on cost}$$

Although companies normally compute the gross profit on the basis of selling price, you should understand the basic relationship between markup on cost and markup on selling price. For example, assume that a company marks up a given item by 25 percent. What, then, is the **gross profit on selling price**? To find the answer, assume that the item sells for \$1. In this case, the following formula applies.

$$\text{Cost} + \text{Gross profit} = \text{Selling price}$$

$$C + .25C = SP$$

$$(1 + .25)C = SP$$

$$1.25C = \$1.00$$

$$C = \$0.80$$

The gross profit equals \$0.20 (\$1.00 – \$0.80). The rate of gross profit on selling price is therefore 20 percent (\$0.20/\$1.00).

Conversely, assume that the gross profit on selling price is 20 percent. What is the **markup on cost**? To find the answer, again assume that the item sells for \$1. Again, the same formula holds:

$$\text{Cost} + \text{Gross profit} = \text{Selling price}$$

$$C + .20SP = SP$$

$$C = (1 - .20)SP$$

$$C = .80SP$$

$$C = .80(\$1.00)$$

$$C = \$0.80$$

As in the previous example, the markup equals \$0.20 (\$1.00 – \$0.80). The markup on cost is 25 percent (\$0.20/\$0.80).

Retailers use the following formulas to express these relationships:

**ILLUSTRATION 9-15**  
Formulas Relating to Gross Profit

$$\begin{aligned} 1. \text{ Gross profit on selling price} &= \frac{\text{Percentage markup on cost}}{100\% + \text{Percentage markup on cost}} \\ 2. \text{ Percentage markup on cost} &= \frac{\text{Gross profit on selling price}}{100\% - \text{Gross profit on selling price}} \end{aligned}$$

<sup>11</sup>The terms *gross margin percentage*, *rate of gross profit*, and *percentage markup* are synonymous, although companies more commonly use *markup* in reference to cost and *gross profit* in reference to sales.

To understand how to use these formulas, consider their application in the following calculations.

Gross Profit on Selling Price	Percentage Markup on Cost
Given: 20% →	$\frac{.20}{1.00 - .20} = 25\%$
Given: 25% →	$\frac{.25}{1.00 - .25} = 33\frac{1}{3}\%$
$\frac{.25}{1.00 + .25} = 20\%$ ←	Given: 25%
$\frac{.50}{1.00 + .50} = 33\frac{1}{3}\%$ ←	Given: 50%

**ILLUSTRATION 9-16**  
Application of Gross Profit Formulas

Because selling price exceeds cost, and with the gross profit amount the same for both, **gross profit on selling price will always be less than the related percentage based on cost.** Note that companies do not multiply sales by a cost-based markup percentage. Instead, they must convert the gross profit percentage to a percentage based on selling price.

### Evaluation of Gross Profit Method

What are the major disadvantages of the gross profit method? One disadvantage is that **it provides an estimate.** As a result, companies must take a physical inventory once a year to verify the inventory. Second, the gross profit method **uses past percentages** in determining the markup. Although the past often provides answers to the future, a current rate is more appropriate. Note that whenever significant fluctuations occur, companies should adjust the percentage as appropriate. Third, companies must be **careful in applying a blanket gross profit rate.** Frequently, a store or department handles merchandise with widely varying rates of gross profit. In these situations, the company may need to apply the gross profit method by subsections, lines of merchandise, or a similar basis that classifies merchandise according to their respective rates of gross profit. The gross profit method is normally unacceptable for financial reporting purposes because it provides only an estimate. GAAP requires a physical inventory as additional verification of the inventory indicated in the records. Nevertheless, GAAP permits the gross profit method to determine ending inventory for interim (generally quarterly) reporting purposes, provided a company discloses the use of this method. Note that the gross profit method will follow closely the inventory method used (FIFO, LIFO, average cost) because it relies on historical records.

### THE SQUEEZE

Managers and analysts closely follow gross profits. A small change in the gross profit rate can significantly affect the bottom line. In 1993, **Apple Computer** suffered a textbook case of shrinking gross profits. In response to pricing wars in the personal computer market, Apple had to quickly reduce the price of its signature Macintosh computers—reducing prices more quickly than it could reduce its costs. As a result its gross profit rate fell from 44 percent in 1992 to 40 percent in 1993. Though the drop of 4 percent seems small, its impact on the bottom line caused Apple’s stock price to drop from \$57 per share on June 1, 1993, to \$27.50 by mid-July 1993. As another example, **Debenham**, the second largest department store in the United Kingdom, experienced a 14 percent share price decline. The cause? Markdowns on slow-moving inventory reduced its gross margin. On the positive side, an increase in the gross profit rate provides a positive signal to the market. For example, just a 1 percent boost in **Dr. Pepper’s** gross profit rate cheered the market, indicating the company was able to avoid the squeeze of increased commodity costs by raising its prices.

*What do the numbers mean?*

Source: Alison Smith, “Debenham’s Shares Hit by Warning,” *Financial Times* (July 24, 2002), p. 21; and D. Kardous, “Higher Pricing Helps Boost Dr. Pepper Snapple’s Net,” *Wall Street Journal Online* (June 5, 2008).



## RETAIL INVENTORY METHOD

### Objective 6

Determine ending inventory by applying the retail inventory method.

Accounting for inventory in a retail operation presents several challenges. Retailers with certain types of inventory may use the specific identification method to value their inventories. Such an approach makes sense when a retailer holds significant individual inventory units, such as automobiles, pianos, or fur coats. However, imagine attempting to use such an approach at **Target**, **True-Value Hardware**, **Sears Holdings**, or **Bloomingdale's**—high-volume retailers that have many different types of merchandise. It would be extremely difficult to determine the cost of each sale, to enter cost codes on the tickets, to change the codes to reflect declines in value of the merchandise, to allocate costs such as transportation, and so on.

An alternative is to compile the inventories at retail prices. For most retailers, an observable pattern between cost and price exists. The retailer can then use a formula to convert retail prices to cost. This method is called the **retail inventory method**. It requires that the retailer keep a record of (1) the total cost and retail value of goods purchased, (2) the total cost and retail value of the goods available for sale, and (3) the sales for the period. Use of the retail inventory method is very common. For example, **Safeway** supermarkets uses the retail inventory method, as does **Target Corp.**, **Wal-Mart**, and **Best Buy**.

Here is how it works at a company like **Best Buy**: Beginning with the retail value of the goods available for sale, Best Buy deducts the sales for the period. This calculation determines an estimated inventory (goods on hand) at retail. It next computes the **cost-to-retail ratio** for all goods. The formula for this computation is to divide the cost of total goods available for sale at cost by the total goods available at retail price. Finally, to obtain ending inventory at cost, Best Buy applies the cost-to-retail ratio to the ending inventory valued at retail. Illustration 9-17 shows the retail inventory method calculations for Best Buy (assumed data).

**ILLUSTRATION 9-17**  
Retail Inventory Method

<b>BEST BUY</b> (current period)		
	Cost	Retail
Beginning inventory	\$14,000	\$ 20,000
Purchases	<u>63,000</u>	<u>90,000</u>
Goods available for sale	<u>\$77,000</u>	110,000
Deduct: Sales		<u>85,000</u>
Ending inventory, at retail		<u>\$ 25,000</u>
	Ratio of cost to retail ( $\$77,000 \div \$110,000$ ) = 70%	
	Ending inventory at cost (70% of \$25,000) = <u>\$17,500</u>	

There are different versions of the retail inventory method. These include the **conventional** method (based on lower-of-average-cost-or-market), the **cost** method, the **LIFO retail** method, and the **dollar-value LIFO** retail method. Regardless of which version a company uses, the IRS, various retail associations, and the accounting profession all sanction use of the retail inventory method. One of its advantages is that a company like **Target** can approximate the inventory balance **without a physical count**. However, to avoid a potential overstatement of the inventory, Target makes periodic inventory counts. Such counts are especially important in retail operations where loss due to shoplifting or breakage is common.

The retail inventory method is particularly useful for any type of interim report, because such reports usually need a fairly quick and reliable measure of the inventory.

Also, insurance adjusters often use this method to estimate losses from fire, flood, or other type of casualty. This method also acts as a **control device** because a company will have to explain any deviations from a physical count at the end of the year. Finally, the retail method **expedites the physical inventory count** at the end of the year. The crew taking the physical inventory need record only the retail price of each item. The crew does not need to look up each item's invoice cost, thereby saving time and expense.

## Retail-Method Concepts

The amounts shown in the "Retail" column of Illustration 9-17 represent the original retail prices, assuming no price changes. In practice, though, retailers frequently mark up or mark down the prices they charge buyers.

For retailers, the term **markup** means an additional markup of the original retail price. (In another context, such as the gross profit discussion on pages 450–451, we often think of markup on the basis of cost.) **Markup cancellations** are decreases in prices of merchandise that the retailer had marked up above the original retail price.

In a competitive market, retailers often need to use **markdowns**, which are decreases in the original sales prices. Such cuts in sales prices may be necessary because of a decrease in the general level of prices, special sales, soiled or damaged goods, overstocking, and market competition. Markdowns are common in retailing these days. **Markdown cancellations** occur when the markdowns are later offset by increases in the prices of goods that the retailer had marked down—such as after a one-day sale, for example. Neither a markup cancellation nor a markdown cancellation can exceed the original markup or markdown.

To illustrate these concepts, assume that Designer Clothing Store recently purchased 100 dress shirts from Marroway, Inc. The cost for these shirts was \$1,500, or \$15 a shirt. Designer Clothing established the selling price on these shirts at \$30 a shirt. The shirts were selling quickly in anticipation of Father's Day, so the manager added a markup of \$5 per shirt. This markup made the price too high for customers, and sales slowed. The manager then reduced the price to \$32. At this point we would say that the shirts at Designer Clothing have had a markup of \$5 and a markup cancellation of \$3.

Right after Father's Day, the manager marked down the remaining shirts to a sale price of \$23. At this point, an additional markup cancellation of \$2 has taken place, and a \$7 markdown has occurred. If the manager later increases the price of the shirts to \$24, a markdown cancellation of \$1 would occur.

## Retail Inventory Method with Markups and Markdowns—Conventional Method

Retailers use markup and markdown concepts in developing the proper inventory valuation at the end of the accounting period. To obtain the appropriate inventory figures, companies must give proper treatment to markups, markup cancellations, markdowns, and markdown cancellations.

To illustrate the different possibilities, consider the data for In-Fusion Inc., shown in Illustration 9-18 (on page 454). In-Fusion can calculate its ending inventory at cost under two assumptions, A and B. (We'll explain the reasons for the two later.)

**Assumption A:** Computes a cost ratio after markups (and markup cancellations) but before markdowns.

**Assumption B:** Computes a cost ratio after both markups and markdowns (and cancellations).

**ILLUSTRATION 9-18**  
Retail Inventory Method  
with Markups and  
Markdowns

	Cost	Retail
Beginning inventory	\$ 500	\$ 1,000
Purchases (net)	20,000	35,000
Markups		3,000
Markup cancellations		1,000
Markdowns		2,500
Markdown cancellations		2,000
Sales (net)		25,000
<b>IN-FUSION INC.</b>		
	Cost	Retail
Beginning inventory	\$ 500	\$ 1,000
Purchases (net)	20,000	35,000
Merchandise available for sale	20,500	36,000
Add: Markups		\$3,000
Less: Markup cancellations		(1,000)
Net markups		2,000
	20,500	38,000
<b>(A)</b> Cost-to-retail ratio	$\frac{\$20,500}{\$38,000} = 53.9\%$	
Deduct:		
Markdowns		2,500
Less: Markdown cancellations		(2,000)
Net markdowns		500
	\$20,500	37,500
<b>(B)</b> Cost-to-retail ratio	$\frac{\$20,500}{\$37,500} = 54.7\%$	
Deduct: Sales (net)		25,000
Ending inventory at retail		\$12,500

The computations for In-Fusion are:

$$\text{Ending inventory at retail} \times \text{Cost ratio} = \text{Value of ending inventory}$$

$$\text{Assumption A: } \$12,500 \times 53.9\% = \$6,737.50$$

$$\text{Assumption B: } \$12,500 \times 54.7\% = \$6,837.50$$

The question becomes: Which assumption and which percentage should In-Fusion use to compute the ending inventory valuation? The answer depends on which retail inventory method In-Fusion chooses.

**One approach uses only assumption A (a cost ratio using markups but not markdowns). It approximates the lower-of-average-cost-or-market.** We will refer to this approach as the **conventional retail inventory method** or the **lower-of-cost-or-market approach**.

To understand why this method considers only the markups, not the markdowns, in the cost percentage, you must understand how a retail business operates. A markup normally indicates an increase in the market value of the item. On the other hand, a markdown means a decline in the utility of that item. Therefore, to approximate the lower-of-cost-or-market, we would consider markdowns a current loss and so would not include them in calculating the cost-to-retail ratio. Omitting the markdowns would make the cost-to-retail ratio lower, which leads to an approximate lower-of-cost-or-market.

An example will make the distinction between the two methods clear: In-Fusion purchased two items for \$5 apiece; the original sales price was \$10 each. One item was

subsequently written down to \$2. Assuming no sales for the period, **if markdowns are considered** in the cost-to-retail ratio (assumption B—the **cost method**), we compute the ending inventory in the following way.

Markdowns Included in Cost-to-Retail Ratio		
	Cost	Retail
Purchases	\$10	\$20
Deduct: Markdowns		<u>8</u>
Ending inventory, at retail		<u>\$12</u>
Cost-to-retail ratio	$\frac{\$10}{\$12}$	= 83.3%
Ending inventory at cost	(\$12 × .833) = \$10	

**ILLUSTRATION 9-19**  
Retail Inventory Method  
Including Markdowns—  
Cost Method

This approach (the cost method) reflects an **average cost** of the two items of the commodity without considering the loss on the one item. It values ending inventory at \$10.

**If markdowns are not considered** in the cost-to-retail ratio (assumption A—the **conventional retail method**), we compute the ending inventory as follows.

Markdowns Not Included in Cost-to-Retail Ratio		
	Cost	Retail
Purchases	\$10	\$20
Cost-to-retail ratio	$\frac{\$10}{\$20}$	= 50%
Deduct: Markdowns		<u>8</u>
Ending inventory, at retail		<u>\$12</u>
Ending inventory, at cost	(\$12 × .50) = \$6	

**ILLUSTRATION 9-20**  
Retail Inventory Method  
Excluding Markdowns—  
Conventional Method  
(LCM)

Under this approach (the conventional retail method, in which markdowns are **not considered**), ending inventory would be \$6. The inventory valuation of \$6 reflects two inventory items, one inventoried at \$5 and the other at \$1. It reflects the fact that In-Fusion reduced the sales price from \$10 to \$2, and reduced the cost from \$5 to \$1.<sup>12</sup>

To approximate the lower-of-cost-or-market, In-Fusion must establish the **cost-to-retail ratio**. It does this by dividing the cost of goods available for sale by the sum of the original retail price of these goods plus the net markups. This calculation excludes markdowns and markdown cancellations. Illustration 9-21 (on page 456) shows the basic format for the retail inventory method using the lower-of-cost-or-market approach along with the In-Fusion Inc. information.

Because an averaging effect occurs, an exact lower-of-cost-or-market inventory valuation is ordinarily not obtained, but an adequate approximation can be achieved. In contrast, adding net markups **and** deducting net markdowns yields **approximate cost**.

<sup>12</sup>This figure is not really market (replacement cost), but it is net realizable value less the normal margin that is allowed. In other words, the sale price of the goods written down is \$2, but subtracting a normal margin of 50 percent (\$5 cost, \$10 price), the figure becomes \$1.

**ILLUSTRATION 9-21**  
 Comprehensive  
 Conventional Retail  
 Inventory Method Format

IN-FUSION INC.		
	Cost	Retail
Beginning inventory	\$ 500	\$ 1,000
Purchases (net)	<u>20,000</u>	<u>35,000</u>
Totals	<b>20,500</b>	<b>36,000</b>
Add: Net markups		
Markups		\$3,000
Markup cancellations		<u>1,000</u>
Totals	<u>\$20,500</u>	<u>38,000</u>
Deduct: Net markdowns		
Markdowns		2,500
Markdown cancellations		<u>2,000</u>
Sales price of goods available		37,500
Deduct: Sales (net)		<u>25,000</u>
Ending inventory, at retail		<u>\$12,500</u>
$\text{Cost-to-retail ratio} = \frac{\text{Cost of goods available}}{\text{Original retail price of goods available, plus net markups}}$ $= \frac{\$20,500}{\$38,000} = 53.9\%$		
Ending inventory at lower-of-cost-or-market (53.9% × \$12,500) = <u>\$ 6,737.50</u>		

### Special Items Relating to Retail Method

The retail inventory method becomes more complicated when we consider such items as freight-in, purchase returns and allowances, and purchase discounts. In the retail method, we treat such items as follows.

- **Freight costs** are part of the purchase cost.
- **Purchase returns** are ordinarily considered as a reduction of the price at both cost and retail.
- **Purchase discounts and allowances** usually are considered as a reduction of the cost of purchases.

In short, the treatment for the items affecting the cost column of the retail inventory approach follows the computation for cost of goods available for sale.<sup>13</sup>

Note also that **sales returns and allowances** are considered as proper adjustments to gross sales. However, when sales are recorded gross, companies do not recognize **sales discounts**. To adjust for the sales discount account in such a situation would provide an ending inventory figure at retail that would be overvalued.

In addition, a number of special items require careful analysis:

- **Transfers-in** from another department are reported in the same way as purchases from an outside enterprise.
- **Normal shortages** (breakage, damage, theft, shrinkage) should reduce the retail column because these goods are no longer available for sale. Such costs are reflected in the selling price because a certain amount of shortage is considered normal in a retail enterprise. As a result, companies do not consider this amount in computing the cost-to-retail percentage. Rather, to arrive at ending inventory at retail, they show normal shortages as a deduction similar to sales.
- **Abnormal shortages**, on the other hand, are deducted from both the cost and retail columns and reported as a special inventory amount or as a loss. To do otherwise distorts the cost-to-retail ratio and overstates ending inventory.

<sup>13</sup>When the purchase allowance is not reflected by a reduction in the selling price, no adjustment is made to the retail column.

- **Employee discounts** (given to employees to encourage loyalty, better performance, and so on) are deducted from the retail column in the same way as sales. These discounts should not be considered in the cost-to-retail percentage because they do not reflect an overall change in the selling price.

Illustration 9-22 shows some of these concepts. The company, Extreme Sport Apparel, determines its inventory using the conventional retail inventory method.

**ILLUSTRATION 9-22**  
Conventional Retail Inventory Method—  
Special Items Included

EXTREME SPORT APPAREL		
	Cost	Retail
Beginning inventory	\$ 1,000	\$ 1,800
Purchases	30,000	60,000
Freight-in	600	—
Purchase returns	(1,500)	(3,000)
Totals	30,100	58,800
Net markups		9,000
Abnormal shortage	(1,200)	(2,000)
Totals	<u>\$28,900</u>	65,800
Deduct:		
Net markdowns		1,400
Sales	\$36,000	
Sales returns	(900)	35,100
Employee discounts		800
Normal shortage		1,300
		<u>\$27,200</u>
$\text{Cost-to-retail ratio} = \frac{\$28,900}{\$65,800} = 43.9\%$		
$\text{Ending inventory at lower-of-cost-or-market} (43.9\% \times \$27,200) = \underline{\underline{\$11,940.80}}$		

### Evaluation of Retail Inventory Method

Companies like **Gap Inc.**, **Circuit City**, or your local department store use the retail inventory method of computing inventory for the following reasons: (1) to permit the computation of net income without a physical count of inventory, (2) as a control measure in determining inventory shortages, (3) in regulating quantities of merchandise on hand, and (4) for insurance information.

One characteristic of the retail inventory method is that it **has an averaging effect on varying rates of gross profit**. This can be problematic when companies apply the method to an entire business, where rates of gross profit vary among departments. There is no allowance for possible distortion of results because of such differences. Companies refine the retail method under such conditions by computing inventory separately by departments or by classes of merchandise with similar gross profits. In addition, the reliability of this method assumes that the distribution of items in inventory is similar to the “mix” in the total goods available for sale.

## PRESENTATION AND ANALYSIS

### Presentation of Inventories

Accounting standards require financial statement disclosure of the composition of the inventory, inventory financing arrangements, and the inventory costing methods employed. The standards also require the consistent application of costing methods from one period to another.

Manufacturers should report the inventory composition either in the balance sheet or in a separate schedule in the notes. The relative mix of raw materials, work in process,

**Objective 7**

Explain how to report and analyze inventory.



Additional Inventory Disclosures

and finished goods helps in assessing liquidity and in computing the stage of inventory completion.

Significant or unusual financing arrangements relating to inventories may require note disclosure. Examples include transactions with related parties, product financing arrangements, firm purchase commitments, involuntary liquidation of LIFO inventories, and pledging of inventories as collateral. Companies should present inventories pledged as collateral for a loan in the current assets section rather than as an offset to the liability.

A company should also report the basis on which it states inventory amounts (lower-of-cost-or-market) and the method used in determining cost (LIFO, FIFO, average cost, etc.). For example, the annual report of **Mumford of Wyoming** contains the following disclosures.

**ILLUSTRATION 9-23**  
Disclosure of Inventory Methods



**Mumford of Wyoming**

**Note A: Significant Accounting Policies**

Live feeder cattle and feed—last-in, first-out (LIFO) cost, which is below approximate market	\$854,800
Live range cattle—lower of principally identified cost or market	\$1,240,500
Live sheep and supplies—lower of first-in, first-out (FIFO) cost or market	\$674,000
Dressed meat and by-products—principally at market less allowances for distribution and selling expenses	\$362,630

The preceding illustration shows that a company can use different pricing methods for different elements of its inventory. If Mumford changes the method of pricing any of its inventory elements, it must report a change in accounting principle. For example, if Mumford changes its method of accounting for live sheep from FIFO to average cost, it should separately report this change, along with the effect on income, in the current and prior periods. Changes in accounting principle require an explanatory paragraph in the auditor’s report describing the change in method.

**Fortune Brands, Inc.** reported its inventories in its annual report as follows (note the “trade practice” followed in classifying inventories among the current assets).

**ILLUSTRATION 9-24**  
Disclosure of Trade Practice in Valuing Inventories



**Fortune Brands, Inc.**

**Current assets**

Inventories (Note 2)	
Leaf tobacco	\$ 563,424,000
Bulk whiskey	232,759,000
Other raw materials, supplies and work in process	238,906,000
Finished products	658,326,000
	\$1,693,415,000

**Note 2: Inventories**

Inventories are priced at the lower of cost (average; first-in, first-out; and minor amounts at last-in, first-out) or market. In accordance with generally recognized trade practice, the leaf tobacco and bulk whiskey inventories are classified as current assets, although part of such inventories due to the duration of the aging process, ordinarily will not be sold within one year.

The following inventory disclosures by **Newmont Gold Company** reveal the use of different bases of valuation, including market value, for different classifications of inventory.



### Newmont Gold Company

Current assets	
Inventories (Note 2)	\$44,303,000
Noncurrent assets	
Inventories—ore in stockpiles (Note 2)	\$5,250,000

**Note 2: Inventories**

Inventories included in current assets at December 31 were:

Ore and in-process inventory	\$11,303,000
Gold bullion and gold precipitates	24,209,000
Materials and supplies	8,791,000
	\$44,303,000

Ore and in-process inventory and materials and supplies are stated at the lower of average cost or net realizable value. Gold bullion and gold precipitates are stated at market value, less a provision for estimated refining and delivery charges. Expenditures capitalized as ore and in-process inventory include labor, material and other production costs.

Noncurrent inventories are stated at the lower of average cost or net realizable value and represent ore in stockpiles anticipated to be processed in future years.

**ILLUSTRATION 9-25**  
Disclosure of Different  
Bases of Valuation

## Analysis of Inventories

As our opening story illustrates, the amount of inventory that a company carries can have significant economic consequences. As a result, companies must manage inventories. But, inventory management is a double-edged sword. It requires constant attention. On the one hand, management wants to stock a great variety and quantity of items. Doing so will provide customers with the greatest selection. However, such an inventory policy may incur excessive carrying costs (e.g., investment, storage, insurance, taxes, obsolescence, and damage). On the other hand, low inventory levels lead to stockouts, lost sales, and disgruntled customers.

Using financial ratios helps companies to chart a middle course between these two dangers. Common ratios used in the management and evaluation of inventory levels are inventory turnover and a related measure, average days to sell the inventory.

### Inventory Turnover Ratio

The **inventory turnover ratio** measures the number of times on average a company sells the inventory during the period. It measures the liquidity of the inventory. To compute inventory turnover, divide the cost of goods sold by the average inventory on hand during the period.

Barring seasonal factors, analysts compute average inventory from beginning and ending inventory balances. For example, in its 2007 annual report **Kellogg Company** reported a beginning inventory of \$924 million, an ending inventory of \$824 million, and cost of goods sold of \$6,597 million for the year. Illustration 9-26 shows the inventory turnover formula and Kellogg Company’s 2007 ratio computation below.

$$\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}} = \frac{\$6,597}{(\$924 + \$824)/2} = 7.5 \text{ times}$$

**ILLUSTRATION 9-26**  
Inventory Turnover Ratio

### Average Days to Sell Inventory

A variant of the inventory turnover ratio is the **average days to sell inventory**. This measure represents the average number of days’ sales for which a company has inventory on hand. For example, the inventory turnover for **Kellogg Company** of 7.5 times divided into 365 is approximately 49 days.

There are typical levels of inventory in every industry. However, companies that keep their inventory at lower levels with higher turnovers than those of their competitors, and that still can satisfy customer needs, are the most successful.

You will want to read the **CONVERGENCE CORNER** on page 460

For discussion of how international convergence efforts relate to inventories.







# CONVERGENCE CORNER

## INVENTORIES

The major iGAAP requirements related to accounting and reporting for inventories are found in *IAS 2* (“Inventories”), *IAS 18* (“Revenue”), and *IAS 41* (“Agriculture”). In most cases, iGAAP and U.S. GAAP are the same. The major differences are that iGAAP prohibits the use of the LIFO cost flow assumption and records market in the lower-of-cost-or-market differently.

### RELEVANT FACTS

- The requirements for accounting for and reporting inventories are more principles-based under iGAAP. That is, U.S. GAAP provides more detailed guidelines in inventory accounting.
- Who owns the goods—goods in transit, consigned goods, special sales agreements—as well as the costs to include in inventory are essentially accounted for the same under iGAAP and U.S. GAAP.
- A major difference between iGAAP and U.S. GAAP relates to the LIFO cost flow assumption. U.S. GAAP permits the use of LIFO for inventory valuation. iGAAP prohibits its use. FIFO and average cost are the only two acceptable cost flow assumptions permitted under iGAAP. Both sets of GAAP permit specific identification where appropriate.
- In the lower-of-cost-or-market test for inventory valuation, iGAAP defines market as net realizable value. U.S. GAAP, on the other hand, defines market as replacement cost subject to the constraints of net realizable value (the ceiling) and net realizable value less a normal markup (the floor). That is, iGAAP does not use a ceiling or a floor to determine market.
- In 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 iGAAP, 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.
- Unlike property, plant, and equipment, iGAAP does not permit the option of valuing inventories at fair value. As indicated above, iGAAP requires inventory to be written down, but inventory cannot be written up above its original cost.
- Similar to U.S. GAAP, certain agricultural products and mineral products can be reported at net realizable value using iGAAP.

### ABOUT THE NUMBERS

Presented below is a disclosure under iGAAP related to inventories for **Nokia Corporation**, which reflects application of iGAAP to its inventories.

#### **Nokia Corporation**

##### **Notes to the Consolidated Financial Statements (in part)**

##### **Note 1. Accounting principles**

###### **Inventories**

Inventories are stated at the lower of cost or net realizable value. Cost is determined using standard cost, which approximates actual cost on a FIFO basis. Net realizable value is the amount that can be realized from the sale of the inventory in the normal course of business after allowing for the costs of realization. In addition to the cost of materials and direct labor, an appropriate proportion of production overhead is included in the inventory values. An allowance is recorded for excess inventory and obsolescence based on the lower of cost or net realizable value.

##### **Note 18. Inventories (000,000 euros)**

	2006	2005
Raw materials, supplies, and other	360	361
Work in progress	600	685
Finished goods	594	622
<b>Total</b>	<u>1,554</u>	<u>1,668</u>

### ON THE HORIZON

One convergence issue that will be difficult to resolve relates to the use of the LIFO cost flow assumption. As indicated, iGAAP specifically prohibits its use. Conversely, the LIFO cost flow assumption is widely used in the United States because of its favorable tax advantages. In addition, many argue that LIFO from a financial reporting point of view provides a better matching of current costs against revenue and therefore enables companies to compute a more realistic income.

## SUMMARY OF LEARNING OBJECTIVES

**•1 Describe and apply the lower-of-cost-or-market rule.** If inventory declines in value below its original cost, for whatever reason, a company should write down the inventory to reflect this loss. The general rule is to abandon the historical cost principle when the future utility (revenue-producing ability) of the asset drops below its original cost.

**•2 Explain when companies value inventories at net realizable value.** Companies value inventory at net realizable value when: (1) there is a controlled market with a quoted price applicable to all quantities, (2) no significant costs of disposal are involved, and (3) the cost figures are too difficult to obtain.

**•3 Explain when companies use the relative sales value method to value inventories.** When a company purchases a group of varying units at a single lump-sum price—a so-called basket purchase—the company may allocate the total purchase price to the individual items on the basis of relative sales value.

**•4 Discuss accounting issues related to purchase commitments.** Accounting for purchase commitments is controversial. Some argue that companies should report purchase commitment contracts as assets and liabilities at the time the contract is signed. Others believe that recognition at the delivery date is most appropriate. The FASB neither excludes nor recommends the recording of assets and liabilities for purchase commitments, but it notes that if companies recorded such contracts at the time of commitment, the nature of the loss and the valuation account should be reported when the price falls.

**•5 Determine ending inventory by applying the gross profit method.** Companies follow these steps to determine ending inventory by the gross profit method: (1) Compute the gross profit percentage on selling price. (2) Compute gross profit by multiplying net sales by the gross profit percentage. (3) Compute cost of goods sold by subtracting gross profit from net sales. (4) Compute ending inventory by subtracting cost of goods sold from total goods available for sale.

**•6 Determine ending inventory by applying the retail inventory method.** Companies follow these steps to determine ending inventory by the conventional retail method: (1) To estimate inventory at retail, deduct the sales for the period from the retail value of the goods available for sale. (2) To find the cost-to-retail ratio for all goods passing through a department or firm, divide the total goods available for sale at cost by the total goods available at retail. (3) Convert the inventory valued at retail to approximate cost by applying the cost-to-retail ratio.

**•7 Explain how to report and analyze inventory.** Accounting standards require financial statement disclosure of: (1) the composition of the inventory (in the balance sheet or a separate schedule in the notes); (2) significant or unusual inventory financing arrangements; and (3) inventory costing methods employed (which may differ for different elements of inventory). Accounting standards also require the consistent application of costing methods from one period to another. Common ratios used in the management and evaluation of inventory levels are inventory turnover and average days to sell the inventory.

## KEY TERMS

average days to sell inventory, 459  
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APPENDIX 9A

LIFO RETAIL METHODS

**Objective-8**  
Determine ending inventory by applying the LIFO retail methods.

A number of retail establishments have changed from the more conventional treatment to a **LIFO retail method**. For example, the world’s largest retailer, **Wal-Mart** uses the LIFO retail method. The primary reason to do so is for the tax advantages associated with valuing inventories on a LIFO basis. In addition, adoption of LIFO results in a better matching of costs and revenues.

The use of LIFO retail is made under two assumptions: (1) stable prices and (2) fluctuating prices.

**STABLE PRICES—LIFO RETAIL METHOD**

It is much more complex to compute the final inventory balance using a LIFO flow than using the conventional retail method. Under the LIFO retail method, companies like **Wal-Mart** or **Target** consider **both markups and markdowns** in obtaining the proper cost-to-retail percentage. Furthermore, since the LIFO method is concerned only with the additional layer, or the amount that should be subtracted from the previous layer, the beginning inventory is excluded from the cost-to-retail percentage.

**A major assumption of the LIFO retail method is that the markups and markdowns apply only to the goods purchased during the current period and not to the beginning inventory.** This assumption is debatable and may explain why some companies do not adopt this method.

Illustration 9A-1 presents the major concepts involved in the LIFO retail method applied to the Hernandez Company. Note that, to simplify the accounting, we have assumed that the price level has remained unchanged.

**ILLUSTRATION 9A-1**  
LIFO Retail Method—  
Stable Prices

	Cost	Retail
Beginning inventory—2010	\$ 27,000	\$ 45,000
Net purchases during the period	346,500	480,000
Net markups		20,000
Net markdowns		(5,000)
<b>Total (excluding beginning inventory)</b>	<b>346,500</b>	<b>495,000</b>
Total (including beginning inventory)	\$373,500	540,000
Net sales during the period		(484,000)
Ending inventory at retail		\$ 56,000
Establishment of cost-to-retail percentage under assumptions of LIFO retail ( $\$346,500 \div \$495,000 = 70\%$ )		

Illustration 9A-2 indicates that the inventory is composed of two layers: the beginning inventory and the additional increase that occurred in the inventory this period (2010). When we start the next period (2011), the beginning inventory will be composed of those two layers. If an increase in inventory occurs again, an additional layer will be added.

**ILLUSTRATION 9A-2**  
Ending Inventory at LIFO  
Cost, 2010—Stable Prices

Ending Inventory at Retail Prices—2010	Layers at Retail Prices	Cost-to-Retail (Percentage)	Ending Inventory at LIFO Cost
\$56,000	2009 \$45,000	× 60%*	= \$27,000
	2010 11,000	× 70	= 7,700
	<u>\$56,000</u>		<u>\$34,700</u>
* $\frac{\$27,000}{\$45,000}$ (prior year's cost-to-retail)			

However, if the final inventory figure is below the beginning inventory, Hernandez must reduce the beginning inventory starting with the most recent layer. For example, assume that the ending inventory for 2011 at retail is \$50,000. Illustration 9A-3 shows the computation of the ending inventory at cost. Notice that the 2010 layer is reduced from \$11,000 to \$5,000.

Ending Inventory at Retail Prices—2011	Layers at Retail Prices	Cost-to-Retail (Percentage)	Ending Inventory at LIFO Cost
\$50,000	2009 \$45,000	× 60%	= \$27,000
	2010 5,000	× 70%	= 3,500
	<u>\$50,000</u>		<u>\$30,500</u>

**ILLUSTRATION 9A-3**  
Ending Inventory at LIFO Cost, 2011—Stable Prices

## FLUCTUATING PRICES—DOLLAR-VALUE LIFO RETAIL METHOD

The previous example simplified the LIFO retail method by ignoring changes in the selling price of the inventory. Let us now assume that a change in the price level of the inventories occurs (as is usual). If the price level does change, the company must **eliminate the price change** so as to measure the real increase in inventory, not the dollar increase. This approach is referred to as the **dollar-value LIFO retail method**.

To illustrate, assume that the beginning inventory had a retail market value of \$10,000 and the ending inventory had a retail market value of \$15,000. Assume further that the price level has risen from 100 to 125. It is inappropriate to suggest that a real increase in inventory of \$5,000 has occurred. Instead, the company must deflate the ending inventory at retail, as the computation in Illustration 9A-4 shows.

Ending inventory at retail (deflated) $\$15,000 \div 1.25^*$	\$12,000	
Beginning inventory at retail	<u>10,000</u>	
Real increase in inventory at retail	<u>\$ 2,000</u>	
Ending inventory at retail on LIFO basis:		
First layer	\$10,000	
Second layer $(\$2,000 \times 1.25)$	<u>2,500</u>	<u>\$12,500</u>
*1.25 = $125 \div 100$		

**ILLUSTRATION 9A-4**  
Ending Inventory at Retail—Deflated and Restated

This approach is essentially the dollar-value LIFO method discussed in Chapter 8. In computing the LIFO inventory under a dollar-value LIFO approach, the company finds the dollar increase in inventory and deflates it to beginning-of-the-year prices. This indicates whether actual increases or decreases in quantity have occurred. If an increase in quantities occurs, the company prices this increase at the new index, in order to compute the value of the new layer. If a decrease in quantities happens, the company subtracts the increase from the most recent layers to the extent necessary.

The following computations, based on those in Illustration 9A-1 for Hernandez Company, illustrate the differences between the dollar-value LIFO retail method and the regular LIFO retail approach. Assume that the current 2010 price index is 112 (prior year = 100) and that the inventory (\$56,000) has remained unchanged. In comparing Illustrations 9A-1 and 9A-5 (see page 464), note that the computations involved in finding the cost-to-retail percentage are exactly the same. However, the dollar-value method determines the increase that has occurred in the inventory in terms of base-year prices.

**ILLUSTRATION 9A-5**  
Dollar-Value LIFO Retail Method—Fluctuating Prices

	Cost	Retail
Beginning inventory—2010	\$ 27,000	\$ 45,000
Net purchases during the period	346,500	480,000
Net markups		20,000
Net markdowns		(5,000)
<b>Total (excluding beginning inventory)</b>	<b>346,500</b>	<b>495,000</b>
Total (including beginning inventory)	\$373,500	540,000
Net sales during the period at retail		(484,000)
Ending inventory at retail		\$ 56,000
Establishment of cost-to-retail percentage under assumptions of LIFO retail ( $\$346,500 \div \$495,000$ ) = <span style="float: right;">70%</span>		
A. Ending inventory at retail prices deflated to base-year prices		
	$\$56,000 \div 112 =$	\$50,000
B. Beginning inventory (retail) at base-year prices		45,000
C. Inventory increase (retail) from beginning of period		\$ 5,000

From this information, we compute the inventory amount at cost:

**ILLUSTRATION 9A-6**  
Ending Inventory at LIFO Cost, 2010—Fluctuating Prices

Ending Inventory at Base-Year Retail Prices—2010	Layers at Base-Year Retail Prices	Price Index (percentage)	Cost-to-Retail (percentage)	Ending Inventory at LIFO Cost
\$50,000	→ 2009 \$45,000	× 100%	× 60%	= \$27,000
	→ 2010 5,000	× 112	× 70	= 3,920
	<u>\$50,000</u>			<u>\$30,920</u>

As Illustration 9A-6 shows, before the conversion to cost takes place, Hernandez must restate layers of a particular year to the prices in effect in the year when the layer was added.

Note the difference between the LIFO approach (stable prices) and the dollar-value LIFO method as indicated below.

**ILLUSTRATION 9A-7**  
Comparison of Effect of Price Assumptions

	LIFO (stable prices)	LIFO (fluctuating prices)
Beginning inventory	\$27,000	\$27,000
Increment	7,700	3,920
Ending inventory	<u>\$34,700</u>	<u>\$30,920</u>

The difference of \$3,780 ( $\$34,700 - \$30,920$ ) results from an increase in the **price** of goods, not from an increase in the **quantity** of goods.

## SUBSEQUENT ADJUSTMENTS UNDER DOLLAR-VALUE LIFO RETAIL

The dollar-value LIFO retail method follows the same procedures in subsequent periods as the traditional dollar-value method discussed in Chapter 8. That is, when a real increase in inventory occurs, Hernandez adds a new layer.

To illustrate, using the data from the previous example, assume that the retail value of the 2011 ending inventory at current prices is \$64,800, the 2011 price index is 120 percent of base-year, and the cost-to-retail percentage is 75 percent. In base-year dollars, the ending inventory is therefore \$54,000 ( $\$64,800/120\%$ ). Illustration 9A-8 shows the computation of the ending inventory at LIFO cost.

Ending Inventory at Base-Year Retail Prices—2011	Layers at Base-Year Retail Prices	Price Index (percentage)	Cost-to-Retail (percentage)	Ending Inventory at LIFO Cost
\$54,000	2009 \$45,000	× 100%	× 60%	= \$27,000
	2010 5,000	× 112	× 70	= 3,920
	2011 4,000	× 120	× 75	= 3,600
	<u>\$54,000</u>			<u>\$34,520</u>

**ILLUSTRATION 9A-8**  
Ending Inventory at LIFO  
Cost, 2011—Fluctuating  
Prices

Conversely, when a real decrease in inventory develops, Hernandez “peels off” previous layers at prices in existence when the layers were added. To illustrate, assume that in 2011 the ending inventory in base-year prices is \$48,000. The computation of the LIFO inventory is as follows.

Ending Inventory at Base-Year Retail Prices—2011	Layers at Base-Year Retail Prices	Price Index (percentage)	Cost-to-Retail (percentage)	Ending Inventory at LIFO Cost
\$48,000	2009 \$45,000	× 100%	× 60%	= \$27,000
	2010 3,000	× 112	× 70	= 2,352
	<u>\$48,000</u>			<u>\$29,352</u>

**ILLUSTRATION 9A-9**  
Ending Inventory at LIFO  
Cost, 2011—Fluctuating  
Prices

The advantages and disadvantages of the lower-of-cost-or-market method (conventional retail) versus LIFO retail are the same for retail operations as for non-retail operations. As a practical matter, a company’s selection of which retail inventory method to use often involves determining which method provides a lower taxable income. It might appear that retail LIFO will provide the lower taxable income in a period of rising prices. But this is not always the case. LIFO will provide an approximate current cost matching, but it states ending inventory at cost. The conventional retail method may have a large write-off because of the use of the lower-of-cost-or-market approach, which may offset the LIFO current cost matching.

## CHANGING FROM CONVENTIONAL RETAIL TO LIFO

Because conventional retail is a lower-of-cost-or-market approach, the company must restate beginning inventory to a cost basis when changing from the conventional retail to the LIFO method.<sup>14</sup> The usual approach is to compute the cost basis from the purchases of the prior year, adjusted for both markups and markdowns.<sup>15</sup>

To illustrate, assume that Clark Clothing Store employs the conventional retail method but wishes to change to the LIFO retail method beginning in 2010. The amounts shown by the firm’s books are as follows.

	At Cost	At Retail
Inventory, January 1, 2010	\$ 5,120	\$ 15,000
Net purchases in 2010	47,250	100,000
Net markups in 2010		7,000
Net markdowns in 2010		2,000
Sales in 2010		95,000

<sup>14</sup>Changing from the conventional retail method to LIFO retail represents a change in accounting principle. We provide an expanded discussion of accounting principle changes in Chapter 22.

<sup>15</sup>A logical question to ask is, “Why are only the purchases from the prior period considered and not also the beginning inventory?” Apparently the IRS believes that “the purchases-only approach” provides a more reasonable cost basis. The IRS position is debatable. However, for our purposes, it seems appropriate to use the purchases-only approach.

Illustration 9A-10 shows computation of ending inventory under the **conventional retail method** for 2010.

**ILLUSTRATION 9A-10**

Conventional Retail Inventory Method

	Cost	Retail
Inventory January 1, 2010	\$ 5,210	\$ 15,000
Net purchases	47,250	100,000
Net additional markups		7,000
	<u>\$52,460</u>	<u>122,000</u>
Net markdowns		(2,000)
Sales		<u>(95,000)</u>
Ending inventory at retail		<u>\$ 25,000</u>
Establishment of cost-to-retail percentage (\$52,460 ÷ \$122,000) =		<u>43%</u>
December 31, 2010, inventory at cost		
Inventory at retail		\$ 25,000
Cost-to-retail ratio		× 43%
<b>Inventory at cost under conventional retail</b>		<u><b>\$ 10,750</b></u>

Clark Clothing can then quickly approximate the ending inventory for 2010 under the **LIFO retail method** as shown in Illustration 9A-11.

**ILLUSTRATION 9A-11**

Conversion to LIFO Retail Inventory Method

<b>December 31, 2010, Inventory at LIFO Cost</b>			
Ending inventory	$\frac{\text{Retail}}{\$25,000}$	$\times \frac{\text{Ratio}}{45\%*}$	$= \frac{\text{LIFO}}{\$11,250}$
*The cost-to-retail ratio was computed as follows:			
Net purchases at cost	$\frac{\$47,250}{\$100,000 + \$7,000 - \$2,000} = 45\%$		
Net purchases at retail plus markups less markdowns			

The difference of \$500 (\$11,250 – \$10,750) between the LIFO retail method and the conventional retail method in the ending inventory for 2010 is the amount by which the company must adjust beginning inventory for 2011. The entry to adjust the inventory to a cost basis is as follows.

Inventory	500	
Adjustment to Record Inventory at Cost		500

**KEY TERMS**

- dollar-value LIFO retail method, 463
- LIFO retail method, 462

**SUMMARY OF LEARNING OBJECTIVE FOR APPENDIX 9A**

**8** **Determine ending inventory by applying the LIFO retail methods.** The application of LIFO retail is made under two assumptions: stable prices and fluctuating prices.  
*Procedures under stable prices:* (a) Because the LIFO method is a cost method, both markups and markdowns must be considered in obtaining the proper cost-to-retail

percentage. (b) Since the LIFO method is concerned only with the additional layer, or the amount that should be subtracted from the previous layer, the beginning inventory is excluded from the cost-to-retail percentage. (c) The markups and markdowns apply only to the goods purchased during the current period and not to the beginning inventory.

*Procedures under fluctuating prices:* The steps are the same as for stable prices except that in computing the LIFO inventory under a dollar-value LIFO approach, the dollar increase in inventory is found and deflated to beginning-of-the-year prices. Doing so will determine whether actual increases or decreases in quantity have occurred. If quantities increase, this increase is priced at the new index to compute the new layer. If quantities decrease, the decrease is subtracted from the most recent layers to the extent necessary.



## FASB CODIFICATION

### FASB Codification References

- [1] FASB ASC 330-10-35. [Predecessor literature: “Restatement and Revision of Accounting Research Bulletins,” *Accounting Research Bulletin No. 43* (New York: AICPA, 1953), Ch. 4, par. 8).]
- [2] FASB ASC 330-10-35. [Predecessor literature: “Restatement and Revision of Accounting Research Bulletins,” *Accounting Research Bulletin No. 43* (New York: AICPA, 1953), Ch. 4.].]
- [3] FASB ASC 330-10-35-16 through 18. [Predecessor literature: “Restatement and Revision of Accounting Research Bulletins,” *Accounting Research Bulletin No. 43* (New York: AICPA, 1953), Ch. 4, par. 16).]

### Exercises

Access the FASB Codification at <http://asc.fasb.org/home> to prepare responses to the following exercises. Provide Codification references for your responses.

CE9-1 Access the glossary (“Master Glossary”) to answer the following.

- (a) What is the definition of inventory?
- (b) What is the definition of market as it relates to inventory?
- (c) What is the definition of net realizable value?

CE9-2 Based on increased competition for one of its key products, Tutaj Company is concerned that it will not be able to sell its products at a price that would cover its costs. Since the company is already having a bad year, the sales manager proposes writing down the inventory to the lowest level possible, so that all the bad news will be in the current year. Explain to the sales manager the rationale for lower-of-cost-or-market adjustments, according to GAAP.

CE9-3 What are the provisions for subsequent measurement of inventory in the context of a hedging transaction?

CE9-4 What is the nature of the SEC guidance concerning inventory disclosures?

**An additional Codification case can be found in the Using Your Judgment section, on page 484.**

**Be sure to check the companion website for a Review and Analysis Exercise, with solution.**





Note: All asterisked Questions, Exercises, and Problems relate to material in the appendix to the chapter.

## QUESTIONS

1. Where there is evidence that the utility of inventory goods, as part of their disposal in the ordinary course of business, will be less than cost, what is the proper accounting treatment?
2. Explain the rationale for the ceiling and floor in the lower-of-cost-or-market method of valuing inventories.
3. Why are inventories valued at the lower-of-cost-or-market? What are the arguments against the use of the LCM method of valuing inventories?
4. What approaches may be employed in applying the lower-of-cost-or-market procedure? Which approach is normally used and why?
5. In some instances accounting principles require a departure from valuing inventories at cost alone. Determine the proper unit inventory price in the following cases.
13. A fire destroys all of the merchandise of Assante Company on February 10, 2011. Presented below is information compiled up to the date of the fire.

Inventory, January 1, 2011	\$ 400,000
Sales to February 10, 2011	1,950,000
Purchases to February 10, 2011	1,140,000
Freight-in to February 10, 2011	60,000
Rate of gross profit on selling price	40%

What is the approximate inventory on February 10, 2011?

- |   | Cases   |         |         |         |         |
|---|---------|---------|---------|---------|---------|
|   | 1       | 2       | 3       | 4       | 5       |
| Cost                                    | \$15.90 | \$16.10 | \$15.90 | \$15.90 | \$15.90 |
| Net realizable value                    | 14.50   | 19.20   | 15.20   | 10.40   | 16.40   |
| Net realizable value less normal profit | 12.80   | 17.60   | 13.75   | 8.80    | 14.80   |
| Market (replacement cost)               | 14.80   | 17.20   | 12.80   | 9.70    | 16.80   |
6. What method(s) might be used in the accounts to record a loss due to a price decline in the inventories? Discuss.
  7. What factors might call for inventory valuation at sales prices (net realizable value or market price)?
  8. Under what circumstances is relative sales value an appropriate basis for determining the price assigned to inventory?
  9. At December 31, 2011, Ashley Co. has outstanding purchase commitments for purchase of 150,000 gallons, at \$6.20 per gallon, of a raw material to be used in its manufacturing process. The company prices its raw material inventory at cost or market, whichever is lower. Assuming that the market price as of December 31, 2011, is \$5.90, how would you treat this situation in the accounts?
  10. What are the major uses of the gross profit method?
  11. Distinguish between gross profit as a percentage of cost and gross profit as a percentage of sales price. Convert the following gross profit percentages based on cost to gross profit percentages based on sales price: 25% and 33 $\frac{1}{3}$ %. Convert the following gross profit percentages based on sales price to gross profit percentages based on cost: 33 $\frac{1}{3}$ % and 60%.
  12. Adriana Co. with annual net sales of \$5 million maintains a markup of 25% based on cost. Adriana's expenses average 15% of net sales. What is Adriana's gross profit and net profit in dollars?

14. What conditions must exist for the retail inventory method to provide valid results?
15. The conventional retail inventory method yields results that are essentially the same as those yielded by the lower-of-cost-or-market method. Explain. Prepare an illustration of how the retail inventory method reduces inventory to market.

16. (a) Determine the ending inventory under the conventional retail method for the furniture department of Mayron Department Stores from the following data.


	Cost	Retail
Inventory, Jan. 1	\$ 149,000	\$ 283,500
Purchases	1,400,000	2,160,000
Freight-in	70,000	
Markups, net		92,000
Markdowns, net		48,000
Sales		2,175,000

- (b) If the results of a physical inventory indicated an inventory at retail of \$295,000, what inferences would you draw?
17. **Deere and Company** reported inventory in its balance sheet as follows:

Inventories      \$1,999,100,000

What additional disclosures might be necessary to present the inventory fairly?

18. Of what significance is inventory turnover to a retail store?
19. Where can authoritative iGAAP guidance related to inventories be found?
20. Briefly describe some of the similarities and differences between U.S. GAAP and iGAAP with respect to the accounting for inventories.
21. LaTour Inc. is based in France and prepares its financial statements in accordance with iGAAP. In 2010, it reported cost of goods sold of €578 million and average inventory of €154 million. Briefly discuss how analysis of LaTour's inventory turnover ratio (and comparisons to a company using U.S. GAAP) might be affected by differences in inventory accounting between iGAAP and U.S. GAAP.

-  22. Reed Pentak, a finance major, has been following globalization and made the following observation concerning accounting convergence: "I do not see many obstacles concerning development of a single accounting standard for inventories." Prepare a response to Reed to explain the main obstacle to achieving convergence in the area of inventory accounting.
- \*23. What modifications to the conventional retail method are necessary to approximate a LIFO retail flow?


**BRIEF EXERCISES**



-  **BE9-1** Presented below is information related to Rembrandt Inc.'s inventory.



(per unit)	Skis	Boots	Parkas
Historical cost	\$190.00	\$106.00	\$53.00
Selling price	212.00	145.00	73.75
Cost to distribute	19.00	8.00	2.50
Current replacement cost	203.00	105.00	51.00
Normal profit margin	32.00	29.00	21.25

Determine the following: (a) the two limits to market value (i.e., the ceiling and the floor) that should be used in the lower-of-cost-or-market computation for skis; (b) the cost amount that should be used in the lower-of-cost-or-market comparison of boots; and (c) the market amount that should be used to value parkas on the basis of the lower-of-cost-or-market.

-  **BE9-2** Floyd Corporation has the following four items in its ending inventory.





Item	Cost	Replacement Cost	Net Realizable Value (NRV)	NRV less Normal Profit Margin
Jokers	\$2,000	\$2,050	\$2,100	\$1,600
Penguins	5,000	5,100	4,950	4,100
Riddlers	4,400	4,550	4,625	3,700
Scarecrows	3,200	2,990	3,830	3,070

Determine the final lower-of-cost-or-market inventory value for each item.

-  **BE9-3** Kumar Inc. uses a perpetual inventory system. At January 1, 2011, inventory was \$214,000 at both cost and market value. At December 31, 2011, the inventory was \$286,000 at cost and \$265,000 at market value. Prepare the necessary December 31 entry under (a) the direct method and (b) the indirect method.
-  **BE9-4** Bell, Inc. buys 1,000 computer game CDs from a distributor who is discontinuing those games. The purchase price for the lot is \$8,000. Bell will group the CDs into three price categories for resale, as indicated below.

Group	No. of CDs	Price per CD
1	100	\$ 5
2	800	10
3	100	15

Determine the cost per CD for each group, using the relative sales value method.

-  **BE9-5** Kemper Company signed a long-term noncancelable purchase commitment with a major supplier to purchase raw materials in 2011 at a cost of \$1,000,000. At December 31, 2010, the raw materials to be purchased have a market value of \$950,000. Prepare any necessary December 31 entry.
-  **BE9-6** Use the information for Kemper Company from BE9-5. In 2011, Kemper paid \$1,000,000 to obtain the raw materials which were worth \$950,000. Prepare the entry to record the purchase.
-  **BE9-7** Fosbre Corporation's April 30 inventory was destroyed by fire. January 1 inventory was \$150,000, and purchases for January through April totaled \$500,000. Sales for the same period were \$700,000. Fosbre's normal gross profit percentage is 35% on sales. Using the gross profit method, estimate Fosbre's April 30 inventory that was destroyed by fire.
-  **BE9-8** Boyne Inc. had beginning inventory of \$12,000 at cost and \$20,000 at retail. Net purchases were \$120,000 at cost and \$170,000 at retail. Net markups were \$10,000; net markdowns were \$7,000; and sales were \$147,000. Compute ending inventory at cost using the conventional retail method.

- 7** BE9-9 In its 2007 annual report, **Wal-Mart** reported inventory of \$33,685 million on January 31, 2007, and \$31,910 million on January 31, 2006, cost of sales of \$264,152 million for fiscal year 2007, and net sales of \$344,992 million. Compute Wal-Mart's inventory turnover and the average days to sell inventory for the fiscal year 2007.
- 8** \*BE9-10 Use the information for Boyne Inc. from BE9-8. Compute ending inventory at cost using the LIFO retail method.
- 8** \*BE9-11 Use the information for Boyne Inc. from BE9-8, and assume the price level increased from 100 at the beginning of the year to 115 at year-end. Compute ending inventory at cost using the dollar-value LIFO retail method.

**EXERCISES**



**1 2**

**E9-1 (Lower-of-Cost-or-Market)** The inventory of Oheto Company on December 31, 2011, consists of the following items.



Part No.	Quantity	Cost per Unit	Cost to Replace per Unit
110	600	\$95	\$100
111	1,000	60	52
112	500	80	76
113	200	170	180
120	400	205	208
121 <sup>a</sup>	1,600	16	14
122	300	240	235

<sup>a</sup>Part No. 121 is obsolete and has a realizable value of \$0.50 each as scrap.

**Instructions**

- (a) Determine the inventory as of December 31, 2011, by the lower-of-cost-or-market method, applying this method directly to each item.
- (b) Determine the inventory by the lower-of-cost-or-market method, applying the method to the total of the inventory.

**1 2**

**E9-2 (Lower-of-Cost-or-Market)** Riegel Company uses the lower-of-cost-or-market method, on an individual-item basis, in pricing its inventory items. The inventory at December 31, 2011, consists of products D, E, F, G, H, and I. Relevant per-unit data for these products appear below.

	Item D	Item E	Item F	Item G	Item H	Item I
Estimated selling price	\$120	\$110	\$95	\$90	\$110	\$90
Cost	75	80	80	80	50	36
Replacement cost	120	72	70	30	70	30
Estimated selling expense	30	30	35	35	30	30
Normal profit	20	20	20	20	20	20

**Instructions**

Using the lower-of-cost-or-market rule, determine the proper unit value for balance sheet reporting purposes at December 31, 2011, for each of the inventory items above.

**1 2**

**E9-3 (Lower-of-Cost-or-Market)** Sedato Company follows the practice of pricing its inventory at the lower-of-cost-or-market, on an individual-item basis.

Item No.	Quantity	Cost per Unit	Cost to Replace	Estimated Selling Price	Cost of Completion and Disposal	Normal Profit
1320	1,200	\$3.20	\$3.00	\$4.50	\$0.35	\$1.25
1333	900	2.70	2.30	3.40	0.50	0.50
1426	800	4.50	3.70	5.00	0.40	1.00
1437	1,000	3.60	3.10	3.20	0.45	0.90
1510	700	2.25	2.00	3.25	0.80	0.60
1522	500	3.00	2.70	3.90	0.40	0.50
1573	3,000	1.80	1.60	2.50	0.75	0.50
1626	1,000	4.70	5.20	6.00	0.50	1.00

**Instructions**

From the information above, determine the amount of Sedato Company inventory.

**•1 •2** E9-4 (Lower-of-Cost-or-Market—Journal Entries) Dover Company began operations in 2010 and determined its ending inventory at cost and at lower-of-cost-or-market at December 31, 2010, and December 31, 2011. This information is presented below.

	Cost	Lower-of-Cost-or-Market
12/31/10	\$346,000	\$322,000
12/31/11	410,000	390,000

**Instructions**

- (a) Prepare the journal entries required at December 31, 2010, and December 31, 2011, assuming that the inventory is recorded at lower-of-cost-or-market, and a perpetual inventory system (direct method) is used.
- (b) Prepare journal entries required at December 31, 2010, and December 31, 2011, assuming that the inventory is recorded at cost and an allowance account is adjusted at each year-end under a perpetual system.
- (c) Which of the two methods above provides the higher net income in each year?

**•1 •2** E9-5 (Lower-of-Cost-or-Market—Valuation Account) Presented below is information related to Knight Enterprises.

	Jan. 31	Feb. 28	Mar. 31	Apr. 30
Inventory at cost	\$15,000	\$15,100	\$17,000	\$14,000
Inventory at the lower-of-cost-or-market	14,500	12,600	15,600	13,300
Purchases for the month		17,000	24,000	26,500
Sales for the month		29,000	35,000	40,000

**Instructions**

- (a) From the information, prepare (as far as the data permit) monthly income statements in columnar form for February, March, and April. The inventory is to be shown in the statement at cost, the gain or loss due to market fluctuations is to be shown separately, and a valuation account is to be set up for the difference between cost and the lower-of-cost-or-market.
- (b) Prepare the journal entry required to establish the valuation account at January 31 and entries to adjust it monthly thereafter.

**•1 •2** E9-6 (Lower-of-Cost-or-Market—Error Effect) LaGreca Company uses the lower-of-cost-or-market method, on an individual-item basis, in pricing its inventory items. The inventory at December 31, 2010, included product X. Relevant per-unit data for product X appear below.

Estimated selling price	\$50
Cost	40
Replacement cost	38
Estimated selling expense	14
Normal profit	9

There were 1,000 units of product X on hand at December 31, 2010. Product X was incorrectly valued at \$38 per unit for reporting purposes. All 1,000 units were sold in 2011.

**Instructions**

Compute the effect of this error on net income for 2010 and the effect on net income for 2011, and indicate the direction of the misstatement for each year.

**•3** E9-7 (Relative Sales Value Method) Larsen Realty Corporation purchased a tract of unimproved land for \$55,000. This land was improved and subdivided into building lots at an additional cost of \$30,000. These building lots were all of the same size but owing to differences in location were offered for sale at different prices as follows.



Group	No. of Lots	Price per Lot
1	9	\$3,000
2	15	4,000
3	19	2,000

Operating expenses for the year allocated to this project total \$18,200. Lots unsold at the year-end were as follows.

Group 1	5 lots
Group 2	7 lots
Group 3	2 lots

**Instructions**

At the end of the fiscal year Larsen Realty Corporation instructs you to arrive at the net income realized on this operation to date.

- E9-8 (Relative Sales Value Method)** During 2011, Crawford Furniture Company purchases a carload of wicker chairs. The manufacturer sells the chairs to Crawford for a lump sum of \$60,000, because it is discontinuing manufacturing operations and wishes to dispose of its entire stock. Three types of chairs are included in the carload. The three types and the estimated selling price for each are listed below.

Type	No. of Chairs	Estimated Selling Price Each
Lounge chairs	400	\$90
Armchairs	300	80
Straight chairs	800	50

During 2011, Crawford sells 200 lounge chairs, 100 armchairs, and 120 straight chairs.

#### Instructions

What is the amount of gross profit realized during 2011? What is the amount of inventory of unsold straight chairs on December 31, 2011?

- E9-9 (Purchase Commitments)** Prater Company has been having difficulty obtaining key raw materials for its manufacturing process. The company therefore signed a long-term noncancelable purchase commitment with its largest supplier of this raw material on November 30, 2011, at an agreed price of \$400,000. At December 31, 2011, the raw material had declined in price to \$375,000.

#### Instructions

What entry would you make on December 31, 2011, to recognize these facts?

- E9-10 (Purchase Commitments)** At December 31, 2011, Volkan Company has outstanding noncancelable purchase commitments for 40,000 gallons, at \$3.00 per gallon, of raw material to be used in its manufacturing process. The company prices its raw material inventory at cost or market, whichever is lower.

#### Instructions

- Assuming that the market price as of December 31, 2011, is \$3.30, how would this matter be treated in the accounts and statements? Explain.
- Assuming that the market price as of December 31, 2011, is \$2.70, instead of \$3.30, how would you treat this situation in the accounts and statements?
- Give the entry in January 2012, when the 40,000-gallon shipment is received, assuming that the situation given in (b) above existed at December 31, 2011, and that the market price in January 2012 was \$2.70 per gallon. Give an explanation of your treatment.

- E9-11 (Gross Profit Method)** Each of the following gross profit percentages is expressed in terms of cost.

- 20%
- 25%
- 33 $\frac{1}{3}$ %
- 50%

#### Instructions

Indicate the gross profit percentage in terms of sales for each of the above.

- E9-12 (Gross Profit Method)** Astaire Company uses the gross profit method to estimate inventory for monthly reporting purposes. Presented below is information for the month of May.

Inventory, May 1	\$ 160,000
Purchases (gross)	640,000
Freight-in	30,000
Sales	1,000,000
Sales returns	70,000
Purchase discounts	12,000

#### Instructions

- Compute the estimated inventory at May 31, assuming that the gross profit is 25% of sales.
- Compute the estimated inventory at May 31, assuming that the gross profit is 25% of cost.

- E9-13 (Gross Profit Method)** Zidek Corp. requires an estimate of the cost of goods lost by fire on March 9. Merchandise on hand on January 1 was \$38,000. Purchases since January 1 were \$92,000; freight-in, \$3,400; purchase returns and allowances, \$2,400. Sales are made at 33 $\frac{1}{3}$ % above cost and totaled \$120,000 to March 9. Goods costing \$10,900 were left undamaged by the fire; remaining goods were destroyed.

#### Instructions

- Compute the cost of goods destroyed.
- Compute the cost of goods destroyed, assuming that the gross profit is 33 $\frac{1}{3}$ % of sales.

**•5 E9-14 (Gross Profit Method)** Castlevania Company lost most of its inventory in a fire in December just before the year-end physical inventory was taken. The corporation's books disclosed the following.

Beginning inventory	\$170,000	Sales	\$650,000
Purchases for the year	450,000	Sales returns	24,000
Purchase returns	30,000	Rate of gross margin on net sales	30%

Merchandise with a selling price of \$21,000 remained undamaged after the fire. Damaged merchandise with an original selling price of \$15,000 had a net realizable value of \$5,300.

**Instructions**

Compute the amount of the loss as a result of the fire, assuming that the corporation had no insurance coverage.

**•5 E9-15 (Gross Profit Method)** You are called by Kevin Garnett of Celtic Co. on July 16 and asked to prepare a claim for insurance as a result of a theft that took place the night before. You suggest that an inventory be taken immediately. The following data are available.

Inventory, July 1	\$ 38,000
Purchases—goods placed in stock July 1–15	90,000
Sales—goods delivered to customers (gross)	116,000
Sales returns—goods returned to stock	4,000

Your client reports that the goods on hand on July 16 cost \$30,500, but you determine that this figure includes goods of \$6,000 received on a consignment basis. Your past records show that sales are made at approximately 25% over cost. Garnett's insurance covers only goods owned.

**Instructions**

Compute the claim against the insurance company.

**•5 E9-16 (Gross Profit Method)** Sliver Lumber Company handles three principal lines of merchandise with these varying rates of gross profit on cost.

Lumber	25%
Millwork	30%
Hardware	40%

On August 18, a fire destroyed the office, lumber shed, and a considerable portion of the lumber stacked in the yard. To file a report of loss for insurance purposes, the company must know what the inventories were immediately preceding the fire. No detail or perpetual inventory records of any kind were maintained. The only pertinent information you are able to obtain are the following facts from the general ledger, which was kept in a fireproof vault and thus escaped destruction.

	Lumber	Millwork	Hardware
Inventory, Jan. 1, 2011	\$ 250,000	\$ 90,000	\$ 45,000
Purchases to Aug. 18, 2011	1,500,000	375,000	160,000
Sales to Aug. 18, 2011	2,050,000	533,000	245,000

**Instructions**

Submit your estimate of the inventory amounts immediately preceding the fire.

**•5 E9-17 (Gross Profit Method)** Presented below is information related to Jerrold Corporation for the current year.

Beginning inventory	\$ 600,000	
Purchases	1,500,000	
Total goods available for sale		\$2,100,000
Sales		2,300,000

**Instructions**

Compute the ending inventory, assuming that (a) gross profit is 40% of sales; (b) gross profit is 60% of cost; (c) gross profit is 35% of sales; and (d) gross profit is 25% of cost.

**•6 E9-18 (Retail Inventory Method)** Presented below is information related to McKenna Company.

	Cost	Retail
Beginning inventory	\$ 58,000	\$100,000
Purchases (net)	122,000	200,000
Net markups		20,000
Net markdowns		30,000
Sales		186,000

**Instructions**

- (a) Compute the ending inventory at retail.
- (b) Compute a cost-to-retail percentage (round to two decimals) under the following conditions.
  - (1) Excluding both markups and markdowns.
  - (2) Excluding markups but including markdowns.
  - (3) Excluding markdowns but including markups.
  - (4) Including both markdowns and markups.
- (c) Which of the methods in (b) above (1, 2, 3, or 4) does the following?
  - (1) Provides the most conservative estimate of ending inventory.
  - (2) Provides an approximation of lower-of-cost-or-market.
  - (3) Is used in the conventional retail method.
- (d) Compute ending inventory at lower-of-cost-or-market (round to nearest dollar).
- (e) Compute cost of goods sold based on (d).
- (f) Compute gross margin based on (d).

**6** E9-19 (Retail Inventory Method) Presented below is information related to Kuchinsky Company.

	Cost	Retail
Beginning inventory	\$ 200,000	\$ 280,000
Purchases	1,425,000	2,140,000
Markups		95,000
Markup cancellations		15,000
Markdowns		35,000
Markdown cancellations		5,000
Sales		2,250,000

**Instructions**

Compute the inventory by the conventional retail inventory method.

**6** E9-20 (Retail Inventory Method) The records of Mandy's Boutique report the following data for the month of April.

Sales	\$95,000	Purchases (at cost)	\$55,000
Sales returns	2,000	Purchases (at sales price)	88,000
Markups	10,000	Purchase returns (at cost)	2,000
Markup cancellations	1,500	Purchase returns (at sales price)	3,000
Markdowns	9,300	Beginning inventory (at cost)	30,000
Markdown cancellations	2,800	Beginning inventory (at sales price)	46,500
Freight on purchases	2,400		

**Instructions**

Compute the ending inventory by the conventional retail inventory method.

**7** E9-21 (Analysis of Inventories) The financial statements of **General Mills, Inc.**'s 2007 annual report disclose the following information.

(in millions)	May 30, 2007	May 25, 2006	May 26, 2005
Inventories	\$1,174	\$1,055	\$1,037
		Fiscal Year	
		2007	2006
Sales		\$12,442	\$11,712
Cost of goods sold		7,955	7,545
Net income		1,144	1,090

**Instructions**

Compute General Mills's (a) inventory turnover and (b) the average days to sell inventory for 2007 and 2006.

**8** \*E9-22 (Retail Inventory Method—Conventional and LIFO) Brewster Company began operations on January 1, 2010, adopting the conventional retail inventory system. None of the company's merchandise was marked down in 2010 and, because there was no beginning inventory, its ending inventory for 2010 of \$41,100 would have been the same under either the conventional retail system or the LIFO retail system.

On December 31, 2011, the store management considers adopting the LIFO retail system and desires to know how the December 31, 2011, inventory would appear under both systems. All pertinent data

regarding purchases, sales, markups, and markdowns are shown below. There has been no change in the price level.

	Cost	Retail
Inventory, Jan. 1, 2011	\$ 41,100	\$ 60,000
Markdowns (net)		13,000
Markups (net)		22,000
Purchases (net)	150,000	191,000
Sales (net)		167,000

### Instructions

Determine the cost of the 2011 ending inventory under both (a) the conventional retail method and (b) the LIFO retail method.

- \*E9-23 (Retail Inventory Method—Conventional and LIFO)** Robinson Company began operations late in 2010 and adopted the conventional retail inventory method. Because there was no beginning inventory for 2010 and no markdowns during 2010, the ending inventory for 2010 was \$14,000 under both the conventional retail method and the LIFO retail method. At the end of 2011, management wants to compare the results of applying the conventional and LIFO retail methods. There was no change in the price level during 2011. The following data are available for computations.

	Cost	Retail
Inventory, January 1, 2011	\$14,000	\$20,000
Sales		75,000
Net markups		9,000
Net markdowns		2,500
Purchases	55,500	81,000
Freight-in	7,500	
Estimated theft		2,000

### Instructions

Compute the cost of the 2011 ending inventory under both (a) the conventional retail method and (b) the LIFO retail method.

- \*E9-24 (Dollar-Value LIFO Retail)** You assemble the following information for Dillon Department Store, which computes its inventory under the dollar-value LIFO method.

	Cost	Retail
Inventory on January 1, 2010	\$222,000	\$300,000
Purchases	364,800	480,000
Increase in price level for year		9%

### Instructions

Compute the cost of the inventory on December 31, 2010, assuming that the inventory at retail is (a) \$294,300 and (b) \$359,700.

- \*E9-25 (Dollar-Value LIFO Retail)** Presented below is information related to Atrium Corporation.

	Price Index	LIFO Cost	Retail
Inventory on December 31, 2010, when dollar-value LIFO is adopted	100	\$36,000	\$74,500
Inventory, December 31, 2011	110	?	95,150

### Instructions

Compute the ending inventory under the dollar-value LIFO method at December 31, 2011. The cost-to-retail ratio for 2011 was 55%.

- \*E9-26 (Conventional Retail and Dollar-Value LIFO Retail)** Mander Corporation began operations on January 1, 2010, with a beginning inventory of \$34,300 at cost and \$50,000 at retail. The following information relates to 2010.

	Retail
Net purchases (\$108,500 at cost)	\$150,000
Net markups	10,000
Net markdowns	5,000
Sales	128,000



**Instructions**

- (a) Assume Mander decided to adopt the conventional retail method. Compute the ending inventory to be reported in the balance sheet.
- (b) Assume instead that Mander decides to adopt the dollar-value LIFO retail method. The appropriate price indexes are 100 at January 1 and 110 at December 31. Compute the ending inventory to be reported in the balance sheet.
- (c) On the basis of the information in part (b), compute cost of goods sold.

**\*E9-27 (Dollar-Value LIFO Retail)** Springsteen Corporation adopted the dollar-value LIFO retail inventory method on January 1, 2009. At that time the inventory had a cost of \$54,000 and a retail price of \$100,000. The following information is available.

	Year-End Inventory at Retail	Current Year Cost—Retail %	Year-End Price Index
2009	\$121,900	57%	106
2010	138,750	60%	111
2011	126,500	61%	115
2012	162,500	58%	125

The price index at January 1, 2009, is 100.

**Instructions**

Compute the ending inventory at December 31 of the years 2009–2012. Round to the nearest dollar.

**\*E9-28 (Change to LIFO Retail)** Mueller Ltd., a local retailing concern in the Bronx, N.Y., has decided to change from the conventional retail inventory method to the LIFO retail method starting on January 1, 2011. The company recomputed its ending inventory for 2010 in accordance with the procedures necessary to switch to LIFO retail. The inventory computed was \$210,600.

**Instructions**

Assuming that Mueller Ltd.’s ending inventory for 2010 under the conventional retail inventory method was \$205,000, prepare the appropriate journal entry on January 1, 2011.



See the companion website, [www.wiley.com/college/kieso](http://www.wiley.com/college/kieso), for a set of B Exercises.

PROBLEMS



**\*1 \*2 P9-1 (Lower-of-Cost-or-Market)** Remmers Company manufactures desks. Most of the company’s desks are standard models and are sold on the basis of catalog prices. At December 31, 2010, the following finished desks appear in the company’s inventory.

Finished Desks	A	B	C	D
2010 catalog selling price	\$450	\$480	\$900	\$1,050
FIFO cost per inventory list 12/31/10	470	450	830	960
Estimated current cost to manufacture (at December 31, 2010, and early 2011)	460	430	610	1,000
Sales commissions and estimated other costs of disposal	50	60	80	130
2011 catalog selling price	500	540	900	1,200

The 2010 catalog was in effect through November 2010 and the 2011 catalog is effective as of December 1, 2010. All catalog prices are net of the usual discounts. Generally, the company attempts to obtain a 20% gross margin on selling price and has usually been successful in doing so.

**Instructions**

At what amount should each of the four desks appear in the company’s December 31, 2010, inventory, assuming that the company has adopted a lower-of-FIFO-cost-or-market approach for valuation of inventories on an individual-item basis?

**1 2**

**P9-2 (Lower-of-Cost-or-Market)** Garcia Home Improvement Company installs replacement siding, windows, and louvered glass doors for single family homes and condominium complexes in northern New Jersey and southern New York. The company is in the process of preparing its annual financial statements for the fiscal year ended May 31, 2010, and Jim Alcide, controller for Garcia, has gathered the following data concerning inventory.



At May 31, 2010, the balance in Garcia’s Raw Material Inventory account was \$408,000, and the Allowance to Reduce Inventory to Market had a credit balance of \$27,500. Alcide summarized the relevant inventory cost and market data at May 31, 2010, in the schedule below.

Alcide assigned Patricia Devereaux, an intern from a local college, the task of calculating the amount that should appear on Garcia’s May 31, 2010, financial statements for inventory under the lower-of-cost-or-market rule as applied to each item in inventory. Devereaux expressed concern over departing from the cost principle.

	Cost	Replacement Cost	Sales Price	Net Realizable Value	Normal Profit
Aluminum siding	\$ 70,000	\$ 62,500	\$ 64,000	\$ 56,000	\$ 5,100
Cedar shake siding	86,000	79,400	94,000	84,800	7,400
Louvered glass doors	112,000	124,000	186,400	168,300	18,500
Thermal windows	140,000	126,000	154,800	140,000	15,400
Total	<u>\$408,000</u>	<u>\$391,900</u>	<u>\$499,200</u>	<u>\$449,100</u>	<u>\$46,400</u>

**Instructions**

- (a) (1) Determine the proper balance in the Allowance to Reduce Inventory to Market at May 31, 2010.
- (2) For the fiscal year ended May 31, 2010, determine the amount of the gain or loss that would be recorded due to the change in the Allowance to Reduce Inventory to Market.
- (b) Explain the rationale for the use of the lower-of-cost-or-market rule as it applies to inventories. (CMA adapted)

**1 2**

**P9-3 (Entries for Lower-of-Cost-or-Market—Direct and Allowance)** Malone Company determined its ending inventory at cost and at lower-of-cost-or-market at December 31, 2009, December 31, 2010, and December 31, 2011, as shown below.

	Cost	Lower-of-Cost-or-Market
12/31/09	\$650,000	\$650,000
12/31/10	780,000	712,000
12/31/11	905,000	830,000

**Instructions**

- (a) Prepare the journal entries required at December 31, 2010, and at December 31, 2011, assuming that a perpetual inventory system and the direct method of adjusting to lower-of-cost-or-market is used.
- (b) Prepare the journal entries required at December 31, 2010, and at December 31, 2011, assuming that a perpetual inventory is recorded at cost and reduced to lower-of-cost-or-market through the use of an allowance account (indirect method).

**5**

**P9-4 (Gross Profit Method)** Eastman Company lost most of its inventory in a fire in December just before the year-end physical inventory was taken. Corporate records disclose the following.

Inventory (beginning)	\$ 80,000	Sales	\$415,000
Purchases	290,000	Sales returns	21,000
Purchase returns	28,000	Gross profit % based on net selling price	35%

Merchandise with a selling price of \$30,000 remained undamaged after the fire, and damaged merchandise has a salvage value of \$8,150. The company does not carry fire insurance on its inventory.

**Instructions**

Prepare a formal labeled schedule computing the fire loss incurred. (Do not use the retail inventory method.)



**P9-5 (Gross Profit Method)** On April 15, 2011, fire damaged the office and warehouse of Stanislaw Corporation. The only accounting record saved was the general ledger, from which the trial balance below was prepared.

STANISLAW CORPORATION		
Trial Balance		
March 31, 2011		
Cash	\$ 20,000	
Accounts receivable	40,000	
Inventory, December 31, 2010	75,000	
Land	35,000	
Building and equipment	110,000	
Accumulated depreciation		\$ 41,300
Other assets	3,600	
Accounts payable		23,700
Other expense accruals		10,200
Capital stock		100,000
Retained earnings		52,000
Sales		135,000
Purchases	52,000	
Other expenses	26,600	
	<u>\$362,200</u>	<u>\$362,200</u>

The following data and information have been gathered.

1. The fiscal year of the corporation ends on December 31.
2. An examination of the April bank statement and canceled checks revealed that checks written during the period April 1–15 totaled \$13,000: \$5,700 paid to accounts payable as of March 31, \$3,400 for April merchandise shipments, and \$3,900 paid for other expenses. Deposits during the same period amounted to \$12,950, which consisted of receipts on account from customers with the exception of a \$950 refund from a vendor for merchandise returned in April.
3. Correspondence with suppliers revealed unrecorded obligations at April 15 of \$15,600 for April merchandise shipments, including \$2,300 for shipments in transit (f.o.b. shipping point) on that date.
4. Customers acknowledged indebtedness of \$46,000 at April 15, 2011. It was also estimated that customers owed another \$8,000 that will never be acknowledged or recovered. Of the acknowledged indebtedness, \$600 will probably be uncollectible.
5. The companies insuring the inventory agreed that the corporation’s fire-loss claim should be based on the assumption that the overall gross profit ratio for the past 2 years was in effect during the current year. The corporation’s audited financial statements disclosed this information:

	Year Ended December 31	
	2010	2009
Net sales	\$530,000	\$390,000
Net purchases	280,000	235,000
Beginning inventory	50,000	66,000
Ending inventory	75,000	50,000

6. Inventory with a cost of \$7,000 was salvaged and sold for \$3,500. The balance of the inventory was a total loss.

**Instructions**

Prepare a schedule computing the amount of inventory fire loss. The supporting schedule of the computation of the gross profit should be in good form.

(AICPA adapted)



**P9-6 (Retail Inventory Method)** The records for the Clothing Department of Sharapova’s Discount Store are summarized below (and on the next page) for the month of January.

- Inventory, January 1: at retail \$25,000; at cost \$17,000
- Purchases in January: at retail \$137,000; at cost \$82,500
- Freight-in: \$7,000
- Purchase returns: at retail \$3,000; at cost \$2,300
- Transfers in from suburban branch: at retail \$13,000; at cost \$9,200
- Net markups: \$8,000

Net markdowns: \$4,000  
 Inventory losses due to normal breakage, etc.: at retail \$400  
 Sales at retail: \$95,000  
 Sales returns: \$2,400

**Instructions**

- (a) Compute the inventory for this department as of January 31, at retail prices.
- (b) Compute the ending inventory using lower-of-average-cost-or-market.

**6** P9-7 (Retail Inventory Method) Presented below is information related to Waveland Inc.

	Cost	Retail
Inventory, 12/31/10	\$250,000	\$ 390,000
Purchases	914,500	1,460,000
Purchase returns	60,000	80,000
Purchase discounts	18,000	—
Gross sales (after employee discounts)	—	1,410,000
Sales returns	—	97,500
Markups	—	120,000
Markup cancellations	—	40,000
Markdowns	—	45,000
Markdown cancellations	—	20,000
Freight-in	42,000	—
Employee discounts granted	—	8,000
Loss from breakage (normal)	—	4,500

**Instructions**

Assuming that Waveland Inc. uses the conventional retail inventory method, compute the cost of its ending inventory at December 31, 2011.

**6** P9-8 (Retail Inventory Method) Fuque Inc. uses the retail inventory method to estimate ending inventory for its monthly financial statements. The following data pertain to a single department for the month of October 2011.



Inventory, October 1, 2011	
At cost	\$ 52,000
At retail	78,000
Purchases (exclusive of freight and returns)	
At cost	272,000
At retail	423,000
Freight-in	16,600
Purchase returns	
At cost	5,600
At retail	8,000
Markups	9,000
Markup cancellations	2,000
Markdowns (net)	3,600
Normal spoilage and breakage	10,000
Sales	390,000

**Instructions**

- (a) Using the conventional retail method, prepare a schedule computing estimated lower-of-cost-or-market inventory for October 31, 2011.
- (b) A department store using the conventional retail inventory method estimates the cost of its ending inventory as \$60,000. An accurate physical count reveals only \$47,000 of inventory at lower-of-cost-or-market. List the factors that may have caused the difference between the computed inventory and the physical count.

**1 • 2 • 4** P9-9 (Statement and Note Disclosure, LCM, and Purchase Commitment) Maddox Specialty Company, a division of Lost World Inc., manufactures three models of gear shift components for bicycles that are sold to bicycle manufacturers, retailers, and catalog outlets. Since beginning operations in 1978, Maddox has used normal absorption costing and has assumed a first-in, first-out cost flow in its perpetual inventory system. The balances of the inventory accounts at the end of Maddox's fiscal year, November 30, 2010, are shown below. The inventories are stated at cost before any year-end adjustments.

Finished goods	\$647,000
Work in process	112,500
Raw materials	264,000
Factory supplies	69,000

The following information relates to Maddox’s inventory and operations.

- The finished goods inventory consists of the items analyzed below.

	Cost	Market
<u>Down tube shifter</u>		
Standard model	\$ 67,500	\$ 67,000
Click adjustment model	94,500	89,000
Deluxe model	<u>108,000</u>	<u>110,000</u>
Total down tube shifters	<u>270,000</u>	<u>266,000</u>
<u>Bar end shifter</u>		
Standard model	83,000	90,050
Click adjustment model	<u>99,000</u>	<u>97,550</u>
Total bar end shifters	<u>182,000</u>	<u>187,600</u>
<u>Head tube shifter</u>		
Standard model	78,000	77,650
Click adjustment model	<u>117,000</u>	<u>119,300</u>
Total head tube shifters	<u>195,000</u>	<u>196,950</u>
Total finished goods	<u>\$647,000</u>	<u>\$650,550</u>

- One-half of the head tube shifter finished goods inventory is held by catalog outlets on consignment.
- Three-quarters of the bar end shifter finished goods inventory has been pledged as collateral for a bank loan.
- One-half of the raw materials balance represents derailleur acquired at a contracted price 20 percent above the current market price. The market value of the rest of the raw materials is \$127,400.
- The total market value of the work in process inventory is \$108,700.
- Included in the cost of factory supplies are obsolete items with an historical cost of \$4,200. The market value of the remaining factory supplies is \$65,900.
- Maddox applies the lower-of-cost-or-market method to each of the three types of shifters in finished goods inventory. For each of the other three inventory accounts, Maddox applies the lower-of-cost-or-market method to the total of each inventory account.
- Consider all amounts presented above to be material in relation to Maddox’s financial statements taken as a whole.

**Instructions**

- Prepare the inventory section of Maddox’s balance sheet as of November 30, 2010, including any required note(s).
- Without prejudice to your answer to (a), assume that the market value of Maddox’s inventories is less than cost. Explain how this decline would be presented in Maddox’s income statement for the fiscal year ended November 30, 2010.
- Assume that Maddox has a firm purchase commitment for the same type of derailleur included in the raw materials inventory as of November 30, 2010, and that the purchase commitment is at a contracted price 15% greater than the current market price. These derailleur are to be delivered to Maddox after November 30, 2010. Discuss the impact, if any, that this purchase commitment would have on Maddox’s financial statements prepared for the fiscal year ended November 30, 2010.

(CMA adapted)



**P9-10 (Lower-of-Cost-or-Market)** Fiedler Co. follows the practice of valuing its inventory at the lower-of-cost-or-market. The following information is available from the company’s inventory records as of December 31, 2010.

Item	Quantity	Unit Cost	Replacement Cost/Unit	Estimated Selling Price/Unit	Completion & Disposal Cost/Unit	Normal Profit Margin/Unit
A	1,100	\$7.50	\$8.40	\$10.50	\$1.50	\$1.80
B	800	8.20	7.90	9.40	0.90	1.20
C	1,000	5.60	5.40	7.20	1.15	0.60
D	1,000	3.80	4.20	6.30	0.80	1.50
E	1,400	6.40	6.30	6.70	0.70	1.00

**Instructions**

Greg Forda is an accounting clerk in the accounting department of Fiedler Co., and he cannot understand why the market value keeps changing from replacement cost to net realizable value to something that he

cannot even figure out. Greg is very confused, and he is the one who records inventory purchases and calculates ending inventory. You are the manager of the department and an accountant.

- (a) Calculate the lower-of-cost-or-market using the “individual item” approach.
- (b) Show the journal entry he will need to make in order to write down the ending inventory from cost to market.
- (c) Then write a memo to Greg explaining what designated market value is as well as how it is computed. Use your calculations to aid in your explanation.

**8** \*P9-11 (Conventional and Dollar-Value LIFO Retail) As of January 1, 2010, Aristotle Inc. installed the retail method of accounting for its merchandise inventory.

To prepare the store’s financial statements at June 30, 2010, you obtain the following data.

	Cost	Selling Price
Inventory, January 1	\$ 30,000	\$ 43,000
Markdowns		10,500
Markups		9,200
Markdown cancellations		6,500
Markup cancellations		3,200
Purchases	104,800	155,000
Sales		154,000
Purchase returns	2,800	4,000
Sales returns and allowances		8,000

**Instructions**

- (a) Prepare a schedule to compute Aristotle’s June 30, 2010, inventory under the conventional retail method of accounting for inventories.
- (b) Without prejudice to your solution to part (a), assume that you computed the June 30, 2010, inventory to be \$59,400 at retail and the ratio of cost to retail to be 70%. The general price level has increased from 100 at January 1, 2010, to 108 at June 30, 2010. Prepare a schedule to compute the June 30, 2010, inventory at the June 30 price level under the dollar-value LIFO retail method.

(AICPA adapted)

**8** \*P9-12 (Retail, LIFO Retail, and Inventory Shortage) Late in 2007, Joan Seceda and four other investors took the chain of Becker Department Stores private, and the company has just completed its third year of operations under the ownership of the investment group. Andrea Selig, controller of Becker Department Stores, is in the process of preparing the year-end financial statements. Based on the preliminary financial statements, Seceda has expressed concern over inventory shortages, and she has asked Selig to determine whether an abnormal amount of theft and breakage has occurred. The accounting records of Becker Department Stores contain the following amounts on November 30, 2010, the end of the fiscal year.



	Cost	Retail
Beginning inventory	\$ 68,000	\$100,000
Purchases	255,000	400,000
Net markups		50,000
Net markdowns		110,000
Sales		320,000

According to the November 30, 2010, physical inventory, the actual inventory at retail is \$115,000.

**Instructions**

- (a) Describe the circumstances under which the retail inventory method would be applied and the advantages of using the retail inventory method.
- (b) Assuming that prices have been stable, calculate the value, at cost, of Becker Department Stores’ ending inventory using the last-in, first-out (LIFO) retail method. Be sure to furnish supporting calculations.
- (c) Estimate the amount of shortage, at retail, that has occurred at Becker Department Stores during the year ended November 30, 2010.
- (d) Complications in the retail method can be caused by such items as (1) freight-in costs, (2) purchase returns and allowances, (3) sales returns and allowances, and (4) employee discounts. Explain how each of these four special items is handled in the retail inventory method.

(CMA adapted)

**8** \*P9-13 (Change to LIFO Retail) Diderot Stores Inc., which uses the conventional retail inventory method, wishes to change to the LIFO retail method beginning with the accounting year ending December 31, 2010.

Amounts as shown below appear on the store's books before adjustment.

	<u>At Cost</u>	<u>At Retail</u>
Inventory, January 1, 2010	\$ 15,800	\$ 24,000
Purchases in 2010	116,200	184,000
Markups in 2010		12,000
Markdowns in 2010		5,500
Sales in 2010		175,000

You are to assume that all markups and markdowns apply to 2010 purchases, and that it is appropriate to treat the entire inventory as a single department.

#### Instructions

Compute the inventory at December 31, 2010, under the following methods.

- The conventional retail method.
- The last-in, first-out retail method, effecting the change in method as of January 1, 2010. Assume that the cost-to-retail percentage for 2009 was recomputed correctly in accordance with procedures necessary to change to LIFO. This ratio was 59%.

(AICPA adapted)

**8** \*P9-14 (Change to LIFO Retail; Dollar-Value LIFO Retail) Davenport Department Store converted from the conventional retail method to the LIFO retail method on January 1, 2010, and is now considering converting to the dollar-value LIFO inventory method. During your examination of the financial statements for the year ended December 31, 2011, management requested that you furnish a summary showing certain computations of inventory cost for the past 3 years.

Here is the available information.

- The inventory at January 1, 2009, had a retail value of \$56,000 and cost of \$29,800 based on the conventional retail method.
- Transactions during 2009 were as follows.

	<u>Cost</u>	<u>Retail</u>
Gross purchases	\$311,000	\$554,000
Purchase returns	5,200	10,000
Purchase discounts	6,000	
Gross sales (after employee discounts)		551,000
Sales returns		9,000
Employee discounts		3,000
Freight-in	17,600	
Net markups		20,000
Net markdowns		12,000


- The retail value of the December 31, 2010, inventory was \$75,600, the cost ratio for 2010 under the LIFO retail method was 61%, and the regional price index was 105% of the January 1, 2010, price level.
- The retail value of the December 31, 2011, inventory was \$62,640, the cost ratio for 2011 under the LIFO retail method was 60%, and the regional price index was 108% of the January 1, 2010, price level.

#### Instructions

- Prepare a schedule showing the computation of the cost of inventory on hand at December 31, 2009, based on the conventional retail method.
- Prepare a schedule showing the recomputation of the inventory to be reported on December 31, 2009, in accordance with procedures necessary to convert from the conventional retail method to the LIFO retail method beginning January 1, 2010. Assume that the retail value of the December 31, 2009, inventory was \$60,000.
- Without prejudice to your solution to part (b), assume that you computed the December 31, 2009, inventory (retail value \$60,000) under the LIFO retail method at a cost of \$33,300. Prepare a schedule showing the computations of the cost of the store's 2010 and 2011 year-end inventories under the dollar-value LIFO method.

(AICPA adapted)

## CONCEPTS FOR ANALYSIS

 **CA9-1 (Lower-of-Cost-or-Market)** You have been asked by the financial vice president to develop a short presentation on the lower-of-cost-or-market method for inventory purposes. The financial VP needs to explain this method to the president, because it appears that a portion of the company's inventory has declined in value.

**Instructions**

The financial VP asks you to answer the following questions.

- (a) What is the purpose of the lower-of-cost-or-market method?
- (b) What is meant by “market”? (*Hint:* Discuss the ceiling and floor constraints.)
- (c) Do you apply the lower-of-cost-or-market method to each individual item, to a category, or to the total of the inventory? Explain.
- (d) What are the potential disadvantages of the lower-of-cost-or-market method?



**CA9-2 (Lower-of-Cost-or-Market)** The market value of Lake Corporation’s inventory has declined below its cost. Sheryl Conan, the controller, wants to use the allowance method to write down inventory because it more clearly discloses the decline in market value and does not distort the cost of goods sold. Her supervisor, financial vice president Dick Wright, prefers the direct method to write down inventory because it does not call attention to the decline in market value.

**Instructions**

Answer the following questions.

- (a) What, if any, is the ethical issue involved?
- (b) Is any stakeholder harmed if Dick Wright’s preference is used?
- (c) What should Sheryl Conan do?

**CA9-3 (Lower-of-Cost-or-Market)** Ogala Corporation purchased a significant amount of raw materials inventory for a new product that it is manufacturing.

Ogala uses the lower-of-cost-or-market rule for these raw materials. The replacement cost of the raw materials is above the net realizable value, and both are below the original cost.

Ogala uses the average cost inventory method for these raw materials. In the last 2 years, each purchase has been at a lower price than the previous purchase, and the ending inventory quantity for each period has been higher than the beginning inventory quantity for that period.

**Instructions**

- (a) (1) At which amount should Ogala’s raw materials inventory be reported on the balance sheet? Why?
- (2) In general, why is the lower-of-cost-or-market rule used to report inventory?
- (b) What would have been the effect on ending inventory and cost of goods sold had Ogala used the LIFO inventory method instead of the average-cost inventory method for the raw materials? Why?



**CA9-4 (Retail Inventory Method)** Saurez Company, your client, manufactures paint. The company’s president, Maria Saurez, has decided to open a retail store to sell Saurez paint as well as wallpaper and other supplies that would be purchased from other suppliers. She has asked you for information about the conventional retail method of pricing inventories at the retail store.

**Instructions**

Prepare a report to the president explaining the retail method of pricing inventories. Your report should include the following points.

- (a) Description and accounting features of the method.
- (b) The conditions that may distort the results under the method.
- (c) A comparison of the advantages of using the retail method with those of using cost methods of inventory pricing.
- (d) The accounting theory underlying the treatment of net markdowns and net markups under the method.

(AICPA adapted)

**CA9-5 (Cost Determination, LCM, Retail Method)** Olson Corporation, a retailer and wholesaler of national brand-name household lighting fixtures, purchases its inventories from various suppliers.

**Instructions**

- (a) (1) What criteria should be used to determine which of Olson’s costs are inventoriable?
- (2) Are Olson’s administrative costs inventoriable? Defend your answer.
- (b) (1) Olson uses the lower-of-cost-or-market rule for its wholesale inventories. What are the theoretical arguments for that rule?
- (2) The replacement cost of the inventories is below the net realizable value less a normal profit margin, which, in turn, is below the original cost. What amount should be used to value the inventories? Why?
- (c) Olson calculates the estimated cost of its ending inventories held for sale at retail using the conventional retail inventory method. How would Olson treat the beginning inventories and net markdowns in calculating the cost ratio used to determine its ending inventories? Why?

(AICPA adapted)





**CA9-6 (Purchase Commitments)** Prophet Company signed a long-term purchase contract to buy timber from the U.S. Forest Service at \$300 per thousand board feet. Under these terms, Prophet must cut and pay \$6,000,000 for this timber during the next year. Currently the market value is \$250 per thousand board feet. At this rate, the market price is \$5,000,000. Jerry Herman, the controller, wants to recognize the loss in value on the year-end financial statements, but the financial vice president, Billie Hands, argues that the loss is temporary and should be ignored. Herman notes that market value has remained near \$250 for many months, and he sees no sign of significant change.

#### Instructions

- What are the ethical issues, if any?
- Is any particular stakeholder harmed by the financial vice president's decision?
- What should the controller do?

**\*CA9-7 (Retail Inventory Method and LIFO Retail)** Presented below are a number of items that may be encountered in computing the cost to retail percentage when using the conventional retail method or the LIFO retail method.

- |   |  |
|---|--|
| 1. Markdowns.   | 7. Estimated retail value of goods broken or stolen. |
| 2. Markdown cancellations.                                      | 8. Cost of beginning inventory.                      |
| 3. Cost of items transferred in from other departments.         | 9. Retail value of beginning inventory.              |
| 4. Retail value of items transferred in from other departments. | 10. Cost of purchases.                               |
| 5. Sales discounts.   | 11. Retail value of purchases.                       |
| 6. Purchases discounts (purchases recorded gross).              | 12. Markups.   |
|   | 13. Markup cancellations.                            |
|   | 14. Employee discounts (sales recorded net).         |

#### Instructions

For each of the items listed above, indicate whether this item would be considered in the cost to retail percentage under (a) conventional retail and (b) LIFO retail.

## USING YOUR JUDGMENT

### FINANCIAL REPORTING

#### Financial Reporting Problem



#### The Procter & Gamble Company (P&G)

The financial statements of P&G are presented in Appendix 5B or can be accessed at the book's companion website, [www.wiley.com/college/kieso](http://www.wiley.com/college/kieso).

#### Instructions

Refer to P&G's financial statements and the accompanying notes to answer the following questions.

- How does P&G value its inventories? Which inventory costing method does P&G use as a basis for reporting its inventories?
- How does P&G report its inventories in the balance sheet? In the notes to its financial statements, what three descriptions are used to classify its inventories?
- What costs does P&G include in Inventory and Cost of Products Sold?
- What was P&G's inventory turnover ratio in 2007? What is its gross profit percentage? Evaluate P&G's inventory turnover ratio and its gross profit percentage.

#### Comparative Analysis Case

#### The Coca-Cola Company and PepsiCo, Inc.

*The Coca-Cola Company*



#### Instructions

Go to the book's companion website and use information found there to answer the following questions related to **The Coca-Cola Company** and **PepsiCo, Inc.**



- What is the amount of inventory reported by Coca-Cola at December 31, 2007, and by PepsiCo at December 29, 2007? What percent of total assets is invested in inventory by each company?
- What inventory costing methods are used by Coca-Cola and PepsiCo? How does each company value its inventories?
- In the notes, what classifications (description) are used by Coca-Cola and PepsiCo to categorize their inventories?
- Compute and compare the inventory turnover ratios and days to sell inventory for Coca-Cola and PepsiCo for 2007. Indicate why there might be a significant difference between the two companies.

## Financial Statement Analysis Cases

### Case 1 Prab Robots, Inc.

Prab Robots, Inc., reported the following information regarding 2009–2010 inventory.

#### Prab Robots, Inc.

	2010	2009
Current assets		
Cash	\$ 153,010	\$ 538,489
Accounts receivable, net of allowance for doubtful accounts of \$46,000 in 2010 and \$160,000 in 2009	1,627,980	2,596,291
Inventories (Note 2)	1,340,494	1,734,873
Other current assets	123,388	90,592
Assets of discontinued operations	—	32,815
Total current assets	<u>3,244,872</u>	<u>4,993,060</u>

#### Notes to Consolidated Financial Statements

##### Note 1 (in part): Nature of Business and Significant Accounting Policies

*Inventories*—Inventories are stated at the lower-of-cost-or-market. Cost is determined by the last-in, first-out (LIFO) method by the parent company and by the first-in, first-out (FIFO) method by its subsidiaries.

##### Note 2: Inventories

Inventories consist of the following.

	2010	2009
Raw materials	\$1,264,646	\$2,321,178
Work in process	240,988	171,222
Finished goods and display units	129,406	711,252
Total inventories	1,635,040	3,203,652
Less: Amount classified as long-term	294,546	1,468,779
Current portion	<u>\$1,340,494</u>	<u>\$1,734,873</u>

Inventories are stated at the lower of cost determined by the LIFO method or market for Prab Robots, Inc. Inventories for the two wholly-owned subsidiaries, Prab Command, Inc. (U.S.) and Prab Limited (U.K.) are stated on the FIFO method which amounted to \$566,000 at October 31, 2009. No inventory is stated on the FIFO method at October 31, 2010. Included in inventory stated at FIFO cost was \$32,815 at October 31, 2009, of Prab Command inventory classified as an asset from discontinued operations (see Note 14). If the FIFO method had been used for the entire consolidated group, inventories after an adjustment to the lower-of-cost-or-market, would have been approximately \$2,000,000 and \$3,800,000 at October 31, 2010 and 2009, respectively.

Inventory has been written down to estimated net realizable value, and results of operations for 2010, 2009, and 2008 include a corresponding charge of approximately \$868,000, \$960,000, and \$273,000, respectively, which represents the excess of LIFO cost over market.

Inventory of \$294,546 and \$1,468,779 at October 31, 2010 and 2009, respectively, shown on the balance sheet as a noncurrent asset represents that portion of the inventory that is not expected to be sold currently.

Reduction in inventory quantities during the years ended October 31, 2010, 2009, and 2008 resulted in liquidation of LIFO inventory quantities carried at a lower cost prevailing in prior years as compared with the cost of fiscal 2004 purchases. The effect of these reductions was to decrease the net loss by approximately \$24,000, \$157,000 and \$90,000 at October 31, 2010, 2009, and 2008, respectively.

**Instructions**

- (a) Why might Prab Robots, Inc., use two different methods for valuing inventory?
- (b) Comment on why Prab Robots, Inc., might disclose how its LIFO inventories would be valued under FIFO.
- (c) Why does the LIFO liquidation reduce operating costs?
- (d) Comment on whether Prab would report more or less income if it had been on a FIFO basis for all its inventory.

**Case 2 Barrick Gold Corporation**

**Barrick Gold Corporation**, with headquarters in Toronto, Canada, is the world’s most profitable and largest gold mining company outside South Africa. Part of the key to Barrick’s success has been due to its ability to maintain cash flow while improving production and increasing its reserves of gold-containing property. During 2004, Barrick achieved record growth in cash flow, production, and reserves.

The company maintains an aggressive policy of developing previously identified target areas that have the possibility of a large amount of gold ore, and that have not been previously developed. Barrick limits the riskiness of this development by choosing only properties that are located in politically stable regions, and by the company’s use of internally generated funds, rather than debt, to finance growth.

Barrick’s inventories are as follows:

<b>Barrick Gold Corporation</b>	
<u>Inventories (in millions, US dollars)</u>	
<b>Current</b>	
Gold in process	\$133
Mine operating supplies	82
	\$215
<b>Non-current (included in Other assets)</b>	
Ore in stockpiles	\$65

**Instructions**

- (a) Why do you think that there are no finished goods inventories? Why do you think the raw material, ore in stockpiles, is considered to be a non-current asset?
- (b) Consider that Barrick has no finished goods inventories. What journal entries are made to record a sale?
- (c) Suppose that gold bullion that cost \$1.8 million to produce was sold for \$2.4 million. The journal entry was made to record the sale, but no entry was made to remove the gold from the gold in process inventory. How would this error affect the following?

Balance Sheet		Income Statement	
Inventory	?	Cost of goods sold	?
Retained earnings	?	Net income	?
Accounts payable	?		
Working capital	?		
Current ratio	?		

**BRIDGE TO THE PROFESSION**



**Professional Research: FASB Codification**

Jones Co. is in a technology-intensive industry. Recently, one of its competitors introduced a new product with technology that might render obsolete some of Jones’s inventory. The accounting staff wants to follow the appropriate authoritative literature in determining the accounting for this significant market event.

**Instructions**

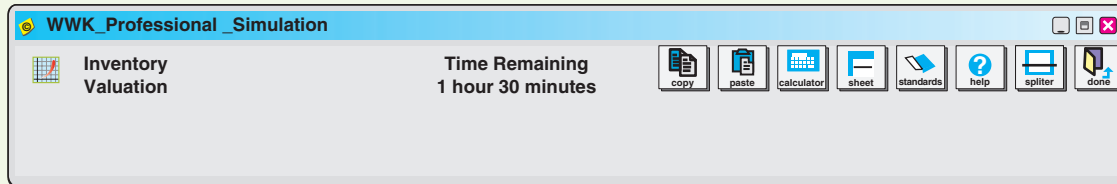
Access the FASB Codification at <http://asc.fasb.org/home> to conduct research using the Codification Research System to prepare responses to the following items. Provide Codification references for your responses.

- (a) Identify the primary authoritative guidance for the accounting for inventories. What is the predecessor literature?

- (b) List three types of goods that are classified as inventory. What characteristic will automatically exclude an item from being classified as inventory?
- (c) Define “market” as used in the phrase “lower-of-cost-or-market.”
- (d) Explain when it is acceptable to state inventory above cost and which industries allow this practice.

### Professional Simulation

Go to the book’s companion website, at [www.wiley.com/college/kieso](http://www.wiley.com/college/kieso), to find an interactive problem that simulates the computerized CPA exam. The professional simulation for this chapter asks you to address questions related to inventory valuation and measurement.



**Remember to check the book’s companion website to find additional resources for this chapter.**

