CHAPTER 6

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Inventories

Chapter Preview

In the previous chapter, we discussed the accounting for merchandise inventory using a perpetual inventory system. In this chapter, we explain the methods used to calculate the cost of inventory on hand at the balance sheet date and the cost of goods sold.

Feature Story

"Where Is That Spare Bulldozer Blade?"

Let's talk inventory—big, bulldozer-size inventory. **Caterpillar Inc.** is the world's largest manufacturer of construction and mining equipment, diesel and natural gas engines, and industrial gas turbines. It sells its products in over 200 countries, making it one of the most successful U.S. exporters. More than 70% of its productive assets are located domestically, and nearly 50% of its sales are foreign.

In the past, Caterpillar's profitability suffered, but today it is very successful. A big part of this turnaround can be attributed to effective management of its inventory. Imagine what it costs Caterpillar to have too many bulldozers sitting around in inventory—a situation the company definitely wants to avoid. Yet Caterpillar must also make sure it has enough inventory to meet demand.

At one time during a 7-year period, Caterpillar's sales increased by 100% while its inventory increased by only 50%. To achieve this dramatic reduction in the amount of resources tied up in inventory while continuing to meet customers' needs, Caterpillar used a two-pronged approach. First, it completed a factory modernization program, which greatly increased its production efficiency. The program reduced by 60% the amount of inventory the company processes at any one time. It also reduced by an incredible 75% the time it takes to manufacture a part.

Second, Caterpillar dramatically improved its parts distribution system. It ships more than 100,000 items daily from its

23 distribution centers strategically located around the world (10 million square feet of warehouse space—remember, we're talking bulldozers). The company can virtually guarantee that it can get any part to anywhere in the world within 24 hours.

These changes led to record exports, profits, and revenues for Caterpillar. It would seem that things couldn't be better. But industry analysts, as well as the company's managers, thought otherwise. In order to maintain Caterpillar's position as the industry leader, management began another major overhaul of inventory production and inventory management processes. The goal: to cut the number of repairs in half, increase productivity by 20%, and increase inventory turnover by 40%.

In short, Caterpillar's ability to manage its inventory has been a key reason for its past success and will very likely play a huge part in its future profitability as well.

Chapter Outline

LEARNING OBJECTIVES

LO 1 Discuss how to classify and determine inventory.	• Classifying inventory • Determining inventory quantities	**DO IT! 1** Rules of Ownership
LO 2 Apply inventory cost flow methods and discuss their financial effects.	• Specific identification • Cost flow assumptions • Financial statement and tax effects • Using inventory cost flow methods consistently	**DO IT! 2** Cost Flow Methods
LO 3 Indicate the effects of inventory errors on the financial statements.	• Income statement effects • Balance sheet effects	**DO IT! 3** Inventory Errors
LO 4 Explain the statement presentation and analysis of inventory.	• Presentation • Lower-of-cost-or-net realizable value • Analysis	**DO IT! 4** LCNRV and Inventory Turnover

Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.
Visit WileyPLUS with ORION for additional tutorials and practice opportunities.

Classifying and Determining Inventory

LEARNING OBJECTIVE 1

Discuss how to classify and determine inventory.

Two important steps in the reporting of inventory at the end of the accounting period are the classification of inventory based on its degree of completeness and the determination of inventory amounts.

Classifying Inventory

How a company classifies its inventory depends on whether the firm is a merchandiser or a manufacturer. In a **merchandising** company, such as those described in Chapter 5, inventory consists of many different items. For example, in a grocery store, canned goods, dairy products, meats, and produce are just a few of the inventory items on hand. These items have two common characteristics: (1) they are owned by the company, and (2) they are in a form ready for sale to customers in the ordinary course of business. Thus, merchandisers need only one inventory classification, **merchandise inventory**, to describe the many different items that make up the total inventory.

In a **manufacturing** company, some inventory may not yet be ready for sale. As a result, manufacturers usually classify inventory into three categories: finished goods, work in process, and raw materials (see **Helpful Hint**). **Finished goods inventory** is manufactured items that are completed and ready for sale. **Work in process** is that portion of manufactured inventory that has been placed into the production process but is not yet complete. **Raw materials** are the basic goods that will be used in production but have not yet been placed into production.

HELPFUL HINT

Regardless of the classification, companies report all inventories under Current Assets on the balance sheet.

For example, **Caterpillar** classifies earth-moving tractors completed and ready for sale as **finished goods**. It classifies the tractors on the assembly line in various stages of production as **work in process**. The steel, glass, tires, and other components that are on hand waiting to be used in the production of tractors are identified as **raw materials**. **Illustration 6.1** shows an adapted excerpt from Note 7 of Caterpillar's annual report.

ILLUSTRATION 6.1

Composition of Caterpillar's inventory

	December 31	
(millions of dollars)	**2016**	**2015**
Raw materials	$2,102	$2,467
Work-in-process	1,719	1,857
Finished goods	4,576	5,122
Supplies	217	254
Total inventories	**$8,614**	**$9,700**

By observing the levels and changes in the levels of these three inventory types, financial statement users can gain insight into management's production plans. For example, low levels of raw materials and high levels of finished goods suggest that management believes it has enough inventory on hand and production will be slowing down—perhaps in anticipation of a recession. Conversely, high levels of raw materials and low levels of finished goods probably signal that management is planning to step up production.

Many companies have significantly lowered inventory levels and costs using **just-in-time (JIT) inventory** methods. Under a just-in-time method, companies manufacture or purchase goods only when needed. **Dell** is famous for having developed a system for making computers in response to individual customer requests. Even though it makes each computer to meet each customer's particular specifications, Dell is able to assemble the computer and put it on a truck in less than 48 hours. The success of the JIT system depends on reliable suppliers. By integrating its information systems with those of its suppliers, Dell reduced its inventories to nearly zero. This is a huge advantage in an industry where products become obsolete nearly overnight.

The accounting concepts discussed in this chapter apply to the inventory classifications of both merchandising and manufacturing companies. Our focus here is on merchandise inventory. Additional issues specific to manufacturing companies are discussed as part of managerial accounting.

Accounting Across the Organization Ford

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A Big Hiccup

JIT can save a company a lot of money, but it isn't without risk. An unexpected disruption in the supply chain can cost a company a lot of money. Japanese automakers experienced just such a disruption when a 6.8-magnitude earthquake caused major damage to the company that produces 50% of their piston rings. The rings themselves cost only $1.50, but you can't make a car without them. As a result, the automakers were forced to shut down production for a few days—a loss of tens of thousands of cars.

Similarly, a major snowstorm halted production at the Canadian plants of **Ford**. A Ford spokesperson said, "Because the plants run with just-in-time inventory, we don't have large stockpiles of parts sitting around. When you have a somewhat significant disruption, you can pretty quickly run out of parts."

Sources: Amy Chozick, "A Key Strategy of Japan's Car Makers Backfires," *Wall Street Journal* (July 20, 2007); and Kate Linebaugh, "Canada Military Evacuates Motorists Stranded by Snow," *Wall Street Journal* (December 15, 2010).

What steps might the companies take to avoid such a serious disruption in the future? (Go to WileyPLUS for this answer and additional questions.)

Determining Inventory Quantities

No matter whether they are using a periodic or perpetual inventory system, all companies need to determine inventory quantities at the end of the accounting period. If using a perpetual system, companies take a physical inventory for the following reasons:

1. To check the accuracy of their perpetual inventory records.
2. To determine the amount of inventory lost due to wasted raw materials, shoplifting, or employee theft.

Companies using a periodic inventory system take a physical inventory for **two different purposes**: to determine the inventory on hand at the balance sheet date, and to determine the cost of goods sold for the period.

Determining inventory quantities involves two steps: (1) taking a physical inventory of goods on hand and (2) determining the ownership of goods.

Taking a Physical Inventory

ETHICS NOTE

In a famous fraud, a salad oil company filled its storage tanks mostly with water. The oil rose to the top, so auditors thought the tanks were full of oil. The company also said it had more tanks than it really did: It repainted numbers on the tanks to confuse auditors.

Companies take a physical inventory at the end of the accounting period. Taking a physical inventory involves actually counting, weighing, or measuring each kind of inventory on hand (see **Ethics Note**). In many companies, taking an inventory is a formidable task. Retailers such as **Target**, **True Value Hardware**, or **Home Depot** have thousands of different inventory items. An inventory count is generally more accurate when goods are not being sold or received during the counting. Consequently, companies often "take inventory" when the business is closed or when business is slow. Many retailers close early on a chosen day in January—after the holiday sales and returns, when inventories are at their lowest level—to count inventory. **Wal-Mart Stores, Inc.**, for example, has a year-end of January 31.

Determining Ownership of Goods

One challenge in computing inventory quantities is determining what inventory a company owns. To determine ownership of goods, two questions must be answered: Do all of the goods included in the count belong to the company? Does the company own any goods that were not included in the count?

Ethics Insight Leslie Fay

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Falsifying Inventory to Boost Income

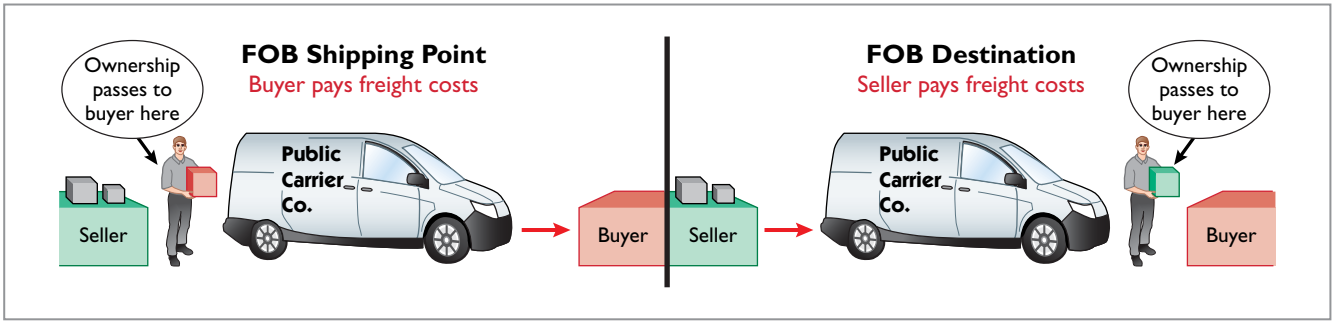
Managers at women's apparel maker **Leslie Fay** were convicted of falsifying inventory records to boost net income in an attempt to increase management bonuses. In another case, executives at **Craig Consumer Electronics** were accused of defrauding lenders by manipulating inventory records. The indictment said the company classified "defective goods as new or refurbished" and claimed that it owned certain shipments "from overseas suppliers" when, in fact, Craig either did not own the shipments or the shipments did not exist.

What effect does an overstatement of inventory have on a company's financial statements? (Go to WileyPLUS for this answer and additional questions.)

Goods in Transit. A complication in determining ownership is **goods in transit** (on board a truck, train, ship, or plane) at the end of the period. The company may have purchased goods that have not yet been received, or it may have sold goods that have not yet been delivered. To arrive at an accurate count, the company must determine ownership of these goods.

Goods in transit should be included in the inventory of the company that has legal title to the goods. Legal title is determined by the terms of the sale, as shown in **Illustration 6.2** and described below.

ILLUSTRATION 6.2 **Terms of sale**



1. When the terms are **FOB (free on board) shipping point**, ownership of the goods passes to the buyer when the public carrier accepts the goods from the seller.
2. When the terms are **FOB destination**, ownership of the goods remains with the seller until the goods reach the buyer.

If goods in transit at the statement date are ignored, inventory quantities may be seriously miscounted. Assume, for example, that Hargrove Company has 20,000 units of inventory on hand on December 31. It also has the following goods in transit:

1. Sales of 1,500 units shipped December 31 FOB destination.
2. Purchases of 2,500 units shipped FOB shipping point by the seller on December 31.

Hargrove has legal title to both the 1,500 units sold and the 2,500 units purchased. If the company ignores the units in transit, it would understate inventory quantities by 4,000 units (1,500 + 2,500).

As we will see later in the chapter, inaccurate inventory counts affect not only the inventory amount shown on the balance sheet but also the cost of goods sold calculation on the income statement.

Consigned Goods. In some lines of business, it is common to hold the goods of other parties and try to sell the goods for them for a fee, but without taking ownership of the goods. These are called **consigned goods**.

For example, you might have a used car that you would like to sell. If you take the item to a dealer, the dealer might be willing to put the car on its lot and charge you a commission if it is sold. Under this agreement, the dealer **would not take ownership** of the car, which would still belong to you. Therefore, if an inventory count were taken, the car would not be included in the dealer's inventory because the dealer does not own it.

Many car, boat, and antique dealers sell goods on consignment to keep their inventory costs down and to avoid the risk of purchasing an item that they will not be able to sell. Today, even some manufacturers are making consignment agreements with their suppliers in order to keep their inventory levels low.

Anatomy of a Fraud

Ted Nickerson, CEO of clock manufacturer Dally Industries, had expensive tastes. To support this habit, Ted took out large loans, which he collateralized with his shares of Dally Industries stock. If the price of Dally's stock fell, he was required to provide the bank with more shares of stock. To achieve target net income figures and thus maintain the stock price, Ted coerced employees in the company to alter inventory figures. Inventory quantities were manipulated by changing the amounts on inventory control tags after the year-end physical inventory count. For example, if a tag said there were 20 units of a particular item, the tag was changed to 220. Similarly, the unit costs that were used to determine the value of ending inventory were increased from, for example, $125 per unit to $1,250. Both of these fraudulent changes had the effect of increasing the amount of reported ending inventory. This reduced cost of goods sold and increased net income.

Total take: $245,000

The Missing Control

Independent internal verification. The company should have spot-checked its inventory records periodically, verifying that the number of units in the records agreed with the amount on hand and that the unit costs agreed with vendor price sheets.

Source: Adapted from Wells, *Fraud Casebook* (2007), pp. 502–509.

DO IT! 1 | Rules of Ownership

Hasbeen Company completed its inventory count. It arrived at a total inventory value of $200,000. As a new member of Hasbeen's accounting department, you have been given the information listed below. Discuss how this information affects the reported cost of inventory.

1. Hasbeen included in the inventory goods held on consignment for Falls Co., costing $15,000.
2. The company did not include in the count purchased goods of $10,000 which were in transit (terms: FOB shipping point).
3. The company did not include in the count sold inventory with a cost of $12,000 which was in transit (terms: FOB shipping point).

ACTION PLAN

- Apply the rules of ownership to goods held on consignment.
- Apply the rules of ownership to goods in transit.

Solution

The goods of $15,000 held on consignment should be deducted from the inventory count. The goods of $10,000 purchased FOB shipping point should be added to the inventory count. Sold goods of $12,000 which were in transit FOB shipping point should not be included in the ending inventory. Thus, inventory should be carried at $195,000 ($200,000 − $15,000 + $10,000).

Related exercise material: **BE6.1, BE6.2, DO IT! 6.1, E6.1, E6.2, and E6.3.**

Inventory Methods and Financial Effects

LEARNING OBJECTIVE 2

Apply inventory cost flow methods and discuss their financial effects.

Inventory is accounted for at cost. Cost includes all expenditures necessary to acquire goods and place them in a condition ready for sale. For example, freight costs incurred to acquire inventory are added to the cost of inventory, but the cost of shipping goods to a customer is a selling expense.

After a company has determined the quantity of units of inventory, it applies unit costs to the quantities to compute the total cost of the inventory and the cost of goods sold. This process can be complicated if a company has purchased inventory items at different times and at different prices.

For example, assume that Crivitz TV Company purchases three identical 50-inch TVs on different dates at costs of $720, $750, and $800. During the year, Crivitz sold two TVs at $1,200 each. These facts are summarized in Illustration 6.3.

ILLUSTRATION 6.3
Data for inventory costing example

Purchases			
February 3	1 TV	at	$720
March 5	1 TV	at	$750
May 22	1 TV	at	$800
Sales			
June 1	2 TVs	for	$2,400 ($1,200 × 2)

Cost of goods sold will differ depending on which two TVs the company sold. For example, it might be $1,470 ($720 + $750), or $1,520 ($720 + $800), or $1,550 ($750 + $800). In this section, we discuss alternative costing methods available to Crivitz.

Specific Identification

If Crivitz can positively identify which particular units it sold and which are still in ending inventory, it can use the **specific identification method** of inventory costing. For example, if Crivitz sold the TVs it purchased on February 3 and May 22, then its cost of goods sold is $1,520 ($720 + $800), and its ending inventory is $750 (see Illustration 6.4). Using this method, companies can accurately determine ending inventory and cost of goods sold.

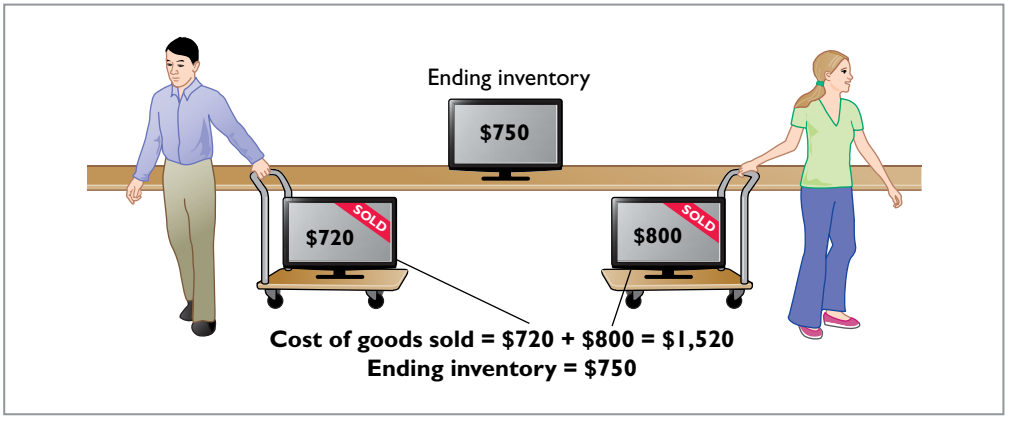


ILLUSTRATION 6.4
Specific identification method

ETHICS NOTE

A major disadvantage of the specific identification method is that management may be able to manipulate net income. For example, it can boost net income by selling units purchased at a low cost, or reduce net income by selling units purchased at a high cost.

Specific identification requires that companies keep records of the original cost of each individual inventory item. Historically, specific identification was possible only when a company sold a limited variety of high-unit-cost items that could be identified clearly from the time of purchase through the time of sale. Examples of such products are cars, pianos, or expensive antiques.

Today, bar coding, electronic product codes, and radio frequency identification make it theoretically possible to do specific identification with nearly any type of product. The reality is, however, that this practice is still relatively rare (see Ethics Note). Instead, rather than keep track of the cost of each particular item sold, most companies make assumptions, called **cost flow assumptions**, about which units were sold.

Cost Flow Assumptions

Because specific identification is often impractical, other cost flow methods are permitted. These differ from specific identification in that they **assume** flows of costs that may be unrelated to the physical flow of goods. There are three assumed cost flow methods:

1. First-in, first-out (FIFO)
2. Last-in, first-out (LIFO)
3. Average-cost

There is no accounting requirement that the cost flow assumption be consistent with the physical movement of the goods. Company management selects the appropriate cost flow method.

To demonstrate the three cost flow methods, we will use a **periodic** inventory system. We assume a periodic system because **very few companies use perpetual LIFO, FIFO, or average-cost** to cost their inventory and related cost of goods sold. Instead, companies that use perpetual systems often use an assumed cost (called a standard cost) to record cost of goods sold at the time of sale. Then, at the end of the period when they count their inventory, they **recalculate cost of goods sold using periodic FIFO, LIFO, or average-cost** as shown in this chapter and adjust cost of goods sold to this recalculated number.[1]

To illustrate the three inventory cost flow methods, we will use the data for Houston Electronics' Astro condensers, shown in Illustration 6.5.

ILLUSTRATION 6.5
Data for Houston Electronics

Houston Electronics
Astro Condensers

Date	Explanation	Units	Unit Cost	Total Cost
Jan. 1	Beginning inventory	100	$10	$ 1,000
Apr. 15	Purchase	200	11	2,200
Aug. 24	Purchase	300	12	3,600
Nov. 27	Purchase	400	13	5,200
	Total units available for sale	1,000		$12,000
	Units in ending inventory	450		
	Units sold	550		

The cost of goods sold formula in a periodic system is:

Beginning Inventory	+	Cost of Goods Purchased	−	Ending Inventory	=	Cost of Goods Sold

[1]Also, some companies use a perpetual system to keep track of units, but they do not make an entry for perpetual cost of goods sold. In addition, firms that employ LIFO tend to use **dollar-value LIFO**, a method discussed in upper-level courses. FIFO periodic and FIFO perpetual give the same result. Therefore, companies should not incur the additional cost to use FIFO perpetual. Few companies use perpetual average-cost because of the added cost of recordkeeping. Finally, for instructional purposes, we believe it is easier to demonstrate the cost flow assumptions under the periodic system, which makes it more pedagogically appropriate.

Houston Electronics had a total of 1,000 units available to sell during the period (beginning inventory plus purchases). The total cost of these 1,000 units is $12,000, referred to as **cost of goods available for sale**. A physical inventory taken at December 31 determined that there were 450 units in ending inventory. Therefore, Houston sold 550 units (1,000 – 450) during the period. To determine the cost of the 550 units that were sold (the cost of goods sold), we assign a cost to the ending inventory and subtract that value from the cost of goods available for sale. The value assigned to the ending inventory **depends on which cost flow method we use**. No matter which cost flow assumption we use, though, the sum of cost of goods sold plus the cost of the ending inventory must equal the cost of goods available for sale—in this case, $12,000.

First-In, First-Out (FIFO)

The **first-in, first-out (FIFO) method** assumes that the **earliest goods** purchased are the first to be sold. FIFO often parallels the actual physical flow of merchandise. That is, it generally is good business practice to sell the oldest units first. Under the FIFO method, therefore, the **costs** of the earliest goods purchased are the first to be recognized in determining cost of goods sold. (This does not necessarily mean that the oldest units **are** sold first, but that the costs of the oldest units are **recognized** first. In a bin of picture hangers at the hardware store, for example, no one really knows, nor would it matter, which hangers are sold first.) **Illustration 6.6** shows the allocation of the cost of goods available for sale at Houston Electronics under FIFO (see **Helpful Hint**).

COST OF GOODS AVAILABLE FOR SALE

Date	Explanation	Units	Unit Cost	Total Cost
Jan. 1	Beginning inventory	100	$10	$ 1,000
Apr. 15	Purchase	200	11	2,200
Aug. 24	Purchase	300	12	3,600
Nov. 27	Purchase	400	13	5,200
	Total	1,000		$12,000

STEP 1: ENDING INVENTORY

Date	Units	Unit Cost	Total Cost
Nov. 27	400	$13	$5,200
Aug. 24	50	12	600
Total	450		$5,800

STEP 2: COST OF GOODS SOLD

Cost of goods available for sale	$12,000
Less: Ending inventory	5,800
Cost of goods sold	$ 6,200

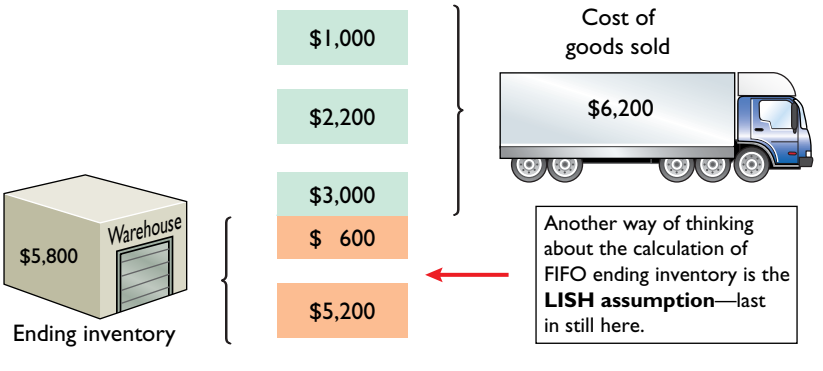


ILLUSTRATION 6.6
Allocation of costs—FIFO method

HELPFUL HINT
Note the sequencing of the allocation: (1) compute ending inventory, and (2) determine cost of goods sold.

Under FIFO, since it is assumed that the first goods purchased were the first goods sold, ending inventory is based on the prices of the most recent units purchased. That is, **under FIFO, companies obtain the cost of the ending inventory by taking the unit cost**

of the most recent purchase and working backward until all units of inventory have been costed. In this example, Houston Electronics prices the 450 units of ending inventory using the **most recent** prices. The last purchase was 400 units at $13 on November 27. The remaining 50 units are priced using the unit cost of the second most recent purchase, $12, on August 24. Next, Houston Electronics calculates cost of goods sold by subtracting the cost of the units **not sold** (ending inventory) from the cost of all goods available for sale.

Illustration 6.7 demonstrates that companies also can calculate cost of goods sold by pricing the 550 units sold using the prices of the first 550 units acquired. Note that of the 300 units purchased on August 24, only 250 units are assumed sold. This agrees with our calculation of the cost of ending inventory, where 50 of these units were assumed unsold and thus included in ending inventory.

ILLUSTRATION 6.7
Proof of cost of goods sold

Date	Units	Unit Cost	Total Cost
Jan. 1	100	$10	$1,000
Apr. 15	200	11	2,200
Aug. 24	250	12	3,000
Total	550		$6,200

Last-In, First-Out (LIFO)

The **last-in, first-out (LIFO) method** assumes that the **latest goods** purchased are the first to be sold. LIFO seldom coincides with the actual physical flow of inventory. (Exceptions include goods stored in piles, such as coal or hay, where goods are removed from the top of the pile as they are sold.) Under the LIFO method, the **costs** of the latest goods purchased are the first to be recognized in determining cost of goods sold. Illustration 6.8 shows the allocation of the cost of goods available for sale at Houston Electronics under LIFO.

ILLUSTRATION 6.8
Allocation of costs—LIFO method

COST OF GOODS AVAILABLE FOR SALE

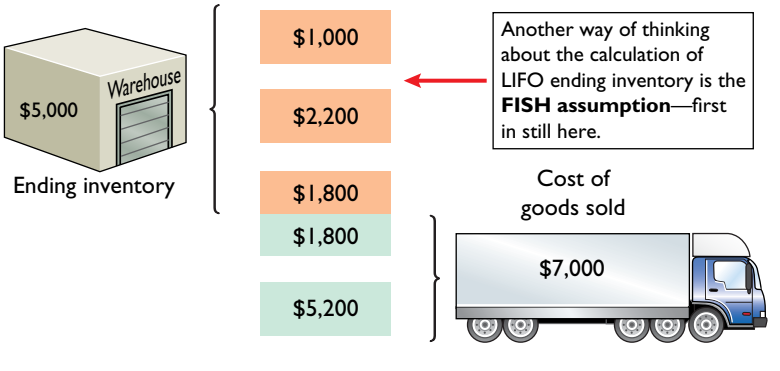
Date	Explanation	Units	Unit Cost	Total Cost
Jan. 1	Beginning inventory	100	$10	$ 1,000
Apr. 15	Purchase	200	11	2,200
Aug. 24	Purchase	300	12	3,600
Nov. 27	Purchase	400	13	5,200
	Total	1,000		$12,000

STEP 1: ENDING INVENTORY

Date	Units	Unit Cost	Total Cost
Jan. 1	100	$10	$1,000
Apr. 15	200	11	2,200
Aug. 24	150	12	1,800
Total	450		$5,000

STEP 2: COST OF GOODS SOLD

Cost of goods available for sale	$12,000
Less: Ending inventory	5,000
Cost of goods sold	$ 7,000



Under LIFO, since it is assumed that the first goods sold were those that were most recently purchased, ending inventory is based on the prices of the oldest units purchased. That is, **under LIFO, companies obtain the cost of the ending inventory by taking the unit cost of the earliest goods available for sale and working forward until all units of inventory have been costed**. In this example, Houston Electronics prices the 450 units of ending inventory using the **earliest** prices. The first purchase was 100 units at $10 in the January 1 beginning inventory. Then, 200 units were purchased at $11. The remaining 150 units needed are priced at $12 per unit (August 24 purchase). Next, Houston Electronics calculates cost of goods sold by subtracting the cost of the units **not sold** (ending inventory) from the cost of all goods available for sale.

Illustration 6.9 demonstrates that companies also can calculate cost of goods sold by pricing the 550 units sold using the prices of the last 550 units acquired. Note that of the 300 units purchased on August 24, only 150 units are assumed sold. This agrees with our calculation of the cost of ending inventory, where 150 of these units were assumed unsold and thus included in ending inventory.

Date	Units	Unit Cost	Total Cost
Nov. 27	400	$13	$5,200
Aug. 24	150	12	1,800
Total	550		$7,000

ILLUSTRATION 6.9
Proof of cost of goods sold

Under a periodic inventory system, which we are using here, **all goods purchased during the period are assumed to be available for the first sale, regardless of the date of purchase**.

Average-Cost

The **average-cost method** allocates the cost of goods available for sale on the basis of the **weighted-average unit cost** incurred. The average-cost method assumes that goods are similar in nature. **Illustration 6.10** presents the formula and a sample computation of the weighted-average unit cost.

Cost of Goods Available for Sale	÷	Total Units Available for Sale	=	Weighted-Average Unit Cost
$12,000	÷	1,000	=	$12

ILLUSTRATION 6.10
Formula for weighted-average unit cost

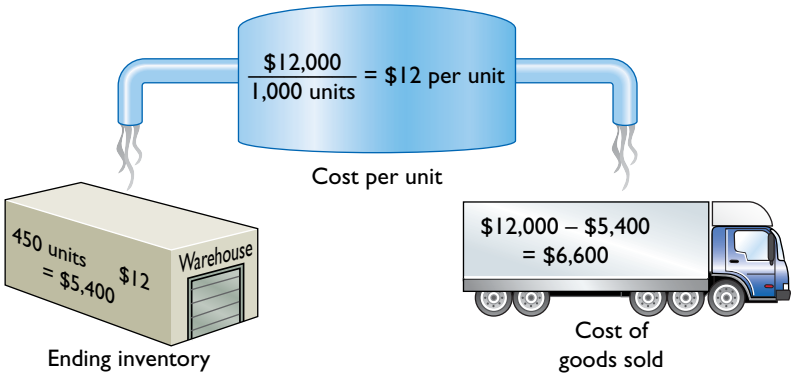
The company then applies the weighted-average unit cost to the units on hand to determine the cost of the ending inventory. **Illustration 6.11** shows the allocation of the cost of goods available for sale at Houston Electronics using average-cost.

COST OF GOODS AVAILABLE FOR SALE				
Date	**Explanation**	**Units**	**Unit Cost**	**Total Cost**
Jan. 1	Beginning inventory	100	$10	$ 1,000
Apr. 15	Purchase	200	11	2,200
Aug. 24	Purchase	300	12	3,600
Nov. 27	Purchase	400	13	5,200
	Total	1,000		$12,000

ILLUSTRATION 6.11
Allocation of costs—average-cost method

ILLUSTRATION 6.11
(*Continued*)

STEP 1: ENDING INVENTORY					STEP 2: COST OF GOODS SOLD	
$12,000	÷	1,000	=	$12	Cost of goods available for sale	$12,000
		Unit		Total	Less: Ending inventory	5,400
Units		Cost		Cost	Cost of goods sold	$ 6,600
450		$12		$5,400		



We can verify the cost of goods sold under this method by multiplying the units sold times the weighted-average unit cost (550 × $12 = $6,600). Note that this method does **not** use the average of the unit costs. That average is $11.50 ($10 + $11 + $12 + $13 = $46; $46 ÷ 4). The average-cost method instead uses the average **weighted by** the quantities purchased at each unit cost.

Financial Statement and Tax Effects of Cost Flow Methods

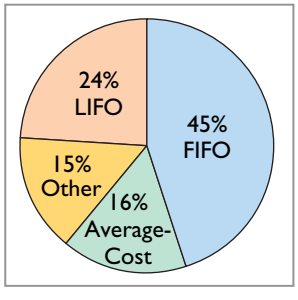


ILLUSTRATION 6.12
Use of cost flow methods in major U.S. companies

Each of the three assumed cost flow methods is acceptable for use. For example, **Reebok International Ltd.** and **Wendy's International** currently use the FIFO method of inventory costing. **Campbell Soup Company**, **Kroger**, and **Walgreen Drugs** use LIFO for part or all of their inventory. **Bristol-Myers Squibb**, **Starbucks**, and **Motorola** use the average-cost method. In fact, a company may also use more than one cost flow method at the same time. **Stanley Black & Decker Manufacturing Company**, for example, uses LIFO for domestic inventories and FIFO for foreign inventories. **Illustration 6.12** shows the use of the three cost flow methods in 500 large U.S. companies.

The reasons companies adopt different inventory cost flow methods are varied, but they usually involve one of three factors: (1) income statement effects, (2) balance sheet effects, or (3) tax effects.

Income Statement Effects

To understand why companies might choose a particular cost flow method, let's examine the effects of the different cost flow assumptions on the financial statements of Houston Electronics. The condensed income statements in **Illustration 6.13** assume that Houston sold its 550 units for $18,500, had operating expenses of $9,000, and is subject to an income tax rate of 30%.

Note the cost of goods available for sale ($12,000) is the same under each of the three inventory cost flow methods. However, the ending inventories and the costs of goods sold are different. This difference is due to the unit costs that the company allocated to cost of goods sold and to ending inventory. Each dollar of difference in ending inventory results in a corresponding dollar difference in income before income taxes. For Houston, an $800 difference exists between FIFO and LIFO cost of goods sold.

ILLUSTRATION 6.13
Comparative effects of cost flow methods

Houston Electronics
Condensed Income Statements

	FIFO	LIFO	Average-Cost
Sales revenue	$18,500	$18,500	$18,500
Beginning inventory	1,000	1,000	1,000
Purchases	11,000	11,000	11,000
Cost of goods available for sale	12,000	12,000	12,000
Ending inventory	**5,800**	**5,000**	**5,400**
Cost of goods sold	6,200	7,000	6,600
Gross profit	12,300	11,500	11,900
Operating expenses	9,000	9,000	9,000
Income before income taxes*	3,300	2,500	2,900
Income tax expense (30%)	990	750	870
Net income	**$ 2,310**	**$ 1,750**	**$ 2,030**

*We are assuming that Houston Electronics is a corporation, and corporations are required to pay income taxes.

In periods of changing prices, the cost flow assumption can have significant impacts both on income and on evaluations of income, such as the following.

1. In a period of inflation, FIFO produces a higher net income because lower unit costs of the first units purchased are matched against revenue.
2. In a period of inflation, LIFO produces a lower net income because higher unit costs of the last goods purchased are matched against revenue.
3. If prices are falling, the results from the use of FIFO and LIFO are reversed. FIFO will report the lowest net income and LIFO the highest.
4. Regardless of whether prices are rising or falling, average-cost produces net income between FIFO and LIFO.

As shown in the Houston example (Illustration 6.13), in a period of rising prices FIFO reports the highest net income ($2,310) and LIFO the lowest ($1,750); average-cost falls between these two amounts ($2,030).

To management, higher net income is an advantage. It causes external users to view the company more favorably. In addition, management bonuses, if based on net income, will be higher. Therefore, when prices are rising (which is usually the case), companies tend to prefer FIFO because it results in higher net income.

Others believe that LIFO presents a more realistic net income number. That is, LIFO matches the more recent costs against current revenues to provide a better measure of net income. During periods of inflation, many challenge the quality of non-LIFO earnings, noting that failing to match current costs against current revenues leads to an understatement of cost of goods sold and an overstatement of net income. As some indicate, net income computed using FIFO creates **"paper or phantom profits"**—that is, earnings that do not really exist.

Balance Sheet Effects

A major advantage of the FIFO method is that in a period of inflation, the costs allocated to ending inventory will approximate their current cost. For example, for Houston Electronics, 400 of the 450 units in the ending inventory are costed under FIFO at the higher November 27 unit cost of $13.

Conversely, a major shortcoming of the LIFO method is that in a period of inflation, the costs allocated to ending inventory may be significantly understated in terms of current cost. The understatement becomes greater over prolonged periods of inflation if the inventory includes goods purchased in one or more prior accounting periods. For example, **Caterpillar** has used LIFO for more than 50 years. Its balance sheet shows

ending inventory of $9,700 million. But the inventory's actual current cost if FIFO had been used is $12,189 million.

Tax Effects

HELPFUL HINT

A tax rule, often referred to as the LIFO conformity rule, requires that if companies use LIFO for tax purposes they must also use it for financial reporting purposes. This means that if a company chooses the LIFO method to reduce its tax bills, it will also have to report lower net income in its financial statements.

We have seen that both inventory on the balance sheet and net income on the income statement are higher when companies use FIFO in a period of inflation. Yet, many companies have selected LIFO. Why? The reason is that LIFO results in the lowest income taxes (because of lower net income) during times of rising prices (see **Helpful Hint**). For example, at Houston Electronics, income taxes are $750 under LIFO, compared to $990 under FIFO. The tax savings of $240 makes more cash available for use in the business.

Using Inventory Cost Flow Methods Consistently

Whatever cost flow method a company chooses, it should use that method consistently from one accounting period to another. This approach is often referred to as the **consistency concept**, which means that a company uses the same accounting principles and methods from year to year. Consistent application enhances the comparability of financial statements over successive time periods. In contrast, using the FIFO method one year and the LIFO method the next year would make it difficult to compare the net incomes of the two years.

Although consistent application is preferred, it does not mean that a company may never change its inventory costing method. When a company adopts a different method, it should disclose in the financial statements the change and its effects on net income. **Illustration 6.14** shows a typical disclosure, using information from recent financial statements of **Quaker Oats** (now a unit of **PepsiCo**).

ILLUSTRATION 6.14

Disclosure of change in cost flow method

Real World

Quaker Oats
Notes to the Financial Statements

Note 1: Effective July 1, the Company adopted the LIFO cost flow assumption for valuing the majority of U.S. Grocery Products inventories. The Company believes that the use of the LIFO method better matches current costs with current revenues. The effect of this change on the current year was to decrease net income by $16.0 million.

International Insight — ExxonMobil Corporation

Bloomberg/Getty Images

Is LIFO Fair?

ExxonMobil Corporation, like many U.S. companies, uses LIFO to value its inventory for financial reporting and tax purposes. In one year, this resulted in a cost of goods sold figure that was $5.6 billion higher than under FIFO. By increasing cost of goods sold, ExxonMobil reduces net income, which reduces taxes. Critics say that LIFO provides an unfair "tax dodge." As Congress looks for more sources of tax revenue, some lawmakers favor the elimination of LIFO. Supporters of LIFO argue that the method is conceptually sound because it matches current costs with current revenues. In addition, they point out that this matching provides protection against inflation.

International accounting standards do not allow the use of LIFO. Because of this, the net income of foreign oil companies such as **BP** and **Royal Dutch Shell** are not directly comparable to U.S. companies, which can make analysis difficult.

Source: David Reilly, "Big Oil's Accounting Methods Fuel Criticism," *Wall Street Journal* (August 8, 2006), p. C1.

What are the arguments for and against the use of LIFO? (Go to WileyPLUS for this answer and additional questions.)

DO IT! 2 | Cost Flow Methods

The accounting records of Shumway Ag Implements show the following data.

Beginning inventory	4,000 units at $ 3
Purchases	6,000 units at $ 4
Sales	7,000 units at $12

Determine the cost of goods sold during the period under a periodic inventory system using (a) the FIFO method, (b) the LIFO method, and (c) the average-cost method.

ACTION PLAN

- Understand the periodic inventory system.
- Allocate costs between goods sold and goods on hand (ending inventory) for each cost flow method.
- Compute cost of goods sold for each method.

Solution

Cost of goods available for sale = (4,000 × $3) + (6,000 × $4) = $36,000
Ending inventory = 10,000 − 7,000 = 3,000 units

a. FIFO: $36,000 − (3,000 × $4) = $24,000

b. LIFO: $36,000 − (3,000 × $3) = $27,000

c. Average cost per unit: [(4,000 @ $3) + (6,000 @ $4)] ÷ 10,000 = $3.60
Average-cost: $36,000 − (3,000 × $3.60) = $25,200

Related exercise material: **BE6.3, BE6.4, BE6.5, BE6.6, DO IT! 6.2, E6.4, E6.5, E6.6, E6.7, E6.8, and E6.9.**

Effects of Inventory Errors

LEARNING OBJECTIVE 3

Indicate the effects of inventory errors on the financial statements.

Unfortunately, errors occasionally occur in accounting for inventory. In some cases, errors are caused by failure to count or price the inventory correctly. In other cases, errors occur because companies do not properly recognize the transfer of legal title to goods that are in transit. When errors occur, they affect both the income statement and the balance sheet.

Income Statement Effects

The ending inventory of one period automatically becomes the beginning inventory of the next period. Thus, inventory errors affect the computation of cost of goods sold and net income in two periods.

The effects on cost of goods sold can be computed by first entering incorrect data in the formula in Illustration 6.15 and then substituting the correct data.

Beginning Inventory	+	Cost of Goods Purchased	−	Ending Inventory	=	Cost of Goods Sold

ILLUSTRATION 6.15
Formula for cost of goods sold

If **beginning** inventory is understated, cost of goods sold will be understated. If **ending** inventory is understated, cost of goods sold will be overstated. Illustration 6.16 shows the effects of inventory errors on the current year's income statement.

ILLUSTRATION 6.16
Effects of inventory errors on current year's income statement

When Inventory Error:	Cost of Goods Sold Is:	Net Income Is:
Understates beginning inventory	Understated	Overstated
Overstates beginning inventory	Overstated	Understated
Understates ending inventory	Overstated	Understated
Overstates ending inventory	Understated	Overstated

ETHICS NOTE

Inventory fraud increases during recessions. Such fraud includes pricing inventory at amounts in excess of its actual value, or claiming to have inventory when no inventory exists. Inventory fraud usually overstates ending inventory, thereby understating cost of goods sold and creating higher income.

An error in the ending inventory of the current period will have a **reverse effect on net income of the next accounting period**. Illustration 6.17 shows this effect. Note that the understatement of ending inventory in 2019 results in an understatement of beginning inventory in 2020 and an overstatement of net income in 2020.

Over the two years, though, total net income is correct because the errors **offset each other**. Notice that total income using incorrect data is $35,000 ($22,000 + $13,000), which is the same as the total income of $35,000 ($25,000 + $10,000) using correct data. Also note in this example that an error in the beginning inventory does not result in a corresponding error in the ending inventory for that period. The correctness of the ending inventory depends entirely on the accuracy of taking and costing the inventory at the balance sheet date under the periodic inventory system (see Ethics Note).

ILLUSTRATION 6.17 **Effects of inventory errors on two years' income statements**

Sample Company
Condensed Income Statements

	2019				2020			
	Incorrect		Correct		Incorrect		Correct	
Sales revenue		$80,000		$80,000		$90,000		$90,000
Beginning inventory	$ 20,000		$20,000		**$12,000**		**$15,000**	
Cost of goods purchased	40,000		40,000		68,000		68,000	
Cost of goods available for sale	60,000		60,000		80,000		83,000	
Ending inventory	**12,000**		**15,000**		23,000		23,000	
Cost of goods sold		48,000		45,000		57,000		60,000
Gross profit		32,000		35,000		33,000		30,000
Operating expenses		10,000		10,000		20,000		20,000
Net income		$22,000		$25,000		$13,000		$10,000

$(3,000) Net income understated

$3,000 Net income overstated

The errors cancel. Thus, the combined total income for the 2-year period is correct.

Balance Sheet Effects

Companies can determine the effect of ending inventory errors on the balance sheet by using the basic accounting equation: Assets = Liabilities + Owner's Equity. Errors in the ending inventory have the effects shown in Illustration 6.18.

ILLUSTRATION 6.18
Effects of ending inventory errors on balance sheet

Ending Inventory Error	Assets	Liabilities	Owner's Equity
Overstated	Overstated	No effect	Overstated
Understated	Understated	No effect	Understated

The effect of an error in ending inventory on the subsequent period was shown in Illustration 6.17. Note that if the error is not corrected, the combined total net income for the two periods would be correct. Thus, total owner's equity reported on the balance sheet at the end of 2020 will also be correct.

DO IT! 3 | Inventory Errors

Visual Company overstated its 2019 ending inventory by $22,000. Determine the impact this error has on ending inventory, cost of goods sold, and owner's equity in 2019 and 2020.

ACTION PLAN

- An ending inventory error in one period will have an equal and opposite effect on cost of goods sold and net income in the next period.
- After two years, the errors have offset each other.

Solution

	2019	2020
Ending inventory	$22,000 overstated	No effect
Cost of goods sold	$22,000 understated	$22,000 overstated
Owner's equity	$22,000 overstated	No effect

Related exercise material: **BE6.7, DO IT! 6.3, E6.10, and E6.11.**

Inventory Statement Presentation and Analysis

LEARNING OBJECTIVE 4

Explain the statement presentation and analysis of inventory.

Presentation

As indicated in Chapter 5, inventory is classified in the balance sheet as a current asset immediately below receivables. In a multiple-step income statement, cost of goods sold is subtracted from net sales. There also should be disclosure of (1) the major inventory classifications, (2) the basis of accounting (cost, or lower-of-cost-or-net realizable value), and (3) the cost method (FIFO, LIFO, or average-cost).

Lower-of-Cost-or-Net Realizable Value

The value of inventory for companies selling high-technology or fashion goods can drop very quickly due to continual changes in technology or fashions. These circumstances sometimes call for inventory valuation methods other than those presented so far. For example, purchasing managers at **Ford** at one time decided to make a large purchase of palladium, a precious metal used in vehicle emission devices. They made this purchase because they feared a future shortage. The shortage did not materialize, and by the end of the year the price of palladium had plummeted. Ford's inventory was then worth $1 billion less than its original cost. Do you think Ford's inventory should have been stated at cost, in accordance with the historical cost principle, or at its lower net realizable value?

As you probably reasoned, this situation requires a departure from the cost basis of accounting. When the value of inventory is lower than its cost, companies must "write down" the inventory to its net realizable value. This is done by valuing the inventory at the **lower-of-cost-or-net realizable value (LCNRV)** in the period in which the price decline occurs. LCNRV is an example of the accounting concept of **conservatism**, which means

that the best choice among accounting alternatives is the method that is least likely to overstate assets and net income.

Under the LCNRV basis, **net realizable value** refers to the net amount that a company excepts to realize (receive) from the sale of inventory. Specifically, net realizable value is the estimated selling price in the normal course of business, less estimated costs to complete and sell.

Companies apply LCNRV to the items in inventory after they have used one of the inventory costing methods (specific identification, FIFO, or average-cost) to determine cost.[2] To illustrate the application of LCNRV, assume that Ken Tuckie TV has the following lines of merchandise with costs and net realizable values as indicated. LCNRV produces the results shown in **Illustration 6.19**. Note that the amounts shown in the final column are the lower-of-cost-or-net realizable value amounts for each item.

ILLUSTRATION 6.19
Computation of lower-of-cost-or-net realizable value

	Units	Cost per Unit	Net Realizable Value per Unit	Lower-of-Cost-or-Net Realizable Value	
Flat-screen TVs	100	$600	$550	$ 55,000	($550 × 100)
Satellite radios	500	90	104	45,000	($90 × 500)
DVD recorders	850	50	48	40,800	($48 × 850)
DVDs	3,000	5	6	15,000	($5 × 3,000)
Total inventory				$155,800	

Analysis

The amount of inventory carried by a company has significant economic consequences. And inventory management is a double-edged sword that requires constant attention. On the one hand, management wants to have a great variety and quantity available so that customers have a wide selection and items are always in stock. But, such a policy may incur high carrying costs (e.g., investment, storage, insurance, obsolescence, and damage). On the other hand, low inventory levels lead to stock-outs and lost sales. Common ratios used to manage and evaluate inventory levels are inventory turnover and a related measure, days in inventory.

Inventory turnover measures the number of times on average the inventory is sold during the period. Its purpose is to measure the liquidity of the inventory. The inventory turnover is computed by dividing cost of goods sold by the average inventory during the period. Unless seasonal factors are significant, average inventory can be computed from the beginning and ending inventory balances. For example, **Wal-Mart** reported in its January 31, 2016, annual report a beginning inventory of $45,141 million, an ending inventory of $44,469 million, and cost of goods sold for the year ended January 31, 2016, of $360,984 million. The inventory turnover formula and computation for Wal-Mart are shown in **Illustration 6.20**.

ILLUSTRATION 6.20
Inventory turnover formula and computation for Wal-Mart

Cost of Goods Sold	÷	Average Inventory	=	Inventory Turnover
$360,984	÷	$\frac{\$44,469 + \$45,141}{2}$	=	8.1 times

A variant of the inventory turnover is **days in inventory**. This measures the average number of days inventory is held. It is calculated as 365 divided by the inventory turnover. For example, Wal-Mart's inventory turnover of 8.1 times divided into 365 is approximately 45.1 days. This is the approximate time that it takes a company to sell the inventory once it arrives at the store.

[2]Special rules apply to companies that use LIFO, which are discussed in more advanced courses.

There are typical levels of inventory in every industry. Companies that are able to keep their inventory at lower levels and higher turnovers and still satisfy customer needs are the most successful.

Accounting Across the Organization Sony

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Too Many TVs or Too Few?

Financial analysts closely monitor the inventory management practices of companies. For example, some analysts following **Sony** expressed concern because the company built up its inventory of televisions in an attempt to sell 25 million liquid crystal display (LCD) TVs—a 60% increase over the prior year. A year earlier, Sony had cut its inventory levels so that its quarterly days in inventory was down to 38 days, compared to 61 days for the same quarter a year before that. But in the next year, as a result of its inventory build-up, days in inventory rose to 59 days. Management said that it didn't think that Sony's inventory levels were too high. However, analysts were concerned that the company would have to engage in very heavy discounting in order to sell off its inventory. Analysts noted that the losses from discounting can be "punishing."

Source: Daisuke Wakabayashi, "Sony Pledges to Corral Inventory," *Wall Street Journal* Online (November 2, 2010).

For Sony, what are the advantages and disadvantages of having a low days in inventory measure? (Go to WileyPLUS for this answer and additional questions.)

DO IT! 4 | LCNRV and Inventory Turnover

a. Tracy Company sells three different types of home heating stoves (gas, wood, and pellet). The cost and net realizable value of its inventory of stoves are as follows.

	Cost	Net Realizable Value
Gas	$ 84,000	$ 79,000
Wood	250,000	280,000
Pellet	112,000	101,000

Determine the value of the company's inventory under the lower-of-cost-or-net realizable value approach.

ACTION PLAN

- Determine whether cost or net realizable value is lower for each inventory type.
- Sum the lowest value of each inventory type to determine the total value of inventory.

Solution

The lowest value for each inventory type is gas $79,000, wood $250,000, and pellet $101,000. The total inventory value is the sum of these amounts, $430,000.

b. Early in 2020, Westmoreland Company switched to a just-in-time inventory system. Its sales revenue, cost of goods sold, and inventory amounts for 2019 and 2020 are shown below.

	2019	2020
Sales revenue	$2,000,000	$1,800,000
Cost of goods sold	1,000,000	910,000
Beginning inventory	290,000	210,000
Ending inventory	210,000	50,000

Determine the inventory turnover and days in inventory for 2019 and 2020. Discuss the changes in the amount of inventory, the inventory turnover and days in inventory, and the amount of sales across the two years.

ACTION PLAN

- To find the inventory turnover, divide cost of goods sold by average inventory.
- To determine days in inventory, divide 365 days by the inventory turnover.

Solution

	2019		2020	
Inventory turnover	$1,000,000 / ($290,000 + $210,000)/2	= 4	$910,000 / ($210,000 + $50,000)/2	= 7
Days in inventory	365 ÷ 4 = 91.3 days		365 ÷ 7 = 52.1 days	

The company experienced a very significant decline in its ending inventory as a result of the just-in-time inventory. This decline improved its inventory turnover and its days in inventory. However, its sales declined by 10%. It is possible that this decline was caused by the dramatic reduction in the amount of inventory that was on hand, which increased the likelihood of "stock-outs." To determine the optimal inventory level, management must weigh the benefits of reduced inventory against the potential lost sales caused by stock-outs.

Related exercise material: **BE6.8, BE6.9, DO IT! 6.4, E6.12, E6.13, E6.14, and E6.15.**

ACTION PLAN (CONT.)

- **Just-in-time inventory reduces the amount of inventory on hand, which reduces carrying costs. Reducing inventory levels by too much has potential negative implications for sales.**

Appendix 6A Inventory Methods and the Perpetual System

LEARNING OBJECTIVE *5

Apply the inventory cost flow methods to perpetual inventory records.

What inventory cost flow methods can companies employ if they use a perpetual inventory system? Simple—they can use any of the inventory cost flow methods described in the chapter. To illustrate the application of the three assumed cost flow methods (FIFO, LIFO, and average-cost), we will use the data shown in Illustration 6A.1 and in this chapter for Houston Electronics' Astro condensers.

ILLUSTRATION 6A.1
Inventoriable units and costs

Houston Electronics
Astro Condensers

Date	Explanation	Units	Unit Cost	Total Cost	Balance in Units
1/1	Beginning inventory	100	$10	$ 1,000	100
4/15	Purchases	200	11	2,200	300
8/24	Purchases	300	12	3,600	600
9/10	Sale	550			50
11/27	Purchases	400	13	5,200	450
				$12,000	

First-In, First-Out (FIFO)

Under perpetual FIFO, the company charges to cost of goods sold the cost of the earliest goods on hand **prior to each sale**. Therefore, the cost of goods sold on September 10 consists of the units on hand January 1 and the units purchased April 15 and August 24. Illustration 6A.2 shows the inventory under a FIFO method perpetual system.

ILLUSTRATION 6A.2
Perpetual system—FIFO

Date	Purchases		Cost of Goods Sold	Balance (in units and cost)	
January 1				(100 @ $10)	$1,000
April 15	(200 @ $11)	$2,200		(100 @ $10) (200 @ $11)	$3,200
August 24	(300 @ $12)	$3,600		(100 @ $10) (200 @ $11) (300 @ $12)	$6,800
September 10			(100 @ $10) (200 @ $11) (250 @ $12)	(50 @ $12)	$ 600
			$6,200		Cost of goods sold
November 27	(400 @ $13)	$5,200		(50 @ $12) (400 @ $13)	$5,800 Ending inventory

The ending inventory in this situation is $5,800, and the cost of goods sold is $6,200 [(100 @ $10) + (200 @ $11) + (250 @ $12)].

Compare Illustrations 6.6 and 6A.2. You can see that the results under FIFO in a perpetual system are the **same as in a periodic system**. In both cases, the ending inventory is $5,800 and cost of goods sold is $6,200. Regardless of the system, the first costs in are the costs assigned to cost of goods sold.

Last-In, First-Out (LIFO)

Under the LIFO method using a perpetual system, the company charges to cost of goods sold the cost of the most recent purchase prior to sale. Therefore, the cost of the goods sold on September 10 consists of all the units from the August 24 and April 15 purchases plus 50 of the units in beginning inventory. **Illustration 6A.3** shows the computation of the ending inventory under the LIFO method.

ILLUSTRATION 6A.3
Perpetual system—LIFO

Date	Purchases		Cost of Goods Sold	Balance (in units and cost)	
January 1				(100 @ $10)	$1,000
April 15	(200 @ $11)	$2,200		(100 @ $10) (200 @ $11)	$3,200
August 24	(300 @ $12)	$3,600		(100 @ $10) (200 @ $11) (300 @ $12)	$6,800
September 10			(300 @ $12) (200 @ $11) (50 @ $10)	(50 @ $10)	$ 500
			$6,300		Cost of goods sold
November 27	(400 @ $13)	$5,200		(50 @ $10) (400 @ $13)	$5,700 Ending inventory

The use of LIFO in a perpetual system will usually produce cost allocations that differ from those using LIFO in a periodic system. In a perpetual system, the latest units purchased **prior to each sale** are allocated to cost of goods sold. In contrast, in a periodic system, the latest units purchased **during the period** are allocated to cost of goods sold. Thus, when a purchase is made after the last sale, the LIFO periodic system will apply this purchase to the previous sale.

See Illustration 6.9, which shows the proof that the 400 units at $13 purchased on November 27 applied to the sale of 550 units on September 10.

Under the LIFO perpetual system in Illustration 6A.3, the 400 units at $13 purchased on November 27 are all applied to the ending inventory. The ending inventory in this LIFO perpetual illustration is $5,700, and cost of goods sold is $6,300, as compared to the LIFO periodic Illustration 6.8 where the ending inventory is $5,000 and cost of goods sold is $7,000.

Average-Cost

The average-cost method in a perpetual inventory system is called the **moving-average method**. Under this method, the company computes a new average **after each purchase**, by dividing the cost of goods available for sale by the units on hand. The average cost is then applied to (1) the units sold, to determine the cost of goods sold, and (2) the remaining units on hand, to determine the ending inventory amount. **Illustration 6A.4** shows the application of the moving-average cost method by Houston Electronics (computations of the moving-average unit cost are shown after Illustration 6A.4).

ILLUSTRATION 6A.4
Perpetual system—moving-average method

Date	Purchases	Cost of Goods Sold	Balance (in units and cost)
January 1			(100 @ $10) $1,000
April 15	(200 @ $11) $2,200		(300 @ $10.667) $3,200
August 24	(300 @ $12) $3,600		(600 @ $11.333) $6,800
September 10		(550 @ $11.333)	(50 @ $11.333) $ 567
		$6,233	
November 27	(400 @ $13) $5,200		(450 @ $12.816) $5,767

Cost of goods sold

Ending inventory

As indicated, Houston Electronics computes **a new average each time it makes a purchase**.

1. On April 15, after Houston buys 200 units for $2,200, a total of 300 units costing $3,200 ($1,000 + $2,200) are on hand. The average unit cost is $10.667 ($3,200 ÷ 300).
2. On August 24, after Houston buys 300 units for $3,600, a total of 600 units costing $6,800 ($1,000 + $2,200 + $3,600) are on hand. The average cost per unit is $11.333 ($6,800 ÷ 600).
3. On September 10, to compute cost of goods sold, Houston uses this unit cost of $11.333 until it makes another purchase, when the company computes a new unit cost. Accordingly, the unit cost of the 550 units sold on September 10 is $11.333, and the total cost of goods sold is $6,233.
4. On November 27, following the purchase of 400 units for $5,200, there are 450 units on hand costing $5,767 ($567 + $5,200) with a new average cost of $12.816 ($5,767 ÷ 450).

Compare this moving-average cost under the perpetual inventory system to Illustration 6.11, which shows the average-cost method under a periodic inventory system.

Appendix 6B Estimating Inventories

LEARNING OBJECTIVE *6
Describe the two methods of estimating inventories.

In the chapter, we assumed that a company would be able to physically count its inventory. What if it cannot? What if the inventory were destroyed by fire or flood, for example? In that case, the company would use an estimate.

Two circumstances explain why companies sometimes estimate inventories. First, a casualty such as fire, flood, or earthquake may make it impossible to take a physical inventory. Second, managers may want monthly or quarterly financial statements, but a physical inventory is taken only annually. The need for estimating inventories occurs primarily with a periodic inventory system because of the absence of perpetual inventory records.

There are two widely used methods of estimating inventories: (1) the gross profit method, and (2) the retail inventory method.

Gross Profit Method

The **gross profit method** estimates the cost of ending inventory by applying a gross profit rate to net sales. This method is relatively simple but effective. Accountants, auditors, and managers frequently use the gross profit method to test the reasonableness of the ending inventory amount. It will detect large errors.

To use this method, a company needs to know its net sales, cost of goods available for sale, and gross profit rate. The company then can estimate its gross profit for the period. Illustration 6B.1 shows the formulas for using the gross profit method.

Step 1:	**Net Sales**	**–**	**Estimated Gross Profit**	**=**	**Estimated Cost of Goods Sold**
Step 2:	**Cost of Goods Available for Sale**	**–**	**Estimated Cost of Goods Sold**	**=**	**Estimated Cost of Ending Inventory**

ILLUSTRATION 6B.1
Gross profit method formulas

To illustrate, assume that Kishwaukee Company wishes to prepare an income statement for the month of January. Its records show net sales of $200,000, beginning inventory $40,000, and cost of goods purchased $120,000. In the preceding year, the company realized a 30% gross profit rate. It expects to earn the same rate this year. Given these facts and assumptions, Kishwaukee can compute the estimated cost of the ending inventory at January 31 under the gross profit method as shown in Illustration 6B.2.

Step 1:	
Net sales	$200,000
Less: Estimated gross profit (30% × $200,000)	60,000
Estimated cost of goods sold	**$140,000**
Step 2:	
Beginning inventory	$ 40,000
Cost of goods purchased	120,000
Cost of goods available for sale	160,000
Less: Estimated cost of goods sold	140,000
Estimated cost of ending inventory	**$ 20,000**

ILLUSTRATION 6B.2
Example of gross profit method

The gross profit method is based on the assumption that the gross profit rate will remain constant. But, it may not remain constant, due to a change in merchandising policies or in market conditions. In such cases, the company should adjust the rate to reflect current operating conditions. In some cases, companies can obtain a more accurate estimate by applying this method on a department or product-line basis.

Note that companies should not use the gross profit method to prepare financial statements at the end of the year. These statements should be based on a physical inventory count.

Retail Inventory Method

A retail store such as **Home Depot**, **Ace Hardware**, or **Walmart** has thousands of different types of merchandise at low unit costs. In such cases, it is difficult and time-consuming to apply unit costs to inventory quantities. An alternative is to use the **retail inventory method** to estimate the cost of inventory. Most retail companies can establish a relationship between cost and sales price. The company then applies the cost-to-retail percentage to the ending inventory at retail prices to determine inventory at cost.

Under the retail inventory method, a company's records must show both the cost and retail value of the goods available for sale. **Illustration 6B.3** presents the formulas for using the retail inventory method.

ILLUSTRATION 6B.3
Retail inventory method formulas

Step 1:	**Goods Available for Sale at Retail**	**–**	**Net Sales**	**=**	**Ending Inventory at Retail**
Step 2:	**Goods Available for Sale at Cost**	**÷**	**Goods Available for Sale at Retail**	**=**	**Cost-to-Retail Ratio**
Step 3:	**Ending Inventory at Retail**	**×**	**Cost-to-Retail Ratio**	**=**	**Estimated Cost of Ending Inventory**

We can demonstrate the logic of the retail method by using unit-cost data. Assume that Ortiz Inc. has marked 10 units purchased at $7 to sell for $10 per unit. Thus, the cost-to-retail ratio is 70% ($70 ÷ $100). If four units remain unsold, their retail value is $40 (4 × $10), and their cost is $28 ($40 × 70%). This amount agrees with the total cost of goods on hand on a per unit basis (4 × $7).

Illustration 6B.4 shows application of the retail method for Valley West. Note that it is not necessary to take a physical inventory to determine the estimated cost of goods on hand at any given time.

ILLUSTRATION 6B.4
Application of retail inventory method

	At Cost	At Retail
Beginning inventory	$14,000	$ 21,500
Goods purchased	61,000	78,500
Goods available for sale	$75,000	100,000
Less: Net sales		70,000
Step (1) Ending inventory at retail =		**$ 30,000**

Step (2) Cost-to-retail ratio = $75,000 ÷ $100,000 = 75%
Step (3) Estimated cost of ending inventory = $30,000 × 75% = $22,500

HELPFUL HINT
In determining inventory at retail, companies use selling prices of the units.

The retail inventory method also facilitates taking a physical inventory at the end of the year. Valley West can value the goods on hand at the prices marked on the merchandise, and then apply the cost-to-retail ratio to the goods on hand at retail to determine the ending inventory at cost (see **Helpful Hint**).

The major disadvantage of the retail method is that it is an averaging technique. Thus, it may produce an incorrect inventory valuation if the mix of the ending inventory is not representative of the mix in the goods available for sale. Assume, for example, that the cost-to-retail ratio of 75% for Valley West consists of equal proportions of inventory items that have cost-to-retail ratios of 70%, 75%, and 80%. If the ending inventory contains only items with a 70% ratio, an incorrect inventory cost will result. Companies can minimize this problem by applying the retail method on a department or product-line basis.

Review and Practice

Learning Objectives Review

1 Discuss how to classify and determine inventory.

Merchandisers need only one inventory classification, merchandise inventory, to describe the different items that make up total inventory. Manufacturers, on the other hand, usually classify inventory into three categories: finished goods, work in process, and raw materials. To determine inventory quantities, manufacturers (1) take a physical inventory of goods on hand and (2) determine the ownership of goods in transit or on consignment.

2 Apply inventory cost flow methods and discuss their financial effects.

The primary basis of accounting for inventories is cost. Cost of goods available for sale includes (a) cost of beginning inventory and (b) cost of goods purchased. The inventory cost flow methods are specific identification and three assumed cost flow methods—FIFO, LIFO, and average-cost.

When prices are rising, the first-in, first-out (FIFO) method results in lower cost of goods sold and higher net income than the other methods. The last-in, first-out (LIFO) method results in the lowest income taxes. The reverse is true when prices are falling. In the balance sheet, FIFO results in an ending inventory that is closest to current value. Inventory under LIFO is the farthest from current value.

3 Indicate the effects of inventory errors on the financial statements.

In the income statement of the current year: (a) If beginning inventory is understated, net income is overstated. The reverse occurs if beginning inventory is overstated. (b) If ending inventory is overstated, net income is overstated. If ending inventory is understated, net income is understated. In the following period, its effect on net income for that period is reversed, and total net income for the two years will be correct.

In the balance sheet: Ending inventory errors will have the same effect on total assets and total owner's equity and no effect on liabilities.

4 Explain the statement presentation and analysis of inventory.

Inventory is classified in the balance sheet as a current asset immediately below receivables. There also should be disclosure of (1) the major inventory classifications, (2) the basis of accounting, and (3) the cost method.

Companies use the lower-of-cost-or-net realizable value (LCNRV) basis when the net realizable value is less than cost. Under LCNRV, companies recognize the loss in the period in which the price decline occurs.

The inventory turnover is cost of goods sold divided by average inventory. To convert it to average days in inventory, divide 365 days by the inventory turnover.

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

Under FIFO and a perpetual inventory system, companies charge to cost of goods sold the cost of the earliest goods on hand prior to each sale. Under LIFO and a perpetual system, companies charge to cost of goods sold the cost of the most recent purchase prior to sale. Under the moving-average (average-cost) method and a perpetual system, companies compute a new average cost after each purchase.

*6 Describe the two methods of estimating inventories.

The two methods of estimating inventories are the gross profit method and the retail inventory method. Under the gross profit method, companies apply a gross profit rate to net sales to determine estimated gross profit and cost of goods sold. They then subtract estimated cost of goods sold from cost of goods available for sale to determine the estimated cost of the ending inventory.

Under the retail inventory method, companies compute a cost-to-retail ratio by dividing the cost of goods available for sale by the retail value of the goods available for sale. They then apply this ratio to the ending inventory at retail to determine the estimated cost of the ending inventory.

Glossary Review

Average-cost method Inventory costing method that uses the weighted-average unit cost to allocate to ending inventory and cost of goods sold the cost of goods available for sale. (p. 6-11).

Consigned goods Goods held for sale by one party although ownership of the goods is retained by another party. (p. 6-6).

Consistency concept Dictates that a company use the same accounting principles and methods from year to year. (p. 6-14).

Days in inventory Measure of the average number of days inventory is held; calculated as 365 divided by inventory turnover. (p. 6-18).

Finished goods inventory Manufactured items that are completed and ready for sale. (p. 6-3).

First-in, first-out (FIFO) method Inventory costing method that assumes that the costs of the earliest goods purchased are the first to be recognized as cost of goods sold. (p. 6-9).

FOB (free on board) destination Freight terms indicating that ownership of the goods remains with the seller until the goods reach the buyer. (p. 6-5).

FOB (free on board) shipping point Freight terms indicating that ownership of the goods passes to the buyer when the public carrier accepts the goods from the seller. (p. 6-5).

***Gross profit method** A method for estimating the cost of the ending inventory by applying a gross profit rate to net sales and subtracting estimated cost of goods sold from cost of goods available for sale. (p. 6-23).

Inventory turnover A ratio that measures the number of times on average the inventory sold during the period; computed by dividing cost of goods sold by the average inventory during the period. (p. 6-18).

Just-in-time (JIT) inventory Inventory system in which companies manufacture or purchase goods only when needed for use. (p. 6-3).

Last-in, first-out (LIFO) method Inventory costing method that assumes the costs of the latest units purchased are the first to be allocated to cost of goods sold. (p. 6-10).

Lower-of-cost-or-net realizable value (LCNRV) basis A basis whereby inventory is stated at the lower of either its cost or its net realizable value. (p. 6-17).

***Moving-average method** A new average is computed after each purchase, by dividing the cost of goods available for sale by the units on hand. (p. 6-22).

Net realizable value Net amount that a company expects to realize (receive) from the sale of inventory. Specifically, it is the estimated selling price in the normal course of business, less estimated costs to complete and sell. (p. 6-18)

Raw materials Basic goods that will be used in production but have not yet been placed into production. (p. 6-3).

***Retail inventory method** A method for estimating the cost of the ending inventory by applying a cost-to-retail ratio to the ending inventory at retail. (p. 6-24).

Specific identification method An actual physical flow costing method in which items still in inventory are specifically costed to arrive at the total cost of the ending inventory. (p. 6-7).

Weighted-average unit cost Average cost that is weighted by the number of units purchased at each unit cost. (p. 6-11).

Work in process That portion of manufactured inventory that has been placed into the production process but is not yet complete. (p. 6-3).

Practice Multiple-Choice Questions

1. (LO 1) When is a physical inventory usually taken?

a. When the company has its greatest amount of inventory.

b. When a limited number of goods are being sold or received.

c. At the end of the company's fiscal year.

d. Both (b) and (c).

2. (LO 1) Which of the following should **not** be included in the physical inventory of a company?

a. Goods held on consignment from another company.

b. Goods shipped on consignment to another company.

c. Goods in transit from another company shipped FOB shipping point.

d. None of the above.

3. (LO 1) As a result of a thorough physical inventory, Railway Company determined that it had inventory worth $180,000 at December 31, 2020. This count did not take into consideration the following facts: Rogers Consignment store currently has goods worth $35,000 on its sales floor that belong to Railway but are being sold on consignment by Rogers. The selling price of these goods is $50,000. Railway purchased $13,000 of goods that were shipped on December 27, FOB destination, that will be received by Railway on January 3. Determine the correct amount of inventory that Railway should report.

a. $230,000. **c.** $228,000.

b. $215,000. **d.** $193,000.

4. (LO 2) Cost of goods available for sale consists of two elements: beginning inventory and

a. ending inventory.

b. cost of goods purchased.

c. cost of goods sold.

d. All of the answer choices are correct.

5. (LO 2) Poppins Company has the following:

	Units	Unit Cost
Inventory, Jan. 1	8,000	$11
Purchase, June 19	13,000	12
Purchase, Nov. 8	5,000	13

If 9,000 units are on hand at December 31, the cost of the ending inventory under FIFO is:

a. $99,000. **c.** $113,000.

b. $108,000. **d.** $117,000.

6. (LO 2) Using the data in Question 5, the cost of the ending inventory under LIFO is:

a. $113,000. **c.** $99,000.

b. $108,000. **d.** $100,000.

7. (LO 2) Hansel Electronics has the following:

	Units	Unit Cost
Inventory, Jan. 1	5,000	$ 8
Purchase, April 2	15,000	$10
Purchase, Aug. 28	20,000	$12

If Hansel has 7,000 units on hand at December 31, the cost of ending inventory under the average-cost method is:

a. $84,000. **c.** $56,000.

b. $70,000. **d.** $75,250.

8. (LO 2) In periods of rising prices, LIFO will produce:

a. higher net income than FIFO.

b. the same net income as FIFO.

c. lower net income than FIFO.

d. higher net income than average-cost.

9. (LO 2) Considerations that affect the selection of an inventory costing method do **not** include:

a. tax effects.

b. balance sheet effects.

c. income statement effects.

d. perpetual vs. periodic inventory system.

10. (LO 3) Falk Company's ending inventory is understated $4,000. The effects of this error on the current year's cost of goods sold and net income, respectively, are:

a. understated, overstated.

b. overstated, understated.

c. overstated, overstated.

d. understated, understated.

11. (LO 3) Pauline Company overstated its inventory by $15,000 at December 31, 2019. It did not correct the error in 2019 or 2020. As a result, Pauline's owner's equity was:

a. overstated at December 31, 2019, and understated at December 31, 2020.

b. overstated at December 31, 2019, and properly stated at December 31, 2020.

c. understated at December 31, 2019, and understated at December 31, 2020.

d. overstated at December 31, 2019, and overstated at December 31, 2020.

12. (LO 4) The lower-of-cost-or-net realizable value rule for inventory is an example of the application of:

a. the conservatism convention.

b. the historical cost principle.

c. the materiality concept.

d. the economics entity assumption.

13. (LO 4) Norton Company purchased 1,000 widgets and has 200 widgets in its ending inventory at a cost of $91 each and a net realizable value of $80 each. The ending inventory under lower-of-cost-or-net realizable value is:

a. $91,000. **c.** $18,200.

b. $80,000. **d.** $16,000.

14. (LO 4) Santana Company had beginning inventory of $80,000, ending inventory of $110,000, cost of goods sold of $285,000, and sales of $475,000. Santana's days in inventory is:

a. 73 days. **c.** 102.5 days.

b. 121.7 days. **d.** 84.5 days.

15. (LO 4) Which of these would cause the inventory turnover to increase the most?

a. Increasing the amount of inventory on hand.

b. Keeping the amount of inventory on hand constant but increasing sales.

c. Keeping the amount of inventory on hand constant but decreasing sales.

d. Decreasing the amount of inventory on hand and increasing sales.

*__16. (LO 5)__ In a perpetual inventory system:

a. LIFO cost of goods sold will be the same as in a periodic inventory system.

b. average costs are a simple average of unit costs incurred.

c. a new average is computed under the average-cost method after each sale.

d. FIFO cost of goods sold will be the same as in a periodic inventory system.

*__17. (LO 6)__ King Company has sales of $150,000 and cost of goods available for sale of $135,000. If the gross profit rate is 30%, the estimated cost of the ending inventory under the gross profit method is:

a. $15,000. **c.** $45,000.

b. $30,000. **d.** $75,000.

Solutions

1. d. A physical inventory is usually taken when a limited number of goods are being sold or received, and at the end of the company's fiscal year. Choice (a) is incorrect because a physical inventory count is usually taken when the company has the least, not greatest, amount of inventory. Choices (b) and (c) are correct, but (d) is the better answer.

2. a. Goods held on consignment should not be included because another company has title (ownership) to the goods. The other choices are incorrect because (b) goods shipped on consignment to another company and (c) goods in transit from another company shipped FOB shipping point should be included in a company's ending inventory. Choice (d) is incorrect because (a) is not included in the physical inventory.

3. b. The inventory held on consignment by Rogers should be included in Railway's inventory balance at cost ($35,000). The purchased goods of $13,000 should not be included in inventory until January 3 because the goods are shipped FOB destination. Therefore, the correct amount of inventory is $215,000 ($180,000 + $35,000), not (a) $230,000, (c) $228,000, or (d) $193,000.

4. b. Cost of goods available for sale consists of beginning inventory and cost of goods purchased, not (a) ending inventory or (c) cost of goods sold. Therefore, choice (d) All of the above is also incorrect.

5. c. Under FIFO, ending inventory will consist of 5,000 units from the Nov. 8 purchase and 4,000 units from the June 19 purchase. Therefore, ending inventory is (5,000 × $13) + (4,000 × $12) = $113,000, not (a) $99,000, (b) $108,000, or (d) $117,000.

6. d. Under LIFO, ending inventory will consist of 8,000 units from the inventory at Jan. 1 and 1,000 units from the June 19 purchase. Therefore, ending inventory is (8,000 × $11) + (1,000 × $12) = $100,000, not (a) $113,000, (b) $108,000, or (c) $99,000.

7. d. Under the average-cost method, total cost of goods available for sale needs to be calculated in order to determine average cost per unit. The total cost of goods available is $430,000 = (5,000 × $8) + (15,000 × $10) + (20,000 × $12). The average cost per unit = ($430,000/40,000 total units available for sale) = $10.75. Therefore, ending inventory is ($10.75 × 7,000) = $75,250, not (a) $84,000, (b) $70,000, or (c) $56,000.

8. c. In periods of rising prices, LIFO will produce lower net income than FIFO, not (a) higher than FIFO or (b) the same as FIFO. Choice (d) is incorrect because in periods of rising prices, LIFO will produce lower net income than average-cost. LIFO therefore charges the highest inventory cost against revenues in a period of rising prices.

9. d. Perpetual vs. periodic inventory system is not one of the factors that affect the selection of an inventory costing method. The other choices are incorrect because (a) tax effects, (b) balance sheet effects, and (c) income statement effects all affect the selection of an inventory costing method.

10. b. Because ending inventory is too low, cost of goods sold will be too high (overstated) and since cost of goods sold (an expense) is too high, net income will be too low (understated). Therefore, the other choices are incorrect.

11. b. Owner's equity is overstated by $15,000 at December 31, 2019, and is properly stated at December 31, 2020. An ending inventory error in one period will have an equal and opposite effect on cost of goods sold and net income in the next period; after two years, the errors have offset each other. The other choices are incorrect because owner's equity (a) is properly stated, not understated, at December 31, 2020; (c) is overstated, not understated, by $15,000 at December 31, 2019, and is properly stated, not understated, at December 31, 2020; and (d) is properly stated at December 31, 2020, not overstated.

12. a. Conservatism means to use the lowest value for assets and revenues when in doubt. The other choices are incorrect because (b) historical cost means that companies value assets at the original cost, (c) materiality means that an amount is large enough to affect a decision-maker, and (d) economic entity means to keep the company's transactions separate from the transactions of other entities.

13. d. Under the LCNRV basis, net realizable value is defined as the estimated selling price in the normal course of business, less estimated costs to complete and sell. Therefore, ending inventory would be valued at 200 widgets × $80 each = $16,000 not (a) $91,000, (b) $80,000, or (c) $18,200.

14. b. Santana's days in inventory = 365/Inventory turnover = 365/[$285,000/($80,000 + $110,000)/2)] = 121.7 days, not (a) 73 days, (c) 102.5 days, or (d) 84.5 days.

15. d. Decreasing the amount of inventory on hand will cause the denominator to decrease, causing inventory turnover to increase. Increasing sales will cause the numerator of the ratio to increase (higher sales means higher COGS), thus causing inventory turnover to increase even more. The other choices are incorrect because (a) increasing the amount of inventory on hand causes the denominator of the ratio to increase while the numerator stays the same, causing inventory turnover to decrease; (b) keeping the amount of inventory on hand constant but increasing sales will cause inventory turnover to increase because the numerator of the ratio will increase (higher sales means higher COGS) while the denominator stays the same, which will result in a lesser inventory increase than decreasing amount of inventory on hand and increasing sales; and (c) keeping the amount of inventory on hand constant but decreasing sales will cause inventory turnover to decrease because the numerator of the ratio will decrease (lower sales means lower COGS) while the denominator stays the same.

***16. d.** FIFO cost of goods sold is the same under both a periodic and a perpetual inventory system. The other choices are incorrect because (a) LIFO cost of goods sold is not the same under a periodic and a perpetual inventory system; (b) average costs are based on a moving average of unit costs, not an average of unit costs; and (c) a new average is computed under the average-cost method after each purchase, not sale.

***17. b.** COGS = Sales ($150,000) − Gross profit ($150,000 × 30%) = $105,000. Ending inventory = Cost of goods available for sale ($135,000) − COGS ($105,000) = $30,000, not (a) $15,000, (c) $45,000, or (d) $75,000.

Practice Brief Exercises

Compute ending inventory using FIFO and LIFO.

1. (LO 2) In its first month of operations, Moncada Company made three purchases of merchandise in the following sequence: (1) 200 units at $7, (2) 300 units at $8, and (3) 150 units at $9. Assuming there are 220 units on hand, compute the cost of the ending inventory under the (a) FIFO method and (b) LIFO method. Moncada uses a periodic inventory system.

Solution

1. a. The ending inventory under FIFO consists of (150 units at $9) + (70 units at $8) for a total allocation of $1,910 ($1,350 + $560).

b. The ending inventory under LIFO consists of (200 units at $7) + (20 units at $8) for a total allocation of $1,560 ($1,400 + $160).

Determine correct income statement amounts.

2. (LO 3) **Financial Statement** Avisail Company reports net income of $80,000 in 2020. However, ending inventory was overstated $9,000. What is the correct net income for 2020? What effect, if any, will this error have on total assets as reported in the balance sheet at December 31, 2020?

Solution

2. The overstatement of ending inventory caused cost of goods sold to be understated $9,000 and net income to be overstated $9,000. The correct net income for 2020 is $71,000 ($80,000 − $9,000). Total assets in the balance sheet will be overstated by the amount that ending inventory is overstated, $9,000.

Compute inventory turnover and days in inventory.

3. (LO 4) At December 31, 2020, the following information was available for Garcia Company: ending inventory $30,000, beginning inventory $42,000, cost of goods sold $240,000, and sales revenue $400,000. Calculate inventory turnover and days in inventory for Garcia Company.

Solution

3. Inventory turnover: $\frac{\$240{,}000}{(\$30{,}000 + \$42{,}000)/2} = \frac{\$240{,}000}{\$36{,}000} = 6.67$

Days in inventory: $\frac{365}{6.67} = 54.7 \text{ days}$

Practice Exercises

1. (LO 1) Matt Clark, an auditor with Grant CPAs, is performing a review of Parson Company's inventory account. Parson did not have a good year and top management is under pressure to boost reported income. According to its records. the inventory balance at year-end was $600,000. However, the following information was not considered when determining that amount.

Determine the correct inventory amount.

1. The physical count did not include goods purchased by Parson with a cost of $30,000 that were shipped FOB destination on December 28 and did not arrive at Parson's warehouse until January 3.
2. Included in the company's count were goods with a cost of $150,000 that the company is holding on consignment. The goods belong to Alvarez Corporation.
3. Included in the inventory account was $21,000 of office supplies that were stored in the warehouse and were to be used by the company's supervisors and managers during the coming year.
4. The company received an order on December 28 that was boxed and was sitting on the loading dock awaiting pick-up on December 31. The shipper picked up the goods on January 1 and delivered them on January 6. The shipping terms were FOB shipping point. The goods had a selling price of $29,000 and a cost of $19,000. The goods were not included in the count because they were sitting on the dock.
5. On December 29, Parson shipped goods with a selling price of $56,000 and a cost of $40,000 to Decco Corporation FOB shipping point. The goods arrived on January 3. Decco had only ordered goods with a selling price of $10,000 and a cost of $6,000. However, a Parson's sales manager had authorized the shipment and said that if Decco wanted to ship the goods back next week, it could.
6. Included in the count was $27,000 of goods that were parts for a machine that the company no longer made. Given the high-tech nature of Parson's products, it was unlikely that these obsolete parts had any other use. However, management would prefer to keep them on the books at cost, "since that is what we paid for them, after all."

Instructions

Prepare a schedule to determine the correct inventory amount. Provide explanations for each item above, saying why you did or did not make an adjustment for each item.

Solution

1. Ending inventory—as reported	$600,000
1. No effect—title does not pass to Parson until goods are received (Jan. 3).	0
2. Subtract from inventory: The goods belong to Alvarez Corporation. Parson is merely holding them for Alvarez.	(150,000)
3. Subtract from inventory: Office supplies should be carried in a separate account. They are not considered inventory held for resale.	(21,000)
4. Add to inventory: The goods belong to Parson until they are shipped (Jan. 1).	19,000
5. Add to inventory: Decco ordered goods with a cost of $6,000. Parson should record the corresponding sales revenue of $10,000. Parson's decision to ship extra "unordered" goods does not constitute a sale. The manager's statement that Decco could ship the goods back indicates that Parson knows this overshipment is not a legitimate sale. The manager acted unethically in an attempt to improve Parson's reported income by overshipping.	34,000
6. Subtract from inventory: GAAP require that inventory be valued at the lower-of-cost-or-net realizable value. Obsolete parts should be adjusted from cost to zero if they have no other use.	(27,000)
Correct inventory	$455,000

Determine effects of inventory errors.

2. (LO 3) Rhode Software reported cost of goods sold as follows.

	2019	2020
Beginning inventory	$ 27,000	$ 40,000
Cost of goods purchased	200,000	235,000
Cost of goods available for sale	227,000	275,000
Ending inventory	40,000	45,000
Cost of goods sold	$187,000	$230,000

Rhode made two errors: (1) 2019 ending inventory was overstated $4,000, and (2) 2020 ending inventory was understated $9,000.

Instructions

Compute the correct cost of goods sold for each year.

Solution

2.

	2019	2020
Beginning inventory	$ 27,000	$ 36,000
Cost of goods purchased	200,000	235,000
Cost of goods available for sale	227,000	271,000
Corrected ending inventory	(36,000)[a]	(54,000)[b]
Cost of goods sold	$191,000	$217,000

[a]$40,000 − $4,000 = $36,000; [b]$45,000 + $9,000 = $54,000

Determine LCNRV valuation.

3. (LO 4) Creve Couer Camera uses the lower-of-cost-or-net realizable value basis for its inventory. The following data are available at December 31.

	Units	Cost per Unit	Net Realizable Value per Unit
Cameras:			
Minolta	5	$160	$156
Canon	7	145	153
Light Meters:			
Vivitar	12	120	114
Kodak	10	130	142

Instructions

What amount should be reported on Creve Couer Camera's financial statements, assuming the lower-of-cost-or-net realizable value rule is applied?

Solution

3.

	Cost per Unit	Net Realizable Value per Unit	Lower-of-Cost or-Net Realizable Value	Units	Inventory at Lower-of-Cost-or-Net Realizable Value
Cameras:					
Minolta	$160	$156	$156	5	$ 780
Canon	145	153	145	7	1,015
Light Meters:					
Vivitar	120	114	114	12	1,368
Kodak	130	142	130	10	1,300
Total					$4,463

Practice Problems

1. (LO 2) Englehart Company has the following inventory, purchases, and sales data for the month of March.

Compute inventory and cost of goods sold using three cost flow methods in a periodic inventory system.

Inventory:	March 1	200 units @ $4.00	$ 800
Purchases:	March 10	500 units @ $4.50	2,250
	March 20	400 units @ $4.75	1,900
	March 30	300 units @ $5.00	1,500
Sales:	March 15	500 units	
	March 25	400 units	

The physical inventory count on March 31 shows 500 units on hand.

Instructions

Under a **periodic inventory system**, determine the cost of inventory on hand at March 31 and the cost of goods sold for March under (a) FIFO, (b) LIFO, and (c) average-cost. (For average-cost, carry cost per unit to three decimal places.)

Solution

1. The cost of goods available for sale is $6,450, as follows.

Inventory:		200 units @ $4.00	$ 800
Purchases:	March 10	500 units @ $4.50	2,250
	March 20	400 units @ $4.75	1,900
	March 30	300 units @ $5.00	1,500
Total goods available for sale			$6,450

a. **FIFO Method**

Ending inventory:

Date	Units	Unit Cost	Total Cost	
March 30	300	$5.00	$1,500	
March 20	200	4.75	950	$2,450
Cost of goods sold: $6,450 − $2,450 =				$4,000

b. **LIFO Method**

Ending inventory:

Date	Units	Unit Cost	Total Cost	
March 1	200	$4.00	$ 800	
March 10	300	4.50	1,350	$2,150
Cost of goods sold: $6,450 − $2,150 =				$4,300

c. **Average-Cost Method**

Average unit cost: $6,450 ÷ 1,400 = $4.607	
Ending inventory: 500 × $4.607 =	$2,303.50
Cost of goods sold: $6,450 − $2,303.50 =	$4,146.50

***2. (LO 5) Practice Problem 1** showed cost of goods sold computations under a periodic inventory system. Now let's assume that Englehart Company uses a perpetual inventory system. The company has the same inventory, purchases, and sales data for the month of March as shown earlier:

Compute inventory and cost of goods sold using three cost flow methods in a perpetual inventory system.

Inventory:	March 1	200 units @ $4.00	$ 800
Purchases:	March 10	500 units @ $4.50	2,250
	March 20	400 units @ $4.75	1,900
	March 30	300 units @ $5.00	1,500
Sales:	March 15	500 units	
	March 25	400 units	

The physical inventory count on March 31 shows 500 units on hand.

Instructions

Under a **perpetual inventory system**, determine the cost of inventory on hand at March 31 and the cost of goods sold for March under (a) FIFO, (b) LIFO, and (c) moving-average cost.

Solution

2. The cost of goods available for sale is $6,450, as follows.

Inventory:		200 units @ $4.00	$ 800
Purchases:	March 10	500 units @ $4.50	2,250
	March 20	400 units @ $4.75	1,900
	March 30	300 units @ $5.00	1,500
Total:			$6,450

Under a **perpetual inventory system**, the cost of goods sold under each cost flow method is as follows.

a. **FIFO Method**

Date	Purchases	Cost of Goods Sold	Balance
March 1			(200 @ $4.00) $ 800
March 10	(500 @ $4.50) $2,250		(200 @ $4.00) } $3,050 (500 @ $4.50) }
March 15		(200 @ $4.00) (300 @ $4.50) $2,150	(200 @ $4.50) $ 900
March 20	(400 @ $4.75) $1,900		(200 @ $4.50) } $2,800 (400 @ $4.75) }
March 25		(200 @ $4.50) (200 @ $4.75) $1,850	(200 @ $4.75) $ 950
March 30	(300 @ $5.00) $1,500		(200 @ $4.75) } $2,450 (300 @ $5.00) }

Ending inventory $2,450 Cost of goods sold: $2,150 + $1,850 = $4,000

b. **LIFO Method**

Date	Purchases	Cost of Goods Sold	Balance
March 1			(200 @ $4.00) $ 800
March 10	(500 @ $4.50) $2,250		(200 @ $4.00) } $3,050 (500 @ $4.50) }
March 15		(500 @ $4.50) $2,250	(200 @ $4.00) $ 800
March 20	(400 @ $4.75) $1,900		(200 @ $4.00) } $2,700 (400 @ $4.75) }
March 25		(400 @ $4.75) $1,900	(200 @ $4.00) $ 800
March 30	(300 @ $5.00) $1,500		(200 @ $4.00) } $2,300 (300 @ $5.00) }

Ending inventory $2,300 Cost of goods sold: $2,250 + $1,900 = $4,150

c. **Moving-Average Cost Method**

Date	Purchases	Cost of Goods Sold	Balance
March 1			(200 @ $ 4.00) $ 800
March 10	(500 @ $4.50) $2,250		(700 @ $4.357) $3,050
March 15		(500 @ $4.357) $2,179	(200 @ $4.357) $ 871
March 20	(400 @ $4.75) $1,900		(600 @ $4.618) $2,771
March 25		(400 @ $4.618) $1,847	(200 @ $4.618) $ 924
March 30	(300 @ $5.00) $1,500		(500 @ $4.848) $2,424

Ending inventory $2,424 Cost of goods sold: $2,179 + $1,847 = $4,026

WileyPLUS

Brief Exercises, DO IT! Exercises, Exercises, Problems, and many additional resources are available for practice in WileyPLUS.

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

Questions

1. "The key to successful business operations is effective inventory management." Do you agree? Explain.

2. An item must possess two characteristics to be classified as inventory by a merchandiser. What are these two characteristics?

3. Your friend Ben Johnson has been hired to help take the physical inventory in Pearson Hardware Store. Explain to Ben what this job will entail.

4. **a.** Jovad Company ships merchandise to Martin Company on December 30. The merchandise reaches the buyer on January 6. Indicate the terms of sale that will result in the goods being included in (1) Jovad's December 31 inventory, and (2) Martin's December 31 inventory.

b. Under what circumstances should Jovad Company include consigned goods in its inventory?

5. Topp Hat Shop received a shipment of hats for which it paid the wholesaler $2,970. The price of the hats was $3,000 but Topp was given a $30 cash discount and required to pay freight charges of $50. What amount will Topp record for inventory? Why?

6. Explain the difference between the terms FOB shipping point and FOB destination.

7. Leah Clement believes that the allocation of cost of goods available for sale should be based on the actual physical flow of the goods. Explain to Leah why this may be both impractical and inappropriate.

8. What is the major advantage and the major disadvantage of the specific identification method of inventory costing?

9. "The selection of an inventory cost flow method is a decision made by accountants." Do you agree? Explain. Once a method has been selected, what accounting requirement applies?

10. Which assumed inventory cost flow method:

a. usually parallels the actual physical flow of merchandise?

b. divides cost of goods available by total units available for sale to determine a unit cost?

c. assumes that the latest units purchased are the first to be sold?

11. In a period of rising prices, the inventory reported in Bert Company's balance sheet is close to the current cost of the inventory, whereas Ernie Company's inventory is considerably below its current cost. Identify the inventory cost flow method being used by each company. Which company probably has been reporting the higher gross profit?

12. Oscar Company has been using the FIFO cost flow method during a prolonged period of inflation. During the same time period, Oscar has been paying out all of its net income as dividends. What adverse effects may result from this policy?

13. Kyle Adams is studying for the next accounting mid-term examination. What should Kyle know about (a) departing from the cost basis of accounting for inventories and (b) the meaning of "net realizable value" in the lower-of-cost-or-net realizable value method?

14. Hendrix Entertainment Center has 5 TVs on hand at the balance sheet date that cost $400 each. The net realizable value is $380 per unit. Under the lower-of-cost-or-net realizable value basis of accounting for inventories, what value should Hendrix report for the TVs on the balance sheet? Why?

15. Warnke Stores has 20 toasters on hand at the balance sheet date. Each costs $27. The net realizable value is $30 per unit. Under the lower-of-cost-or-net realizable value basis of accounting for inventories, what value should Warnke report for the toasters on the balance sheet? Why?

16. Sayaovang Company discovers in 2020 that its ending inventory at December 31, 2019, was $7,000 understated. What effect will this error have on (a) 2019 net income, (b) 2020 net income, and (c) the combined net income for the 2 years?

17. Dreher Company's balance sheet shows Inventory $162,800. What additional disclosures should be made?

18. Under what circumstances might inventory turnover be too high? That is, what possible negative consequences might occur?

19. What inventory cost flow does **Apple** use for its inventories? (*Hint:* You will need to examine the notes for Apple's financial statements.)

***20.** "When perpetual inventory records are kept, the results under the FIFO and LIFO methods are the same as they would be in a periodic inventory system." Do you agree? Explain.

***21.** How does the average-cost method of inventory costing differ between a perpetual inventory system and a periodic inventory system?

***22.** When is it necessary to estimate inventories?

***23.** Both the gross profit method and the retail inventory method are based on averages. For each method, indicate the average used, how it is determined, and how it is applied.

***24.** Pawlowski Company has net sales of $400,000 and cost of goods available for sale of $300,000. If the gross profit rate is 35%, what is the estimated cost of the ending inventory? Show computations.

***25.** Cinderella Shoe Shop had goods available for sale in 2020 with a retail price of $120,000. The cost of these goods was $84,000. If sales during the period were $80,000, what is the ending inventory at cost using the retail inventory method?

Brief Exercises

Identify items to be included in taking a physical inventory.

BE6.1 (LO 1) Peosta Company identifies the following items for possible inclusion in the taking of a physical inventory. Indicate whether each item should be included or excluded from the inventory taking.

a. Goods shipped on consignment by Peosta to another company.

b. Goods in transit from a supplier shipped FOB destination.

c. Goods held on consignment from another company.

Determine ending inventory amount.

BE6.2 (LO 1) Stallman Company took a physical inventory on December 31 and determined that goods costing $200,000 were on hand. Not included in the physical count were $25,000 of goods purchased from Pelzer Corporation, FOB shipping point, and $22,000 of goods sold to Alvarez Company for $30,000, FOB destination. Both the Pelzer purchase and the Alvarez sale were in transit at year-end. What amount should Stallman report as its December 31 inventory?

Compute ending inventory using FIFO and LIFO.

BE6.3 (LO 2) In its first month of operations, Weatherall Company made three purchases of merchandise in the following sequence: (1) 300 units at $6, (2) 400 units at $7, and (3) 200 units at $8. Assuming there are 380 units on hand, compute the cost of the ending inventory under the (a) FIFO method and (b) LIFO method. Weatherall uses a periodic inventory system.

Compute the ending inventory using average-cost.

BE6.4 (LO 2) Data for Weatherall Company are presented in BE6.3. Compute the cost of the ending inventory under the average-cost method, assuming there are 380 units on hand.

Explain the financial statement effect of inventory cost flow assumptions.

BE6.5 (LO 2) **Financial Statement** The management of Mastronardo Corp. is considering the effects of inventory-costing methods on its financial statements and its income tax expense. Assuming that the price the company pays for inventory is increasing, which method will:

a. Provide the highest net income?

b. Provide the highest ending inventory?

c. Result in the lowest income tax expense?

d. Result in the most stable earnings over a number of years?

Explain the financial statement effect of inventory cost flow assumptions.

BE6.6 (LO 2) **Financial Statement** In its first month of operation, Hoffman Company purchased 100 units of inventory for $6, then 200 units for $7, and finally 140 units for $8. At the end of the month, 180 units remained. Compute the amount of phantom profit that would result if the company used FIFO rather than LIFO. Explain why this amount is referred to as phantom profit. The company uses the periodic method.

Determine correct income statement amounts.

BE6.7 (LO 3) Larkin Company reports net income of $90,000 in 2020. However, ending inventory was understated $7,000. What is the correct net income for 2020? What effect, if any, will this error have on total assets as reported in the balance sheet at December 31, 2020?

Determine the LCNRV valuation using inventory categories.

BE6.8 (LO 4) Cruz Video Center accumulates the following cost and net realizable data at December 31.

Inventory Categories	Cost Data	Net Realizable Data
Cameras	$12,000	$12,300
Camcorders	9,500	9,700
Blu-ray players	14,000	12,900

Compute the lower-of-cost-or-net realizable value valuation for the company's total inventory.

Compute inventory turnover and days in inventory.

BE6.9 (LO 4) At December 31, 2020, the following information was available for E. Hetzel Company: ending inventory $40,000, beginning inventory $56,000, cost of goods sold $270,000, and sales revenue $380,000. Calculate inventory turnover and days in inventory for E. Hetzel Company.

Apply cost flow methods to perpetual inventory records.

*BE6.10 (LO 5) Rosario Department Store uses a perpetual inventory system. Data for product E2-D2 include the following purchases.

Date	Number of Units	Unit Price
May 7	50	$10
July 28	30	13

On June 1, Rosario sold 26 units, and on August 27, 40 more units. Prepare the perpetual inventory schedule for the above transactions using (a) FIFO, (b) LIFO, and (c) moving-average cost. (Round average cost per unit to nearest cent.)

*BE6.11 (LO 6) At May 31, Brunet Company has net sales of $340,000 and cost of goods available for sale of $230,000. Compute the estimated cost of the ending inventory, assuming the gross profit rate is 35%. *Apply the gross profit method.*

*BE6.12 (LO 6) On June 30, Joanna Fabrics has the following data pertaining to the retail inventory method. Goods available for sale: at cost $38,000; at retail $50,000; net sales $40,000; and ending inventory at retail $10,000. Compute the estimated cost of the ending inventory using the retail inventory method. *Apply the retail inventory method.*

DO IT! Exercises

DO IT! 6.1 (LO 1) Gresa Company just took its physical inventory. The count of inventory items on hand at the company's business locations resulted in a total inventory cost of $300,000. In reviewing the details of the count and related inventory transactions, you have discovered the following. *Apply rules of ownership to determine inventory cost.*

1. Gresa has sent inventory costing $26,000 on consignment to Alissa Company. All of this inventory was at Alissa's showrooms on December 31.
2. The company did not include in the count inventory (cost, $20,000) that was sold on December 28, terms FOB shipping point. The goods were in transit on December 31.
3. The company did not include in the count inventory (cost, $14,000) that was purchased with terms of FOB shipping point. The goods were in transit on December 31.

Compute the correct December 31 inventory.

DO IT! 6.2 (LO 2) The accounting records of Americo Electronics show the following data. *Compute cost of goods sold under different cost flow methods.*

Beginning inventory	3,000 units at $5
Purchases	8,000 units at $7
Sales	9,400 units at $10

Determine cost of goods sold during the period under a periodic inventory system using (a) the FIFO method, (b) the LIFO method, and (c) the average-cost method. (Round unit cost to nearest tenth of a cent.)

DO IT! 6.3 (LO 3) Vanida Company understated its 2019 ending inventory by $27,000. Determine the impact this error has on ending inventory, cost of goods sold, and owner's equity in 2019 and 2020. *Determine effect of inventory error.*

DO IT! 6.4a (LO 4) Cody Company sells three different categories of tools (small, medium, and large). The cost and net realizable value of its inventory of tools are as follows. *Compute inventory value under LCNRV.*

	Cost	Net Realizable Value
Small	$ 64,000	$ 73,000
Medium	290,000	260,000
Large	152,000	171,000

Determine the value of the company's inventory under the lower-of-cost-or-net realizable value approach.

DO IT! 6.4b (LO 4) Early in 2020, Yeng Company switched to a just-in-time inventory system. Its sales revenue, cost of goods sold, and inventory amounts for 2019 and 2020 are shown below. *Compute inventory turnover and assess inventory level.*

	2019	2020
Sales	$3,120,000	$3,713,000
Cost of goods sold	1,200,000	1,425,000
Beginning inventory	180,000	220,000
Ending inventory	220,000	100,000

Determine the inventory turnover and days in inventory for 2019 and 2020. Discuss the changes in the amount of inventory, the inventory turnover and days in inventory, and the amount of sales across the two years.

Exercises

Determine the correct inventory amount.

E6.1 (LO 1) Tri-State Bank and Trust is considering giving Wilfred Company a loan. Before doing so, management decides that further discussions with Wilfred's accountant may be desirable. One area of particular concern is the inventory account, which has a year-end balance of $297,000. Discussions with the accountant reveal the following.

1. Wilfred shipped goods costing $38,000 to Lilja Company, FOB shipping point, on December 28. The goods are not expected to arrive at Lilja until January 12. The goods were not included in the physical inventory because they were not in the warehouse.
2. The physical count of the inventory did not include goods costing $95,000 that were shipped to Wilfred FOB destination on December 27 and were still in transit at year-end.
3. Wilfred received goods costing $22,000 on January 2. The goods were shipped FOB shipping point on December 26 by Brent Co. The goods were not included in the physical count.
4. Wilfred shipped goods costing $35,000 to Jesse Co., FOB destination, on December 30. The goods were received at Jesse on January 8. They were not included in Wilfred's physical inventory.
5. Wilfred received goods costing $44,000 on January 2 that were shipped FOB destination on December 29. The shipment was a rush order that was supposed to arrive December 31. This purchase was included in the ending inventory of $297,000.

Instructions

Determine the correct inventory amount on December 31.

Determine the correct inventory amount.

E6.2 (LO 1) Kari Downs, an auditor with Wheeler CPAs, is performing a review of Depue Company's inventory account. Depue did not have a good year, and top management is under pressure to boost reported income. According to its records, the inventory balance at year-end was $740,000. However, the following information was not considered when determining that amount.

1. Included in the company's count were goods with a cost of $250,000 that the company is holding on consignment. The goods belong to Kroeger Corporation.
2. The physical count did not include goods purchased by Depue with a cost of $40,000 that were shipped FOB destination on December 28 and did not arrive at Depue warehouse until January 3.
3. Included in the inventory account was $14,000 of office supplies that were stored in the warehouse and were to be used by the company's supervisors and managers during the coming year.
4. The company received an order on December 29 that was boxed and sitting on the loading dock awaiting pick-up on December 31. The shipper picked up the goods on January 1 and delivered them on January 6. The shipping terms were FOB shipping point. The goods had a selling price of $40,000 and a cost of $28,000. The goods were not included in the count because they were sitting on the dock.
5. On December 29, Depue shipped goods with a selling price of $80,000 and a cost of $60,000 to Macchia Sales Corporation FOB shipping point. The goods arrived on January 3. Macchia had only ordered goods with a selling price of $10,000 and a cost of $8,000. However, a sales manager at Depue had authorized the shipment and said that if Machia wanted to ship the goods back next week, it could.
6. Included in the count was $40,000 of goods that were parts for a machine that the company no longer made. Given the high-tech nature of Depue's products, it was unlikely that these obsolete parts had any other use. However, management would prefer to keep them on the books at cost, "since that is what we paid for them, after all."

Instructions

Prepare a schedule to determine the correct inventory amount. Provide explanations for each item above, saying why you did or did not make an adjustment for each item.

Identify items in inventory.

E6.3 (LO 1) Gato Inc. had the following inventory situations to consider at January 31, its year-end.

a. Goods held on consignment for Steele Corp. since December 12.

b. Goods shipped on consignment to Logan Holdings Inc. on January 5.

c. Goods shipped to a customer, FOB destination, on January 29 that are still in transit.

d. Goods shipped to a customer, FOB shipping point, on January 29 that are still in transit.

e. Goods purchased FOB destination from a supplier on January 25 that are still in transit.

f. Goods purchased FOB shipping point from a supplier on January 25 that are still in transit.

g. Office supplies on hand at January 31.

Instructions

Identify which of the preceding items should be included in inventory. If the item should not be included in inventory, state in what account, if any, it should have been recorded.

Calculate cost of goods sold using specific identification and FIFO.

E6.4 (LO 2) On December 1, Kiyak Electronics Ltd. has three DVD players left in stock. All are identical, all are priced to sell at $150. One of the three DVD players left in stock, with serial #1012, was purchased on June 1 at a cost of $100. Another, with serial #1045, was purchased on November 1 for $88. The last player, serial #1056, was purchased on November 30 for $80.

Instructions

a. Calculate the cost of goods sold using the FIFO periodic inventory method assuming that two of the three players were sold by the end of December, Kiyak Electronics' year-end.

b. If Kiyak Electronics used the specific identification method instead of the FIFO method, how might it alter its earnings by "selectively choosing" which particular players to sell to the two customers? What would Kiyak's cost of goods sold be if the company wished to minimize earnings? Maximize earnings?

c. Which of the two inventory methods do you recommend that Kiyak use? Explain why.

Compute inventory and cost of goods sold using FIFO and LIFO.

E6.5 (LO 2) Elsa's Boards sells a snowboard, Xpert, that is popular with snowboard enthusiasts. Information relating to Elsa's purchases of Xpert snowboards during September is shown below. During the same month, 121 Xpert snowboards were sold. Elsa's uses a periodic inventory system.

Date	Explanation	Units	Unit Cost	Total Cost
Sept. 1	Inventory	26	$ 97	$ 2,522
Sept. 12	Purchases	45	102	4,590
Sept. 19	Purchases	20	104	2,080
Sept. 26	Purchases	50	105	5,250
	Totals	141		$14,442

Instructions

a. Compute the ending inventory at September 30 and cost of goods sold using the FIFO and LIFO methods. Prove the amount allocated to cost of goods sold under each method.

b. For both FIFO and LIFO, calculate the sum of ending inventory and cost of goods sold. What do you notice about the answers you found for each method?

Compute inventory and cost of goods sold using FIFO and LIFO.

E6.6 (LO 2) Ballas Co. uses a periodic inventory system. Its records show the following for the month of May, in which 68 units were sold.

		Units	Unit Cost	Total Cost
May 1	Inventory	30	$ 8	$240
15	Purchases	25	11	275
24	Purchases	35	12	420
	Totals	90		$935

Instructions

Compute the ending inventory at May 31 and cost of goods sold using the FIFO and LIFO methods. Prove the amount allocated to cost of goods sold under each method.

Compute inventory and cost of goods sold using FIFO and LIFO.

E6.7 (LO 2) Moath Company reports the following for the month of June.

		Units	Unit Cost	Total Cost
June 1	Inventory	200	$5	$1,000
12	Purchase	400	6	2,400
23	Purchase	300	7	2,100
30	Inventory	100		

Instructions

a. Compute the cost of the ending inventory and the cost of goods sold under (1) FIFO and (2) LIFO.

b. Which costing method gives the higher ending inventory? Why?

c. Which method results in the higher cost of goods sold? Why?

Compute inventory under FIFO, LIFO, and average-cost.

E6.8 (LO 2) Shawn Company had 100 units in beginning inventory at a total cost of $10,000. The company purchased 200 units at a total cost of $26,000. At the end of the year, Shawn had 75 units in ending inventory.

Instructions

a. Compute the cost of the ending inventory and the cost of goods sold under (1) FIFO, (2) LIFO, and (3) average-cost.

b. Which cost flow method would result in the highest net income?

c. Which cost flow method would result in inventories approximating current cost in the balance sheet?

d. Which cost flow method would result in Shawn paying the least taxes in the first year?

Compute inventory and cost of goods sold using average-cost.

E6.9 (LO 2) Inventory data for Moath Company are presented in E6.7.

Instructions

a. Compute the cost of the ending inventory and the cost of goods sold using the average-cost method.

b. Will the results in (a) be higher or lower than the results under (1) FIFO and (2) LIFO?

c. Why is the average unit cost not $6?

Determine effects of inventory errors.

E6.10 (LO 3) Elliott's Hardware reported cost of goods sold as follows.

	2019	2020
Beginning inventory	$ 20,000	$ 30,000
Cost of goods purchased	150,000	175,000
Cost of goods available for sale	170,000	205,000
Ending inventory	30,000	35,000
Cost of goods sold	$140,000	$170,000

Elliott's made two errors: (1) 2019 ending inventory was overstated $3,000, and (2) 2020 ending inventory was understated $5,000.

Instructions

Compute the correct cost of goods sold for each year.

Prepare correct income statements.

E6.11 (LO 3) Financial Statement Writing Smart Watch Company reported the following income statement data for a 2-year period.

	2019	2020
Sales revenue	$220,000	$250,000
Cost of goods sold		
Beginning inventory	32,000	44,000
Cost of goods purchased	173,000	202,000
Cost of goods available for sale	205,000	246,000
Ending inventory	44,000	52,000
Cost of goods sold	161,000	194,000
Gross profit	$ 59,000	$ 56,000

Smart uses a periodic inventory system. The inventories at January 1, 2019, and December 31, 2020, are correct. However, the ending inventory at December 31, 2019, was overstated $6,000.

Instructions

a. Prepare correct income statement data for the 2 years.

b. What is the cumulative effect of the inventory error on total gross profit for the 2 years?

c. Explain in a letter to the president of Smart Watch Company what has happened, i.e., the nature of the error and its effect on the financial statements.

Determine ending inventory under LCNRV.

E6.12 (LO 4) Freeze Frame Camera Shop uses the lower-of-cost-or-net realizable value basis for its inventory. The following data are available at December 31.

Item	Units	Unit Cost	Net Realizable Value
Cameras:			
Minolta	5	$170	$156
Canon	6	150	152
Light meters:			
Vivitar	10	125	115
Kodak	14	120	135

Instructions

Determine the amount of the ending inventory by applying the lower-of-cost-or-net realizable value basis.

E6.13 (LO 4) Charapata Company applied FIFO to its inventory and got the following results for its ending inventory.

Compute lower-of-cost-or-net realizable value.

Cameras	100 units at a cost per unit of $65
Blu-ray players	150 units at a cost per unit of $75
iPods	125 units at a cost per unit of $80

The net realizable value at year-end was cameras $71, Blu-ray players $67, and iPods $78.

Instructions

Determine the amount of ending inventory at lower-of-cost-or-net realizable value.

E6.14 (LO 4) This information is available for Abdullah's Photo Corporation for 2018, 2019, and 2020.

Compute inventory turnover, days in inventory, and gross profit rate.

	2018	2019	2020
Beginning inventory	$ 100,000	$ 300,000	$ 400,000
Ending inventory	300,000	400,000	480,000
Cost of goods sold	900,000	1,152,000	1,300,000
Sales revenue	1,200,000	1,600,000	1,900,000

Instructions

Calculate inventory turnover (round to two decimal places), days in inventory (round to one decimal place), and gross profit rate (from Chapter 5, round to nearest percentage) for Abdullah's Photo Corporation for 2018, 2019, and 2020. Comment on any trends.

E6.15 (LO 4) The cost of goods sold computations for Sooner Company and Later Company are shown below.

Compute inventory turnover and days in inventory.

	Sooner Company	Later Company
Beginning inventory	$ 45,000	$ 71,000
Cost of goods purchased	200,000	290,000
Cost of goods available for sale	245,000	361,000
Ending inventory	55,000	69,000
Cost of goods sold	$190,000	$292,000

Instructions

a. Compute inventory turnover (round to two decimal places) and days in inventory (round to nearest day) for each company.

b. Which company moves its inventory more quickly?

*E6.16 (LO 5) Ehrhart Appliance uses a perpetual inventory system. For its flat-screen television sets, the January 1 inventory was 3 sets at $600 each. On January 10, Ehrhart purchased 6 units at $660 each. The company sold 2 units on January 8 and 5 units on January 15.

Apply cost flow methods to perpetual records.

Instructions

Compute the ending inventory under (a) FIFO, (b) LIFO, and (c) moving-average cost.

*E6.17 (LO 5) Moath Company reports the following for the month of June.

Calculate inventory and cost of goods sold using three cost flow methods in a perpetual inventory system.

Date	Explanation	Units	Unit Cost	Total Cost
June 1	Inventory	200	$5	$1,000
12	Purchase	400	6	2,400
23	Purchase	300	7	2,100
30	Inventory	100		

Instructions

a. Calculate the cost of the ending inventory and the cost of goods sold for each cost flow assumption, using a perpetual inventory system. Assume a sale of 440 units occurred on June 15 for a selling price of $8 and a sale of 360 units on June 27 for $9.

b. How do the results differ from the answers to E6.7 and E6.9?

c. Why is the average unit cost not $6 [($5 + $6 + $7) ÷ 3 = $6]?

Apply cost flow methods to perpetual records.

***E6.18 (LO 5)** Information about Elsa's Boards is presented in E6.5. Additional data regarding Elsa's sales of Xpert snowboards are provided below. Assume that Elsa's uses a perpetual inventory system.

Date		Units	Unit Price	Total Revenue
Sept. 5	Sale	12	$199	$ 2,388
Sept. 16	Sale	50	199	9,950
Sept. 29	Sale	59	209	12,331
	Totals	121		$24,669

Instructions

a. Compute ending inventory at September 30 using FIFO, LIFO, and moving-average cost.

b. Compare ending inventory using a perpetual inventory system to ending inventory using a periodic inventory system (from E6.5).

c. Which inventory cost flow method (FIFO, LIFO) gives the same ending inventory value under both periodic and perpetual? Which method gives different ending inventory values?

Use the gross profit method to estimate inventory.

***E6.19 (LO 6)** Shereen Company reported the following information for November and December 2020.

	November	December
Cost of goods purchased	$536,000	$ 610,000
Inventory, beginning-of-month	130,000	120,000
Inventory, end-of-month	120,000	?
Sales revenue	840,000	1,000,000

Shereen's ending inventory at December 31 was destroyed in a fire.

Instructions

a. Compute the gross profit rate for November.

b. Using the gross profit rate for November, determine the estimated cost of inventory lost in the fire.

Determine merchandise lost using the gross profit method of estimating inventory.

***E6.20 (LO 6)** The inventory of Hang Company was destroyed by fire on March 1. From an examination of the accounting records, the following data for the first 2 months of the year are obtained: Sales Revenue $51,000, Sales Returns and Allowances $1,000, Purchases $31,200, Freight-In $1,200, and Purchase Returns and Allowances $1,400.

Instructions

Determine the merchandise lost by fire, assuming:

a. A beginning inventory of $20,000 and a gross profit rate of 30% on net sales.

b. A beginning inventory of $30,000 and a gross profit rate of 40% on net sales.

Determine ending inventory at cost using retail method.

***E6.21 (LO 6)** Kicks Shoe Store uses the retail inventory method for its two departments, Women's Shoes and Men's Shoes. The following information for each department is obtained.

Item	Women's Shoes	Men's Shoes
Beginning inventory at cost	$ 25,000	$ 45,000
Cost of goods purchased at cost	110,000	136,300
Net sales	178,000	185,000
Beginning inventory at retail	46,000	60,000
Cost of goods purchased at retail	179,000	185,000

Instructions

Compute the estimated cost of the ending inventory for each department under the retail inventory method.

Problems: Set A

Determine items and amounts to be recorded in inventory.

P6.1A (LO 1) Houghton Limited is trying to determine the value of its ending inventory as of February 28, 2020, the company's year-end. The following transactions occurred, and the accountant asked your help in determining whether they should be recorded or not.

a. On February 26, Houghton shipped goods costing $800 to a customer and charged the customer $1,000. The goods were shipped with terms FOB shipping point and the receiving report indicates that the customer received the goods on March 2.

b. On February 26, Crain Inc. shipped goods to Houghton under terms FOB shipping point. The invoice price was $450 plus $30 for freight. The receiving report indicates that the goods were received by Houghton on March 2.

c. Houghton had $720 of inventory isolated in the warehouse. The inventory is designated for a customer who has requested that the goods be shipped on March 10.

d. Also included in Houghton's warehouse is $700 of inventory that Korenic Producers shipped to Houghton on consignment.

e. On February 26, Houghton issued a purchase order to acquire goods costing $900. The goods were shipped with terms FOB destination on February 27. Houghton received the goods on March 2.

f. On February 26, Houghton shipped goods to a customer under terms FOB destination. The invoice price was $390; the cost of the items was $240. The receiving report indicates that the goods were received by the customer on March 2.

g. Houghton had damaged goods set aside in the warehouse because they are no longer saleable. These goods originally cost $400, and Houghton had expected to sell these items for $600.

Instructions

For each of the preceding transactions, specify whether the item in question should be included in ending inventory, and if so, at what amount. For each item that is not included in ending inventory, indicate who owns it and in what account, if any, it should have been recorded.

Determine cost of goods sold and ending inventory using FIFO, LIFO, and average-cost with analysis.

P6.2A (LO 2) Glee Distribution markets CDs of the performing artist Unique. At the beginning of October, Glee had in beginning inventory 2,000 of Unique's CDs with a unit cost of $7. During October, Glee made the following purchases of Unique's CDs.

Oct. 3	2,500 @ $8	Oct. 19	3,000 @ $10
Oct. 9	3,500 @ $9	Oct. 25	4,000 @ $11

During October, 10,900 units were sold. Glee uses a periodic inventory system.

Instructions

a. Determine the cost of goods available for sale.

b. Determine (1) the ending inventory and (2) the cost of goods sold under each of the assumed cost flow methods (FIFO, LIFO, and average-cost). Prove the accuracy of the cost of goods sold under the FIFO and LIFO methods.

b. (2) Cost of goods sold:

FIFO	$ 94,500
LIFO	$108,700
Average	$101,370

c. Which cost flow method results in (1) the highest inventory amount for the balance sheet and (2) the highest cost of goods sold for the income statement?

Determine cost of goods sold and ending inventory, using FIFO, LIFO, and average-cost with analysis.

P6.3A (LO 2) **Financial Statement** Sekhon Company had a beginning inventory on January 1 of 160 units of Product 4-18-15 at a cost of $20 per unit. During the year, the following purchases were made.

Mar. 15	400 units at $23	Sept. 4	330 units at $26
July 20	250 units at $24	Dec. 2	100 units at $29

1,000 units were sold. Sekhon Company uses a periodic inventory system.

Instructions

a. Determine the cost of goods available for sale.

b. Determine (1) the ending inventory, and (2) the cost of goods sold under each of the assumed cost flow methods (FIFO, LIFO, and average-cost). Prove the accuracy of the cost of goods sold under the FIFO and LIFO methods.

b. (2) Cost of goods sold:

FIFO	$23,340
LIFO	$24,840
Average	$24,097

c. Which cost flow method results in (1) the highest inventory amount for the balance sheet, and (2) the highest cost of goods sold for the income statement?

Compute ending inventory, prepare income statements, and answer questions using FIFO and LIFO.

P6.4A (LO 2) **Financial Statement** **Writing** The management of Gresa Inc. is reevaluating the appropriateness of using its present inventory cost flow method, which is average-cost. The company requests your help in determining the results of operations for 2020 if either the FIFO or the LIFO method had been used. For 2020, the accounting records show these data:

Inventories		Purchases and Sales	
Beginning (7,000 units)	$14,000	Total net sales (180,000 units)	$747,000
Ending (17,000 units)		Total cost of goods purchased (190,000 units)	466,000

Purchases were made quarterly as follows.

Quarter	Units	Unit Cost	Total Cost
1	50,000	$2.20	$110,000
2	40,000	2.35	94,000
3	40,000	2.50	100,000
4	60,000	2.70	162,000
	190,000		$466,000

Operating expenses were $130,000, and the company's income tax rate is 40%.

Instructions

a. Gross profit:
FIFO $312,900
LIFO $303,000

a. Prepare comparative condensed income statements for 2020 under FIFO and LIFO. (Show computations of ending inventory.)

b. Answer the following questions for management.

1. Which cost flow method (FIFO or LIFO) produces the more meaningful inventory amount for the balance sheet? Why?

2. Which cost flow method (FIFO or LIFO) produces the more meaningful net income? Why?

3. Which cost flow method (FIFO or LIFO) is more likely to approximate the actual physical flow of goods? Why?

4. How much more cash will be available for management under LIFO than under FIFO? Why?

5. Will gross profit under the average-cost method be higher or lower than FIFO? Than LIFO? (*Note:* It is not necessary to quantify your answer.)

Calculate ending inventory, cost of goods sold, gross profit, and gross profit rate under periodic method; compare results.

P6.5A (LO 2) You are provided with the following information for Koetteritz Inc. for the month ended June 30, 2020. Koetteritz uses the periodic method for inventory.

Date	Description	Quantity	Unit Cost or Selling Price
June 1	Beginning inventory	40	$40
June 4	Purchase	135	43
June 10	Sale	110	70
June 11	Sale return	15	70
June 18	Purchase	55	46
June 18	Purchase return	10	46
June 25	Sale	65	76
June 28	Purchase	35	50

Instructions

a. (iii) Gross profit:
LIFO $4,330
FIFO $4,830
Average $4,546.90

a. Calculate (i) ending inventory, (ii) cost of goods sold, (iii) gross profit, and (iv) gross profit rate under each of the following methods.

(1) LIFO. (2) FIFO. (3) Average-cost.

b. Compare results for the three cost flow assumptions.

Compare specific identification, FIFO, and LIFO under periodic method; use cost flow assumption to justify price increase.

P6.6A (LO 2) **Financial Statement** You are provided with the following information for Gobler Inc. Gobler Inc. uses the periodic method of accounting for its inventory transactions.

March 1 Beginning inventory 2,000 liters at a cost of 60¢ per liter.
March 3 Purchased 2,500 liters at a cost of 65¢ per liter.
March 5 Sold 2,300 liters for $1.05 per liter.
March 10 Purchased 4,000 liters at a cost of 72¢ per liter.
March 20 Purchased 2,500 liters at a cost of 80¢ per liter.
March 30 Sold 5,200 liters for $1.25 per liter.

Instructions

a. Prepare partial income statements for 2020 through gross profit, and calculate the value of ending inventory that would be reported on the balance sheet, under each of the following cost flow assumptions. (Round ending inventory and cost of goods sold to the nearest dollar.)

1. Specific identification method assuming:
(i) The March 5 sale consisted of 1,000 liters from the March 1 beginning inventory and 1,300 liters from the March 3 purchase; and
(ii) The March 30 sale consisted of the following number of units sold from beginning inventory and each purchase: 450 liters from March 1; 550 liters from March 3; 2,900 liters from March 10; 1,300 liters from March 20.

2. FIFO.

3. LIFO.

b. How can companies use a cost flow method to justify price increases? Which cost flow method would best support an argument to increase prices?

a. Gross profit:
1. Specific identification $3,715
2. FIFO $3,930
3. LIFO $3,385

P6.7A (LO 2) Financial Statement Writing The management of Danica Co. asks your help in determining the comparative effects of the FIFO and LIFO inventory cost flow methods. For 2020, the accounting records provide the following data.

Compute ending inventory, prepare income statements, and answer questions using FIFO and LIFO.

Inventory, January 1 (10,000 units)	$ 47,000
Cost of 100,000 units purchased	532,000
Selling price of 84,000 units sold	735,000
Operating expenses	140,000

Units purchased consisted of 35,000 units at $5.10 on May 10; 35,000 units at $5.30 on August 15; and 30,000 units at $5.60 on November 20. Income taxes are 30%.

Instructions

a. Prepare comparative condensed income statements for 2020 under FIFO and LIFO. (Show computations of ending inventory.)

b. Answer the following questions for management.

1. Which inventory cost flow method produces the most meaningful inventory amount for the balance sheet? Why?

2. Which inventory cost flow method produces the most meaningful net income? Why?

3. Which inventory cost flow method is most likely to approximate actual physical flow of the goods? Why?

4. How much additional cash will be available for management under LIFO than under FIFO? Why?

5. How much of the gross profit under FIFO is illusory in comparison with the gross profit under LIFO?

a. Net income
FIFO $113,120
LIFO $101,220

***P6.8A (LO 5)** Dempsey Inc. is a retailer operating in British Columbia. Dempsey uses the perpetual inventory method. All sales returns from customers result in the goods being returned to inventory; the inventory is not damaged. Assume that there are no credit transactions; all amounts are settled in cash. You are provided with the following information for Dempsey Inc. for the month of January 2020.

Calculate cost of goods sold and ending inventory under LIFO, FIFO, and moving-average cost under the perpetual system; compare gross profit under each assumption.

Date	Description	Quantity	Unit Cost or Selling Price
January 1	Beginning inventory	100	$15
January 5	Purchase	140	18
January 8	Sale	110	28
January 10	Sale return	10	28
January 15	Purchase	55	20
January 16	Purchase return	5	20
January 20	Sale	90	32
January 25	Purchase	20	22

Instructions

a. For each of the following cost flow assumptions, calculate (i) cost of goods sold, (ii) ending inventory, and (iii) gross profit.

1. LIFO.

2. FIFO.

3. Moving-average cost. (Round cost per unit to three decimal places.)

b. Compare results for the three cost flow assumptions.

a. (iii) Gross profit:
LIFO $2,160
FIFO $2,560
Average $2,421

Determine ending inventory under a perpetual inventory system.

***P6.9A (LO 5)** Wittmann Co. began operations on July 1. It uses a perpetual inventory system. During July, the company had the following purchases and sales.

	Purchases		
Date	Units	Unit Cost	Sales Units
July 1	5	$122	
July 6			3
July 11	7	$136	
July 14			5
July 21	8	$147	
July 27			5

Instructions

a. Ending inventory
FIFO $1,029
Avg. $996
LIFO $957

a. Determine the ending inventory under a perpetual inventory system using (1) FIFO, (2) moving-average cost, and (3) LIFO.

b. Which costing method produces the highest ending inventory valuation?

Compute gross profit rate and inventory loss using gross profit method.

Excel

***P6.10A (LO 6)** Bao Company lost all of its inventory in a fire on December 26, 2020. The accounting records showed the following gross profit data for November and December.

	November	December (to 12/26)
Net sales	$600,000	$700,000
Beginning inventory	32,000	36,000
Purchases	389,000	420,000
Purchase returns and allowances	13,300	14,900
Purchase discounts	8,500	9,500
Freight-in	8,800	9,900
Ending inventory	36,000	?

Bao is fully insured for fire losses but must prepare a report for the insurance company.

Instructions

a. Gross profit rate 38%

a. Compute the gross profit rate for November.

b. Using the gross profit rate for November, determine the estimated cost of the inventory lost in the fire.

Compute ending inventory using retail method.

***P6.11A (LO 6)** Rayre Books uses the retail inventory method to estimate its monthly ending inventories. The following information is available for two of its departments at October 31, 2020.

	Hardcovers		Paperbacks	
	Cost	Retail	Cost	Retail
Beginning inventory	$ 420,000	$ 640,000	$ 280,000	$ 360,000
Purchases	2,135,000	3,200,000	1,155,000	1,540,000
Freight-in	24,000		12,000	
Purchase discounts	44,000		22,000	
Net sales		3,100,000		1,570,000

At December 31, Rayre Books takes a physical inventory at retail. The actual retail values of the inventories in each department are Hardcovers $744,000 and Paperbacks $335,000.

Instructions

a. Hardcovers: End. Inv. $488,400

a. Determine the estimated cost of the ending inventory for each department at **October 31**, 2020, using the retail inventory method.

b. Compute the ending inventory at cost for each department at **December 31**, assuming the cost-to-retail ratios for the year are 65% for Hardcovers and 75% for Paperbacks.

Continuing Case

Cookie Creations

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(*Note:* This is a continuation of the Cookie Creations case from Chapters 1 through 5.)

CC6 Natalie is busy establishing both divisions of her business (cookie classes and mixer sales) and completing her business degree. Her goals for the next 11 months are to sell one mixer per month and to give two to three classes per week.

The cost of the fine European mixers is expected to increase. Natalie has just negotiated new terms with Kzinski that include shipping costs in the negotiated purchase price (mixers will be shipped FOB destination). Natalie must choose a cost flow assumption for her mixer inventory.

Go to **WileyPLUS** *for complete case details and instructions.*

Ethics Case

EC6 R. J. Graziano Wholesale Corp. uses the LIFO method of inventory costing. In the current year, profit at R. J. Graziano is running unusually high. The corporate tax rate is also high this year, but it is scheduled to decline significantly next year. In an effort to lower the current year's net income and to take advantage of the changing income tax rate, the president of R. J. Graziano Wholesale instructs the plant accountant to recommend to the purchasing department a large purchase of inventory for delivery 3 days before the end of the year. The price of the inventory to be purchased has doubled during the year, and the purchase will represent a major portion of the ending inventory value.

Instructions

a. What is the effect of this transaction on this year's and next year's income statement and income tax expense? Why?

b. If R. J. Graziano Wholesale had been using the FIFO method of inventory costing, would the president give the same directive?

c. Should the plant accountant order the inventory purchase to lower income? What are the ethical implications of this order?

Comprehensive Accounting Cycle Review

ACR6 **Financial Statement** On December 1, 2020, Annalise Company had the account balances shown below.

	Debit		Credit
Cash	$ 4,800	Accumulated Depreciation—Equipment	$ 1,500
Accounts Receivable	3,900	Accounts Payable	3,000
Inventory	1,800*	Owner's Capital	27,000
Equipment	21,000		$31,500
	$31,500		

*(3,000 × $0.60)

The following transactions occurred during December.

Dec. 3 Purchased 4,000 units of inventory on account at a cost of $0.74 per unit.

5 Sold 4,400 units of inventory on account for $0.90 per unit. (Annalise sold 3,000 of the $0.60 units and 1,400 of the $0.74.)

7 Granted the December 5 customer $180 credit for 200 units of inventory returned costing $120. These units were returned to inventory.

17 Purchased 2,200 units of inventory for cash at $0.80 each.

22 Sold 2,100 units of inventory on account for $0.95 per unit. (Annalise sold 2,100 of the $0.74 units.)

Adjustment data:

1. Accrued salaries payable $400.

2. Depreciation $200 per month.

Instructions

a. Journalize the December transactions and adjusting entries, assuming Annalise uses the perpetual inventory method.

b. Enter the December 1 balances in the ledger T-accounts and post the December transactions. In addition to the accounts mentioned above, use the following additional accounts: Cost of Goods Sold, Depreciation Expense, Salaries and Wages Expense, Salaries and Wages Payable, Sales Revenue, and Sales Returns and Allowances.

c. Prepare an adjusted trial balance as of December 31, 2020.

d. Prepare an income statement for December 2020 and a classified balance sheet at December 31, 2020.

e. Compute ending inventory and cost of goods sold under FIFO, assuming Annalise Company uses the periodic inventory system.

f. Compute ending inventory and cost of goods sold under LIFO, assuming Annalise Company uses the periodic inventory system.

Expand Your Critical Thinking

Financial Reporting Problem: Apple Inc.

CT6.1 The notes that accompany a company's financial statements provide informative details that would clutter the amounts and descriptions presented in the statements. Refer to the financial statements of **Apple Inc.** in Appendix A as well as its annual report. The complete annual report, including the notes to the financial statements, is available at the company's website.

Instructions

Answer the following questions. Complete the requirements in millions of dollars, as shown in Apple's annual report.

a. What did Apple report for the amount of inventories in its consolidated balance sheet at September 27, 2014? At September 26, 2015?

b. Compute the dollar amount of change and the percentage change in inventories between 2014 and 2015. Compute inventory as a percentage of current assets at September 26, 2015.

c. How does Apple value its inventories? Which inventory cost flow method does Apple use? (See Notes to the Financial Statements.)

d. What is the cost of sales (cost of goods sold) reported by Apple for 2015, 2014, and 2013? Compute the percentage of cost of sales to net sales in 2015.

Comparative Analysis Problem: PepsiCo, Inc. vs. The Coca-Cola Company

CT6.2 **PepsiCo**'s financial statements are presented in Appendix B. Financial statements of **The Coca-Cola Company** are presented in Appendix C. The complete annual reports of PepsiCo and Coca-Cola, including the notes to the financial statements, are available at each company's respective website.

Instructions

a. Based on the information contained in these financial statements, compute the following 2015 ratios for each company.

1. Inventory turnover.

2. Days in inventory.

b. What conclusions concerning the management of the inventory can you draw from these data?

Comparative Analysis Problem: Amazon.com, Inc. vs. Wal-Mart Stores, Inc.

CT6.3 **Amazon.com, Inc.**'s financial statements are presented in Appendix D. Financial statements of **Wal-Mart Stores, Inc.** are presented in Appendix E. The complete annual reports of Amazon and Wal-Mart, including the notes to the financial statements, are available at each company's respective website.

Instructions

a. Based on the information contained in these financial statements, compute the following 2015 ratios for each company.

1. Inventory turnover.

2. Days in inventory.

b. What conclusions concerning the management of the inventory can you draw from these data?

Real-World Focus

CT6.4 A company's annual report usually will identify the inventory method used. Knowing that, you can analyze the effects of the inventory method on the income statement and balance sheet.

Instructions

Answer the following questions based on **Cisco**'s current year's annual report (available on the company's website).

a. At Cisco's fiscal year-end, what was the inventory on the balance sheet?

b. How has this changed from the previous fiscal year-end?

c. How much of the inventory was finished goods?

Decision-Making Across the Organization

CT6.5 On April 10, 2020, fire damaged the office and warehouse of Corvet Company. Most of the accounting records were destroyed, but the following account balances were determined as of March 31, 2020: Inventory (January 1, 2020), $80,000; Sales Revenue (January 1–March 31, 2020), $180,000; Purchases (January 1–March 31, 2020), $94,000.

The company's fiscal year ends on December 31. It uses a periodic inventory system.

From an analysis of the April bank statement, you discover cancelled checks of $4,200 for cash purchases during the period April 1–10. Deposits during the same period totaled $18,500. Of that amount, 60% were collections on accounts receivable, and the balance was cash sales.

Correspondence with the company's principal suppliers revealed $12,400 of purchases on account from April 1 to April 10. Of that amount, $1,600 was for merchandise in transit on April 10 that was shipped FOB destination.

Correspondence with the company's principal customers produced acknowledgments of credit sales totaling $37,000 from April 1 to April 10. It was estimated that $5,600 of credit sales will never be acknowledged or recovered from customers.

Corvet Company reached an agreement with the insurance company that its fire-loss claim should be based on the average of the gross profit rates for the preceding 2 years. The financial statements for 2018 and 2019 showed the following data.

	2019	2018
Net sales	$600,000	$480,000
Cost of goods purchased	404,000	356,000
Beginning inventory	60,000	40,000
Ending inventory	80,000	60,000

Inventory with a cost of $17,000 was salvaged from the fire.

Instructions

With the class divided into groups, answer the following.

a. Determine the balances in (1) Sales Revenue and (2) Purchases at April 10.

***b.** Determine the average gross profit rate for the years 2018 and 2019. (*Hint:* Find the gross profit rate for each year and divide the sum by 2.)

***c.** Determine the inventory loss as a result of the fire, using the gross profit method.

Communication Activity

CT6.6 You are the controller of Small Toys Inc. Pamela Bames, the president, recently mentioned to you that she found an error in the 2019 financial statements which she believes has corrected itself. She determined, in discussions with the Purchasing Department, that 2019 ending inventory was overstated by $1 million. Pamela says that the 2020 ending inventory is correct. Thus, she assumes that 2020 income is correct. Pamela says to you, "What happened has happened—there's no point in worrying about it anymore."

Instructions

You conclude that Pamela is incorrect. Write a brief, tactful memo to Pamela, clarifying the situation.

All About You

CT6.7 Some of the largest business frauds ever perpetrated have involved the misstatement of inventory. Two classics were at **Leslie Fay** and **McKesson Corporation**.

Instructions

There is considerable information regarding inventory frauds available on the Internet. Search for information about one of the two cases mentioned above, or inventory fraud at any other company, and prepare a short explanation of the nature of the inventory fraud.

FASB Codification Activity

CT6.8 If your school has a subscription to the FASB Codification, log in and prepare responses to the following.

Instructions

a. The primary basis for accounting for inventories is cost. How is cost defined in the Codification?

b. What does the Codification state regarding the use of consistency in the selection or employment of a basis for inventory?

A Look at IFRS

LEARNING OBJECTIVE 7

Compare the accounting for inventories under GAAP and IFRS.

The major IFRS requirements related to accounting and reporting for inventories are the same as GAAP. The major difference is that IFRS prohibits the use of the LIFO cost flow assumption.

Key Points

Following are the key similarities and differences between GAAP and IFRS related to inventories.

Similarities

- IFRS and GAAP account for inventory acquisitions at historical cost and value inventory at the lower-of-cost-or-net realizable value subsequent to acquisition.
- Who owns the goods—goods in transit or consigned goods—as well as the costs to include in inventory are essentially accounted for the same under IFRS and GAAP.

Differences

- The requirements for accounting for and reporting inventories are more principles-based under IFRS. That is, GAAP provides more detailed guidelines in inventory accounting.
- A major difference between IFRS and GAAP relates to the LIFO cost flow assumption. GAAP permits the use of LIFO for inventory valuation. IFRS prohibits its use. FIFO and average-cost are the only two acceptable cost flow assumptions permitted under IFRS. Both sets of standards permit specific identification where appropriate.

Looking to the Future

One convergence issue that will be difficult to resolve relates to the use of the LIFO cost flow assumption. As indicated, IFRS 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.

IFRS Practice

IFRS Self-Test Questions

1. Which of the following should **not** be included in the inventory of a company using IFRS?
   a. Goods held on consignment from another company.
   b. Goods shipped on consignment to another company.
   c. Goods in transit from another company shipped FOB shipping point.
   d. All of the above are included in inventory.
2. Which method of inventory costing is prohibited under IFRS?
   a. Specific identification.
   b. LIFO.
   c. FIFO.
   d. Average-cost.

IFRS Exercises

IFRS6.1 Briefly describe some of the similarities and differences between GAAP and IFRS with respect to the accounting for inventories.

IFRS6.2 LaTour Inc. is based in France and prepares its financial statements (in euros) in accordance with IFRS. In 2020, it reported cost of goods sold of €578 million and average inventory of €154 million. Briefly discuss how analysis of LaTour's inventory turnover (and comparisons to a company using GAAP) might be affected by differences in inventory accounting between IFRS and GAAP.

International Financial Reporting Problem: Louis Vuitton

IFRS6.3 The financial statements of **Louis Vuitton** are presented in Appendix F. The complete annual report, including the notes to its financial statements, is available at the company's website.

Instructions

Using the notes to the company's financial statements, answer the following questions.

a. What cost flow assumption does the company use to value inventory other than wine?
b. What amount of goods purchased for retail and finished products did the company report at December 31, 2015?

Answers to IFRS Self-Test Questions

1. a **2.** b