

**CHAPTER 6**  
**Reporting and Analyzing Inventory**  
**Study Objectives.**

- Describe the steps in determining inventory quantities.
- Explain the basis of accounting for inventories and apply the inventory cost flow methods under a periodic inventory system.
- Explain the financial statement and tax effects of each of the inventory cost flow assumptions.
- Explain the lower of cost or market basis of accounting for inventories.
- Compute and interpret the inventory turnover ratio.
- Describe the LIFO reserve and explain its importance for comparing results of different companies.

**Study Objective 1 - Describe the Steps in Determining Inventory Quantities**

1. Merchandising Inventory (items held for sale to customers):
  - a. In a **merchandising** company, inventory consists of many different items. These items have two common characteristics:
    - i. They are owned by the company, and
    - ii. they are in a form ready for sale to customers.
    - iii. Only one inventory classification, **merchandise inventory**, is needed to describe the many different items that make up the total inventory.
  - b. 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.
2. Manufacturing Inventories:
  - a. In a **manufacturing company**, some inventory may not yet be ready for sale. Inventory is usually classified into three categories:
    - i. **finished goods inventory**—items that are completed and ready for sale,
    - ii. **work in process**—that portion of manufactured inventory that has been placed into the production process but is not yet complete, and
    - iii. **raw materials inventory**—the basic goods that will be used in production but have not yet been placed into production.
  - b. 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.
3. Inventory systems (Periodic and Perpetual Inventory Systems)
  - a. No matter whether they are using a periodic or perpetual inventory system, **all companies need to take a physical inventory** to determine the quantity of inventory on hand at the end of the accounting period.
    - i. In a perpetual system, companies take a physical inventory at year-end for two purposes:
      1. to check the accuracy of their perpetual inventory records, and
      2. to determine the amount of inventory lost due to wasted raw materials, shoplifting or employee theft.
    - ii. In a period inventory system must take a physical inventory for two different purposes:
      1. to determine the inventory on hand at the balance sheet date, and
      2. to determine the cost of goods sold for the period.
        - a. Note that in a perpetual system (where inventory quantities are always known) the cost of goods sold can be computed immediately by noting quantity and type of inventory sold)
4. Determining inventory quantities (involves two steps):
  - a. taking the physical inventory of goods on hand
    - i. Taking a physical inventory involves actually counting, weighing, or measuring each kind of inventory on hand
  - b. determining the ownership of goods.
    - i. To determine ownership of goods, two questions must be answered:
      1. do all of the goods included in the count belong to the company?



Fifo Illustrated:

Beginning inventory				- 0 -
Purchases:				
	6/2	500	@ \$ 100 =	\$ 50,000
	6/8	400	@ 125 =	50,000
	6/25	350	@ 130 =	45,500
Goods available		1,250		\$ 145,500
Less: Ending inventory		250	@ 130 =	32,500
Cost of goods sold		1,000		\$ 113,000

Note that FIFO assumes that the first units in are the first units sold; this means that the cost of the ending inventory will consist of the most recent costs.

- c. **Last-in, First-out (LIFO)** method assumes that the last goods purchased are the first to be sold.
- LIFO seldom coincides with the actual physical flow of inventory.
  - Under LIFO, the cost of the ending inventory is obtained by taking the unit cost the earliest goods available for sale and working forward until all units of inventory have been costed.

Beginning inventory				- 0 -
Purchases:				
	6/2	500	@ \$100 =	\$ 50,000
	6/8	400	@ 125 =	50,000
	6/25	350	@ 130 =	45,500
Goods available		1,250		\$ 145,500
Ending inventory		250	@ 100 =	25,000
Cost of goods sold		1,000		\$ 120,500

Note that LIFO assumes that the last units in are the first units sold. This matches the most current costs against sales and in periods of rising inventory prices will reduce income by increasing the cost of goods sold.

- d. **Average cost (weighted average)** method assumes that the goods available for sale are homogeneous and allocates the cost of goods available for sale on the basis of weighted average unit cost incurred.
- The **weighted average unit cost** is then applied to the units on hand to determine the cost of the ending inventory.

Beginning inventory				- 0 -
Purchases:				
	6/2	500	@ \$100 =	\$ 50,000
	6/8	400	@ 125 =	50,000
	6/25	350	@ 130 =	45,500
Goods available		1,250		\$ 145,500
Ending inventory		250	@ 116.40 =	29,100
Cost of goods sold		1,000	@ 116.40	\$ 116,400

$\$145,500 \div 1,250 = \$116.40$  per unit

**Study Objective 3 - Explain the Financial Statement and Tax Effects of Each of the Inventory Cost Flow Assumptions**

The reasons companies adopt different inventory cost flow methods are varied, but usually involve on the three following factors:

- Income statement effects In periods of increasing (inflationary) prices
  - FIFO reports the highest net income,
  - LIFO the lowest net income and
    - use of LIFO enables the company to avoid reporting **paper** or **phantom profit** by matching the most current (increasing costs) against sales revenue.

ii. There is a major potential problem if old (lower costs) are carried in "LIFO layers" that remain on the books over time and are eventually charged as part of Cost of Goods sold (when inventory levels decline).

1. This can lead to reporting hugely disproportionate income as very old inventory prices (usually very low) are charged against current (usually higher) sales prices. These disproportionately high profits are also known as **phantom profits**.

c. **average cost** falls in the middle.

2. Income statement effects in periods of decreasing prices

a. **FIFO** will report the lowest net income,

b. **LIFO** the highest net income

c. **average cost** is again in the middle.

3. Balance sheet effects in periods of increasing (inflationary) prices

a. the costs allocated to ending inventory using **FIFO** will approximate current costs.

b. Conversely, During a period of increasing prices, the costs allocated the ending inventory using **LIFO** will be significantly understated.

4. Tax Effects

a. Both inventory (which is reported on the balance sheet) and net income (which is reported on the income statement) are higher when **FIFO** is used in a period of increasing prices.

b. Many companies have switched to **LIFO** because LIFO yields the lowest net income and therefore, the lowest income tax liability in a period of increasing prices.

**Study Objective 4 - Explain the Lower of Cost or Market Basis of Accounting for Inventories**

Because the valuation of inventory has such a significant immediate impact on the computation of net income, inventory inventory is written down to its market value by valuing the inventory at the **lower of cost or market (LCM)** in the period in which the price decline occurs.

Under the LCM basis, market is defined as **current replacement cost**, not selling price.

For a merchandising company, market is the cost of purchasing the same goods at the present time from the usual suppliers in the usual quantities.

- The **lower of cost or market** basis may be applied to individual items of inventory, major categories of inventory, or total inventory.

Lower of Cost or Market Example:

In order to apply the Lower of Cost or Market rule, four items must be computed:

Ceiling Value: Sales price less normal profit

Market: Current replacement cost

Cost: Historical cost paid for item

Floor: Sales price less normal profit less normal sales expenses

Rule: Select the lower of Cost or Market but that value cannot be above the Ceiling or below the Floor values

Example:

	Example 1	Example 2	Example 3	Example 4
Sales price:	\$ 100	\$ 100	\$ 100	\$ 100
Normal Profit:	\$ 40	\$ 40	\$ 40	\$ 40
Normal Sales Expense:	\$ 10	\$ 10	\$ 10	\$ 10
Cost	\$ 25	\$ 75	\$ 55	\$ 51
Market	\$ 30	\$ 80	\$ 52	\$ 55
Ceiling value:	100-40=60	100-40=60	100-40=60	100-40=60
Floor Value:	100-40-10-50	100-40-10-50	100-40-10-50	100-40-10-50
Value used to compute	Cost (\$25) is less than market (\$30) but below floor	Cost (\$75) is less than market (\$80) but above the ceiling	Market (\$52) is less than Cost (\$55) and is between the	Cost (\$51) is less than Market (\$55) and is between the

	(\$50) so use floor	(\$60) so use ceiling	ceiling (\$60) and the floor (\$50) so use market	ceiling (\$60) and the floor (\$50) so use Cost
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### Study Objective 5 - Compute and Interpret the Inventory Turnover Ratio

- ◆ **Inventory turnover ratio** is computed by dividing cost of goods sold by average inventory. The ratio tells how many times the inventory is turning over during the year.
- **Days in inventory**, computed by dividing 365 days by the **inventory turnover ratio**, indicates the average age of the inventory.

### Study Objective 6- Describe the LIFO Reserve and Explain its Importance for Comparing Results of Different Companies

- ◆ Accounting standards require firms using **LIFO** to report the amount by which inventory would be increased (or on occasion decreased) if the firm had instead been using **FIFO**. This amount is referred to as the **LIFO reserve**. Reporting the **LIFO reserve** enables analysts to make adjustments to compare companies that use different cost flow methods.

## Chapter 6 Review

- ✓ What are the unique features of the income statement for a merchandising company under a periodic inventory system?
- ✓ Explain the basis of accounting for inventories and apply the inventory cost flow methods-- FIFO, LIFO, weighted-average--under a periodic inventory system.
- ✓ Compare the financial statement and tax effects of each of the inventory cost flow assumptions-- FIFO, LIFO, weighted-average.
- ✓ What is the lower of cost or market basis of accounting for inventories?
- ✓ What is the inventory turnover ratio? How is it computed?
- ✓ What is the LIFO reserve? Explain its importance for comparing results of different companies.

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\_\_\_\_\_ requires that records be kept of the \_\_\_\_\_ of each individual inventory item. Historically, \_\_\_\_\_ was possible only when a company sold a \_\_\_\_\_ that could be identified clearly from the \_\_\_\_\_ through the \_\_\_\_\_. Examples of such products are cars, pianos, or expensive antiques. Today with \_\_\_\_\_ it is theoretically possible to do specific identification with nearly any type of product. The reality is, however that this practice is still relatively \_\_\_\_\_.

## Solutions to Reading Comprehension Check I

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Specific identification requires that records be kept 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 the purchase through the time of sale. Examples of such products are cars, pianos, or expensive antiques. Today with bar coding it is theoretically possible to do specific identification with nearly any type of product. The reality is, however that this practice is still relatively rare.



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Because specific identification is often impractical, other cost flow methods are allowed. These differ from \_\_\_\_\_ in that they \_\_\_\_\_ flows of costs that may be \_\_\_\_\_ to the \_\_\_\_\_ . There are three assumed cost flow methods: \_\_\_\_\_ , \_\_\_\_\_ , and \_\_\_\_\_ . There is no accounting requirement that \_\_\_\_\_ be consistent with the \_\_\_\_\_ of the \_\_\_\_\_. The appropriate cost flow method is made by \_\_\_\_\_ .

**Solutions to Reading Comprehension Check II**

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Because specific identification is often impractical, other cost flow methods are allowed. 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), Last-in, first-out (LIFO), and Average cost. There is no accounting requirement that cost flow assumptions be consistent with the physical movement of the goods. The appropriate cost flow method is made by management.

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\_\_\_\_\_ 1. An inventory costing method that assumes that the costs of the latest goods purchased are the first to be allocated to cost of goods sold.

\_\_\_\_\_ 2. Measure of the average number of days inventory is held; calculated \_\_\_\_\_ as 365 divided by inventory turnover ratio.

\_\_\_\_\_ 3. Goods held for sale by one party (the consignee) although ownership of the goods is retained by another party (the consignor).

\_\_\_\_\_ 4. The current cost to replace an item of inventory.

\_\_\_\_\_ 5. A basis whereby inventory is stated at the lower of cost or market (current replacement cost).

\_\_\_\_\_ 6. That portion of manufacturing inventory that has begun the production process but is not yet complete.

\_\_\_\_\_ 7. Freight terms indicating that the goods are placed free on board at the buyer's place of business, and the seller pays the freight cost; goods belong to the seller while in transit.

\_\_\_\_\_ 8. Freight terms indicating that the goods are placed free on board the carrier by the seller and the buyer pays the freight cost

\_\_\_\_\_ 9. Purchases less purchase returns and allowances and purchase discounts.

\_\_\_\_\_ 10. An inventory costing method that uses the weighted average unit cost to allocate the cost of goods available for sale to ending inventory and cost of goods sold

## Solutions to Vocabulary Quiz

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1. Last-in, first-out (LIFO) method
2. Days in inventory
3. Consigned goods
4. current replacement cost
5. Lower of cost or market (LCM) basis
6. FOB shipping point
7. FOB destination
8. Cost of goods purchased
9. Net purchases
10. Average (weighted average) cost method

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1. In order to be classified as Merchandise Inventory, merchandise must be:
  - a. owned by the company.
  - b. in a form ready for sale to customers in the ordinary course of business.
  - c. shipped FOB destination.
  - d. both a and b above.
2. General Motors would classify automobiles on the assembly line in various stages of completion as:
  - a. raw materials.
  - b. work in process.
  - c. finished goods.
  - d. none of the above.
3. When purchases of merchandise are recorded in the Purchases account rather than the Merchandise Inventory account the inventory system being used is the
  - a. FIFO system.
  - b. LIFO system.
  - c. periodic system.
  - d. perpetual system.
4. To determine cost of goods sold under a periodic inventory system, all of the following are necessary **except**:
  - a. total cash register receipts for the period.
  - b. record purchases of merchandise
  - c. determine the cost of goods purchased
  - d. determine the cost of goods on hand at the beginning and end of the accounting period.
5. In some lines of business, it is customary to hold the goods of other parties and try to sell the goods for them for a fee. These goods are called:
  - a. goods in transit.
  - b. work in process.
  - c. merchandise inventory.
  - d. consigned goods.
6. When legal title of the goods remains with the seller until the goods reach the buyer the terms are said to be:
  - a. consigned goods.
  - b. FOB destination.
  - c. FOB shipping point.
  - d. none of the above.
7. The three assumed cost flow methods are:
  - a. specific identification, FIFO, and LIFO.
  - b. FIFO, LIFO, and average cost.
  - c. Perpetual, periodic, and specific identification.
  - d. None of the above.
8. Which of the following statements are not true regarding LIFO:
  - a. Assumes the latest goods purchased are the first to be sold.
  - b. Seldom coincides with the actual physical flow of inventory.
  - c. Ending inventory is based on the price of the most recent units purchased.
  - d. Ending inventory obtained by taking the unit cost of the earliest goods available for sale and working forward until all units of inventory have been costed.

9. In a period of increasing prices, the inventory system that will yield the highest net income is:
- Specific identification.
  - FIFO.
  - LIFO.
  - weighted average.
10. Under lower of cost or market (LCM), market is defined as:
- historical cost.
  - selling price.
  - current replacement cost.
  - none of the above.

## Solutions to Multiple Choice Quiz

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1. d

2. b

3. c

4. a

5. d

6. b

7. b

8. c

9. b

10. c

## Exercise 1 - Financial Analysis Activity

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The Caterpillar Corporation, mentioned in the opening vignette of the chapter, uses the last-in, first-out (LIFO) method of valuing inventories. In the notes to the financial statements, found at [www.cat.com](http://www.cat.com), **Cat Financials** and finally **Annual Report**, it is stated that if Caterpillar had used first-in, first-out (FIFO), inventories would have been significantly higher.

1. Explain why inventories would be higher had the FIFO valuation method been used. Please be thorough. You may use hypothetical figures to illustrate your point.
2. What would be the effect on net income of using FIFO rather than LIFO to value inventory?
3. Can you think of a scenario in which Caterpillar would want to use FIFO rather than LIFO in valuing inventories?

#### Solutions:

1. First-in, first-out (FIFO) assumes that the first units purchased or manufactured are the first units to be sold. Therefore, the last units purchased or manufactured are assumed to be in ending inventory. In a period of increasing prices, the last units purchased or manufactured are more expensive than the units purchased or manufactured earlier. Therefore the inventory would have been higher had FIFO method of valuing inventory been used.
2. If FIFO had been used the cost of goods sold would have been valued at a lesser cost than it would using LIFO. Remember, FIFO assumes that the first units purchased or manufactured are the first units to be sold. In a period of increasing prices, the units purchased or manufactured earlier would be valued at a lesser cost. If cost of goods sold is less, net income will be higher.
3. Caterpillar would want to use FIFO if they were trying to increase net income for the period. For example, if Caterpillar needed additional financing and was considering issuing additional stock or sell bonds they would want a higher net income.

**Note:** The Wiley student website is constantly being updated. Please check to see that the information requested in this exercise is available.

## Exercise 2 - Financial Analysis Activity

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The notes to financial statements of Ben & Jerry's located at [www.benjerry.com](http://www.benjerry.com), [site index](#), [financial info](#), and finally [Ben & Jerry's Annual Report](#), state that inventories are stated at the lower of cost or market. In addition, inventory cost is determined by the first-in, first-out method.

1. Why would Ben & Jerry's need to state inventories at the lower of cost or market?
  
2. Your friend contends that Ben & Jerry's must use the FIFO method in valuing inventories, because the ice cream produced first would be the ice cream they would need to sell first. Do you agree with your friend's reasoning? Why or why not?

#### Solutions:

1. Ben and Jerry's uses lower of cost or market in valuing inventories because inventories--raw materials, work in process, and finished goods--are all perishable and have a relatively short shelf life. The inventories would become worthless in a relatively short period of time.
2. Cost flow methods assume flows of costs that may be unrelated to the physical flow of goods. There are three assumed costs flow methods: first-in, first-out, last-in, first-out, weighted average cost. There is no accounting requirement that the cost flow assumptions be consistent with the physical movement of the goods.

**Note:** The Wiley student website is constantly being updated. Please check to see that the information requested in this exercise is available.



## Exercise 3 - Ethics Activity

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Assume you are a staff accountant at Merchandise and Such, where sales for the year have far exceeded expectations. On December 29, the controller asked you to tell the shipping clerk to delay shipment of a very large order of merchandise until the beginning of the next fiscal year.

1. Why does the controller want to delay the shipment?
2. What are your responsibilities concerning the shipment of merchandise? And what action would you take?

#### Solutions:

1. The controller wants to delay shipment so that the revenue from this sale will be shifted to the next period.
2. Employees of Merchandise and Such have a responsibility to the stockholders' to see that the business is run as efficiently as possible. It is not good business to delay shipment. The customer may be depending on the merchandise. If it is not received on time, this could hurt the Merchandise's image.

## Exercise 4 - Financial Statement Analysis Activity

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After the physical inventory count, you realized that inventory in one small warehouse had not been counted. The company uses the periodic inventory method and you are responsible for the inventory figures.

1. What effect will the omission of inventory have on the income statement? Be specific in your answer.
2. What effect will the omission of inventory have on the balance sheet? Be specific in your answer.

#### Solutions:

1. When the periodic inventory method is used, cost of goods sold is found by adding purchases to beginning inventory to come up with cost of goods available and then subtracting ending inventory found by taking a physical count. If ending inventory is understated, cost of goods sold will be overstated by the same amount and net income will be understated.
2. If merchandise in the warehouse is not counted, the Merchandise Inventory account will be understated by the amount of the inventory in the warehouse. This will cause total assets to be understated. However, the balance sheet will balance because the stockholders' equity will be understated as well because net income was understated.

## Exercise 5 - Financial Statement Analysis Activity

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Shoplifting is one of the most non-violent crimes facing America-- and the rest of the world--today is shoplifting. The problem is so prevalent that most retailers increase prices as much as 10 percent to cover losses from shoplifting.

If a company uses the periodic inventory system, where will the cost of shoplifting show up on the income statement?

#### Solutions:

Shoplifting has the same effect as understating ending inventory. The ending inventory will be lower because of the theft and cost of goods sold will be higher. Therefore net income will be lower than it would have been had the theft not occurred.

One can think of it as having the amount that was stolen added to cost of goods sold without the offsetting revenue which would have been received had a sale been made.

## Exercise 6 - World Wide Web Research and Financial Statement Analysis Activity

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The inventory turnover ratio indicates how many times inventory turns over within the year. Compute the inventory turnover ratio for three firms in vastly different industries. Use your school library or go to the internet to find the most recent annual report for Edy's, Nike, and General Motors.

If you research the internet, go to:

Edy's - [www.edys.com](http://www.edys.com), [Grand](#), [The Inside Scoop](#), and [Annual Report Summary](#);

Nike - [info.nike.com](http://info.nike.com), [Investment Information](#), and [Annual Report](#);

GM - [www.gm.com](http://www.gm.com), [get investor info](#), and [Annual Report](#).

1. Compute the inventory ratio and days in inventory for each company for the most recent year.
2. Compare and contrast the ratios of the three companies.
3. Are the ratios consistent with what you expected?

**Solutions:** Information available on Wiley student website.

**Note:** The Wiley student website is constantly being updated. Please check to see that the information requested in this exercise is available.

## Exercise 7 - Accounting Career Activity

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Private or corporate accounting is the largest area of accounting, offering unlimited job opportunities. A private accountant, unlike a public accountant, works for one employer such as Toyota, Coca-Cola, or IBM. A number of accounting majors go into private accounting immediately after graduation. Others go into private accounting after becoming disenchanted with public accounting. Regardless of whether one is a CPA, corporate accountants should pursue the certified Managerial Accounting (CMA) certificate administered by the Institute of Management Accountants.

To learn more about the Institute of Management Accountant and the CMA certification go to [www.imastudents.org](http://www.imastudents.org), [About IMA](#), and [Student Information Kit](#).

1. What is the IMA and how many members does it have?
2. What are the benefits of becoming a student member of the IMA?
3. What is a CMA? How does one become a CMA?
4. What is a CFM? What are the requirements for certification?

**Solutions:** Information available on Wiley student website.

**Note:** The Wiley student website is constantly being updated. Please check to see that the information requested in this exercise is available.

## Exercise 8 - Financial Statement Analysis Activity

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Wendy's is the third largest fast-food restaurant chain in the world. Let's visit Wendy's at [www.wendys.com](http://www.wendys.com), , Investment Information, Annual Reports, and Wendy's Shareholders Reports.

1. How does Wendy's value its inventory?
2. Are you surprised Wendy's uses lower of cost or market? Why or why not?
3. What types of items are included in Wendy's inventory count?

**Solutions:** Information available on Wiley student website.

**Note:** The Wiley student website is constantly being updated. Please check to see that the information requested in this exercise is available.