

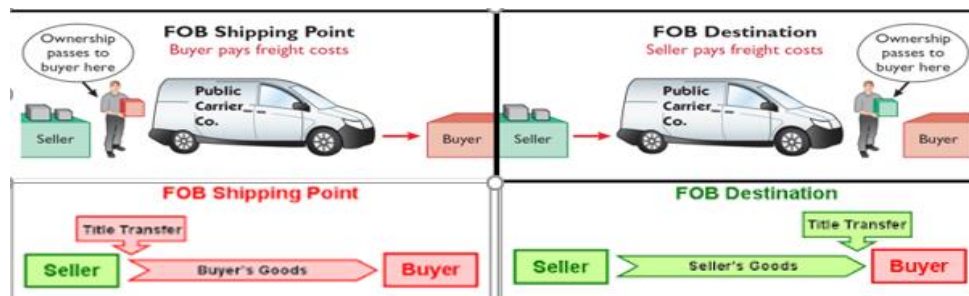
# REPORTING AND ANALYZING INVENTORY

## LO 1: Discuss how to classify and determine inventory.

- **Inventory:** “Assets a company intends to sell in the normal course of business, has in production for future sale, or uses currently in the production of goods to be sold.”
  1. **Inventory**--ON BALANCE SHEET: “represents the cost of inventory STILL ON HAND.”
  2. **Cost of Goods Sold**---ON INCOME STATEMENT: “represents the cost of inventory SOLD DURING THE PERIOD.”
- Merchandising companies have ONE type of inventory: **Merchandise Inventory**
- Manufacturing companies have THREE types of inventory:
  1. **Raw Materials**
  2. **Work in Process**
  3. **Finished Goods**

### DETERMINING INVENTORY QUANTITIES

- Physical inventory is taken for 2 reasons:
  - **Perpetual System**
    1. Check accuracy of inventory records.
    2. Determine amount of inventory lost due to wasted raw materials, shoplifting, or employee theft.
  - **Periodic System**
    1. Determine the inventory on hand.
    2. Determine the cost of goods sold for the period.
- One challenge in determining inventory quantities is making sure a company owns the inventory.
  - **Goods in transit:** purchased goods not yet received and sold goods not yet delivered.
    - **FOB (Free on Board) Shipping Point:** Ownership of the goods passes to the buyer when the public carrier accepts the goods from the seller.
      - If goods are in transit they are the **BUYERS**.
    - **FOB (Free on Board) Destination:** Ownership of the goods remains with the seller until the goods reach the buyer.
      - If goods are in transit they are the **SELLERS**.



- **Consigned Goods**: Goods held for other parties to see if they can sell the goods for the other party. The company holding the goods charges a fee and does not take ownership of the goods.
  - **Consignor**: goods shipped by the owner.
  - **Consignee**: sell goods for the owner.

\*\*At end of the year GOODS NOT SOLD BELONG AS PART OF CONSIGNOR'S (OWNER'S) INVENTORY.

Ex: Auto Alex owns a used car lot. Nick has a used car that he wants to sell. He goes to Auto Alex and the dealer agrees to put Nick's car on the lot for a fee. Auto Alex does not take ownership of the car.

**Consignor**: Nick (Car is INCLUDED in inventory.)

**Consignee**: Auto Alex (Used car is NOT INCLUDED in inventory.)

**LO 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.
  - Unit costs are applied to quantities to determine the total **cost of the inventory** and the **cost of goods sold** using the following costing methods:
    1. **Specific identification**
    2. **First-in, first-out (FIFO)**
    3. **Last-in, first-out (LIFO)**
    4. **Average-cost**
  - There is NO REQUIREMENT that the cost flow assumption has to be consistent with the physical movement of goods.

**1. SPECIFIC IDENTIFICATION (PERIODIC)**

- Cost attached to a specific item. (Ex: When selling jewelry.)

Ex: Mike Company sells 3 units from beginning inventory, 8 units from Jan. 6 purchase, and 4 units from Jan. 24 purchase.

Date	Explanation	Units	Unit Cost	Total Cost
Jan. 1	Beginning Inventory	10	\$ 10.00	\$ 100.00
Jan. 6	Purchase	8	\$ 15.00	\$ 120.00
Jan. 24	Purchase	20	\$ 20.00	\$ 400.00
	<b>Total</b>	<u>38</u>		<u>\$ 620.00</u>

**Step 1: Calculate Cost of Goods Sold**

Date	Units	Unit Cost	Total Cost
Beg. Inv.	3	\$ 10.00	\$ 30.00
Jan. 6	8	\$ 15.00	\$ 120.00
Jan. 24	4	\$ 20.00	\$ 80.00
<b>Total</b>	<u>15</u>		<u>\$ 230.00</u>

**Step 2: Calculate Ending Inventory**

Cost of Goods Available for sale	\$ 620.00
Less: Cost of Goods Sold	<u>\$ (230.00)</u>
<b>Ending Inventory</b>	<u><b>\$ 390.00</b></u>

OR

**Step 2: Calculate Ending Inventory**

Date	Units	Unit Cost	Total Cost
Beg. Inv.	7	\$ 10.00	\$ 70.00
Jan. 24	16	\$ 20.00	\$ 320.00
<b>Total</b>	<u>23</u>		<u>\$ 390.00</u>

### 2. FIRST-IN, FIRST-OUT (FIFO) (PERIODIC)

- Assumes **OLDEST ITEMS SOLD FIRST** (Ex: Grocery stores sell oldest fruit or dairy products like milk first before newest.)
- Costs of the **earliest goods purchased** are the **first** to be recognized in determining cost of goods sold. **(Resembles the actual physical flow of merchandise)**
- Companies determine 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.



	Date	Explanation	Units	Unit Cost	Total Cost
Ex)	Jan. 1	Beginning Inventory	10	\$ 10.00	\$ 100.00
	Jan.6	Purchase	8	\$ 15.00	\$ 120.00
	Jan. 24	Purchase	20	\$ 20.00	\$ 400.00
		<b>Total</b>	<b>38</b>		<b>\$ 620.00</b>

**\*Assume 23 units are in ending inventory at the end of January**

- Items **SOLD** in order acquired....
  - Beginning Inventory
  - Jan. 6
  - Jan. 24
- NEWEST** UNITS REMAIN IN ENDING INVENTORY.

Step 1: Calculate Ending Inventory			
Date	Units	Unit Cost	Total Cost
Jan. 24	20	\$ 20.00	\$ 400.00
Jan. 6	3	\$ 15.00	\$ 45.00
<b>Total</b>	<b>23</b>		<b>\$ 445.00</b>

Step 2: Calculate Cost of Goods Sold	
Cost of Goods Available for sale	\$ 620.00
Less: Ending Inventory	<u>\$ (445.00)</u>
<b>Cost of Goods Sold</b>	<b><u>\$ 175.00</u></b>

**ENDING INVENTORY** = units on hand x unit cost

### 3. LAST-IN, FIRST-OUT (LIFO) (PERIODIC)

- Assumes **NEWEST ITEMS SOLD FIRST** (Ex: When new technology items came out.)
- Costs of the **latest goods purchased** are the **first** to be recognized in determining cost of goods sold.
- Seldom coincides with actual physical flow of merchandise.



Ex)	Date	Explanation	Units	Unit Cost	Total Cost
	Jan. 1	Beginning Inventory	10	\$ 10.00	\$ 100.00
	Jan.6	Purchase	8	\$ 15.00	\$ 120.00
	Jan. 24	Purchase	20	\$ 20.00	\$ 400.00
		<b>Total</b>	<b>38</b>		<b>\$ 620.00</b>

**\*Assume 23 units are in ending inventory at the end of January**

- Items **SOLD** from **newest to oldest**....
  - Jan. 24
  - Jan. 6
  - Beginning Inventory
- OLDEST UNITS** REMAIN IN ENDING INVENTORY.

#### Step 1: Calculate Ending Inventory

Date	Units	Unit Cost	Total Cost
Beg. Inv.	10	\$ 10.00	\$ 100.00
Jan. 6	8	\$ 15.00	\$ 120.00
Jan. 24	5	\$ 20.00	\$ 100.00
<b>Total</b>	<b>23</b>		<b>\$ 320.00</b>

#### Step 2: Calculate Cost of Goods Sold

Cost of Goods Available for sale	\$ 620.00
Less: Ending Inventory	\$ (320.00)
<b>Cost of Goods Sold</b>	<b>\$ 300.00</b>

**ENDING INVENTORY** = units on hand x unit cost

### 4. WEIGHTED AVERAGE (PERIODIC)

- Allocates cost of goods available for sale on the basis of **weighted-average unit cost** incurred.
- Applies weighted-average unit cost to the units on hand to determine cost of the ending inventory.

**WEIGHTED AVERAGE COST PER UNIT** = Total Cost of Inventory on Hand ÷ Number of Units on Hand

Ex)	Date	Explanation	Units	Unit Cost	Total Cost
	Jan. 1	Beginning Inventory	10	\$ 10.00	\$ 100.00
	Jan.6	Purchase	8	\$ 15.00	\$ 120.00
	Jan. 24	Purchase	20	\$ 20.00	\$ 400.00
		<b>Total</b>	<b>38</b>		<b>\$ 620.00</b>

**\*Assume 23 units are in ending inventory at the end of January**

$$\text{Weighted Average Cost Per Unit} = \frac{(10 \text{ units} \times \$10) + (8 \text{ units} \times \$15) + (20 \text{ units} \times \$20 \text{ per unit})}{10 \text{ units} + 8 \text{ units} + 20 \text{ units}}$$

$$= \$620 \div 38 \text{ units} = \mathbf{\$16.32 \text{ per unit}}$$

**Step 1: Calculate Ending Inventory**

Total Cost ÷ Total Units = Weighted Average Cost  
 \$620 ÷ 38 units ≈ **\$16.32**

**Step 2: Calculate Cost of Goods Sold**

Cost of Goods Available for sale	\$ 620.00
Less: Ending Inventory	\$ (375.36)
<b>Cost of Goods Sold</b>	<b><u>\$ 244.64</u></b>

**Ending Inventory** = 23 units × \$16.32 = **\$375.36**

**INCOME STATEMENT EFFECTS**

- 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.
  - In a period of inflation (**prices are RISING**), FIFO produces a higher net income because lower unit costs of the first units purchased are matched against revenue.
  - In a period of inflation (**prices are RISING**), LIFO produces a lower net income because higher unit costs of the last goods purchased are matched against revenue.
  - 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.
  - Regardless of whether prices are rising or falling, **average-cost produces net income between FIFO and LIFO.**

	<u>During Times of Rising Prices:</u> (Jan. 1 \$20, Feb. 1 \$30, Mar. 1 \$40)		<u>During Times of Falling Prices:</u> (Jan. 1 \$40, Feb. 1 \$30, Mar. 1 \$20)	
	+ Increasing Costs (Prices)		- Decreasing Costs (Prices)	
	↑ Highest Amount	↓ Lowest Amount	↑ Highest Amount	↓ Lowest Amount
Cost of merchandise sold	LIFO	FIFO	FIFO	LIFO
Gross profit	FIFO	LIFO	LIFO	FIFO
Net income	FIFO	LIFO	LIFO	FIFO
Ending merchandise inventory	FIFO	LIFO	LIFO	FIFO

- Each of the three cost flow assumptions are acceptable under GAAP.
- Method should be used consistently, enhances comparability.
- Although consistency is preferred, a company may change its inventory costing method.

**LO 3: Explain the statement presentation and analysis of inventory.**

- 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-market**)
  3. The cost method (**FIFO, LIFO, or average-cost**).

**LOWER-OF-COST-OR-MARKET**

- Applied to items in inventory after the company has used one of the cost flow methods (specific identification, FIFO, LIFO, or average-cost) to determine cost.
- Companies can “write down” the inventory to its market value in the period in which the **price decline occurs**.
- **Market value = Replacement Cost**
- Example of conservatism.
- **Inventory is valued at the LOWER of its COST or MARKET VALUE.**

	Units	Cost per Unit	Market per Unit	Lower-of-Cost-or-Market
Flat-screen TVs	100	\$600	<b>\$550</b>	\$ 55,000 (\$550 × 100)
Satellite radios	500	<b>90</b>	104	45,000 (\$90 × 500)
Blu-ray players	850	50	<b>48</b>	40,800 (\$48 × 850)
CDs	3,000	<b>5</b>	6	15,000 (\$5 × 3,000)
Total inventory				<u>\$155,800</u>

**ANALYSIS**

1. Inventory Turnover Ratio

$$\text{Inventory Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

- **Average Inventory**= (Inventory Beginning of Year + Inventory End of Year) ÷ 2
- Used to measure a company’s ability to manage its inventory effectively.
- A company that has an inventory turnover of 4 indicates that it sells and replaces their inventory 4 times per year.

2. Days in Inventory

$$\text{Days in Inventory} = \frac{365}{\text{Inventory Turnover Ratio}}$$

- Indicates the average number of days’ inventory is held.
- Shorter the number of days’ in inventory, the better, but it depends on industry. For example, grocery stores will have a much shorter amount of days than jewelry stores.
- A company has 100 days’ in inventory. Therefore, it takes it 100 days to purchase, sell, and replace their inventory.

### 3. LIFO Reserve

- The difference between inventories reported using LIFO and Inventory using FIFO.
- Enables analysts to make adjustments to compare companies that use different cost flow methods.

**Inventory Assuming FIFO** = Inventory Using LIFO + LIFO Reserve

	(in millions)
2014 inventory using LIFO	\$ 12,205
2014 LIFO reserve	<u>2,430</u>
<b>2014 inventory assuming FIFO</b>	<b><u><u>\$14,635</u></u></b>



**LO 4: Apply inventory cost flow methods to perpetual inventory records.**

- Need to keep track of cost of goods sold and ending inventory after EACH sale and purchase.
- Need to go through all of the dates of the transactions before calculating cost of goods sold and ending inventory.

**FIRST-IN, FIRST-OUT (FIFO) (PERPETUAL)**

- The amounts for **ending inventory** and **cost of goods sold** are going to be the same as if the periodic inventory system is used.
- The cost of the **EARLIEST goods** on hand **prior to each sale** is charged to cost of goods sold.

Jan. 1	Inventory	190 units @ \$5.50
Jan. 10	Sale	110 units
Jan. 20	Purchase	260 units @\$5.80
Jan. 24	Sale	185 units
Jan. 27	Purchase	130 units @ \$6.80
Jan. 28	Purchase	150 units @ \$7.80
Jan. 30	Sale	200 units

1. What is the cost of goods sold using FIFO?

2. What is the ending inventory using FIFO?

**FIFO Solution**

Date	Activities	Units Acquired			Cost of Goods Sold			Ending Balance		
		Units Acquired	\$ per Unit	Total \$ Amount	Units Sold	\$ per Unit	Total \$ Amount	Units On Hand	\$ per Unit	Total \$ Amount
Jan. 1	Beg Inventory			\$ -			\$ -	190	\$ 5.50	\$ 1,045.00
				\$ -			\$ -			\$ -
Jan. 10	Sales- 110 units			\$ -	110	\$ 5.50	\$ 605.00	80	\$ 5.50	\$ 440.00
				\$ -			\$ -			\$ -
Jan. 20	Purchase- 260 units	260	\$ 5.80	\$ 1,508.00			\$ -	80	\$ 5.50	\$ 440.00
				\$ -			\$ -	260	\$ 5.80	\$ 1,508.00
Jan. 24	Sales- 185 units			\$ -	80	\$ 5.50	\$ 440.00	155	\$ 5.80	\$ 899.00
				\$ -	105	\$ 5.80	\$ 609.00			\$ -
Jan. 27	Purchase- 130 units	130	\$ 6.80	\$ 884.00			\$ -	155	\$ 5.80	\$ 899.00
				\$ -			\$ -	130	\$ 6.80	\$ 884.00
Jan. 28	Purchase- 150 units	150	\$ 7.80	\$ 1,170.00			\$ -	155	\$ 5.80	\$ 899.00
				\$ -			\$ -	130	\$ 6.80	\$ 884.00
								150	\$ 7.80	\$ 1,170.00
Jan. 30	Sales- 200 units			\$ -	155	\$ 5.80	\$ 899.00	85	\$ 6.80	\$ 578.00
				\$ -	45	\$ 6.80	\$ 306.00	150	\$ 7.80	\$ 1,170.00
				\$ -			\$ -			

**\$2,859**

**235 Units**

**TOTAL COGS**

**\$1,748.00**

**Total Ending Inventory**

**FIFO**

1. Cost of Goods Sold \$ 2,859.00

2. Ending Inventory = \$ 1,748.00

**LAST-IN, FIRST-OUT (LIFO) (PERPETUAL)**

- The LATEST units purchased **prior to each sale** are allocated to cost of goods sold.
- The amounts for **ending inventory** and **cost of goods sold** are going to be different from the periodic inventory system because in a **periodic system** the latest units purchased **during the period** are allocated to cost of goods sold.

Jan. 1     Inventory 190 units @ \$5.50  
 Jan. 10    Sale     110 units  
 Jan. 20    Purchase 260 units @\$5.80  
 Jan. 24    Sale     185 units  
 Jan. 27    Purchase 130 units @ \$6.80  
 Jan. 28    Purchase 150 units @ \$7.80  
 Jan. 30    Sale     200 units

1. What is the cost of goods sold using LIFO?
2. What is the ending inventory using LIFO?

<b>LIFO Solution</b>										
Date	Activities	Units Acquired			Cost of Goods Sold			Ending Balance		
		Units Acquired	\$ per Unit	Total \$ Amount	Units Sold	\$ per Unit	Total \$ Amount	Units On Hand	\$ per Unit	Total \$ Amount
Jan. 1	Beg Inventory			\$ -			\$ -	190	\$ 5.50	\$ 1,045.00
Jan. 10	Sales- 110 units			\$ -	110	\$ 5.50	\$ 605.00	80	\$ 5.50	\$ 440.00
Jan. 20	Purchase- 260 units	260	\$ 5.80	\$ 1,508.00			\$ -	80	\$ 5.50	\$ 440.00
Jan. 24	Sales- 185 units			\$ -	185	\$ 5.80	\$ 1,073.00	80	\$ 5.50	\$ 440.00
Jan. 27	Purchase- 130 units	130	\$ 6.80	\$ 884.00			\$ -	80	\$ 5.50	\$ 440.00
Jan. 28	Purchase- 150 units	150	\$ 7.80	\$ 1,170.00			\$ -	75	\$ 5.80	\$ 435.00
Jan. 30	Sales- 200 units			\$ -	150	\$ 7.80	\$ 1,170.00	80	\$ 5.50	\$ 440.00
				\$ -	50	\$ 6.80	\$ 340.00	75	\$ 5.80	\$ 435.00
				\$ -			\$ -	80	\$ 6.80	\$ 544.00
							<b>\$3,188</b>			
							<b>TOTAL COGS</b>			
								<b>235 Units</b>		
								<b>\$1,419.00</b>		
								<b>Total Ending Inventory</b>		

<b>LIFO</b>	
1. <u>Cost of Goods Sold</u> \$ 3,188.00	
2. <u>Ending Inventory</u> = \$ 1,419.00	

### AVERAGE COST (PERPETUAL)

- Called the “**moving-average method.**”
- Compute a new average after each purchase.

**Average Cost = Cost of Goods Available for Sale ÷ Units on Hand**

- The average cost is then applied to..
  1. The units sold to calculate **cost of goods sold.**
  2. The remaining units on hand to calculate **ending inventory.**

Jan. 1     Inventory 190 units @ \$5.50  
 Jan. 10    Sale       110 units  
 Jan. 20    Purchase 260 units @\$5.80  
 Jan. 24    Sale       185 units

1. What is the cost of goods sold using Average Cost?
2. What is the ending inventory using Average Cost?

Average Cost Solution										
Date	Activities	Units Acquired			Cost of Goods Sold			Ending Balance		
		Units Acquired	\$ per Unit	Total \$ Amount	Units Sold	\$ per Unit	Total \$ Amount	Units On Hand	\$ per Unit	Total \$ Amount
Jan. 1	Beg Inventory			\$ -			\$ -	190	\$ 5.50	\$ 1,045.00
				\$ -			\$ -			\$ -
Jan. 10	Sales- 110 units			\$ -	110	\$ 5.50	\$ 605.00	80	\$ 5.50	\$ 440.00
				\$ -			\$ -			\$ -
Jan. 20	Purchase- 260 units	260	\$ 5.80	\$ 1,508.00			\$ -	80	\$ 5.50	\$ 440.00
				\$ -			\$ -	260	\$ 5.80	\$ 1,508.00
Weighted Average Cost= Total Cost of Inventory on Hand ÷ Total Units of Inventory on Hand										Weighted
Average Cost = (\$440 + \$1,508) ÷ (80 units + 260 units) =										<b>\$5.73</b>
Jan. 24	Sales- 185 units			\$ -	185	\$ 5.73	\$ 1,060.05	155	\$ 5.73	\$ 888.15
				\$ -			\$ -	*80 units + 260 units - 185 units sold		

**WEIGHTED AVERAGE**

1. Cost of Goods Sold \$ 1,665.05
2. Ending Inventory = \$ 888.15

<b>Total COGS</b>	<b>Ending Inventory</b>
\$605 + \$1,060.05	155 units
<u>\$1,665.05</u>	<u>\$888.15</u>

**LO 5: Indicate the effects of inventory errors on financial statements.**

***INCOME STATEMENT EFFECTS***

$$\text{Beginning Inventory} + \text{Cost of Goods Purchased} - \text{Ending Inventory} = \text{Cost of Goods Sold}$$

<u>Inventory Error</u>	<u>Cost of Goods Sold</u>	<u>Net Income</u>
Beginning inventory understated	Understated	Overstated
Beginning inventory overstated	Overstated	Understated
Ending inventory understated	Overstated	Understated
Ending inventory overstated	Understated	Overstated

***BALANCE SHEET EFFECTS***

**Accounting Equation: ASSETS = LIABILITIES + STOCKHOLDERS' EQUITY**

<u>Ending Inventory Error</u>	<u>Assets</u>	<u>Liabilities</u>	<u>Stockholders' Equity</u>
Overstated	Overstated	No effect	Overstated
Understated	Understated	No effect	Understated