

Principles of Accounting

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MGM 227

Lecture 5

Inventory



Inventories

Classifying Inventory

- Finished goods
- Work in process
- Raw materials

Determining Inventory Quantities

- Taking a physical inventory
- Determining ownership of goods

Inventory Costing

- Specific identification
- Cost flow assumptions
- Financial statement and tax effects
- Consistent use
- Lower-of-cost-or-net realizable value

Inventory Errors

- Income statement effects
- Statement of financial position effects

Statement Presentation and Analysis

- Presentation
- Analysis using inventory turnover

Classifying Inventory

Merchandising Company

One Classification:

- Merchandise Inventory

Manufacturing Company

Three Classifications:

- Raw Materials
- Work in Process
- Finished Goods

Regardless of the classification, companies report all inventories under Current Assets on the statement of financial position.

Determining Inventory Quantities

Physical Inventory taken for two reasons:

Perpetual System

1. Check accuracy of inventory records.
2. Determine amount of inventory lost (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.

Determining Inventory Quantities

Taking a Physical Inventory

Involves counting, weighing, or measuring each kind of inventory on hand.

Taken,

- when the business is closed or when business is slow.
- at end of the accounting period.

Determining Inventory Quantities

Determining Ownership of Goods

Goods in Transit

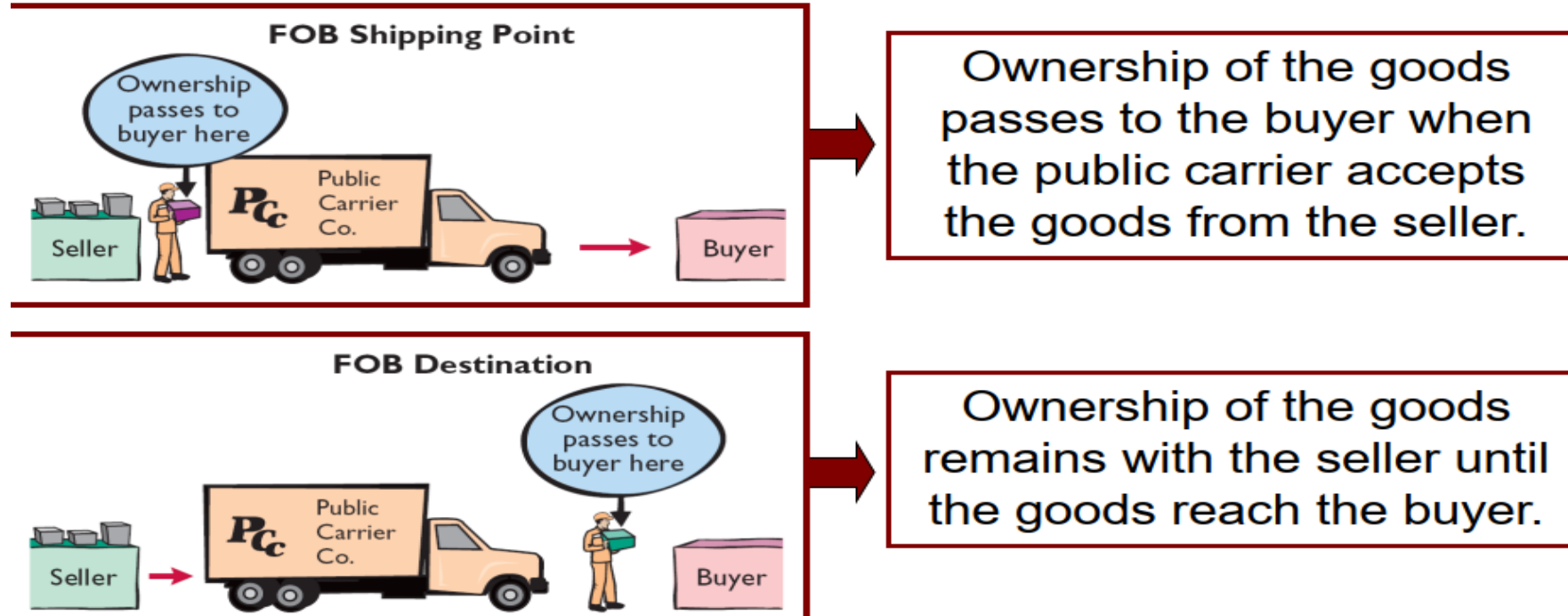
- Purchased goods not yet received.
- Sold goods not yet delivered.

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 sale**.

Determining Inventory Quantities

Goods in Transit

Illustration 6-1



Determining Inventory Quantities

Determining Ownership of Goods

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 goods.
- These are called **consigned goods**.

Inventory Costing

Unit costs can be applied to quantities on hand using the following costing methods:

- Specific Identification
- First-in, first-out (FIFO)
- Average-cost



**Cost Flow
Assumptions**

Inventory Costing

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.

- Practice is relatively rare.
- Most companies make assumptions (**Cost Flow Assumptions**) about which units were sold.

Inventory Costing

Illustration: Assume that Crivitz TV Company purchases three identical 46-inch TVs on different dates at costs of \$700, \$750, and \$800. During the year Crivitz sold two sets at \$1,200 each.

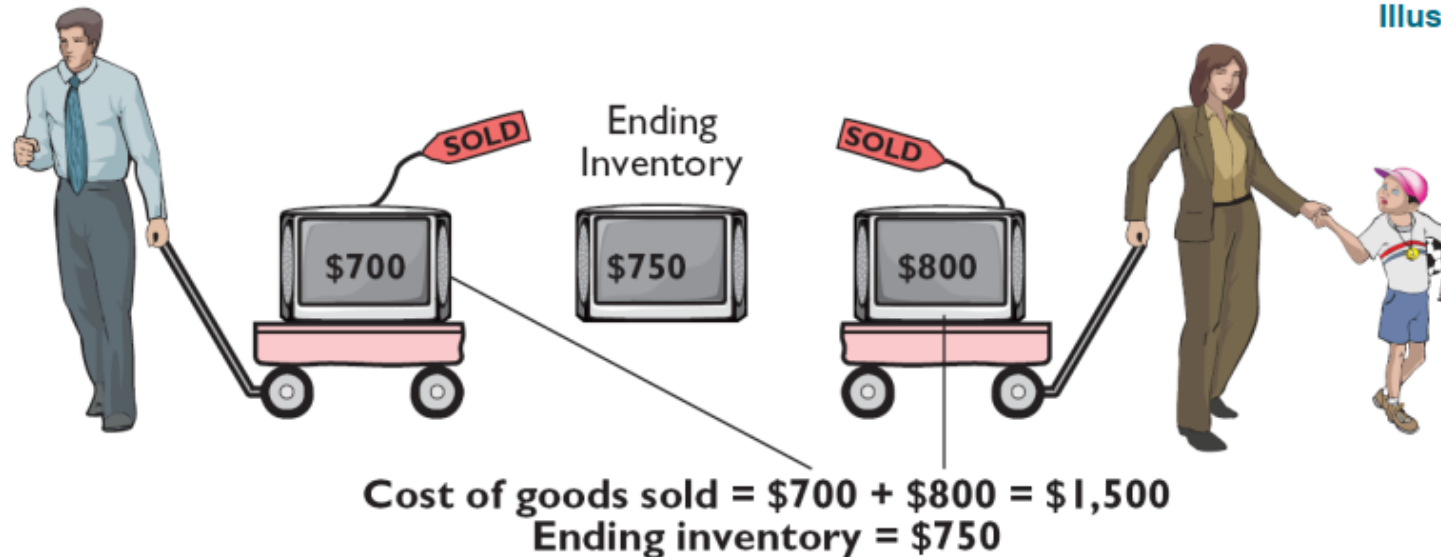
Illustration 6-2

Purchases			
February 3	1 TV	at	\$700
March 5	1 TV	at	\$750
May 22	1 TV	at	\$800
Sales			
June 1	2 TVs	for	\$2,400 ($\$1,200 \times 2$)

Inventory Costing

Illustration: If Crivitz sold the TVs it purchased on February 3 and May 22, then its cost of goods sold is \$1,500 (\$700 + \$800), and its ending inventory is \$750.

Illustration 6-3



Inventory Costing

Cost Flow Assumptions

Illustration 6-4

ISHIKAWA 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	<u>1,000</u>		<u>\$12,000</u>

- Ishikawa uses a periodic inventory system.
- Physical inventory determined that Ishikawa sold 550 units and had 450 units in inventory at December 31.

Inventory Costing

“First-In-First-Out (FIFO)”

- **Earliest goods** purchased are first to be sold.
- Often parallels actual physical flow of merchandise.
- Generally good business practice to sell oldest units first.

Inventory Costing

“First-In-First-Out (FIFO)”

Illustration 6-5

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	<u>1,000</u>		<u>\$12,000</u>
STEP 1: ENDING INVENTORY		STEP 2: COST OF GOODS SOLD		
Date	Units	Unit Cost	Total Cost	
				Cost of goods available for sale \$12,000
	—			
	<u> </u>		<u> </u>	

1000 units (550 sold & 450 End. Inventory)

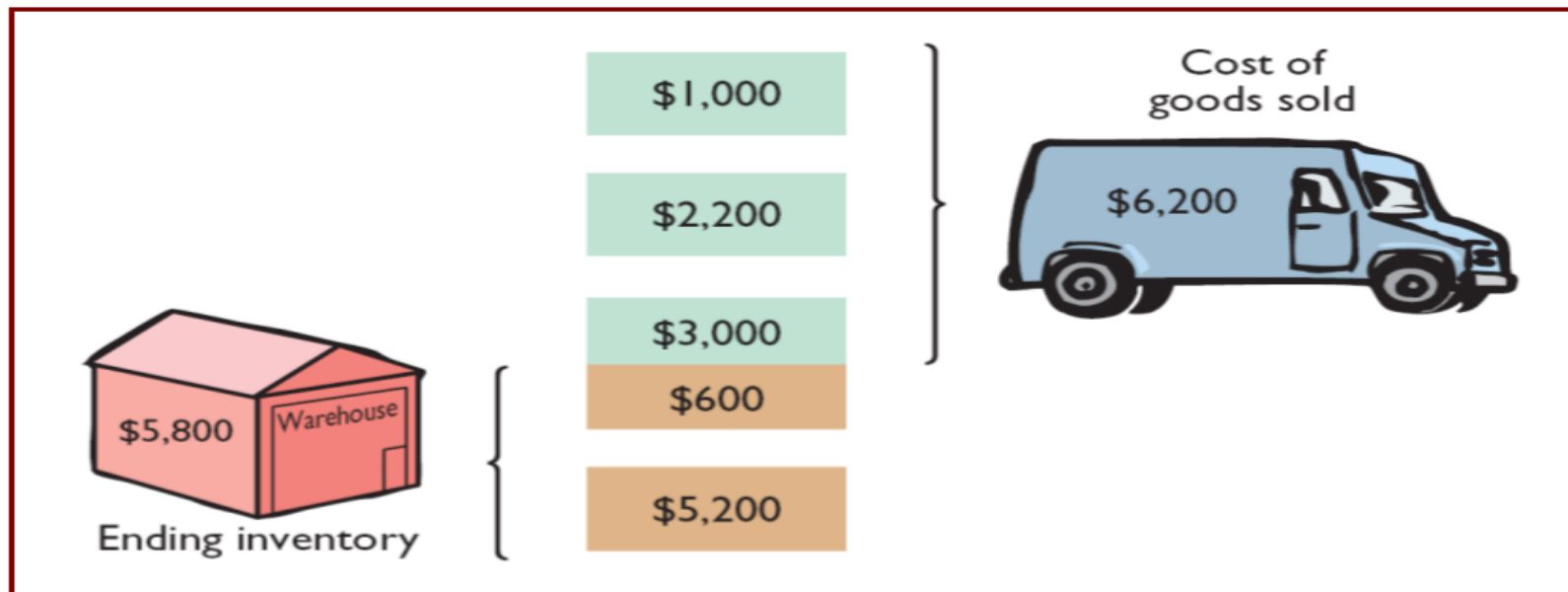
COGS

	Units	Cost/unit	FIFO	Average cost
				<u>Total cost = 12000</u>
Beginning inventory	100	10	100*10	Total no. of units 1000
+ Purchases	200	11	200*11	
+ Purchases	300	12	250*12	unit cost = 12
+ Purchases	400	13		

Inventory Costing

“First-In-First-Out (FIFO)”

Illustration 6-5



“Average-Cost”

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

“Average Cost”

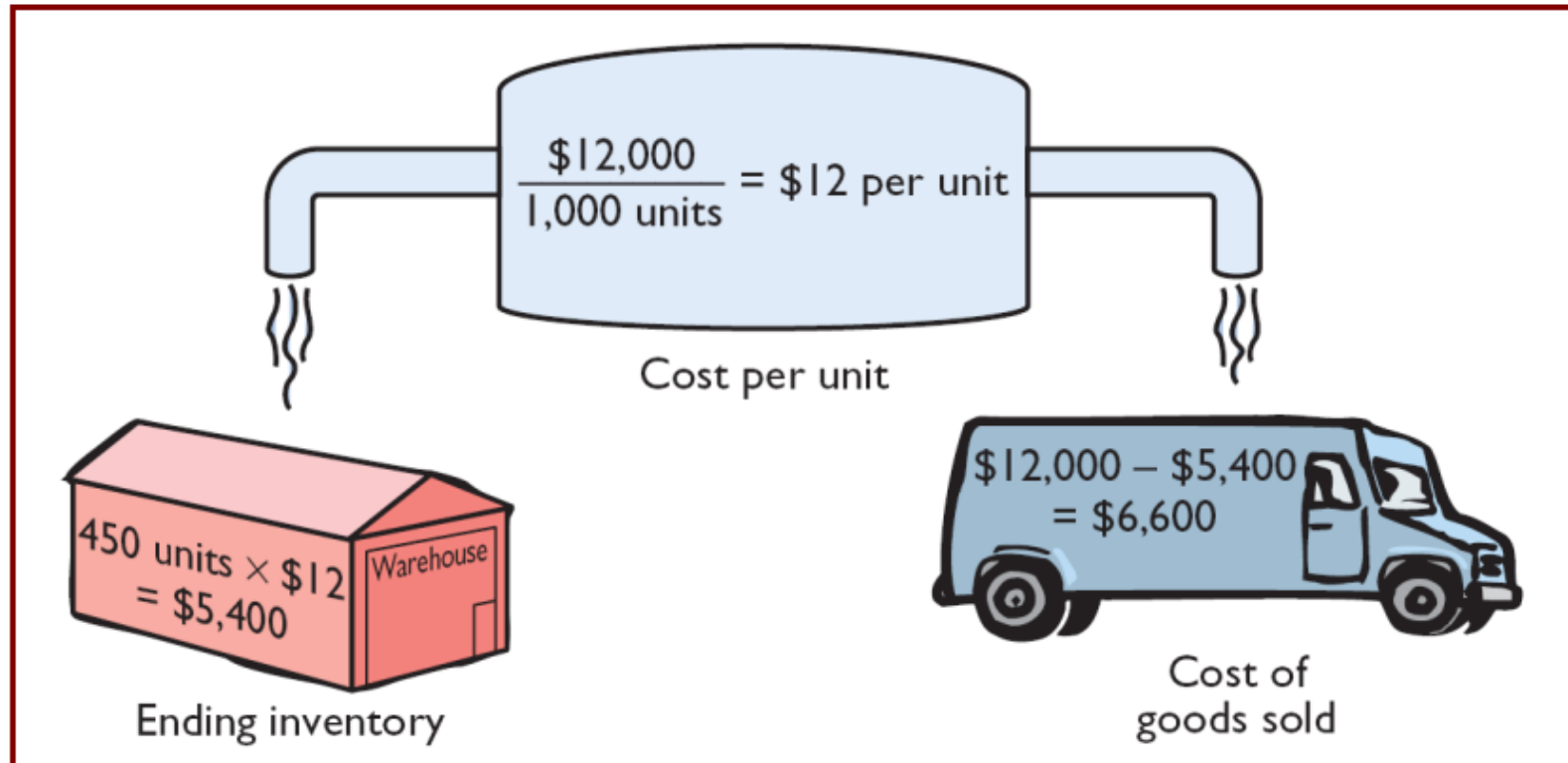
Illustration 6-8

COST OF GOODS AVAILABLE FOR SALE				
Date	Explanation	Units	Unit Cost	Total Cost
Jan. 1	Beginning inventory	100	\$10	\$ 1,000
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Aug. 24	Purchase	300	12	3,600
Nov. 27	Purchase	400	13	5,200
	Total	<u>1,000</u>		<u>\$12,000</u>
STEP 1: ENDING INVENTORY			STEP 2: COST OF GOODS SOLD	
\$12,000	÷ 1,000	= \$12.00	Cost of goods available for sale	\$12,000
Units	Unit Cost	Total Cost		

Inventory Costing

“Average Cost”

Illustration 6-8



Income Statement

Sales

- Cost of goods sold

Gross profit

- Operating expenses

Income before income tax

- Income tax

Net Income

$$\begin{array}{rcl} \text{Beginning inventory} + \text{Purchases} & = & \text{Cost of Goods available for sale} \\ & & - \text{Ending inventory} \\ & & \text{-----} \\ & & \text{Cost of goods sold} \end{array}$$

Financial

Income Statement Effects

ISHIKAWA ELECTRONICS Condensed Income Statements		
	<u>FIFO</u>	<u>Average-Cost</u>
Sales	\$11,500	\$11,500
Beginning inventory	1,000	1,000
Purchases	11,000	11,000
Cost of goods available for sale	12,000	12,000
Ending inventory	5,800	5,400
Cost of goods sold	6,200	6,600
Gross profit	5,300	4,900
Operating expenses	2,000	2,000
Income before income taxes ⁴	3,300	2,900
Income tax expense (30%)	990	870
Net income	\$ 2,310	\$ 2,030

LIFO Inventory Method

“Last-In-First-Out (LIFO)”

Appendix 6C

- **Latest goods** purchased are first to be sold.
- Seldom coincides with actual physical flow of merchandise.
- Exceptions include goods stored in piles, such as coal or hay.
- Under IFRS, LIFO is not permitted for financial reporting purposes.

LIFO Inventory Method

Illustration

Illustration 6-4

ISHIKAWA ELECTRONICS Astro Condensers				
<u>Date</u>	<u>Explanation</u>	<u>Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
Jan. 1	Beginning inventory	100	\$10	\$ 1,000
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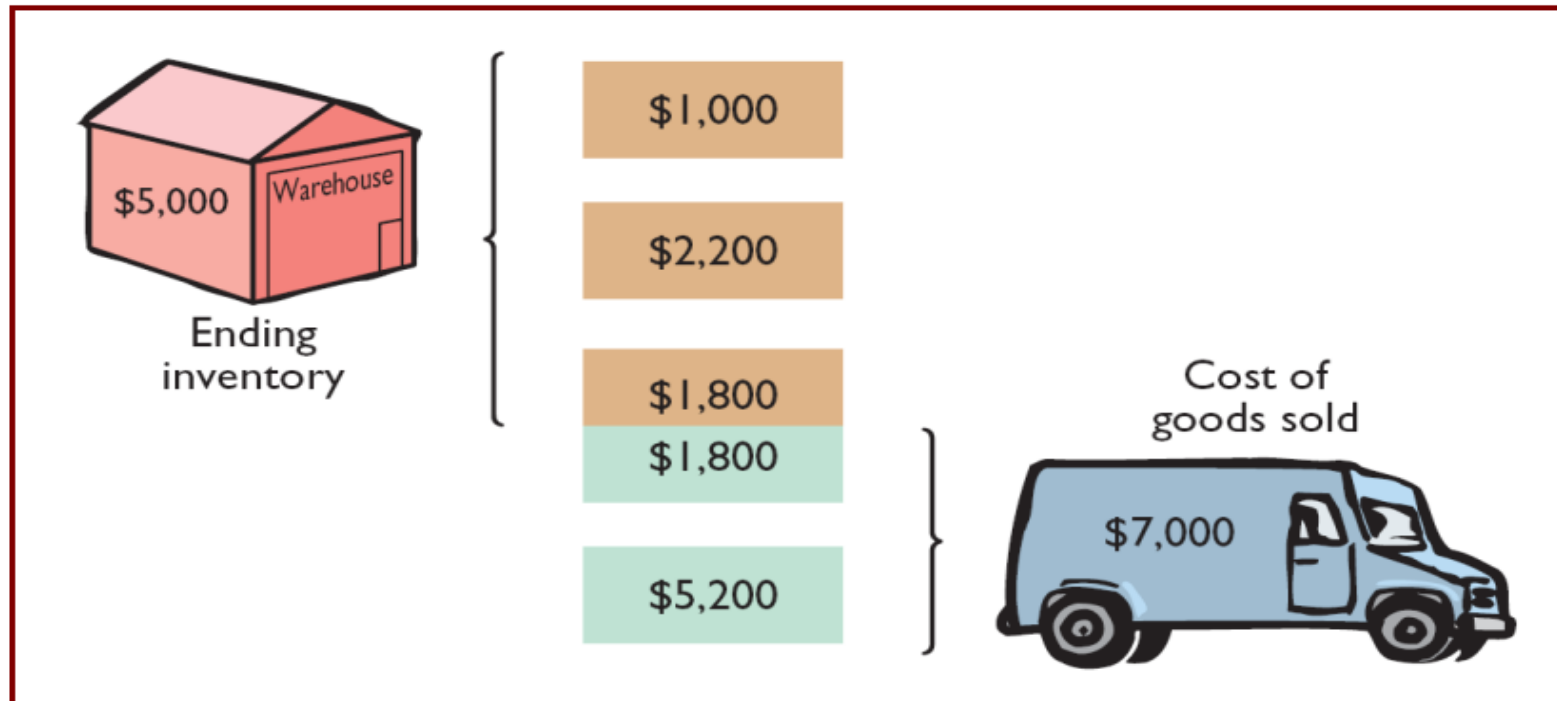
Illustration 6C-1

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LIFO Inventory Method

“Last-In-First-Out (LIFO)”

Illustration 6C-1



Inventory Costing

Statement of Financial Statement 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.
- A shortcoming of the average-cost method is that in a period of inflation, the costs allocated to ending inventory may be understated in terms of current cost.

Inventory Costing

Tax Effects

In a period of inflation:

- FIFO - inventory and net income higher.
- AVERAGE Cost - lower income taxes.

Inventory Costing

Using Cost Flow Methods Consistently

- Method should be used consistently, enhances comparability.
- Although consistency is preferred, a company may change its inventory costing method.

Inventory Costing

Lower-of-Cost-or-Net Realizable Value

When the value of inventory is lower than its cost

- Companies can “write down” the inventory to its net realizable value in the period in which the price decline occurs.
- Net realizable value refers to the net amount that a company expects to realize (receive) from the sale of inventory.

Inventory Costing

Lower-of-Cost-or-Net Realizable Value

Illustration: Assume that Ken Tuckie TV has the following lines of merchandise with costs and market values as indicated.

Illustration 6-10

	<u>Cost</u>	<u>Net Realizable Value</u>	<u>Lower-of-Cost-or-Net Realizable Value</u>
Flatscreen TVs	\$60,000	\$55,000	\$ 55,000
Satellite radios	45,000	52,000	45,000
DVD recorders	48,000	45,000	45,000
DVDs	15,000	14,000	14,000
Total inventory			<u><u>\$159,000</u></u>

Inventory Errors

Common Cause:

- Failure to count or price inventory correctly.
- Not properly recognizing the transfer of legal title to goods in transit.
- Errors affect both the income statement and statement of financial position.

Inventory Errors

Income Statement Effects

Inventory errors affect the computation of cost of goods sold and net income.

Illustration 6-11

$$\begin{array}{ccccccc} \text{Beginning} & & & & & & \\ \text{Inventory} & + & \text{Cost of} & - & \text{Ending} & = & \text{Cost of} \\ & & \text{Goods} & & \text{Inventory} & & \text{Goods} \\ & & \text{Purchased} & & & & \text{Sold} \end{array}$$

Illustration 6-12

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

Income Statement Effects

Inventory errors affect the computation of cost of goods sold and net income **in two periods**.

- An error in ending inventory of the current period will have a **reverse effect on net income of the next accounting period**.
- Over the two years, the total net income is correct because the errors **offset each other**.
- The ending inventory depends entirely on the accuracy of taking and costing the inventory.

Inventory Errors

Illustration 6-13

	2011		2012	
	Incorrect	Correct	Incorrect	Correct
Sales	\$ 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	60,000	60,000	80,000	83,000
Ending inventory	12,000	15,000	23,000	23,000
Cost of good 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

Combined income for 2-year period is correct.

(\$3,000)
Net Income
understated

\$3,000
Net Income
overstated

Inventory Errors

Statement of Financial Position Effects

Effect of inventory errors on the statement of financial position is determined by using the accounting equation:

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

Illustration 6-11

Illustration 6-14

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

Presentation

Statement of Financial Position - Inventory classified as current asset.

Income Statement - Cost of goods sold.

There also should be disclosure of

- 1) major inventory classifications,
- 2) basis of accounting (cost, or lower-of-cost-or-net realizable value), and
- 3) Cost method (specific identification, FIFO, or average-cost).

Analysis Using Inventory Turnover

Inventory management is a double-edged sword

1. **High Inventory Levels** - may incur high carrying costs (e.g., investment, storage, insurance, obsolescence, and damage).
2. **Low Inventory Levels** – may lead to stockouts and lost sales.

Statement Presentation and Analysis

Inventory turnover measures the number of times on average the inventory is sold during the period.

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

Days in inventory measures the average number of days inventory is held.

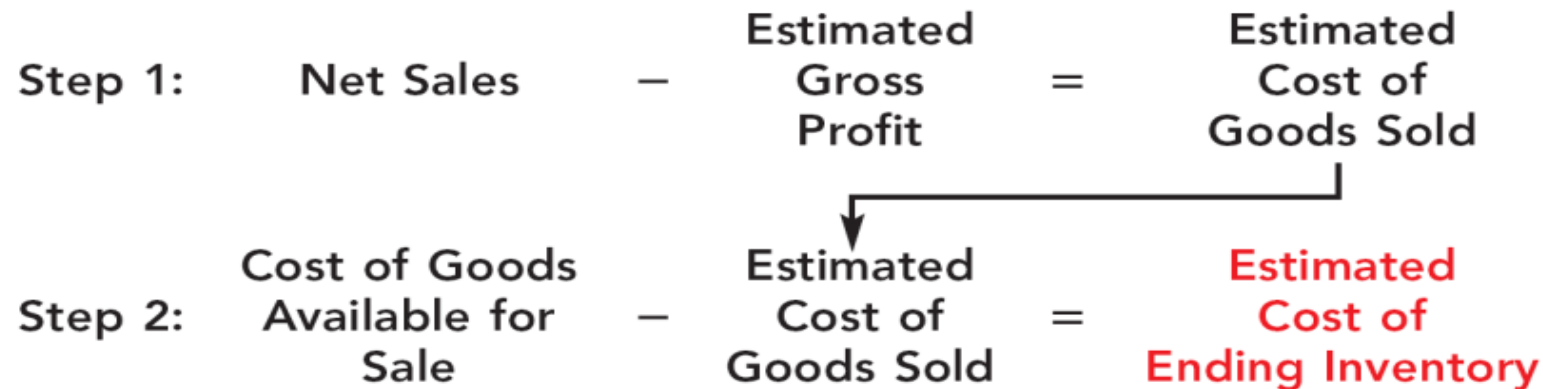
$$\text{Days in Inventory} = \frac{\text{Days in a Year (365)}}{\text{Inventory Turnover}}$$

Estimating Inventories

Gross Profit Method

The **gross profit method** estimates the cost of ending inventory by applying a gross profit rate to net sales.

Illustration 6B-1



Estimating Inventories

Illustration: Kishwaukee Company's records for January show net sales of \$200,000, beginning inventory \$40,000, and cost of goods purchased \$120,000. The company expects to earn a 30% gross profit rate. Compute the estimated cost of the ending inventory at January 31 under the gross profit method.

Step 1:

Net sales	\$200,000
Less: Estimated gross profit (30% × \$200,000)	<u>60,000</u>
Estimated cost of goods sold	<u><u>\$140,000</u></u>

Step 2:

Beginning inventory	\$ 40,000
Cost of goods purchased	<u>120,000</u>
Cost of goods available for sale	160,000
Less: Estimated cost of goods sold	<u>140,000</u>
Estimated cost of ending inventory	<u><u>\$ 20,000</u></u>

Illustration 6B-2