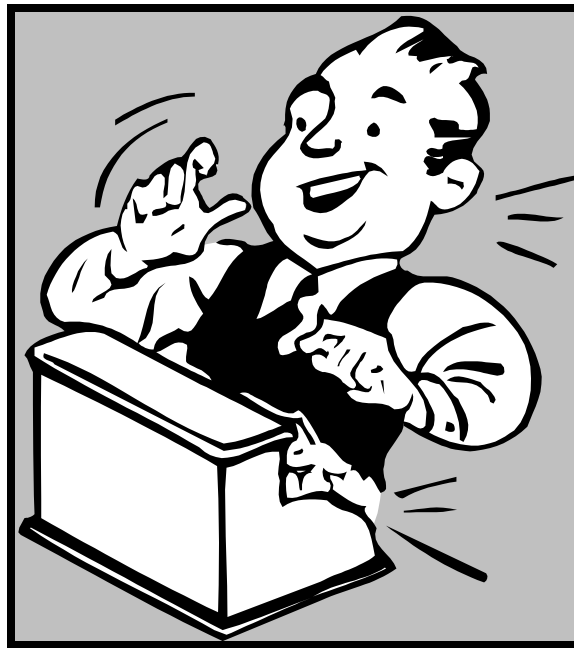


ACC101 – CHAPTER 5

Accounting for Inventories



Key Terms and Concepts to Know

Ownership:

Ownership includes all inventory owned by the purchaser, regardless of location or possession. The following items are included in inventory:

- Owned inventory at the company's location
- Inventory purchased FOB Shipping Point and still in-transit from the seller
- Inventory sold FOB Destination and still in-transit to the seller
- Owned inventory on consignment to others

Physical Inventory:

Inventory is physically counted to determine the quantity on hand.

Inventory Cost:

Cost is the total resources given up to acquire inventory and move it to the purchaser's place of business.

Cost may be assigned to units of inventory in one of four ways:

- Specific identification
- First-In, First Out (FIFO)
- Last-In, First-Out (LIFO)
- Weighted Average Cost

The actual application of these methods will vary somewhat depending on whether a perpetual or periodic inventory system is used.

Lower of Cost or Market:

As with all assets, inventory is recorded at cost when acquired. Over time, however, the cost of replacing the inventory with the same type of inventory (market cost) may fall below purchase cost. This situation requires a journal entry to record the decline in the value of the inventory on hand:

Cost of Goods Sold	xxx
Merchandise Inventory	xxx

Estimating Inventory Cost:

At times, a physical inventory of the merchandise on hand may not be possible or the inventory records may not be available. In these situations, estimates of the value on the inventory on hand and the cost of goods sold are required. The

Gross Profit Method and the **Retail Method** are used for these purposes.

Both methods rely on two fundamentals: the relationship among sales, cost of

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goods sold and gross profit and the relationship among goods available for sale, ending inventory and cost of goods sold.

Inventory Turnover ratio and Days Sales in Inventory ratio

Inventory Cost Flow Assumptions: FIFO, LIFO and Average Cost

Table #1

Status	# of Units	Unit Cost
Beginning Inventory	10	\$120
Purchased	40	\$125
Sold	20	
Purchased	50	\$130
Sold	20	
Sold	30	
Purchased	40	\$132
Sold	20	

1. Each time the units above are sold, how do we know which ones are sold?
2. We must make an assumption as to the order in which the units are sold:
 - a. Under FIFO – units are sold in the order in which they were purchased; first-in, first-out
 - b. Under LIFO – units are sold in reverse order; last-in, first-out
 - c. Under Avg. Cost – we calculate an average cost for all units.
3. Whether the company uses periodic or perpetual inventory procedures is also a factor:
 - a. Under Periodic – all sales transactions are ignored when calculating ending inventory.
 - b. Under Perpetual – proceed through each transaction, constantly updating inventory.

Example #1: FIFO/Periodic

According to Table #1 above, there are 50 units in the ending inventory. What is the cost of these units under FIFO if periodic inventory procedures are used?

Solution #1

The 50 units in the ending inventory consist of the 50 units purchased last:

$$\begin{array}{rcl} 40 \text{ units @ } \$132 & = & \$5,280 \\ 10 \text{ units @ } \$130 & = & \underline{\$1,300} \\ & & \$6,580 \end{array}$$

Example #2: LIFO/Periodic

According to Table #1 above, there are 50 units in the ending inventory. What is the cost of these units under LIFO if periodic inventory procedures are used?

Solution #2

The 50 units in the ending inventory consist of the oldest 50 units on hand:

$$\begin{array}{rcl} 10 \text{ units @ } \$120 & = & \$1,200 \\ 40 \text{ units @ } \$125 & = & \underline{\$5,000} \\ & & \$6,200 \end{array}$$

Example #3: Average Cost/Periodic

According to Table #1, there are 50 units in the ending inventory. What is the cost of these units under Average Cost if periodic inventory procedures are used?

Solution #3

Status	# of Units	Unit Cost	Extended Cost
Beginning Inventory	10	\$120	\$ 1,200
Purchased	40	\$125	\$ 5,000
Purchased	50	\$130	\$ 6,500
Purchased	40	\$132	\$ 5,280
Total	140 units		\$17,980

Average Cost: $17,980 / 140 = 128.43$ (rounded)

The 50 units in the ending inventory would cost \$128.43 each:

$$50 \text{ units @ } \$128.43 = \$6,421.50$$

Example #4: FIFO/Perpetual

According to Table #1 above, there are 50 units in the ending inventory. What is the cost of these units under FIFO if perpetual inventory procedures are used?

Solution #4

Transaction	Cost of Mdse Sold	Ending Inventory
Beginning Balance		10 units @ \$120
Purchased 40 units		10 units @ \$120 40 units @ \$125
Sold 20 units	10 units @ \$120 10 units @ \$125	30 units @ \$125
Purchased 50 units		30 units @ \$125 50 units @ \$130
Sold 20 units	20 units @ \$125	10 units @ \$125 50 units @ \$130
Sold 30 units	10 units @ \$125 20 units @ \$130	30 units @ \$130
Purchased 40 units		30 units @ \$130 40 units @ \$132
Sold 20 units	20 units @ \$130	10 units @ \$130 40 units @ \$132

Ending Inventory: 10 units @ \$130 = \$1,300
 40 units @ \$132 = \$5,280
 \$6,580

Example #5

Transaction	Cost of Mdse Sold	Ending Inventory
Beginning Balance		10 units @ \$120
Purchased 40 units		10 units @ \$120 40 units @ \$125
Sold 20 units	20 units @ \$125	10 units @ \$120 20 units @ \$125
Purchased 50 units		10 units @ \$120 20 units @ \$125 50 units @ \$130
Sold 20 units	20 units @ \$130	10 units @ \$120 20 units @ \$125 30 units @ \$130
Sold 30 units	30 units @ \$130	10 units @ \$120 20 units @ \$125
Purchased 40 units		10 units @ \$120 20 units @ \$125 40 units @ \$132
Sold 20 units	20 units @ \$132	10 units @ \$120 20 units @ \$125 20 units @ \$132

Ending Inventory:

10 units @ \$120	=	\$1,200
20 units @ \$125	=	\$2,500
20 units @ \$132	=	<u>\$2,640</u>
		\$6,340

Practice Problem #1

Transaction	# of Units	Unit Cost
Beginning Inventory	20	\$2,200
Purchase	25	\$2,250
Sold	10	
Sold	14	
Purchase	15	\$2,300
Sold	26	
Purchase	20	\$2,350

According to the table above, there are 30 units in the ending inventory. What is the cost of these units under each of the following assumptions?

- a. FIFO/Perpetual
- b. LIFO/Perpetual
- c. FIFO/Periodic
- d. LIFO/Periodic
- e. Average Cost/Periodic

Estimating Inventory Cost: Retail and Gross Profit Methods

The Retail Method

This method involves determining the relationship between the cost and the retail price of the inventory. To do this we use the cost of merchandise sold calculation at both cost and retail with one change. The last 2 lines of this calculation are done at the retail price only and are reversed—Cost of Merchandise Sold is deducted to find ending inventory. Cost of Merchandise Sold at Retail is equal to Sales.

	<u>Cost</u>	<u>Retail</u>
Merchandise Inventory, January 1	\$21,000	\$35,000
Add: Purchases in January	<u>42,000</u>	<u>70,000</u>
Merchandise Available for sale	\$63,000	\$105,000

At this point, the cost to retail % is calculated: $63,000 / 105,000 = 60\%$

Deduct: Cost of Mdse Sold at Retail (Sales)	<u>72,000</u>
Merchandise Inventory, January 31 (at retail)	\$ 33,000
Cost to retail %	<u>x 60%</u>
Merchandise Inventory, January 31 at cost:	\$ 19,800

Practice Problem #2

On the basis of the following data, estimate the cost of the merchandise inventory at June 30 by the retail method.

	<u>Cost</u>	<u>Retail</u>
June 1 Merchandise Inventory	\$148,200	\$228,000
June 1-30 Purchases (net)	624,000	960,000
June 1-30 Sales (net)		920,000

The Gross Profit Method

In this method, knowing the rate of gross profit—the percentage of sales that is gross profit—allows us to estimate the gross profit and thus the cost of mdse sold for the period. Knowing the cost of mdse sold enables us to estimate ending inventory. We use the cost of merchandise sold calculation, reversing the last two lines as we did in the retail method.

February 1 Merchandise Inventory	\$120,000
Feb. 1-29 Purchases	400,000
Sales, net	450,000
Estimated gross profit rate	40%

On the Income Statement, Sales – COMS = Gross Profit

Therefore, If 40% of sales is Gross Profit, then 60% of sales must be COMS

Merchandise Inventory, February 1	\$120,000
Add: Purchases	<u>400,000</u>
Merchandise Available for Sale	520,000
Deduct: COMS (60% of 450,000)	<u>270,000</u>
Ending Inventory	\$250,000

Practice Problem #3

The merchandise inventory was destroyed by fire on June 20. The following data were obtained form the accounting records:

April 1	Merchandise Inventory	\$ 180,000
Apr. 1-June 20	Purchases (net)	850,000
	Sales (net)	1,520,000
	Estimated gross profit rate	42%

Estimate the cost of the merchandise destroyed.

SAMPLE MULTIPLE CHOICE QUESTIONS

1. If the merchandise costs \$6,000, insurance in transit costs \$500, tariff costs \$50, processing the purchase order by the purchasing department costs \$35, and the company receiving dock personnel costs \$15, what is the total cost charged to the merchandise?
 - a. \$6,000
 - b. \$6,500
 - c. \$6,550
 - d. \$6,600

2. Merchandise inventory at the end of the year was inadvertently overstated. Which of the following statements correctly states the effect of the error on net income, assets and owner's equity?
 - a. Net income is overstated, assets are overstated, owner's equity is overstated.
 - b. Net income is overstated, assets are overstated, owner's equity is understated.
 - c. Net income is understated, assets are understated, owner's equity is understated.
 - d. Net income is understated, assets are understated, owner's equity is overstated.

3. Under which method of cost flows is the inventory assumed to be composed of the most recent costs?
 - a. average cost
 - b. first-in, first-out
 - c. last-in, first-out
 - d. weighted average

4. If merchandise inventory is being valued at cost and the price level is steadily rising, the method of costing that will yield the highest net income is?
 - a. periodic
 - b. FIFO
 - c. LIFO
 - d. Average

5. If the cost of an item of inventory is \$50, the current replacement cost is \$45, and the sales price is \$65, the amount included in inventory according to the lower of cost or market is:
 - a. \$20
 - b. \$65
 - c. \$50
 - d. \$45
6. Merchandise Inventory is reported on the balance sheet in the section entitled:
 - a. current liabilities
 - b. plant assets
 - c. current assets
 - d. owner's equity
7. The Number of days' sales in inventory
 - a. Measures the length of time it takes to acquire, sell, and replace the inventory.
 - b. Is computed by dividing the cost of merchandise sold by 365.
 - c. Measures the length of time it takes to sell the merchandise on credit and collect the account receivable.
 - d. Is about the same for all industries.

Use the following information to answer questions 8-10:

Acme Company just started business in August and they use the periodic inventory system. They made the following purchases during August:

August 1	300 units	\$1,560	<i>(total cost)</i>
August 12	400 units	2,340	
August 24	400 units	2,520	
August 30	<u>300 units</u>	<u>1,980</u>	
	1,400 units	\$8,400	

8. A physical count of the inventory on August 31 reveals that there are 500 units on hand. Using a FIFO cost flow assumption, the value of the ending inventory on August 31 is:
 - a. \$2,730
 - b. \$5,670
 - c. \$5,160
 - d. \$3,240

9. A physical count of the inventory on August 31 reveals that there are 500 units on hand. Using a LIFO cost flow assumption, the value of the ending inventory on August 31 is:
- a. \$3,240
 - b. \$2,730
 - c. \$5,670
 - d. \$5,160
10. A physical count of the inventory on August 31 reveals that there are 500 units on hand. Using the average cost method, the cost of goods sold for August is:
- a. \$5,400
 - b. \$8,400
 - c. \$2,300
 - d. \$3,000

Use the following information to answer questions 11-13

Cole, Inc. uses perpetual inventory procedures and made the following sales and purchases during the month of September:

September 1	Balance	200 units	\$150
September 5	Sold	110 units	
September 8	Purchased	400 units	\$155
September 10	Sold	320 units	
September 15	Purchased	400 units	\$160
September 20	Sold	240 units	
September 25	Sold	230 units	
September 30	Purchased	300 units	\$165

11. A physical count of the inventory on September 30 reveals that there are 400 units on hand. Using a FIFO cost flow assumption, the value of the ending inventory on August 31 is:
- a. \$60,000
 - b. \$66,000
 - c. \$65,500
 - d. \$64,550

12. A physical count of the inventory on September 30 reveals that there are 400 units on hand. Using a LIFO cost flow assumption, the value of the ending inventory on August 31 is:
- \$64,550
 - \$65,500
 - \$61,000
 - \$60,000
13. A physical count of the inventory on September 30 reveals that there are 400 units on hand. Using a LIFO cost flow assumption, determine the cost of goods sold:
- \$140,000
 - \$144,500
 - \$140,950
 - \$141,750
14. Olson's beginning inventory totaled \$180,000. During the year they purchased \$1,200,000 of merchandise and had sales of \$1,600,000. Their gross profit rate is 40%. If the ending inventory is destroyed by fire, estimate the cost of merchandise destroyed.
- \$180,000
 - \$480,000
 - \$740,000
 - \$420,000
15. On the basis of the following data, estimate the cost of the merchandise inventory at May 31 by the retail method:
- | | | | |
|----------|-----------------------------|-----------|-----------|
| May 1 | Merchandise Inventory | \$234,260 | \$360,400 |
| May 1-31 | Purchases (net) | \$565,500 | 870,000 |
| | Sales (net) | | 750,000 |
| | Estimated gross profit rate | | 40% |
- \$312,260
 - \$480,400
 - \$288,240
 - \$192,160

SOLUTIONS TO PRACTICE PROBLEMS

Practice Problem #1

A. FIFO/Perpetual

Transaction	Cost of Mdse Sold	Ending Inventory
Beginning Balance		20 units @ \$2,200
Purchased 25 units		20 units @ \$2,200 25 units @ \$2,250
Sold 10 units	10 units @ \$2,200	10 units @ \$2,200 25 units @ \$2,250
Sold 14 units	10 units @ \$2,200 4 units @ \$2,250	21 units @ \$2,250
Purchased 15 units		21 units @ \$2,250 15 units @ \$2,300
Sold 26 units	21 units @ \$2,250 5 units @ \$2,300	10 units @ \$2,300
Purchased 20 units		10 units @ \$2,300 20 units @ \$2,350

Ending Inventory: 10 units @ \$2,300 = \$23,000
 20 units @ \$2,350 = \$47,000
 \$70,000

B. LIFO/Perpetual

Transaction	Cost of Mdse Sold	Ending Inventory
Beginning Balance		20 units @ \$2,200
Purchased 25 units		20 units @\$2,200 25 units @ \$2,250
Sold 10 units	10 units @ \$2,250	20 units @ \$2,200 15 units @ \$2,250
Sold 14 units	14 units @ \$2,250	20 units @ \$2,200 1 unit @ \$2,250
Purchased 15 units		20 units @ \$2,200 1 unit @ \$2,250 15 units @ \$2,300
Sold 26 units	15 units @ \$2,300 1 unit @ \$2,250 10 units @ \$2,200	10 units @ \$2,200
Purchased 20 units		10 units @ \$2,200 20 units @ \$2,350

Ending Inventory: 10 units @ \$2,200 = \$22,000
 20 units @ \$2,350 = \$47,000
 \$69,000

C. FIFO/Periodic

Ending Inventory: 20 units @ \$2,350 = \$47,000
 10 units @ \$2,300 = \$23,000
 \$70,000

D. LIFO/Periodic

Ending Inventory: 20 units @ \$2,200 = \$44,000
 10 units @ \$2,250 = \$22,500
 \$66,500

E. Average Cost/Periodic

Status	# of Units	Unit Cost	Extended Cost
Beginning Inventory	20	\$2,200	\$ 44,000
Purchase	25	\$2,250	\$ 56,250
Purchase	15	\$2,300	\$ 34,500
Purchase	20	\$2,350	\$ 47,000
Total	80 units		\$ 181,750

Average Cost: $181,750 / 80 = 2,271.875$

30 units @ \$2,271.875 = \$68,156.25

Practice Problem #2

	<u>Cost</u>	<u>Retail</u>
Merchandise Inventory, June	\$148,200	\$ 228,000
Add: Purchases in June	<u>624,000</u>	<u>960,000</u>
Merchandise Available for sale	\$772,200	\$1,188,000

(Cost to Retail %: $772,200 / 1,188,000 = 65\%$)

Deduct: Sales (at retail)	<u>920,000</u>
Merchandise Inventory, June 30 (at retail)	\$ 268,000
Cost to retail %	<u>x 65%</u>
Merchandise Inventory, June 30 at cost:	\$174,200

Practice Problem #3

Merchandise Inventory, April 1	\$ 180,000
Add: Purchases	<u>850,000</u>
Merchandise Available for Sale	1,030,000
Deduct: COMS (58% of 1,520,000)	<u>881,600</u>
Ending Inventory (estimated cost of mdse destroyed)	\$148,400

SOLUTIONS TO MULTIPLE CHOICE QUESTIONS

1. C: (6,000 mdse + 500 ins. + 50 tariff)
1. A
2. B
3. B
4. D
5. C
6. A
7. D: (300 units @ \$1,980 + 200 units @ \$1,260 = \$3,240)
8. B: (300 units @ \$1,560 + 200 units @ \$1,170 = \$2,730)
9. D: (8,400 cost / 1,400 units = \$6 per unit; 500 units * 6 = \$3,000)
10. C

Transaction	Cost of Mdse Sold	Ending Inventory
Beginning Balance		200 units @ \$150
Sold 110 units	110 units @ \$150	90 units @ \$150
Purchased 400 units		90 units @ \$150 400 units @ \$155
Sold 320 units	90 units @ \$150 230 units @ \$155	170 units @ \$155
Purchased 400 units		170 units @ \$155 400 units @ \$160
Sold 240 units	170 units @ \$155 70 units @ \$160	330 units @ \$160
Sold 230 units	230 units @ \$160	100 units @ \$160
Purchased 300 units		100 units @ \$160 300 units @ \$165

11. A

Transaction	Cost of Mdse Sold	Ending Inventory
Beginning Balance		200 units @ \$150
Sold 110 units	110 units @ \$150	90 units @ \$150
Purchased 400 units		90 units @ \$150 400 units @ \$155
Sold 320 units	320 units @ \$155	90 units @ \$150 80 units @ \$155
Purchased 400 units		90 units @ \$150 80 units @ \$155 400 units @ \$160
Sold 240 units	240 units @ \$160	90 units @ \$150 80 units @ \$155 160 units @ \$160
Sold 230 units	160 units @ \$160 70 units @ \$155	90 units @ \$150 10 units @ \$155
Purchased 300 units		90 units @ \$150 10 units @ \$155 300 units @ \$165

13. C Sum of Cost of Mdse Sold column in 12

14. D

Beginning Inventory	180,000
Add: Purchases	<u>1,200,000</u>
Mdse Available for Sale	1,380,000
COMS (1,600,000 * 60%)	<u>960,000</u>
Ending Inventory	420,000

15.

	Cost	Retail
Beginning Inventory	\$234,260	\$ 360,400
Add: Purchases	<u>565,500</u>	<u>870,000</u>
Mdse Available for Sale	799,760	1,230,400
(Cost to Retail %: $799,760 / 1,230,400 = 65\%$)		
Deduct: Sales		<u>750,000</u>
Ending Inventory at retail		480,400
Cost to retail ratio		<u>x 65%</u>
Ending Inventory at cost		\$312,260