

Intermediate Accounting

CHAPTER THREE

INVENTORY

Finance & Banking Department

2021-2022

INVENTORY

Inventories are asset items that a company holds for sale in the ordinary course of business, or goods that it will use or consume in the production of goods to be sold. The description and measurement of inventory require careful attention. The investment in inventories is frequently the largest current asset of merchandising (retail) and manufacturing businesses.

TYPES OF INVENTORY

- **Merchandising Inventory**

Wholesale and retail companies purchase goods that are primarily in finished form. These companies are intermediaries in the process of moving goods from the manufacturer to the end-user. They often are referred to as merchandising companies and their inventory as merchandise inventory. The cost of merchandise inventory includes the purchase price plus any other costs necessary to get the goods in condition and location for sale.

- **Manufacturing Inventories**

Unlike merchandising companies, manufacturing companies actually produce the goods they sell to wholesalers, retailers, other manufacturers, or consumers. Inventory for a manufacturer consists of (1) raw materials; (2) work in process, and (3) finished goods.

Raw materials: represent the cost of components purchased from suppliers that will become part of the finished product. For example, Hewlett-Packard's raw materials inventory includes semiconductors, circuit boards, plastic, and glass that go into the production of personal computers.

Work-in-process: inventory refers to the products that are not yet complete in the manufacturing process. The cost of work in process includes the cost of raw materials used in production, the cost of labor that can be directly traced to the goods in process, and an allocated portion of other manufacturing costs, called manufacturing overhead. Overhead costs include electricity and other utility costs to operate the manufacturing facility, depreciation of manufacturing equipment, and many other manufacturing costs that cannot be directly linked to the production of specific goods.

Finished goods are goods that have been completed in the manufacturing process but have not yet been sold. They have reached their final stage and now await sale to a customer. Their cost includes the cost of all raw materials and work-in-process used in production.

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Merchandising Company
Wal-Mart Stores, Inc.
Balance Sheet

January 31, 2015

Current assets (in millions)	
Cash and cash equivalents	\$ 9,135
Receivables, net	6,778
Inventories	45,141
Prepaid expenses and other	2,224
Total current assets	<u>\$63,278</u>


Manufacturing Company
Sherwin-Williams Company
Balance Sheet

December 31, 2014

Current assets (in thousands)	
Cash and cash equivalents	\$ 40,732
Accounts receivable, less allowance	1,130,565
Inventories:	
Finished goods	\$841,784
Work in process and raw materials	191,743
	1,033,527
Deferred income taxes	109,087
Other current assets	252,869
Total current assets	<u>\$2,566,780</u>

TYPES OF INVENTORY SYSTEMS

Perpetual Inventory System

A perpetual inventory system continuously tracks changes in the Inventory account. That is, a company records all purchases and sales (issues) of goods directly in the Inventory account as they occur. The accounting features of a perpetual inventory system are as follows.

- 1- Purchases of merchandise for resale or raw materials for production are debited to Inventory rather than to Purchases.
- 2- Freight-in is debited to Inventory, not Purchases. Purchase returns and allowances and purchase discounts are credited to Inventory rather than to separate accounts.
- 3- Cost of goods sold is recorded at the time of each sale by debiting Cost of Goods Sold and crediting Inventory.
- 4- A subsidiary ledger of individual inventory records is maintained as a control measure. The subsidiary records show the quantity and cost of each type of inventory on hand.

The perpetual inventory system provides a continuous record of the balances in both the Inventory account and the Cost of Goods Sold account.

Periodic System

Under a periodic inventory system, a company determines the quantity of inventory on hand only periodically, as the name implies. To do so, a company does the following.

- 1- It records all acquisitions of inventory during the accounting period by debiting the Purchases account.
- 2- A company then adds the total in the Purchases account at the end of the accounting period to the cost of the inventory on hand at the beginning of the period. This sum determines the total cost of the goods available for sale during the period.

- 3- To compute the cost of goods sold, the company then subtracts the ending inventory from the cost of goods available for sale.

Note that under a periodic inventory system, the cost of goods sold is a residual amount that depends on a physical count of ending inventory. This process is referred to as "taking a physical inventory." Companies that use the periodic system take a physical inventory at least once a year.

Comparing Perpetual and Periodic Systems

To illustrate the difference between a perpetual and a periodic system, assume that a Company had the following transactions during the current year.

The Lothridge Wholesale Beverage Company purchases soft drinks from producers and then sells them to retailers. The company began 2018 with merchandise inventory of \$120,000 on hand. During 2018 additional inventory transactions include:

- Purchases of merchandise on account totaled \$620,000, with terms 2/10, n/30.
- Freight charges paid by Lothridge were \$16,000.
- Merchandise with a cost of \$20,000 was returned to suppliers for credit.
- All purchases on account were paid within the discount period.
- Sales on account totaled \$830,000. The cost of soft drinks sold was \$550,000.
- Inventory remaining on hand at the end of 2018 totaled \$174,000.

The above transactions are recorded in summary form according to both the perpetual and periodic inventory systems using the gross method:

(\$ in thousands)

Perpetual System		Periodic System	
Purchases			
Inventory	620	Purchases	620
Accounts payable	620	Accounts payable	620
Freight			
Inventory	16	Freight-in	16
Cash.....	16	Cash	16
Returns			
Accounts payable	20	Accounts payable	20
Inventory	20	Purchase returns	20
Discounts			
Accounts Payable	600	Accounts Payable	600
Inventory (\$600 × 2%)	12	Purchase discounts (\$600 × 2%)	12
Cash	588	Cash	588
Sales			
Accounts receivable	830	Accounts receivable	830
Sales revenue	830	Sales revenue	830
Cost of goods sold	550	No entry	
Inventory	550		

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And also you can see this example for **Fesmire** Company

Beginning inventory	100 units at \$6 = \$ 600
Purchases	900 units at \$6 = \$5,400
Sales	600 units at \$12 = \$7,200
Ending inventory	400 units at \$6 = \$2,400

Fesmire records these transactions during the current year as shown below:

Perpetual Inventory System			Periodic Inventory System		
Beginning inventory, 100 units at \$6					
The Inventory account shows the inventory on hand at \$600.			The Inventory account shows the inventory on hand at \$600.		
Purchase 900 units at \$6					
Inventory	5,400		Purchases	5,400	
Accounts Payable		5,400	Accounts Payable		5,400
Sale of 600 units at \$12					
Accounts Receivable	7,200		Accounts Receivable	7,200	
Sales Revenue		7,200	Sales Revenue		7,200
Cost of Goods Sold	3,600				(No entry)
(600 at \$6)					
Inventory		3,600			
End-of-period entries for inventory accounts, 400 units at \$6					
No entry necessary.			Inventory (ending, by count) 2,400		
The Inventory account shows the ending balance of \$2,400 (\$600 + \$5,400 - \$3,600).			Cost of Goods Sold 3,600		
			Purchases 5,400		
			Inventory (beginning) 600		

Inventory Cost Flow Assumptions

Regardless of whether the perpetual or periodic system is used, it's necessary to assign dollar amounts to the physical quantities of goods sold and goods remaining in ending inventory. Unless each item of inventory is specifically identified and traced through the system, assigning dollars is accomplished by making an assumption regarding how units of goods) and their associated costs) flow through the system. We examine the common cost flow assumptions next. In previous illustrations, dollar amounts of the cost of goods sold and the cost of ending inventory were assumed known. However, if various portions of inventory are acquired at different costs, we need a way to decide which units were sold and which remain in inventory. The below illustration will help explain.

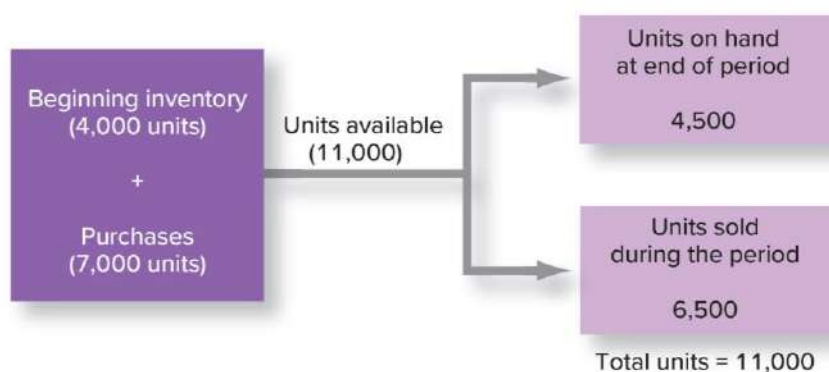
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The Browning Company has the following inventory information for 2018:

Beginning Inventory and Purchases During 2018			
Date	Units	Unit Cost*	Total Cost
Jan. 1 (Beginning Inventory)	4,000	\$5.50	\$22,000
Purchases:			
Jan. 17	1,000	6.00	6,000
Mar. 22	3,000	7.00	21,000
Oct. 15	3,000	7.50	22,500
Goods available for sale	<u>11,000</u>		<u>\$71,500</u>
Sales			
Date of Sale	Units		
Jan. 10	2,000		
Apr. 15	1,500		
Nov. 20	3,000		
Total	<u>6,500</u>		

*Includes purchase price and cost of freight.

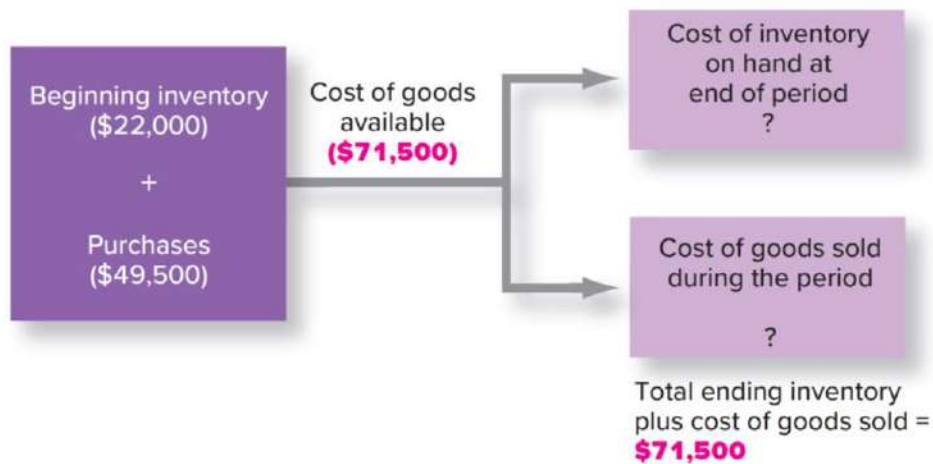
Browning began the year with 4,000 units and purchased another 7,000 units, so there were 11,000 units available for sale. Of this amount, 6,500 units were sold. This means 4,500 units remain in ending inventory.



What is the cost of the 6,500 units sold? In other words, which of the 11,000 units available for sale were sold? If all units, including beginning inventory, were purchased at the same price, then the answer would be simple. However, that rarely is the case. Using the numbers given, let's consider the question as follows:

Beginning inventory (4,000 units @ \$5.50)	\$ 22,000
Plus: Purchases (7,000 units @ various prices)	<u>49,500</u>
Cost of goods available for sale (11,000 units)	\$71,500
Less: Ending inventory (4,500 units @ ?)	<u>?</u>
Cost of goods sold (6,500 units @ ?)	<u>?</u>

The **\$71,500** in cost of goods available for sale must be allocated to ending inventory and cost of goods sold.



Let's turn our attention now to the various inventory methods that can be used to achieve the allocation between ending inventory and cost of goods sold.

Inventory Methods Evaluation

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

USED METHODS UNDER PERIODICAL INVENTORY SYSTEMS

A) Periodical Inventory System

1- Average Cost:

The average cost method assumes that cost of goods sold and ending inventory consist of a mixture of all the goods available for sale. The average unit cost applied to goods sold or to ending inventory is not simply an average of the various unit costs of purchases during the period but an average unit cost weighted by the number of units acquired at the various unit costs.

In a periodic inventory system, this weighted average is calculated only at the end of the period as follows:

$$\text{Weighted-average unit cost} = \frac{\text{Cost of goods available for sale}}{\text{Quantity available for sale}}$$

The calculation of average cost is demonstrated in this illustration as follows:

Beginning inventory (4,000 units @ \$5.50)	\$ 22,000
Plus: Purchases (7,000 units @ various prices)	49,500
Cost of goods available for sale (11,000 units)	71,500
Less: Ending inventory* (determined below)	(29,250)
Cost of goods sold (6,500 units)	\$42,250
*Cost of Ending Inventory:	
Weighted-average unit cost = $\frac{\$71,500}{11,000 \text{ units}} = \6.50	
4,500 units × \$6.50 =	\$29,250

Cost of goods sold also could be determined directly by multiplying the weighted average unit cost of \$6.50 by the number of units sold (**\$6.50 × 6,500 units = \$42,250**).

2- First-in First-out Method - FIFO

Recall that we determine physical quantities on hand in a periodic inventory system by taking a physical count. Costing the 4,500 units in ending inventory this way automatically gives us the cost of goods sold as well. Using the numbers from our illustration, we determine cost of goods sold to be \$38,500 by subtracting the \$33,000 ending inventory from \$71,500 cost of goods available for sale as shown in Illustration:

Beginning inventory (4,000 units @ \$5.50)	\$22,000		
Plus: Purchases (7,000 units @ various prices)	49,500		
Cost of goods available for sale (11,000 units)	71,500		
Less: Ending inventory* (determined below)	(33,000)		
Cost of goods sold (6,500 units)	\$38,500		
*Cost of Ending Inventory:			
Date of Purchase	Units	Unit Cost	Total Cost
Mar. 22	1,500	\$7.00	\$ 10,500
Oct. 15	3,000	7.50	22,500
Total	4,500		\$33,000

Of course, the 6,500 units sold could be costed directly as follows:

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<u>Date of Purchase</u>	<u>Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
Jan. 1 (Beginning inventory)	4,000	\$5.50	\$ 22,000
Jan. 17	1,000	6.00	6,000
Mar. 22	1,500	7.00	10,500
Total	<u>6,500</u>		<u>\$38,500</u>

3- Last-in First-out - LIFO Method (Under Periodical Inventory System)

The cost of ending inventory determined to be \$25,000 (calculated below) by the LIFO assumption and using a periodic system is subtracted from cost of goods available for sale to arrive at the cost of goods sold of \$46,500 as shown in Illustration.

Beginning inventory (4,000 units @ \$5.50)	\$ 22,000		
Plus: Purchases (7,000 units @ various prices)	49,500		
Cost of goods available for sale (11,000 units)	<u>71,500</u>		
Less: Ending inventory* (determined below)	<u>(25,000)</u>		
Cost of goods sold (6,500 units)	<u>\$46,500</u>		
*Cost of Ending Inventory:			
<u>Date of Purchase</u>	<u>Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
Jan. 1 (Beginning inventory)	4,000	\$5.50	\$22,000
Jan. 17	500	6.00	3,000
Total	<u>4,500</u>		<u>\$25,000</u>

The 6,500 sold could be costed directly as follows:

<u>Date of Purchase</u>	<u>Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
Jan. 17	500	\$6.00	\$ 3,000
Mar. 22	3,000	7.00	21,000
Oct. 15	3,000	7.50	22,500
Total	<u>6,500</u>		<u>\$46,500</u>

B) Perpetual Inventory System

1- First-in First-out Method - FIFO

The ending inventory and cost of goods sold will have the same amounts in a perpetual inventory system as in a periodic inventory system when FIFO is used. This is because the same units and costs are first in and first out whether cost of goods sold is determined as each sale is made or at the end of the period as a residual amount. The application of FIFO in a perpetual system is shown in Illustration

Date	Purchased	Sold	Balance
Beginning inventory	4,000 @ \$5.50 = \$22,000		4,000 @ \$5.50 = \$22,000
Jan. 10		2,000 @ \$5.50 = \$ 11,000	2,000 @ \$5.50 = \$11,000
Jan. 17	1,000 @ \$6.00 = \$ 6,000		2,000 @ \$5.50 } 1,000 @ \$6.00 } \$17,000
Mar. 22	3,000 @ \$7.00 = \$21,000		2,000 @ \$5.50 } 1,000 @ \$6.00 } \$38,000 3,000 @ \$7.00 }
Apr. 15		1,500 @ \$5.50 = \$ 8,250	500 @ \$5.50 } 1,000 @ \$6.00 } \$29,750 3,000 @ \$7.00 }
Oct. 15	3,000 @ \$7.50 = \$22,500		500 @ \$5.50 } 1,000 @ \$6.00 } \$52,250 3,000 @ \$7.00 } 3,000 @ \$7.50 }
Nov. 20		500 @ \$5.50 + 1,000 @ \$6.00 + 1,500 @ \$7.00 = \$ 19,250	1,500 @ \$7.00 } 3,000 @ \$7.50 } <u>\$33,000</u>
	Total cost of goods sold	= <u>\$38,500</u>	

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2- Last-in First-out - LIFO The application of LIFO in a perpetual system is shown in Illustration. Each time inventory is purchased or sold, the LIFO layers are adjusted.

Date	Purchased	Sold	Balance
Beginning inventory	4,000 @ \$5.50 = \$22,000		4,000 @ \$5.50 = \$22,000
Jan. 10		2,000 @ \$5.50 = \$ 11,000	2,000 @ \$5.50 = \$ 11,000
Jan. 17	1,000 @ \$6.00 = \$6,000		2,000 @ \$5.50 } 1,000 @ \$6.00 } \$ 17,000
Mar. 22	3,000 @ \$7.00 = \$21,000		2,000 @ \$5.50 } 1,000 @ \$6.00 } 3,000 @ \$7.00 } \$ 38,000
Apr. 15		1,500 @ \$7.00 = \$ 10,500	2,000 @ \$5.50 } 1,000 @ \$6.00 } 1,500 @ \$7.00 } \$ 27,500
Oct. 15	3,000 @ \$7.50 = \$22,500		2,000 @ \$5.50 } 1,000 @ \$6.00 } 1,500 @ \$7.00 } 3,000 @ \$7.50 } \$ 50,000
Nov. 20		3,000 @ \$7.50 = <u>\$ 22,500</u>	2,000 @ \$5.50 } 1,000 @ \$6.00 } 1,500 @ \$7.00 } <u>\$27,500</u>
	Total cost of goods sold	= <u>\$44,000</u>	

3- Average Cost

The weighted-average unit cost in a perpetual inventory system becomes a moving-average unit cost. A new weighted-average unit cost is calculated each time additional units are purchased. The new average is determined after each purchase.

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

First-In, First-Out (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) } \$ 6,800 (300 @ \$12)
September 10		(100 @ \$10) (200 @ \$11) (250 @ \$12)	(50 @ \$12) \$ 600
		<u>\$6,200</u>	
November 27	(400 @ \$13) \$5,200		(50 @ \$12) } (400 @ \$13) } \$5,800

Illustration 6A-2

Perpetual system—FIFO

Cost of goods sold

Ending inventory

Activate Window
Go to Settings to act

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Last-In, First-Out (LIFO)**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) } \$6,800 (300 @ \$12) }
September 10		(300 @ \$12) (200 @ \$11) (50 @ \$10)	(50 @ \$10) \$ 500
		\$6,300	
November 27	(400 @ \$13) \$5,200		(50 @ \$10) } (400 @ \$13) } \$5,700

Cost of goods sold

Ending inventory

Average-Cost**Illustration 6A-4**Perpetual system—
average-cost 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

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EXAMPLE 1

The company has the same inventory, purchases, and sales data for the month of March as shown earlier:

Inventory:	March 1	200 units	@ \$4.00	\$2,800
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) average-cost.

EXAMPLE 2

Jensen's Department Store uses a perpetual inventory system. Data for product E2-D2 include the following purchases.

<u>Date</u>	<u>Number Unit of</u>	<u>Units Price</u>
May 7	50	\$10
July 28	30	13

On June 1 Jensen's sold 30 units, and on August 27, 40 more units. Prepare the perpetual inventory schedule for the above transactions using (1) FIFO, (2) LIFO, and (3) moving-average cost.

EXAMPLE 3

Boarders sells a snowboard, Xpert, that is popular with snowboard enthusiasts. Below is information relating to Boarders's purchases of Xpert snowboards during September. During the same month, 121 Xpert snowboards were sold. Boarders uses a periodic inventory system.

<u>Date</u>	<u>Explanation</u>	<u>Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
Sept. 1	Inventory	26	\$ 97	\$ 2,522
Sept.	Purchases	45	102	4,590
Sept. 19	Purchases	20	104	2,080
Sept. 26	Purchases	<u>50</u>	105	<u>5,250</u>
	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?

EXAMPLE 4

Yount Company reports the following for the month of June.

	<u>Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
June 1 Inventory	200	\$5	\$1,000
12 Purchase	300	6	1,800
23 Purchase	500	7	3,500
30 Inventory	120		

Instructions

- Compute the cost of the ending inventory and the cost of goods sold under (1) FIFO and (2) LIFO.
- Which costing method gives the higher ending inventory? Why?
- Which method results in the higher cost of goods sold? Why?

EXAMPLE 5

Jones 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, Jones had 80 units in ending inventory.

Instructions

- Compute the cost of the ending inventory and the cost of goods sold under (1) FIFO, (2) LIFO, and (3) average-cost.
- Which cost flow method would result in the highest net income?
- Which cost flow method would result in inventories approximating current cost in the balance sheet?
- Which cost flow method would result in Jones paying the least taxes in the first year?

EXAMPLE 6

Klugman 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, Klugman purchased 6 units at \$660 each. The company sold 2 units on January 8 and 4 units on January 15.

Instructions

Compute the ending inventory under (1) FIFO, (2) LIFO, and (3) moving-average cost.

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EXAMPLE 7

Yount Company reports the following for the month of June.

	<u>Date</u>	<u>Explanation</u>	<u>Units</u>	<u>Unit Cost</u>	<u>Total Cost</u>
June	1	Inventory	200	\$5	\$1,000
	12	Purchase	300	6	1,800
	23	Purchase	500	7	3,500
	30	Inventory	120		

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 400 units occurred on June 15 for a selling price of \$8 and a sale of 480 units on June 27 for \$9.
- (b) How do the results differ from E6-6 and E6-8?
- (c) Why is the average unit cost not \$6 $[(\$5 + \$6 + \$7) \div 3 = \$6]$?

EXAMPLE 8

Information about Boarders is presented in E6-4. Additional data regarding Boarders' sales of Xpert snowboards are provided below. Assume that Boarders uses a perpetual inventory system.

	<u>Date</u>		<u>Units</u>	<u>Unit Price</u>	<u>Total Cost</u>
	Sept. 5	Sale	12	\$199	\$ 2,388
	Sept. 16	Sale	50	199	9,950
	Sept. 29	Sale	<u>59</u>	209	<u>12,331</u>
		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 E6-4).
- (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?

EXAMPLE 9

Vasquez Ltd. is a retailer operating in Edmonton, Alberta. Vasquez 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 Vasquez Ltd. for the month of January 2010.

<u>Date</u>	<u>Description</u>	<u>Quantity</u>	<u>Selling Price Unit Cost or</u>
December 31	Ending inventory	150	\$17
January 2	Purchase	100	21
January 6	Sale	150	40
January 9	Sale return	10	40
January 9	Purchase	75	24
January 10	Purchase return	15	24
January 10	Sale	50	45
January 23	Purchase	100	28
January 30	Sale	110	50

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.

(b) Compare results for the three cost flow assumptions.