

INVENTORY MANAGEMENT

Lecture 3

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Inventory as Money

Because inventory is a money, you should care about the financial aspects of inventory?

Accounting for Inventories

As we say before, There are three basic types of inventory:

1. Raw Materials —raw materials inventory is made up of goods that will be used in the production of finished products,

e.g., nuts, bolts, flour, sugar.

1. Work in Process —work in process inventory, or **WIP**, consists of materials entered into the production process but not yet completed,

e.g., subassemblies.

1. Finished Goods —finished goods inventory includes completed products waiting to be sold,

e.g., bar stools, bread, cookies.

There are three methods used when valuing the goods that you have on hand at the end of the period.

1. The First-In-First-Out Method (FIFO)

First bought first sold

2. The Last-In-First-Out Method (LIFO)

last bought first sold

3. The Weighted Average Cost Method

Example

Mr. Ahmed Mahmoud runs a candy shop. he enters into the following transactions during July:

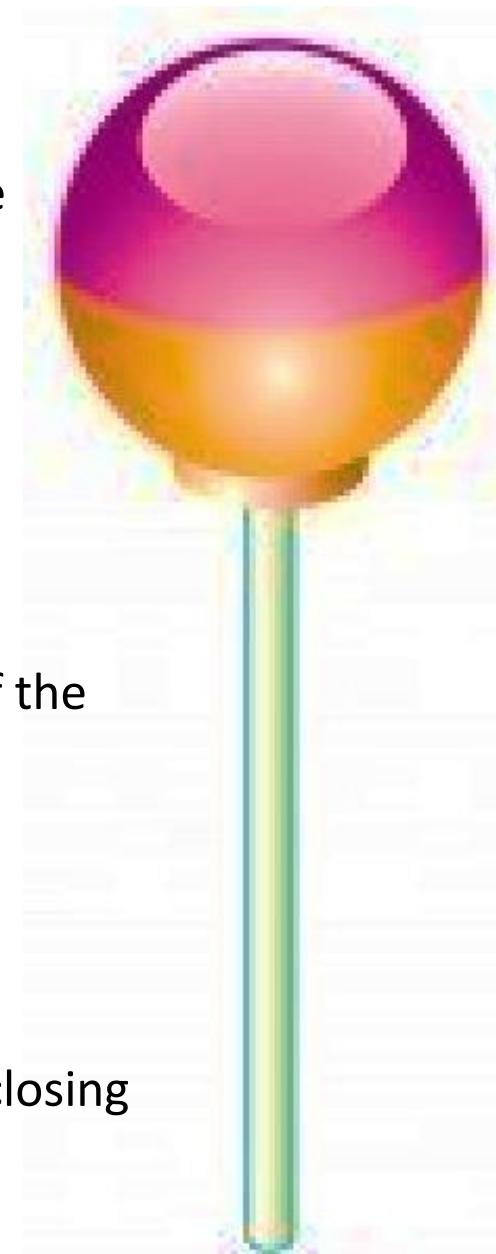
- July 1 **Purchases** 1,200 lollipops at \$1 for each one.
- July 13 **Purchases** 500 lollipops at \$1.20 for each one.
- July 14 **Sells** 700 lollipops at \$2 for each one.

First of all, how many lollipops does he has at the end of the month?

Answer:

$$1,200 + 500 - 700 = 1,000 \text{ lollipops}$$

Now, there are three ways that Mr. Ahmed could value his closing stock:



First-in, First-out (FIFO) This method assumes that the first inventories bought are the first ones to be sold, and that inventories bought later are sold later.

The value of our closing inventories in this example would be calculated as follows:

DATE	DETAILS	NUMBER	\$/UNIT	VALUE
July 1	Purchases 1,200 lollypops at \$1 each.	1,200	\$1	\$1,200
13	Purchases 500 lollypops at \$1.20 each.	1,200	\$1	\$1,200
		<u>500</u>	<u>\$1.20</u>	<u>\$ 600</u>
		1,700	n/a	\$1,800
14	Sells 700 lollypops at \$2 each.	500	\$1	\$500
		<u>500</u>	<u>\$1.20</u>	<u>\$600</u>
		1,000	n/a	\$1,100

subtract

Using the First-In-First-Out method, our closing inventory comes to \$1,100. This equates to a cost of \$1.10 per lollypop (\$1,100/1,000 lollypops).

It is very common to use the FIFO method if one trades in **foodstuffs** and **other goods that have a limited shelf life**, because the oldest goods need to be sold before they pass their sell-by date.

the FIFO is probably the most commonly used method in small business

2. Last-in, First-out (LIFO) This method assumes that the last inventories bought are the first ones to be sold, and that inventories bought first are sold last.

The value of our closing inventories in this example would be calculated as follows:

last bought are first sold

DATE	DETAILS	NUMBER	\$/UNIT	VALUE
July 1	Purchases 1,200 lollypops at \$1 each.	1,200	\$1	\$1,200
13	Purchases 500 lollypops at \$1.20 each.	1,200	\$1	\$1,200
		500	\$1.20	\$ 600
		<u>1,700</u>	n/a	<u>\$1,800</u>
14	Sells 700 lollypops at \$2 each.	1,000	\$1	\$1,000
		0	\$1.20	\$ 0
		<u>1,000</u>	n/a	<u>\$1,000</u>

From 500
500 + 200 From 1200

first
last

Using the Last-In-First-Out method, our closing inventory comes to \$1,000. This equates to a cost of \$1.00 per lollypop ($\$1,000/1,000$ lollypops).

The LIFO method is commonly used in the U.S.A.

3. The Weighted Average Cost Method: This method assumes that we sell all our inventories simultaneously. Identifies the value of inventory and cost of goods sold by calculating an average unit cost for all goods available for sale during a given period of time.

This valuation method assumes that ending inventory consists of all goods available for sale.

$$\text{Average Cost} = \frac{\text{Total Cost of Goods Available for Sale}}{\text{Total Quantity of Goods Available for Sale}}$$

DATE	DETAILS	NUMBER	\$/UNIT	VALUE
July 1	Purchases 1,200 lollypops at \$1 each.	1,200	\$1	\$1,200
	13 Purchases 500 lollypops at \$1.20 each.	1,200	\$1	\$1,200
		<u>500</u>	<u>\$1.20</u>	<u>\$ 600</u>
		1,700		\$1,800

Therefore, the average cost per lollypop is $\$1,800/1,700$ lollypops, which comes to \$1.06.

		<u>1,700</u>	<u>\$1.06</u>	<u>\$1,800</u>
	14 Sells 700 lollypops at \$2 each.	<u>1,000</u>	<u>\$1.06</u>	<u>\$1,059</u>

Using the weighted average cost method, our closing inventory amounts to \$1,059. This equates to a cost of \$1.06 per lollypop ($\$1,059/1,000$ lollypops).

The weighted average cost method is most commonly used in manufacturing businesses

where inventories are mixed together and cannot be differentiated, such as chemicals, oils, etc.

the LIFO method is the preferred inventory valuation method in the United States but is disallowed in non-US countries.

The FIFO method and the weighted average cost method are used in non-US countries.

FIFO vs. LIFO vs. Average Cost Method of Inventory Valuation

Assume the following inventory events:

November 5 **Purchased** 800 widgets at \$10/unit—Total cost \$8,000

November 7 **Purchased** 300 widgets at \$11/unit—Total cost \$3,300

November 8 **Purchased** 320 widgets at \$12.25/unit—Total cost \$3,920

November 15 **Purchased** 200 widgets at \$14.7/unit—Total cost \$2,940

November 10 **Sold** 750 units of goods at \$15/unit

November 14 **Sold** 460 units of goods at \$15.55/unit

November 18 **Sold** 220 units of goods at \$14.45/unit

Basic Events:

Date	Units Purchased		
	#Units	Cost/Unit	Total Cost
11/5	800	\$10.00	\$8,000
11/7	300	11.00	3,300
11/8	320	12.25	3,920
11/15	200	14.70	2,940
Total	1,620	N/A	\$18,160

Date	Units Sold		
	#Units	Cost/Unit	Total Cost
11/10	750	Varies By Valuation Method	
11/14	460		
11/18	220		
Total	1,430	N/A	N/A

FIFO

Transactions	Quantity		Price		Inventory
Purchased#1	800		10		
Purchased#2	300		11		
Purchased#3	320		12.25		
Purchased#4	200		14.7		
					18160
Sold#1	750				
Purchased#1	50		10		
Purchased#2	300		11		
Purchased#3	320		12.25		
Purchased#4	200		14.7		
					10660
Sold#2	460				
Purchased#1	0		10		
Purchased#2	0		11		
Purchased#3	210		12.25		
Purchased#4	200		14.7		
					5512.5
Sold#3	220				
Purchased#1	0		10		
Purchased#2	0		11		
Purchased#3	0		12.25		
Purchased#4	190		14.7		
					2793

LIFO

	Transactions	Quantity	Price	Inventory
	Purchased#1	800	10	
	Purchased#2	300	11	
	Purchased#3	320	12.25	
	Purchased#4	200	14.7	
				18160
	Sold#1	750		
	Purchased#1	800	10	
	Purchased#2	70	11	
	Purchased#3	0	12.25	
	Purchased#4	0	14.7	
				8770
	Sold#2	460		
	Purchased#1	410	10	
	Purchased#2	0	11	
	Purchased#3	0	12.25	
	Purchased#4	0	14.7	
				4100
90	Sold#3	220		
	Purchased#1	190	10	
	Purchased#2	0	11	
	Purchased#3	0	12.25	
	Purchased#4	0	14.7	
				1900

The Weighted Average Cost Method

Transactions	Quantity	Price	Value
Purchased#1	800	10	
Purchased#2	300	11	
Purchased#3	320	12.25	
Purchased#4	200	14.7	
Total Purchased	1620		18160
Sold#1	750		
Sold#2	460		
Sold#3	220		
Total Sold	1430		
Net Inv.	190		
Average price	11.21		
Inventory	2130		

Average Cost	= Total Cost of Goods Available for Sale	÷ Total Quantity of Goods Available for Sale
	= \$18,160	÷ 1,620 units
	= \$11.21/unit	

Calculating the Cost of Goods Sold

	FIFO	LIFO	Avg Cost Method
Cost of Goods Purchased	\$18,160	\$18,160	\$18,160
Minus: Ending Inventory	2,793	1,900	2,130
Cost of Goods Sold	\$15,367	\$16,260	\$16,030

Assignment

Said Company reported the following current-year data for its only product:

Jan. 1	Beginning Inventory	200	Units @ \$10	\$2,000
Mar. 14	Purchase	350	Units @ \$15	5,250
Jul. 30	Purchase	450	Units @ \$20	9,000
Oct. 26	Purchase	<u>700</u>	Units @ \$25	<u>17,500</u>

Said resold its products at \$40 per unit on the following dates:

Jan. 10	Sales	100	units
Mar. 15	Sales	150	units
Oct. 5	Sales	<u>310</u>	units
Total Sales		<u>560</u>	units

Determine the costs assigned to cost of goods sold and ending inventory using

- (a) FIFO and**
- (b) LIFO**
- (c) WAC Method**