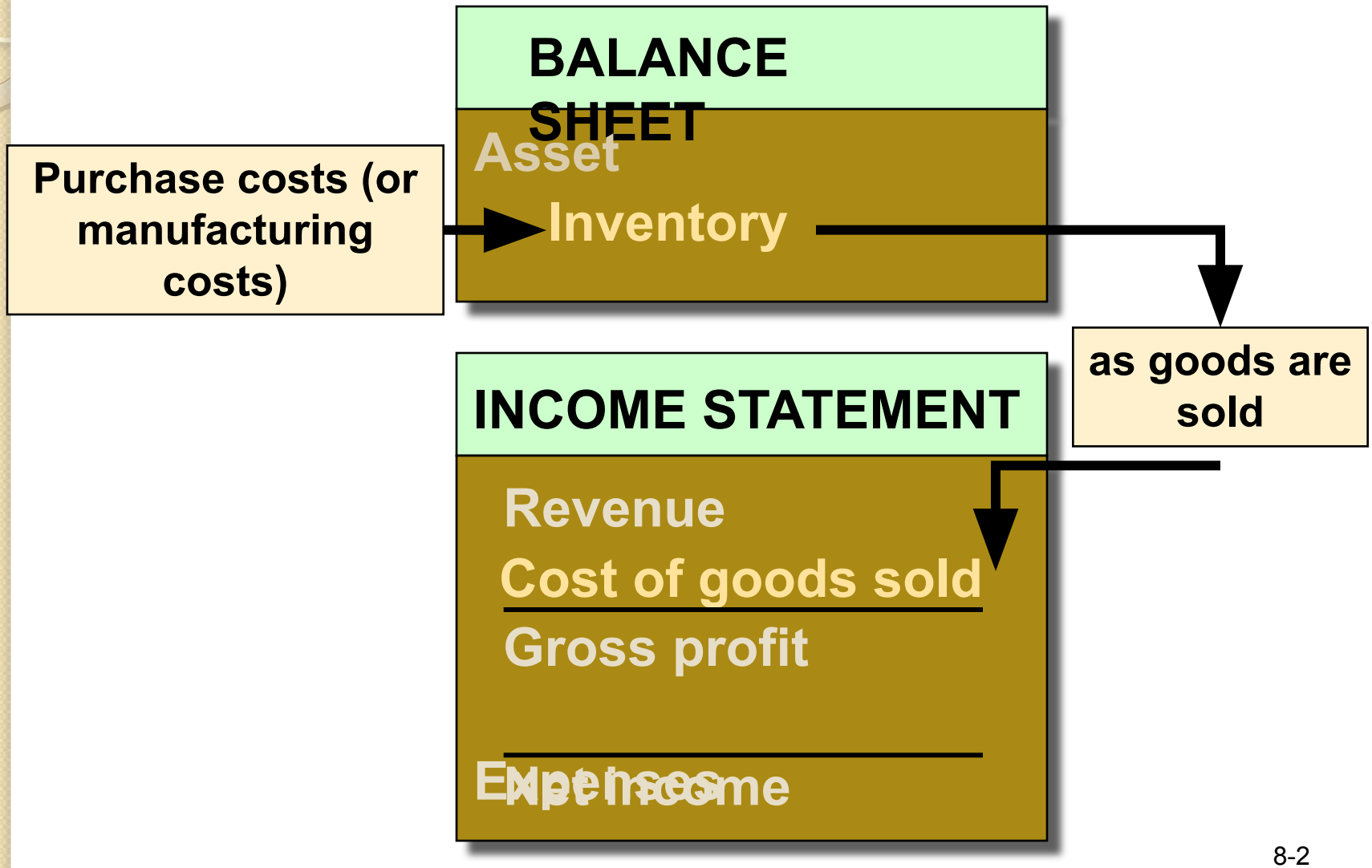
Inventories and the Cost of Goods Sold

Chapter 8

The Flow of Inventory Costs



The Flow of Inventory Costs

In a perpetual inventory system, inventory entries parallel the flow of costs.

GENERAL JOURNAL				
Date		Account Titles and Explanation	Debit	Credit
		Entry on Purchase Date		
		Inventory	$$$$	
		Accounts Payable		$$$$
		Entry on Sale Date		
		Cost of Goods Sold	$$$$	
		Inventory		$$$$

Which Unit Did We Sell?

When identical units of inventory have different unit costs, a question naturally arises as to which of these costs should be used in recording a sale of inventory.

GENERAL JOURNAL

Date	Account Titles and Explanation	Debit	Credit
	Entry on Sale Date		
	Cost of Goods Sold	$$$$	
	Inventory		$$$$

Inventory Subsidiary Ledger

A separate subsidiary account is maintained for each item in inventory.

Item LL002 — Primary supplier Electronic City
Description Laser Light — Secondary supplier Electric Company
Location Storeroom 2 — Inventory level: Min: 25 Max: 200

	Purchased			Sold			Balance		
Date	Units	Unit Cost	Total	Units	Unit Cost	Cost of Goods Sold	Units	Unit Cost	Total
Sept. 5	100	$ 30	$ 3,000				100	$ 30	$ 3,000
Sept. 9	75	50	3,750				100 75	30 50	3,000 3,750
Sept. 10				10	?	?	? ?	? ?	? ?

How can we determine the unit cost for the Sept. 10 sale?

Data for an Illustration

The Bike Company (TBC)

Cost of Goods Available for Sale

Aug.	1	Beg. Inventory	10 units @	$ 91	=	$ 910
Aug.	3	Purchased	15 units @	$ 106	=	$ 1,590
Aug.	17	Purchased	20 units @	$ 115	=	$ 2,300
Aug.	28	Purchased	10 units @	$ 119	=	$ 1,190

Retail Sales of Goods

Aug.	14	Sales	20 units @	$ 130	=	$ 2,600
Aug.	31	Sales	23 units @	$ 150	=	$ 3,450

Specific Identification

On August 14, TBC sold 20 bikes for $130 each. Of the bikes sold 9 originally cost $91 and 11 cost $106.

	Purchases			Cost of Goods Sold			Inventory Balance		
Date	Units	Unit Cost	Total	Units	Unit Cost	Total	Units	Unit Cost	Total
Aug. 1	10	$ 91	$ 910				10	$ 91	$ 910
Aug. 3	15	$ 106	$ 1,590				10 15	$ 91 $ 106	$ 2,500
Aug. 14				9 11	$ 91 $ 106	$ 1,985	1 4	$ 91 $ 106	$ 515

The Cost of Goods Sold for the August 14 sale is $1,985. This leaves 5 units, with a total cost of $515, in inventory: 1 unit that costs $91 and 4 units that cost $106 each.

Specific Identification

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Date		Account Titles and Explanation	Debit	Credit
Aug.	14	Cash	2,600	
		Sales		2,600
	14	Cost of Goods Sold	1,985	
		Inventory		1,985

Retail (20 × $130)

Cost

A similar entry is made after each sale.

Specific Identification

Additional purchases were made on August 17 and 28.

	Purchases			Cost of Goods Sold			Inventory Balance		
Date	Units	Unit Cost	Total	Units	Unit Cost	Total	Units	Unit Cost	Total
Aug. 1	10	@ $ 91	= $ 910				10	@ $ 91	= $ 910
Aug. 3	15	@ $ 106	= $ 1,590				10 15	@ $ 91 @ $ 106	= $ 2,500
Aug. 14				9 11	@ $ 91 @ $ 106	= $ 1,985	1 4	@ $ 91 @ $ 106	= $ 515
Aug. 17	20	@ $ 115	= $ 2,300				1 4 20	@ $ 91 @ $ 106 @ $ 115	= $ 2,815
Aug. 28	10	@ $ 119	= $ 1,190				1 4 20 10	@ $ 91 @ $ 106 @ $ 115 @ $ 119	= $ 4,005
Aug. 31				1 3 15 4	@ $ 91 @ $ 106 @ $ 115 @ $ 119	= $ 2,610	1 5 6	@ $ 106 @ $ 115 @ $ 119	= $ 1,395

Specific Identification

Cost of Goods Sold				Inventory Balance			
Units	Unit Cost		Total	Units	Unit Cost		Total
				10 @ $ 91	= $		910
				10 @ $ 91 15 @ $ 106	= $		2,500
9 @ $ 91 11 @ $ 106	= $		1,985	1 @ $ 91 4 @ $ 106	= $		515
				1 @ $ 91 4 @ $ 106 20 @ $ 115	= $		2,815
				1 @ $ 91 4 @ $ 106 20 @ $ 115 10 @ $ 119	= $		4,005
1 @ $ 91 3 @ $ 106 15 @ $ 115 4 @ $ 119	= $		2,610	1 @ $ 106 5 @ $ 115 6 @ $ 119	= $		1,395

Income Statement
COGS = $4,595

Balance Sheet
Inventory = $1,395

Average-Cost Method

On August 14, TBC sold 20 bikes for $130 each.

	Purchases				Cost of Goods Sold				Inventory Balance			
Date	Units	Unit Cost		Total	Units	Unit Cost		Total	Units	Unit Cost		Total
Aug. 1	10	@ $	91	= $ 910					10	@ $	91	= $ 910
Aug. 3	15	@ $	106	= $ 1,590					25	@ $	100	= $ 2,500
Aug. 14					20	@ $	100	= $ 2,000	5	@ $	100	= $ 500

The average cost per unit must be computed prior to each sale.

$2,500 ÷ 25 = $100 avg. cost

Average-Cost Method

Additional purchases were made on August 17 and August 28. On August 31, an additional 23 units were sold.

	Purchases			Cost of Goods Sold			Inventory Balance		
Date	Units	Unit Cost	Total	Units	Unit Cost	Total	Units	Unit Cost	Total
Aug. 1	10	$ 91	$ 910				10	$ 91	$ 910
Aug. 3	15	$ 106	$ 1,590				25	$ 100	$ 2,500
Aug. 14				20	$ 100	$ 2,000	5	$ 100	$ 500
Aug. 17	20	$ 115	$ 2,300				25	$ 112	$ 2,800
Aug. 28	10	$ 119	$ 1,190				35	$ 114	$ 3,990
Aug. 31				23	$ 114	$ 2,622	12	$ 114	$ 1,368

$114 = $3,990 ÷ 35

Average-Cost Method

Cost of Goods Sold						Inventory Balance					
Units		Unit Cost		Total		Units		Unit Cost		Total	
						10	@	$ 91	=	$ 910	
						25	@	$ 100	=	$ 2,500	
20	@	$ 100	=	$ 2,000		5	@	$ 100	=	$ 500	
						25	@	$ 112	=	$ 2,800	
						35	@	$ 114	=	$ 3,990	
23	@	$ 114	=	$ 2,622		12	@	$ 114	=	$ 1,368	

Income Statement
COGS = $4,622

Balance Sheet
Inventory = $1,368

First-In, First-Out Method (FIFO)

On August 14, TBC sold 20 bikes for $130 each.

	Purchases			Cost of Goods Sold			Inventory Balance		
Date	Units	Unit Cost	Total	Units	Unit Cost	Total	Units	Unit Cost	Total
Aug. 1	10	@ $ 91	= $ 910				10	@ $ 91	= $ 910
Aug. 3	15	@ $ 106	= $ 1,590				10 15	@ $ 91 @ $ 106	= $ 2,500
Aug. 14				10 10	@ $ 91 @ $ 106	= $ 1,970	5	@ $ 106	= $ 530

The Cost of Goods Sold for the August 14 sale is $1,970, leaving 5 units, with a total cost of $530, in inventory.

First-In, First-Out Method (FIFO)

Additional purchases were made on Aug. 17 and Aug. 28.
On August 31, an additional 23 units were sold.

	Purchases			Cost of Goods Sold			Inventory Balance		
Date	Units	Unit Cost	Total	Units	Unit Cost	Total	Units	Unit Cost	Total
Aug. 1	10	@ $ 91	= $ 910				10	@ $ 91	= $ 910
Aug. 3	15	@ $ 106	= $ 1,590				10 15	@ $ 91 @ $ 106	= $ 2,500
Aug. 14				10 10	@ $ 91 @ $ 106	= $ 1,970	5	@ $ 106	= $ 530
Aug. 17	20	@ $ 115	= $ 2,300				5 20	@ $ 106 @ $ 115	= $ 2,830
Aug. 28	10	@ $ 119	= $ 1,190				5 20 10	@ $ 106 @ $ 115 @ $ 119	= $ 4,020
Aug. 31				5 18	@ $ 106 @ $ 115	= $ 2,600	2 10	@ $ 115 @ $ 119	= $ 1,420

First-In, First-Out Method (FIFO)

Cost of Goods Sold			Inventory Balance		
Units	Unit Cost	Total	Units	Unit Cost	Total
			10 @ $ 91	=	$ 910
			10 @ $ 91 15 @ $ 106	=	$ 2,500
10 @ $ 91 10 @ $ 106	=	$ 1,970	5 @ $ 106	=	$ 530
			5 @ $ 106 20 @ $ 115	=	$ 2,830
			5 @ $ 106 20 @ $ 115 10 @ $ 119	=	$ 4,020
5 @ $ 106 18 @ $ 115	=	$ 2,600	2 @ $ 115 10 @ $ 119	=	$ 1,420

Income Statement
COGS = $4,570

Balance Sheet
Inventory = $1,420

Last-In, First-Out Method (LIFO)

On August 14, TBC sold 20 bikes for $130 each.

	Purchases			Cost of Goods Sold			Inventory Balance		
Date	Units	Unit Cost	Total	Units	Unit Cost	Total	Units	Unit Cost	Total
Aug. 1	10	$ 91	$ 910				10	$ 91	$ 910
Aug. 3	15	$ 106	$ 1,590				10 15	$ 91 $ 106	$ 2,500
Aug. 14				15 5	$ 106 $ 91	$ 2,045	5	$ 91	$ 455

The Cost of Goods Sold for the August 14 sale is $2,045, leaving 5 units, with a total cost of $455, in inventory.

Last-In, First-Out Method (LIFO)

Additional purchases were made on Aug. 17 and Aug. 28. On Aug. 31, an additional 23 units were sold.

	Purchases			Cost of Goods Sold			Inventory Balance		
Date	Units	Unit Cost	Total	Units	Unit Cost	Total	Units	Unit Cost	Total
Aug. 1	10	$ 91	$ 910				10	$ 91	$ 910
Aug. 3	15	$ 106	$ 1,590				10 15	$ 91 $ 106	$ 2,500
Aug. 14				15 5	$ 106 $ 91	$ 2,045	5	$ 91	$ 455
Aug. 17	20	$ 115	$ 2,300				5 20	$ 91 $ 115	$ 2,755
Aug. 28	10	$ 119	$ 1,190				5 20 10	$ 91 $ 115 $ 119	$ 3,945
Aug. 31				10 13	$ 119 $ 115	$ 2,685	5 7	$ 91 $ 115	$ 1,260

Last-In, First-Out Method (LIFO)

Cost of Goods Sold			Inventory Balance		
Units	Unit Cost	Total	Units	Unit Cost	Total
			10 @	$ 91	= $ 910
			10 @ 15 @	$ 91 $ 106	= $ 2,500
15 @ 5 @	$ 106 $ 91	= $ 2,045	5 @	$ 91	= $ 455
			5 @ 20 @	$ 91 $ 115	= $ 2,755
			5 @ 20 @ 10 @	$ 91 $ 115 $ 119	= $ 3,945
10 @ 13 @	$ 119 $ 115	= $ 2,685	5 @ 7 @	$ 91 $ 115	= $ 1,260

Income Statement
COGS = $4,730

Balance Sheet
Inventory = $1,260

Inventory Valuation Methods: A Summary			
Valuation Method	Costs Allocated to: Cost of Goods Sold	Inventory	Comments
Specific identification	Actual cost of the units sold	Actual cost of units remaining	Parallels physical flow
			Logical method when units are unique
			May be misleading for identical units
Average cost	Number of units sold times the average unit cost	Number of units on hand times the average unit cost	Assigns all units the same average unit cost
			Current costs are averaged in with older costs
First-in, First-out (FIFO)	Cost of earliest purchases on hand prior to the sale	Cost of most recently purchased units	Cost of goods sold is based on older costs
			Inventory valued at current costs
			May overstate income during periods of rising prices; may increase income taxes due
Last-in, First-out (LIFO)	Cost of most recently purchased units	Cost of earliest purchases (assumed still in inventory)	Cost of goods sold shown at recent prices
			Inventory shown at old (and perhaps out of date) costs
			Most conservative method during periods of rising prices; often results in lower income taxes

The Principle of Consistency

Once a company has adopted a particular accounting method, it should follow that method consistently rather than switch methods from one year to the next.

Taking a Physical Inventory

The primary reason for taking a physical inventory is to adjust the perpetual inventory records for unrecorded shrinkage losses, such as theft, spoilage, or breakage.

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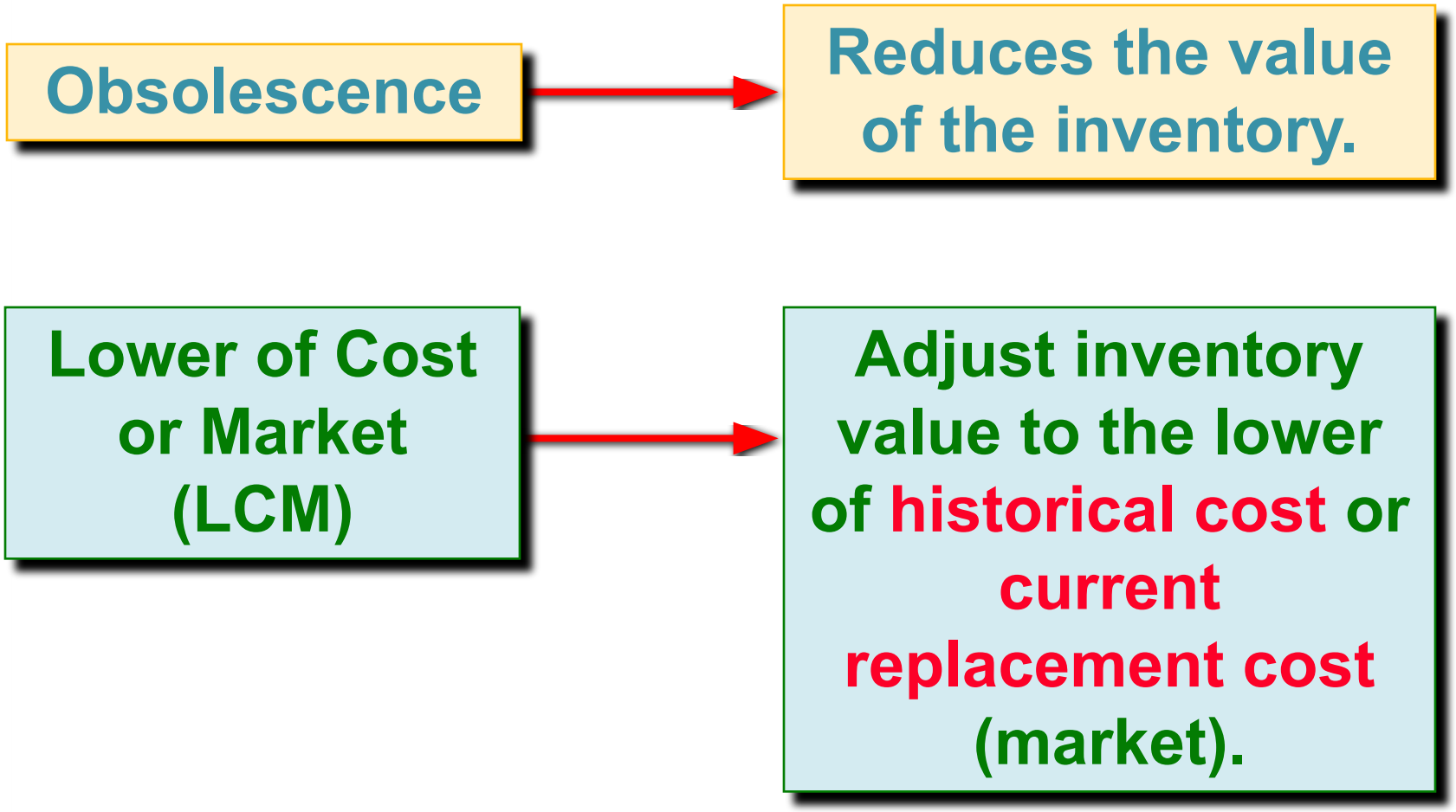
Date		Account Titles and Explanation	Debit	Credit
Dec.	31	Cost of Goods Sold	$$$$	
		Inventory		$$$$

LCM and Other Write-Downs of Inventory



LCM and Other Write-Downs of Inventory

			LCM Applied on the Basis of . . .		
	Cost	Market	Individual Items	Inventory Category	Total Inventory
Bicycles:					
Boy's bicycles	$ 4,200	$ 4,600	4,200		
Girls bicycles	3,300	3,100	3,100		
Junior bicycle	5,700	5,000	5,000		
Total	$ 13,700	$ 12,700		12,700	
Bicycle accessories:					
Training wheels	$ 485	$ 525	485		
Headlamps	312	400	312		
Protective helmets	700	600	600		
Gloves	245	212	212		
Kneepads	195	145	145		
Total	$ 1,937	$ 1,882		1,882	
Total inventory	$ 15,637	$ 14,582	$ 14,054	$ 14,582	$ 14,582

Goods In Transit

A sale should be recorded when title to the merchandise passes to the buyer.

F.O.B. shipping point —title passes to buyer at the point of shipment.

Year End

F.O.B. destination point —title passes to buyer at the point of destination.

Periodic Inventory Systems

In a periodic inventory system, inventory entries are as follows.

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Date	Account Titles and Explanation	Debit	Credit
	Entry on Purchase Date		
	Purchases	$$$$	
	Accounts Payable		$$$$

Note that an entry is not made to inventory.

Periodic Inventory Systems

In a periodic inventory system, inventory entries are as follows.

GENERAL JOURNAL				
Date		Account Titles and Explanation	Debit	Credit
		Entry on Sale Date		
		No entry to inventory.		
		Accounts Receivable	$$$$	
		Sales		$$$$

Information for the Following Inventory Examples

Computers, Inc. Mouse Pad Inventory			
Date	**Units**	**$/Unit**	**Total**
Beginning Inventory	1,000	$ 5.25	$ 5,250.00
Purchases:			
Jan. 3	300	5.30	1,590.00
June 20	150	5.60	840.00
Sept. 15	200	5.80	1,160.00
Nov. 29	150	5.90	885.00
Goods Available for Sale	1,800		$ 9,725.00
Ending Inventory	1,200		?
Cost of Goods Sold	600		?

Specific Identification

Computers, Inc. Mouse Pad Inventory			
Date	Units	$/Unit	Total
Beginning Inventory	1,000	$ 5.25	$ 5,250.00
Purchases:			
Jan. 3	300	5.30	1,590.00
June 20	150	5.60	840.00
			1,160.00
			885.00
for Sale	1,800		$ 9,725.00
Ending Inventory	1,200		$ 6,400.00
Cost of Goods Sold	600		$ 3,325.00

Cost of Goods Sold

$9,725 - $6,400 = $3,325

Average-Cost Method

Avg. Cost $9,725 ÷ 1,800 = $5.40278

Ending Inventory
Avg. Cost $5.40278 × 1,200 = $6,483

Cost of Goods Sold
Avg. Cost $5.40278 × 600 = $3,242

Computers, Inc. Mouse Pad Inventory			
Date	Units	$/Unit	Total
Beginning Inventory	1,000	$ 5.25	$ 5,250.00
Purchases:			
Jan. 3	300	5.30	1,590.00
June 20	150	5.60	840.00
Sept. 15	200	5.80	1,160.00
Nov. 29	150	5.90	885.00
Goods Available for Sale	1,800		$ 9,725.00
Ending Inventory	1,200		$ 6,483.00
Cost of Goods Sold	600		$ 3,242.00

First-In, First-Out Method (FIFO)

Remember: Start with the 11/29 purchase and then add other purchases until you reach the number of units in ending inventory.

Computers, Inc. Mouse Pad Inventory			
Date	**Units**	**$/Unit**	**Total**
Beginning Inventory	1,000	$ 5.25	$ 5,250.00
Purchases:			
Jan. 3	300	5.30	1,590.00
June 20	150	5.60	840.00
Sept. 15	200	5.80	1,160.00
Nov. 29	150	5.90	885.00
Goods Available for Sale	1,800		$ 9,725.00
Ending Inventory	1,200		?
Cost of Goods Sold	600		?

First-In, First-Out Method (FIFO)

Date	Beg. Inv.	Purchases	End. Inv.	Cost of Goods Sold
	1,000@$5.25			600@$5.25
			400@$5.25	
Jan. 3		300@$5.30	300@$5.30	
June 20		150@$5.60	150@$5.60	
Sept. 15		200@$5.80	200@$5.80	
Nov. 29		150@$5.90	150@$5.90	
Units			1,200	600
Costs			$6,575	$3,150
Cost of Goods Available for Sale			$9,725	

First-In, First-Out Method (FIFO)

Completing the table summarizes the computations just made.

Computers, Inc. Mouse Pad Inventory			
Date	**Units**	**$/Unit**	**Total**
Beginning Inventory	1,000	$ 5.25	$ 5,250.00
Purchases:			
Jan. 3	300	5.30	1,590.00
June 20	150	5.60	840.00
Sept. 15	200	5.80	1,160.00
Nov. 29	150	5.90	885.00
Goods Available for Sale	1,800		$ 9,725.00
Ending Inventory	1,200		$ 6,575.00
Cost of Goods Sold	600		$ 3,150.00

Last-In, First-Out Method (LIFO)

Remember:
Start with beginning inventory and then add other purchases until you reach the number of units in ending inventory.

Computers, Inc. Mouse Pad Inventory			
Date	**Units**	**$/Unit**	**Total**
Beginning Inventory	1,000	$ 5.25	$ 5,250.00
Purchases:			
Jan. 3	300	5.30	1,590.00
June 20	150	5.60	840.00
Sept. 15	200	5.80	1,160.00
Nov. 29	150	5.90	885.00
Goods Available for Sale	1,800		$ 9,725.00
Ending Inventory	1,200		?
Cost of Goods Sold	600		?

Last-In, First-Out Method (LIFO)

Date	Beg. Inv.	Purchases	End. Inv.	Cost of Goods Sold
	1,000@$5.25		1,000@$5.25	
Jan. 3		300@$5.30	200@$5.30	
				100@$5.30
June 20		150@$5.60		150@$5.60
Sept. 15		200@$5.80		200@$5.80
Nov. 29		150@$5.90		150@$5.90
Units			1,200	600
Costs			$6,310	$3,415
Cost of Goods Available for Sale				$9,725

Last-In, First-Out Method (LIFO)

Completing the table summarizes the computations just made.

Computers, Inc. Mouse Pad Inventory			
Date	**Units**	**$/Unit**	**Total**
Beginning Inventory	1,000	$ 5.25	$ 5,250.00
Purchases:			
Jan. 3	300	5.30	1,590.00
June 20	150	5.60	840.00
Sept. 15	200	5.80	1,160.00
Nov. 29	150	5.90	885.00
Goods Available for Sale	1,800		$ 9,725.00
Ending Inventory	1,200		$ 6,310.00
Cost of Goods Sold	600		$ 3,415.00

Importance of an Accurate Valuation of Inventory

Errors in Measuring Inventory

	Beginning Inventory		Ending Inventory	
Effect on Income Statement	**Overstated**	**Understated**	**Overstated**	**Understated**
Goods Available for Sale	+	-	NE	NE
Cost of Goods Sold	+	-	-	+
Gross Profit	-	+	+	-
Net Income	-	+	+	-
Effect on Balance Sheet				
Ending Inventory	NE	NE	+	-
Retained Earnings	-	+	+	-

An error in ending inventory in a year will result in the same error in the beginning inventory of the next year.

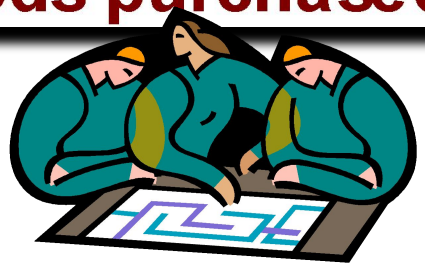
The Gross Profit Method

1. **Determine cost of goods available for sale.**
2. **Estimate cost of goods sold by multiplying the net sales by the cost ratio.**
3. **Deduct cost of goods sold from cost of goods available for sale to determine ending inventory.**

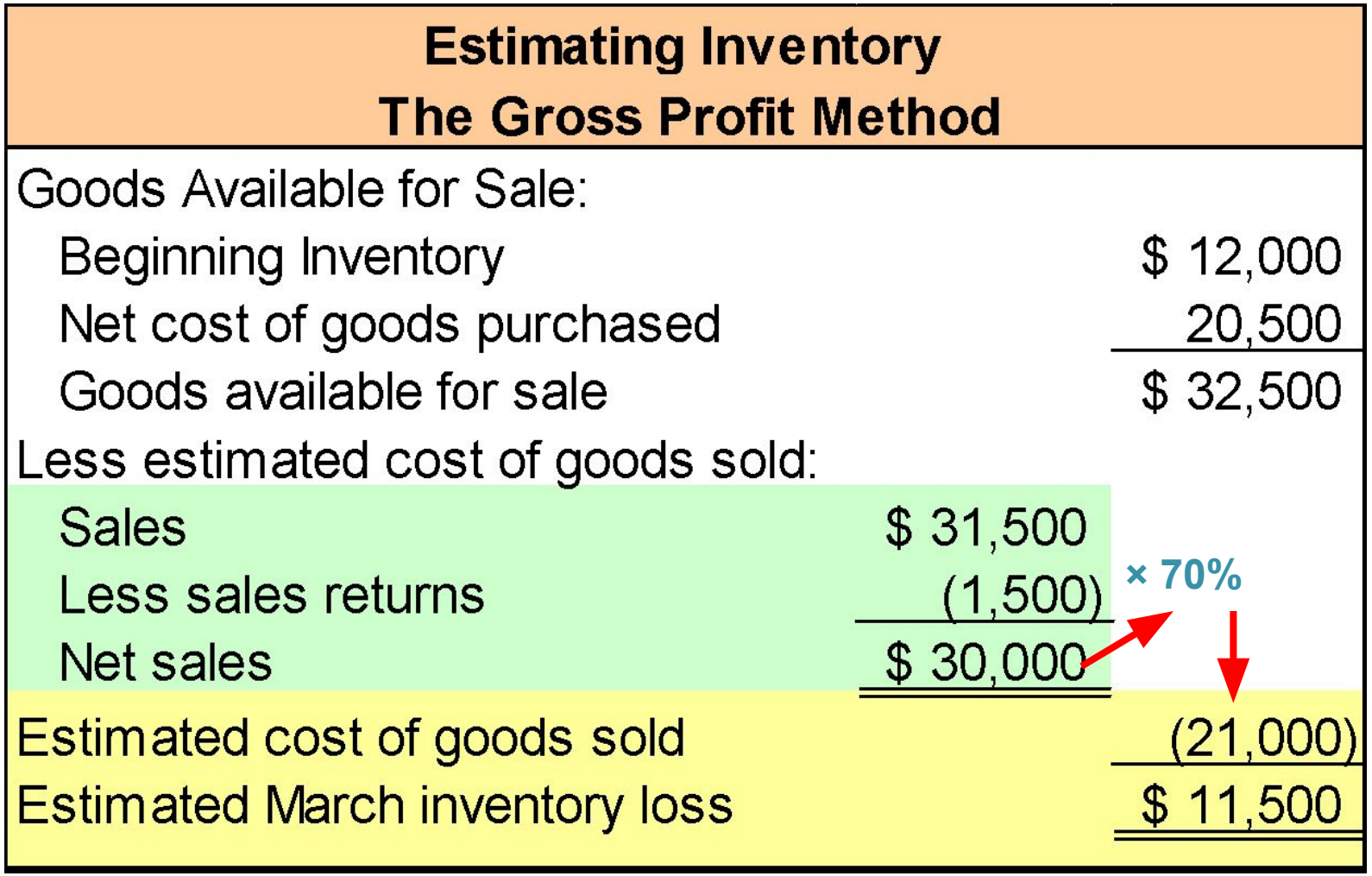
The Gross Profit Method

In March of 2009, Matrix Company's inventory was destroyed by fire. Matrix normal gross profit ratio is 30% of net sales. At the time of the fire, Matrix showed the following balances:

Sales	$ 31,500
Sales returns	1,500
Beginning Inventory	12,000
Net cost of goods purchased	20,500



The Gross Profit Method



The Retail Method

The retail method of estimating inventory requires that management determine the value of ending inventory at retail prices.

In March of 2009, Matrix Company's inventory was destroyed by fire. At the time of the fire, Matrix's management collected the following information:

Information for Matrix Company The Retail Method	
Goods available for sale at cost	$ 32,500
Goods available for sale at retail	50,000
Physical count of ending inventory priced at retail	22,000

The Retail Method

Matrix would follow the steps below to estimate their ending inventory using the retail method.

Estimating Inventory The Retail Method		
a	Goods available for sale at cost	$ 32,500
b	Goods available for sale at retail	50,000
c	Cost ratio [a ÷ b]	65%
d	Physical count of ending inventory priced at retail	22,000
e	Estimated ending inventory at cost [c × d]	$ 14,300

Financial Analysis

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

(Beginning Inventory + Ending Inventory) ÷ 2

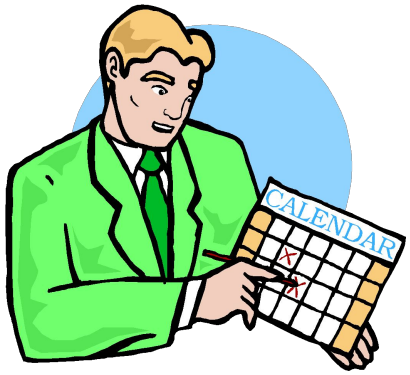
$$\text{Average Days to Sell Inventory} = \frac{365}{\text{Inventory Turnover}}$$

Financial Analysis

$$\text{Receivables Turnover} = \frac{\text{Net Sales}}{\text{Average Accounts Receivable}}$$

(Beginning Receivables + Ending Receivables) ÷ 2

$$\text{Average Days to Collect Receivables} = \frac{365}{\text{Receivables Turnover}}$$



End of Chapter 8