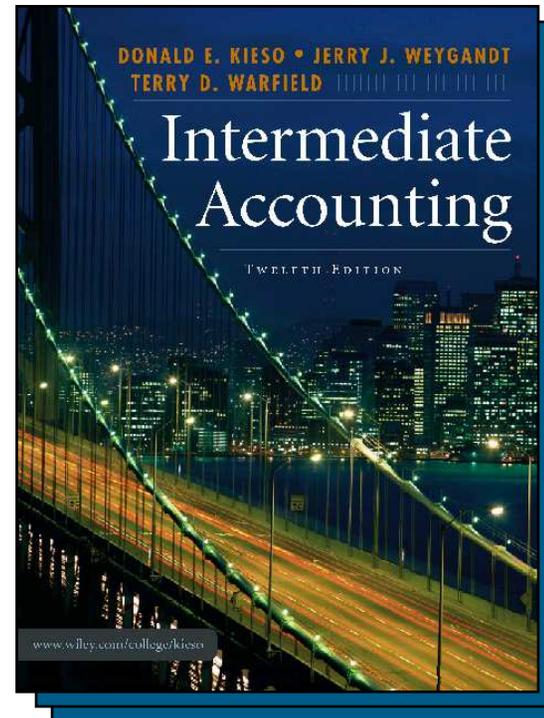


Inventories: Valuation and Estimation Concepts

Chapter 9

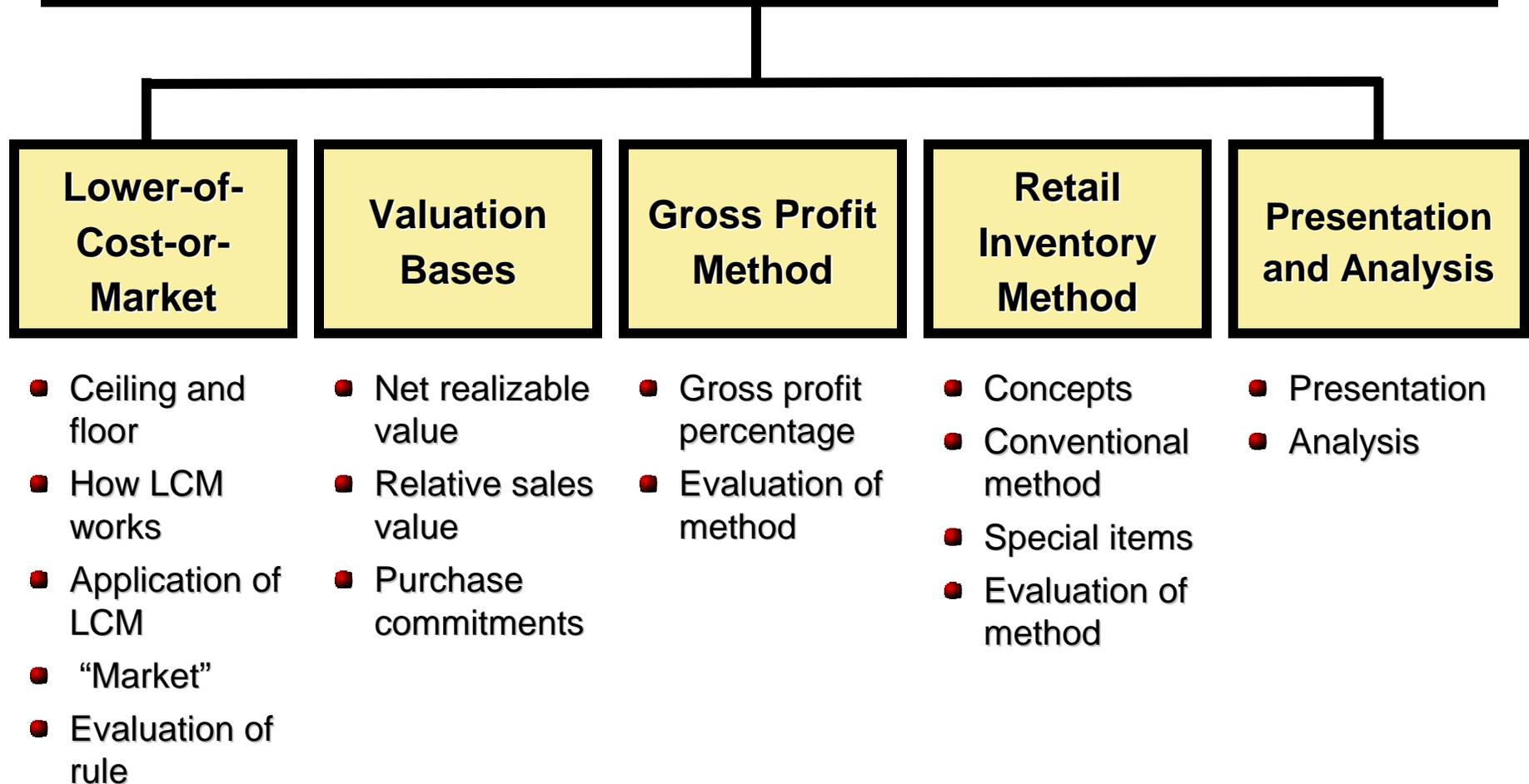
Intermediate Accounting
12th Edition
Kieso, Weygandt, and Warfield



Learning Objectives

1. Describe and apply the lower-of-cost-or-market rule.
2. Explain when companies value inventories at net realizable value.
3. Explain when companies use the relative sales value method to value inventories.
4. Discuss accounting issues related to purchase commitments.
5. Determine ending inventory by applying the gross profit method.
6. Determine ending inventory by applying the retail inventory method.
7. Explain how to report and analyze inventory.

Inventories: Additional Valuation Issues



Lower-of-Cost-or-Market

LCM

A company abandons the historical cost principle when the future utility (revenue-producing ability) of the asset drops below its original cost.

- Market = Replacement Cost
- Lower of Cost or Replacement Cost
- Loss should be recorded when loss occurs, not in the period of sale.

Lower-of-Cost-or-Market

Ceiling and Floor

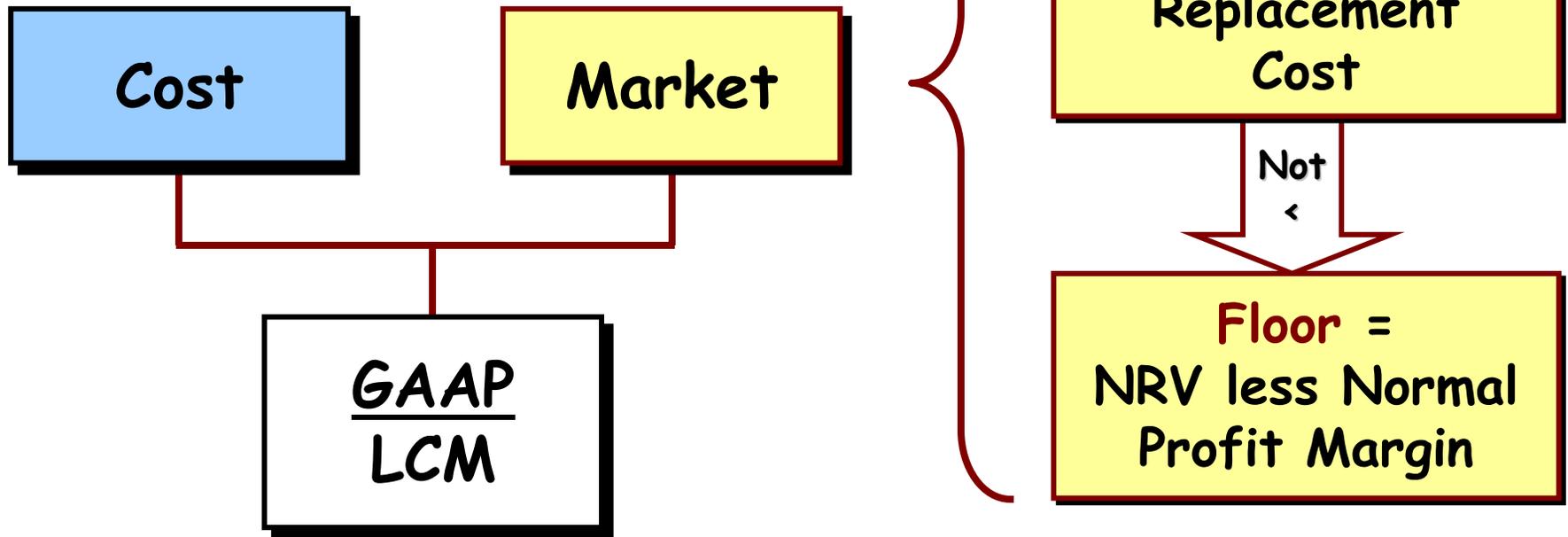
Why use Replacement Cost (RC) for Market?

- Decline in the RC usually = decline in selling price.
- RC allows a consistent rate of gross profit.
- If reduction in RC fails to indicate reduction in utility, then two additional valuation limitations are used:
 - ◆ **Ceiling** - net realizable value and
 - ◆ **Floor** - net realizable value less a normal profit margin.

Lower-of-Cost-or-Market

What is the rationale for the **Ceiling** and **Floor** limitations?

Illustration 9-3



Lower-of-Cost-or-Market

Rationale for Limitations

Ceiling - prevents overstatement of the value of obsolete, damaged, or shopworn inventories.

Floor - deters understatement of inventory and overstatement of the loss in the current period.

Lower-of-Cost-or-Market

How LCM Works (Individual Items)

Illustration 9-5			Net Realizable Value (Ceiling)	Net Realizable Value Less a Normal Profit Margin (Floor)	Designated Market Value	Final Inventory Value
Food	Cost	Replacement Cost				
Spinach	\$ 80,000	\$ 88,000	\$120,000	\$104,000	\$104,000	\$ 80,000
Carrots	100,000	90,000	100,000	70,000	90,000	90,000
Cut beans	50,000	45,000	40,000	27,500	40,000	40,000
Peas	90,000	36,000	72,000	48,000	48,000	48,000
Mixed vegetables	95,000	105,000	92,000	80,000	92,000	92,000
						<u>\$350,000</u>

Lower-of-Cost-or-Market

Methods of Applying LCM

Illustration 9-6	Lower-of-Cost-or-Market By:				
	Cost	Designated Market	Individual Items	Major Categories	Total Inventory
Frozen					
Spinach	\$ 80,000	\$104,000	\$ 80,000		
Carrots	100,000	90,000	90,000		
Cut beans	50,000	40,000	40,000		
Total frozen	<u>230,000</u>	<u>234,000</u>		\$230,000	
Canned					
Peas	90,000	48,000	48,000		
Mixed vegetables	95,000	92,000	92,000		
Total canned	<u>185,000</u>	<u>140,000</u>		140,000	
Total	<u>\$415,000</u>	<u>\$374,000</u>	<u>\$350,000</u>	<u>\$370,000</u>	<u>\$374,000</u>

Lower-of-Cost-or-Market

Recording LCM (data from Illus. 9-5 and 9-6)

Ending inventory (cost)	\$ 415,000
Ending inventory (LCM)	350,000
Adjustment to LCM	<u>\$ 65,000</u>

Allowance Method

Loss on inventory	65,000	
Allowance on inventory		65,000

Direct Method

Cost of goods sold	65,000	
Inventory		65,000

Lower-of-Cost-or-Market

Balance Sheet Presentation

	<u>Allowance</u>	<u>Direct</u>
Current assets:		
Cash	\$ 100,000	\$ 100,000
Accounts receivable	350,000	350,000
Inventory	770,000	705,000
Less: inventory allowance	(65,000)	
Prepays	20,000	20,000
Total current assets	<u>1,175,000</u>	<u>1,175,000</u>

Lower-of-Cost-or-Market

Income Statement Presentation

	Allowance	Direct
Sales	\$ 300,000	\$ 300,000
Cost of goods sold	120,000	185,000
Gross profit	180,000	115,000
Operating expenses:		
Selling	45,000	45,000
General and administrative	20,000	20,000
Total operating expenses	65,000	65,000
Other revenue and expense:		
Loss on inventory	65,000	-
Interest income	5,000	5,000
Total other	(60,000)	5,000
Income from operations	55,000	55,000
Income tax expense	16,500	16,500
Net income	<u>\$ 38,500</u>	<u>\$ 38,500</u>

Lower-of-Cost-or-Market

P9-1 Grant Wood Company manufactures desks. The company attempts to obtain a 20% gross margin on selling price. At December 31, 2008, the following finished desks appear in the company's inventory.

Finished Desks	A	B	C	D
Inventory cost	\$ 470	\$ 450	\$ 830	\$ 960
Est. cost to manufacture	460	440	610	1,000
Commissions and disposal costs	45	60	90	130
Catalog selling price	500	540	900	1,200

Instructions:

At what amount should the desks appear in the company's December 31, 2008, inventory, assuming that the company has adopted a lower-of-cost-or-market approach for valuation of inventories on an individual-item basis?

Lower-of-Cost-or-Market

Finished Desks	A
Inventory cost	\$ 470
Est. cost to manufacture	460
Commissions and disposal costs	45
Catalog selling price	500

Cost = 470

Market = 455

LCM = 455

Ceiling = 455
(500 - 45)

Not
>

Replacement
Cost = 460

Not
<

Floor = 355
(455 - (500 × 20%))

Lower-of-Cost-or-Market

Finished Desks	B
Inventory cost	\$ 450
Est. cost to manufacture	440
Commissions and disposal costs	60
Catalog selling price	540

Cost = 450

Market = 440

LCM = 440

Ceiling = 480
(540 - 60)

Not
>

Replacement
Cost = 440

Not
<

Floor = 372
(480 - (540 × 20%))

Lower-of-Cost-or-Market

Finished Desks	C
Inventory cost	\$ 830
Est. cost to manufacture	610
Commissions and disposal costs	90
Catalog selling price	900

Cost = 830

Market = 630

LCM = 630

Ceiling = 810
(900 - 90)

Not
>

Replacement
Cost = 610

Not
<

Floor = 630
(810 - (900 × 20%))

Lower-of-Cost-or-Market

Finished Desks	D
Inventory cost	\$ 960
Est. cost to manufacture	1,000
Commissions and disposal costs	130
Catalog selling price	1,200

Cost = 960

Market = 1,000

LCM = 960

Ceiling = 1,070
(1,200 - 130)

Not
>

Replacement
Cost = 1,000

Not
<

Floor = 830
(1,070 - (1,200 × 20%))

Lower-of-Cost-or-Market

Evaluation of LCM Rule

Some Deficiencies:

- Expense recorded when loss in utility occurs. Profit on sale recognized at the point of sale.
- Inventory valued at cost in one year and at market in the next year.
- Net income in year of loss is lower. Net income in subsequent period may be higher than normal if expected reductions in sales price do not materialize.
- LCM uses a "normal profit" in determining inventory values, which is a subjective measure.

Valuation Bases

Net Realizable Value

Permitted by GAAP under the following conditions:

- (1) a controlled market with a quoted price applicable to all quantities, and
- (2) no significant costs of disposal (rare metals and agricultural products)

or

- (3) too difficult to obtain cost figures (meatpacking)

Valuation Bases

Relative Sales Value

Used when buying varying units in a single lump-sum purchase.

E9-7 (Relative Sales Value Method) Phil Collins Realty Corporation purchased a tract of unimproved land for \$55,000. This land was improved and subdivided into building lots at an additional cost of \$34,460. These building lots were all of the same size but owing to differences in location were offered for sale at different prices as follows. Operating expenses allocated to this project total \$18,200.

Group	No. of Lots	Price per Lot	Lots Unsold at Year-End
1	9	\$ 3,000	5
2	15	4,000	7
3	17	2,400	2

Instructions: Calculate the net income realized on this operation to date.

Valuation Bases

E9-7 (Relative Sales Value Method - Solution)

Group	No. of Lots	Price per Lot	= Selling Price	Relative Sales Price	× Total Cost	= Cost Allocated	Cost Per Lot
1	9	\$ 3,000	\$ 27,000	\$27,000/127,800	\$ 89,460	\$ 18,900	\$ 2,100
2	15	4,000	60,000	60,000/127,800	89,460	42,000	2,800
3	17	2,400	40,800	40,000/127,800	89,460	28,560	1,680
			<u>\$ 127,800</u>			<u>\$ 89,460</u>	

Group	Lots Sold	Price per Lot	= Total Sales	Cost Per Lot	Total Cost of Goods	Calculation of Net Income	
1	4	\$ 3,000	\$ 12,000	\$ 2,100	\$ 8,400	Sales	\$ 80,000
2	8	4,000	32,000	2,800	22,400	Cost of good sold	56,000
3	15	2,400	36,000	1,680	25,200	Gross profit	24,000
			<u>\$ 80,000</u>		<u>\$ 56,000</u>	Expenses	18,200
						Net income	<u>\$ 5,800</u>

Valuation Bases

Purchase Commitments

- Generally seller retains title to the merchandise.
- Buyer recognizes no asset or liability.
- If material, the buyer should disclose contract details in footnote.
- If the contract price is **greater than** the market price, and the **buyer expects that losses will occur** when the purchase is effected, the buyer should recognize losses in the period during which such declines in market prices take place.

Gross Profit Method

Substitute Measure to Approximate Inventory

Relies on Three Assumptions:

- (1) Beginning inventory plus purchases equal total goods to be accounted for.
- (2) Goods not sold must be on hand.
- (3) The sales, reduced to cost, deducted from the sum of the opening inventory plus purchases, equal ending inventory.

Gross Profit Method

E9-12 (Gross Profit Method) Mark Price Company uses the gross profit method to estimate inventory for monthly reporting purposes. Presented below is information for the month of May.

Inventory, May 1	\$	160,000
Purchases (gross)		640,000
Freight-in		30,000
Sales		1,000,000
Sales returns		70,000
Purchase discounts		12,000

Instructions:

- (a) Compute the estimated inventory at May 31, assuming that the gross profit is 30% of **sales**.
- (b) Compute the estimated inventory at May 31, assuming that the gross profit is 30% of **cost**.

Gross Profit Method

E9-12 (Gross Profit Method - Solution)

(a) Compute the estimated inventory assuming gross profit is 30% of sales.

(a) Inventory, May 1 (at cost)		\$ 160,000
Purchases (gross) (at cost)		640,000
Purchase discounts		(12,000)
Freight-in		30,000
Goods available (at cost)		818,000
Sales (at selling price)	\$ 1,000,000	
Sales returns (at selling price)	(70,000)	
Net sales (at selling price)	930,000	
Less gross profit (30% of \$930,000)	279,000	
Sales (at cost)		651,000
Approximate inventory, May 31 (at cost)		\$ 167,000

Gross Profit Method

E9-12 (Gross Profit Method - Solution)

(b) Compute the estimated inventory assuming gross profit is 30% of cost.

(a) Inventory, May 1 (at cost)		\$ 160,000
Purchases (gross) (at cost)		640,000
Purchase discounts		(12,000)
Freight-in		30,000
Goods available (at cost)		818,000
Sales (at selling price)	\$ 1,000,000	
Sales returns (at selling price)	(70,000)	
Net sales (at selling price)	930,000	
Less gross profit (23.08% of \$930,000)	214,644	
Sales (at cost)		715,356
Approximate inventory, May 31 (at cost)		\$ 102,644

$$\frac{30\%}{100\% + 30\%} = 23.08\% \text{ of sales}$$

Gross Profit Method

Evaluation:

Disadvantages:

- (1) Provides an estimate of ending inventory.
- (2) Uses past percentages in calculation.
- (3) A blanket gross profit rate may not be representative.
- (4) Only acceptable for interim (generally quarterly) reporting purposes.

Retail Inventory Method

A method used by retailers, to value inventory without a physical count, by converting retail prices to cost.

Requires retailers to keep:

- (1) the total cost and retail value of goods purchased,
- (2) the total cost and retail value of the goods available for sale, and
- (3) the sales for the period.

Retail Inventory Method

P9-8 (Retail Inventory Method) Jared Jones Inc. uses the retail inventory method to estimate ending inventory for its monthly financial statements. The following data pertain to a single department for the month of October 2008.

	<u>COST</u>	<u>RETAIL</u>
Beg. inventory, Oct. 1	\$ 52,000	\$ 78,000
Purchases	262,000	423,000
Freight in	16,600	
Purchase returns	5,600	8,000
Additional markups		9,000
Markup cancellations		2,000
Markdowns (net)		3,600
Normal spoilage		10,000
Sales		380,000

Instructions:

Prepare a schedule computing estimate retail inventory using the following methods:

- (1) Cost
- (2) LCM
- (3) LIFO (appendix)

Retail Inventory - Cost Method

P9-8 Solution - Cost Method

	<u>COST</u>	<u>RETAIL</u>	<u>Cost to Retail %</u>
Beg. inventory	\$ 52,000	\$ 78,000	
Purchases	262,000	423,000	
Freight in	16,600		
Purchase returns	(5,600)	(8,000)	
Markdowns, net		(3,600)	
Markups, net		7,000	
Current year additions	<u>273,000</u>	<u>418,400</u>	
Goods available for sale	325,000 /	496,400	= 65.47%
Normal spoilage		(10,000)	
Sales		<u>(380,000)</u>	
Ending inventory at retail		<u>\$ 106,400</u>	
Ending inventory at Cost:			
	\$ 106,400 x 65.47%	=	<u>\$ 69,660</u>

Retail Inventory - LCM Method

P9-8 Solution - LCM (CONVENTIONAL) Method:

	COST	RETAIL	Cost to Retail %
Beg. inventory	\$ 52,000	\$ 78,000	
Purchases	262,000	423,000	
Freight in	16,600		
Purchase returns	(5,600)	(8,000)	
Markups, net		7,000	
Current year additions	273,000	422,000	
Goods available for sale	325,000 /	500,000	= 65.00%
Markdowns, net		(3,600)	
Normal spoilage		(10,000)	
Sales		(380,000)	
Ending inventory at retail		<u>\$ 106,400</u>	
Ending inventory at Cost:			
	\$ 106,400 x 65.00%		= <u>\$ 69,160</u>

Retail Inventory - LIFO Method

P9-8 Solution - LIFO Method:

	<u>COST</u>		<u>RETAIL</u>	<u>Cost to Retail %</u>
Beg. inventory	\$ 52,000	/	\$ 78,000	= 66.67%
Purchases	262,000		423,000	
Freight in	16,600			
Purchase returns	(5,600)		(8,000)	
Markdowns, net			(3,600)	
Markups, net			7,000	
Current year additions	<u>273,000</u>	/	<u>418,400</u>	= 65.25%
Goods available for sale	325,000		496,400	
Normal spoilage			(10,000)	
Sales			(380,000)	
Ending inventory at retail			<u>\$ 106,400</u>	
Ending inventory at Cost:				
PY	\$ 78,000	x	66.67%	= \$ 52,000
CY	<u>28,400</u>	x	65.25%	= <u>18,531</u>
	<u>\$ 106,400</u>			<u>\$ 70,531</u>

Appendix 9A

Retail Inventory Method

Evaluation:

Widely used for the following reasons:

- (1) to permit the computation of net income without a physical count of inventory,
- (2) as a control measure in determining inventory shortages,
- (3) in regulating quantities of merchandise on hand, and
- (4) for insurance information.

Some companies refine the retail method by computing inventory separately by departments or class of merchandise with similar gross profits.

Presentation and Analysis

Presentation:

Accounting standards require disclosure of:

- (1) composition of the inventory,
- (2) financing arrangements, and
- (3) costing methods employed.

Analysis:

Common ratios used in the management and evaluation of inventory levels are **inventory turnover** and **average days to sell the inventory**.

Presentation and Analysis

Inventory Turnover Ratio

Measures the number of times on average a company sells the inventory during the period.

Illustration 9-26

$$\frac{\text{Cost of Goods Sold}}{\text{Average Inventory}} = 8 \text{ times}$$
$$\frac{\$5,299}{(\$681 + \$649.8)/2} = 8 \text{ times}$$

Presentation and Analysis

Average Days to Sell Inventory

Measure represents the average number of days' sales for which a company has inventory on hand.

Inventory Turnover →

Average Days to Sell

Illustration 9-26

$$\frac{\text{Cost of Goods Sold}}{\text{Average Inventory}} = 8 \text{ times}$$
$$\frac{\$5,299}{(\$681 + \$649.8)/2} = 8 \text{ times}$$

$$365 \text{ days} / 8 \text{ times} = \text{every } 45.6 \text{ days}$$

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