

Inventories: Additional Valuation Issues

LEARNING OBJECTIVES

After studying this chapter, you should be

- able to:*
1. **Describe and apply the lower-of-cost-or-net realizable value rule.**
 2. Explain when companies value inventories at net realizable value.
 3. Explain when companies use the relative standalone 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.

LOWER-OF-COST-OR-NET REALIZABLE VALUE (LCNRV)

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

LCNRV

Net Realizable Value

Estimated selling price in the normal course of business less

- ◆ estimated costs to complete and
- ◆ estimated costs to make a sale.

Inventory value—unfinished		€1,000
Less: Estimated cost of completion	€ 50	
Estimated cost to sell	<u>200</u>	<u>250</u>
Net realizable value		<u><u>€ 750</u></u>

LCNRV

Illustration of LCNRV: Jinn-Feng Foods computes its inventory at LCNRV (amounts in thousands).

Food	Cost	Net Realizable Value	Final Inventory Value
Spinach	¥ 80,000	¥120,000	¥ 80,000
Carrots	100,000	110,000	100,000
Cut beans	50,000	40,000	40,000
Peas	90,000	72,000	72,000
Mixed vegetables	95,000	92,000	92,000
			¥384,000

Final Inventory Value:

Spinach	Cost (¥80,000) is selected because it is lower than net realizable value.
Carrots	Cost (¥100,000) is selected because it is lower than net realizable value.
Cut beans	Net realizable value (¥40,000) is selected because it is lower than cost.
Peas	Net realizable value (¥72,000) is selected because it is lower than cost.
Mixed vegetables	Net realizable value (¥92,000) is selected because it is lower than cost.

LCNRV

Methods of Applying LCNRV

			LCNRV by:		
	<u>Cost</u>	<u>LCNRV</u>	<u>Individual Items</u>	<u>Major Groups</u>	<u>Total Inventory</u>
Frozen					
Spinach	¥ 80,000	¥120,000	¥ 80,000		
Carrots	100,000	110,000	100,000		
Cut beans	50,000	40,000	40,000		
Total frozen	230,000	270,000		¥230,000	
Canned					
Peas	90,000	72,000	72,000		
Mixed vegetables	95,000	92,000	92,000		
Total canned	185,000	164,000		164,000	
Total	¥415,000	¥434,000	¥384,000	¥394,000	¥415,000

LCNRV

Methods of Applying

LCNRV

- ◆ In most situations, companies price inventory on an item-by-item basis.
- ◆ Tax rules in some countries require that companies use an individual-item basis.
- ◆ Individual-item approach gives the lowest valuation for statement of financial position purposes.
- ◆ Method should be applied consistently from one period to another.

Recording Net Realizable Value

Illustration: Data for Ricardo Company

Cost of goods sold (before adj. to NRV)	€108,000
Ending inventory (cost)	82,000
Ending inventory (at NRV)	70,000

Loss Method

Loss Due to Decline to NRV 12,000
Inventory (€82,000 - €70,000)

COGS Method

12,000
Cost of Goods Sold 12,000
Inventory

12,000

Recording Net Realizable Value

Partial Statement of Financial Position

	Loss Method	COGS Method
Current assets:		
Inventory	€ 70,000	€ 70,000
Prepays	20,000	20,000
Accounts receivable	350,000	350,000
Cash	100,000	100,000
Total current assets	540,000	540,000

Recording Net Realizable Value

Income Statement	Loss Method	COGS Method
Sales	€ 200,000	€ 200,000
Cost of goods sold	108,000	120,000
Gross profit	92,000	80,000
Operating expenses:		
Selling	45,000	45,000
General and administrative	20,000	20,000
Total operating expenses	65,000	65,000
Other income and expense:		
Loss due to decline of inventory to NRV	12,000	-
Interest income	5,000	5,000
Total other	(7,000)	5,000
Income from operations	20,000	20,000
Income tax expense	6,000	6,000
Net income	€ 14,000	€ 14,000

LCNRV

Use of an Allowance

Instead of crediting the Inventory account for net realizable value adjustments, companies generally use an allowance account.

Loss Method

Loss Due to Decline to NRV	12,000
Allowance to Reduce Inventory to NRV	
12,000	

Use of an Allowance

Partial Statement of Financial Position

	<u>No Allowance</u>	<u>Allowance</u>
Current assets:		
Inventory	€ 70,000	€ 82,000
Allowance to reduce inventory		<u>(12,000)</u>
Inventory at NRV		70,000
Prepays	20,000	20,000
Accounts receivable	350,000	350,000
Cash	<u>100,000</u>	<u>100,000</u>
Total current assets	<u>540,000</u>	<u>540,000</u>

Recovery of Inventory Loss

- Continuing the Ricardo example, assume the net realizable value increases to €74,000 (an increase of €4,000). Ricardo makes the following entry, using the **loss method**.

Recovery of Inventory Loss	4,000
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Recovery of Inventory Loss

Allowance account is adjusted in subsequent periods, such that inventory is reported at the LCNRV.

Illustration shows **net realizable value** evaluation for Vuko Company and the effect of net realizable value adjustments on income.

<u>Date</u>	<u>Inventory at Cost</u>	<u>Inventory at Net Realizable Value</u>	<u>Amount Required in Allowance Account</u>	<u>Adjustment of Allowance Account Balance</u>	<u>Effect on Net Income</u>
Dec. 31, 2015	₱188,000	₱176,000	₱12,000	₱12,000 inc.	Decrease
Dec. 31, 2016	194,000	187,000	7,000	5,000 dec.	Increase
Dec. 31, 2017	173,000	174,000	0	7,000 dec.	Increase
Dec. 31, 2018	182,000	180,000	2,000	2,000 inc.	Decrease

Evaluation of LCM Rule

LCNRV rule suffers some conceptual deficiencies:

1. A company recognizes decreases in the value of the asset and the charge to expense in the period in which the loss in utility occurs—not in the period of sale.
2. Application of the rule results in inconsistency because a company may value the inventory at cost in one year and at net realizable value in the next year.
3. LCNRV values the inventory in the statement of financial position conservatively, but its effect on the income statement may or may not be conservative. Net income for the year in which a company takes the loss is definitely lower. Net income of the subsequent period may be higher than normal if the expected

LCNRV

P9-1: Remmers Company manufactures desks. Most of the company's desks are standard models and are sold on the basis of catalog prices. At December 31, 2015, the following finished desks appear in the company's inventory.

Finished Desks	A	B	C	D
Catalog selling price	€ 500	€ 540	€ 900	€ 1,200
FIFO cost per inventory list 12/31/15	470	450	830	960
Estimated cost to complete and sell	50	110	260	200

Instructions: At what amount should the desks appear in the company's December 31, 2015, inventory, assuming that the company has adopted a lower-of-FIFO-cost-or-net realizable value approach for valuation of inventories on an individual-item basis?

LCNRV

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Catalog selling price	€ 500	€ 540	€ 900	€ 1,200
FIFO cost per inventory list 12/31/15	470	450	830	960
Estimated cost to complete and sell	50	110	260	200
Net realizable value	450	430	640	1,000
Lower-of-cost-or-NRV	450	430	640	960

VALUATION BASES

Special Valuation Situations

Departure from LCNRV rule may be justified in situations when

- ◆ cost is difficult to determine,
- ◆ items are readily marketable at quoted market prices, and
- ◆ units of product are interchangeable.

Two common situations in which **NRV** is the **general rule**:

- ◆ Agricultural assets
- ◆ Commodities held by broker-traders.

VALUATION BASES

Valuation Using Relative Standalone Sales Value

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

Illustration: Woodland Developers purchases land for \$1 million that it will subdivide into 400 lots. These lots are of different sizes and shapes but can be roughly sorted into three groups graded A, B, and C. As Woodland sells the lots, it apportions the purchase cost of \$1 million among the lots sold and the lots remaining on hand. Calculate the cost of lots sold and gross profit.

VALUATION BASES

Lots	Number of Lots	Sales Price per Lot	Total Sales Price	Relative Sales Price	Total Cost	Cost Allocated to Lots	Cost per Lot
A	100	\$10,000	\$1,000,000	100/250	\$1,000,000	\$ 400,000	\$4,000
B	100	6,000	600,000	60/250	1,000,000	240,000	2,400
C	200	4,500	900,000	90/250	1,000,000	360,000	1,800
			<u>\$2,500,000</u>			<u>\$1,000,000</u>	

ILLUSTRATION 9-11

Determination of Gross Profit,
Using Relative Standalone Sales
Value

Lots	Number of Lots Sold	Cost per Lot	Cost of Lots Sold	Sales	Gross Profit
A	77	\$4,000	\$308,000	\$ 770,000	\$ 462,000
B	80	2,400	192,000	480,000	288,000
C	100	1,800	180,000	450,000	270,000
			<u>\$680,000</u>	<u>\$1,700,000</u>	<u>\$1,020,000</u>

GROSS PROFIT METHOD OF ESTIMATING INVENTORY

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

Illustration: Cetus Corp. has a beginning inventory of €60,000 and purchases of €200,000, both at cost. Sales at selling price amount to €280,000. The gross profit on selling price is 30 percent. Cetus applies the gross margin method as follows.

Beginning inventory (at cost)		€ 60,000
Purchases (at cost)		<u>200,000</u>
Goods available (at cost)		260,000
Sales (at selling price)	€280,000	
Less: Gross profit (30% of €280,000)	<u>84,000</u>	
Sales (at cost)		<u>196,000</u>
Approximate inventory (at cost)		<u><u>€ 64,000</u></u>

GROSS PROFIT METHOD

Computation of Gross Profit Percentage

Illustration: In Illustration 9-13, the gross profit was a given. But how did Cetus derive that figure? To see how to compute a gross profit percentage, assume that an article cost €15 and sells for €20, a gross profit of €5.

$$\frac{\text{Markup}}{\text{Retail}} = \frac{€5}{€20} = 25\% \text{ at retail}$$

$$\frac{\text{Markup}}{\text{Cost}} = \frac{€5}{€15} = 33\frac{1}{2}\% \text{ on cost}$$

GROSS PROFIT METHOD

1. **Gross Profit on Selling Price** = $\frac{\text{Percentage Markup on Cost}}{100\% + \text{Percentage Markup on Cost}}$
2. **Percentage Markup on Cost** = $\frac{\text{Gross Profit on Selling Price}}{100\% - \text{Gross Profit on Selling Price}}$

Gross Profit on Selling Price

Percentage Markup on Cost

Given: 20%



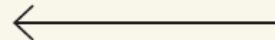
$$\frac{.20}{1.00 - .20} = 25\%$$

Given: 25%



$$\frac{.25}{1.00 - .25} = 33\frac{1}{3}\%$$

$$\frac{.25}{1.00 + .25} = 20\%$$



Given: 25%

$$\frac{.50}{1.00 + .50} = 33\frac{1}{3}\%$$



Given: 50%

GROSS PROFIT METHOD

Illustration: Astaire 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	Sales	€ 1,000,000
Purchases (gross)	640,000	Sales returns	70,000
Freight-in	30,000	Purchases discounts	12,000

Instructions:

- (a)** Compute the estimated inventory at May 31, assuming that the gross profit is **25% of sales**.
- (b)** Compute the estimated inventory at May 31, assuming that the gross profit is **25% of cost**.

GROSS PROFIT METHOD

(a) Compute the estimated inventory at May 31, assuming that the gross profit is **25% of sales**.

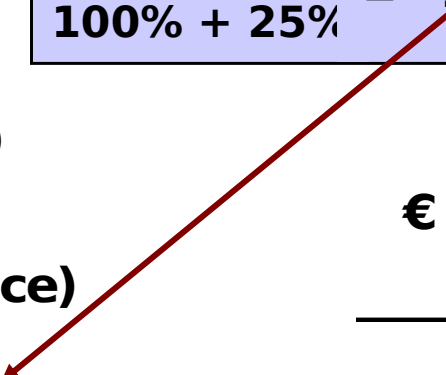
Inventory, May 1 (at cost)		€ 160,000
Purchases (gross) (at cost)		640,000
Purchase discounts		(12,000)
Freight-in		30,000
Goods available (at cost)		<u>818,000</u>
Sales (at selling price)	€ 1,000,000	
Sales returns (at selling price)	(70,000)	
Net sales (at selling price)	<u>930,000</u>	
Less: Gross profit (25% of €930,000)	<u>232,500</u>	
Sales (at cost)		<u>697,500</u>
Approximate inventory, May 31 (at cost)		<u><u>€ 120,500</u></u>

GROSS PROFIT METHOD

(b) Compute the estimated inventory at May 31, assuming that the gross profit is **25% of cost**.

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)		<u>818,000</u>
Sales (at selling price)	€	1,000,000
Sales returns (at selling price)		<u>(70,000)</u>
Net sales (at selling price)		930,000
Less: Gross profit (20% of €930,000)		<u>186,000</u>
Sales (at cost)		<u>744,000</u>
Approximate inventory, May 31 (at cost)	€	<u><u>74,000</u></u>

$$\frac{25\%}{100\% + 25\%} = 20\% \text{ of sales}$$



GROSS PROFIT METHOD

Evaluation of Gross Profit Method

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) Normally unacceptable for financial reporting purposes because it provides only an estimate.

IFRS requires a physical inventory as additional verification of the inventory indicated in the records.

RETAIL INVENTORY METHOD

Method used by retailers to compile inventories at retail prices. Retailer can use a formula to **convert retail prices to cost**.

Requires retailers to keep a record of:

- 1) total cost and retail value of goods purchased.
- 2) Total cost and retail value of the goods available for sale.
- 3) Sales for the period.

Methods

- ◆ Conventional Method (or LCNRV)
- ◆ Cost Method

- For retailers, the term **markup** means an additional markup of the original retail price.
- **Markup cancellations** are decreases in prices of merchandise that the retailer had marked up above the original retail price.
- In a competitive market, retailers often need to use **markdowns**, which are decreases in the original sales prices.
- **Markdown cancellations** occur when the markdowns are later offset by increases in the prices of goods that the retailer had marked down—such as after a one-day sale.
- Neither a markup cancellation nor a markdown cancellation can exceed the original markup or markdown.

- To illustrate these concepts, assume that Designer Clothing Store recently purchased 100 dress shirts from Marroway, Inc. The cost for these shirts was €1,500, or €15 a shirt. Designer Clothing established the selling price on these shirts at €30 a shirt. The shirts were selling quickly, so the manager added a markup of €5 per shirt. This markup made the price too high for customers, and sales slowed. The manager then reduced the price to €32. At this point, we would say that the shirts at Designer Clothing have had a markup of €5 and a markup cancellation of €3.
- A month later, the manager marked down the remaining shirts to a sales price of €23. At this point, an additional markup cancellation of €2 has taken place, and a €7 markdown has occurred. If the manager later increases the price of the shirts to €24, a markdown cancellation of €1 would occur.

- **Freight costs** are part of the purchase cost.
- **Purchase returns** are ordinarily considered as a reduction of the price at both cost and retail.
- **Purchase discounts and allowances** usually are considered as a reduction of the cost of purchases.

- **Transfers-in** from another department are reported in the same way as purchases from an outside enterprise.
- **Normal shortages** (breakage, damage, theft, shrinkage) should reduce the retail column because these goods are no longer available for sale. Such costs are reflected in the selling price because a certain amount of shortage is considered normal in a retail enterprise. As a result, companies do not consider this amount in computing the cost-to-retail percentage. Rather, to arrive at ending inventory at retail, they show normal shortages as a deduction similar to sales.
- **Abnormal shortages**, on the other hand, are deducted from both the cost and retail columns and reported as a special inventory amount or as a loss. To do otherwise distorts the cost-to-retail ratio and overstates ending inventory.
- **Employee discounts** (given to employees to encourage loyalty, better performance, and so on) are deducted from the retail column in the same way as sales. These discounts should not be considered in the cost-to-retail percentage because they do not reflect an overall change in the selling

- The cost/retail ratio makes up one of the main components used to calculate the retail inventory method. Two methods exist for calculating the cost/retail ratio.
- The first method, called the conventional retail method includes markups but excludes markdowns. This method results in a lower ending inventory value.
 - To approach the lower of cost or NRV consider markdown as a current loss and not included in calculating the cost to retail ratio, omitting the markdown makes the cost to retail ratio lower which lead to the lower of cost or NRV.
- The second method, simply called the retail method, uses both markups and markdowns to calculate the ratio. This method results in a higher-ending inventory value

EXTREME SPORT APPAREL

	<u>Cost</u>		<u>Retail</u>
Beginning inventory	€ 1,000		€ 1,800
Purchases	30,000		60,000
Freight-in	600		—
Purchase returns	<u>(1,500)</u>		<u>(3,000)</u>
Totals	30,100		58,800
Net markups			9,000
Abnormal shortage	<u>(1,200)</u>		<u>(2,000)</u>
Totals	<u>€28,900</u>	←————→	65,800
Deduct:			
Net markdowns			1,400
Sales		€36,000	
Sales returns		<u>(900)</u>	35,100
Employee discounts			800
Normal shortage			<u>1,300</u>
Ending inventory, at retail			<u>€27,200</u>

$$\text{Cost-to-retail ratio} = \frac{€28,900}{€65,800} = 43.9\%$$

$$\text{Ending inventory at LCNRV} (43.9\% \times €27,200) = \underline{\underline{€11,940.80}}$$

RETAIL INVENTORY METHOD

Illustration: The following data pertain to a single department for the month of October for Fuque Inc. Prepare a schedule computing retail inventory using the Conventional and Cost methods.

	<u>COST</u>	<u>RETAIL</u>
Beg. inventory, Oct. 1	£ 52,000	£ 78,000
Purchases	272,000	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 and breakage		10,000
Sales		390,000

RETAIL INVENTORY METHOD

CONVENTIONAL Method:

	<u>COST</u>	<u>RETAIL</u>	<u>Cost to Retail %</u>
Beginning inventory	£ 52,000	£ 78,000	
Purchases	272,000	423,000	
Purchase returns	(5,600)	(8,000)	
Freight in	16,600		
Markups, net		7,000	
Current year additions	<u>283,000</u>	<u>422,000</u>	
Goods available for sale	335,000	500,000	67.0%
Markdowns, net		(3,600)	
Normal spoilage and breakage		(10,000)	
Sales		<u>(390,000)</u>	
Ending inventory at retail		<u>£ 96,400</u>	

Ending inventory at Cost:

$$£ 96,400 \times 67.0\% = \underline{\underline{£ 64,588}}$$

RETAIL INVENTORY METHOD

COST Method:

	<u>COST</u>	<u>RETAIL</u>	<u>Cost to Retail %</u>
Beginning inventory	£ 52,000	£ 78,000	
Purchases	272,000	423,000	
Purchase returns	(5,600)	(8,000)	
Freight in	16,600		
Markdowns, net		(3,600)	
Markups, net		7,000	
Current year additions	<u>283,000</u>	<u>418,400</u>	
Goods available for sale	335,000	496,400	67.49%
Normal spoilage and breakage		(10,000)	
Sales		(390,000)	
Ending inventory at retail		<u>£ 96,400</u>	

Ending inventory at Cost:

$$£ 96,400 \times 67.49\% = \underline{\underline{£ 65,060}}$$

RETAIL INVENTORY METHOD

Special Items Relating to Retail Method

- ◆ Freight costs
- ◆ Purchase returns
- ◆ Purchase discounts and allowances
- ◆ Transfers-in
- ◆ Normal shortages
- ◆ Abnormal shortages
- ◆ Employee discounts

When sales are recorded gross, companies **do not** recognize **sales discounts**.

RETAIL INVENTORY METHOD

Special Items

ILLUSTRATION 9-22

Conventional Retail Inventory Method—Special Items Included

EXTREME SPORT APPAREL

	Cost		Retail
Beginning inventory	€ 1,000		€ 1,800
Purchases	30,000		60,000
Freight-in	600		—
Purchase returns	(1,500)		(3,000)
Totals	30,100		58,800
Net markups			9,000
Abnormal shortage	(1,200)		(2,000)
Totals	<u>€28,900</u>	←————→	<u>65,800</u>
Deduct:			
Net markdowns			1,400
Sales		€36,000	
Sales returns		(900)	35,100
Employee discounts			800
Normal shortage			<u>1,300</u>
Ending inventory, at retail			<u>€27,200</u>

$$\text{Cost-to-retail ratio} = \frac{€28,900}{€65,800} = 43.9\%$$

$$\text{Ending inventory at LCNRV} (43.9\% \times €27,200) = \underline{\underline{€11,940.80}}$$

RETAIL INVENTORY METHOD

Evaluation of Retail Inventory Method

Used for the following reasons:

- 1) To permit the computation of net income without a physical count of inventory.
- 2) Control measure in determining inventory shortages.
- 3) Regulating quantities of merchandise on hand.
- 4) 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 of Inventories

Accounting standards require disclosure of:

- 1) Accounting policies adopted in measuring inventories, including the cost formula used (weighted-average, FIFO).
- 2) Total carrying amount of inventories and the carrying amount in classifications (merchandise, production supplies, raw materials, work in progress, and finished goods).
- 3) Carrying amount of inventories carried at fair value less costs to sell.
- 4) Amount of inventories recognized as an expense

PRESENTATION AND ANALYSIS

Presentation of Inventories

Accounting standards require disclosure of:

- 5) Amount of any write-down of inventories recognized as an expense in the period and the amount of any reversal of write-downs recognized as a reduction of expense in the period.
- 6) Circumstances or events that led to the reversal of a write-down of inventories.
- 7) Carrying amount of inventories pledged as security for liabilities, if any.