

16-1

# Computing the Markup

To make a profit, you need to sell a product at a higher rate than its **cost**, or the amount you purchased it for. Cost includes expenses such as freight charges. Your **markup**, or **gross profit**, is the difference between the cost and the selling price. You make a **net profit** if your markup is larger than your operating expenses.

**Example**

**Find the markup.**

Safe Appliances purchases microwave ovens for \$137.50 each. It then sells the microwaves for \$160.00 each. What is the markup on each microwave oven?

Find the markup.

**Markup = Selling Price – Cost**

\$160 – \$137.50 = **\$22.50 markup**

**Practice**

**Find the markup.**

	<b>Item</b>	<b>Selling Price</b>	<b>Cost</b>	<b>Markup</b>
1.	10-CD Changer	\$ 199.00	\$159.00	
2.	Sofa	1,295.00	999.00	
3.	Weed Trimmer	299.95	250.00	
4.	Mattress Set	599.98	527.69	

- Bulky Bakery sells its product to restaurants. It costs Bulky \$0.22 to make each brownie. It sells a dozen brownies for \$2.99 and a gross (144) for \$34.95. What is the markup on a dozen brownies? On a gross of brownies?
- Valley Auto Dealer purchases a new minivan for \$10,725. It sells the same minivan for \$12,918. What is the markup on the minivan?
- Smith Hardware purchases electric sanders for \$71.50. The electric sander is advertised in Smith’s flyer for \$99.00. What is the markup?
- Standardized Test Practice** Bigmart purchases a 4-pack of film for \$7.67. Its regular selling price on the film is \$9.99. What is the markup on a roll of film?  
 A. \$2.32    B. \$0.58    C. \$9.99    D. \$7.67



16-2

# Computing the Markup as a Percentage of Selling Price

Businesses charge a **markup rate** to make money. The markup rate is the markup expressed as a percentage of the selling price.

**Example**

**Find the markup rate.**

Safe Appliances purchases microwave ovens for \$137.50 each. It then sells the microwaves for \$160.00 each. What is the markup rate based on the selling price?

1. Find the markup.

$$\text{Markup} = \text{Selling Price} - \text{Cost}$$

$$\$160 - \$137.50 = \$22.50$$

2. Find the markup rate.

$$\text{Markup Rate} = \text{Markup} \div \text{Selling Price}$$

$$\$22.50 \div \$160 = 14.06\% \text{ markup rate}$$

**Practice**

**Find the markup rate based on the selling price. Round to the nearest hundredth percent.**

	<b>Item</b>	<b>Selling Price</b>	<b>Cost</b>	<b>Markup Rate</b>
1.	10-CD Changer	\$ 199.00	\$159.00	
2.	Sofa	1,295.00	999.00	
3.	Weed Trimmer	299.95	250.00	
4.	Mattress Set	599.98	527.69	

5. Bulky Bakery sells its product to restaurants. It costs Bulky \$0.27 to make each cream-filled donut. It sells a dozen donuts for \$3.99 and a gross (144) for \$46.50. What is the markup rate on a dozen donuts? On a gross of donuts?
6. Valley Auto Dealer purchases a new pickup truck for \$14,572. It sells the same truck for \$18,196. What is the markup rate based on the selling price of the truck?
7. Smith Hardware purchases gas grills for \$147.50. The gas grill is advertised in Smith's flyer for \$219.99. What is the markup rate on the grill?
8. **Standardized Test Practice** Bigmart purchases a 4-pack of film for \$7.67. It sells the film for \$9.99. What is the markup rate on a roll of film?  
**A.** \$2.32    **B.** \$0.58    **C.** 23.2%    **D.** 76.8%

16-3

# Determining the Net Profit in Dollars

The markup on items you sell must cover your **operating expenses** or *overhead*. These expenses include wages, rent, utilities, and taxes. Since the overhead for each item is hard to determine, you may approximate it. When the markup of an item is greater than its overhead expense, you make a net profit on the item.

**Example**

**Find the net profit.**

Safe Appliances purchased 10 electric ranges for \$329 each. It sells the ranges for \$579 each. Safe's owner, Lester Mills, estimates his overhead costs to be 40 percent of the selling price. What is the net profit on each range?

1. Find the markup.

$$\text{Markup} = \text{Selling Price} - \text{Cost}$$

$$\$579 - \$329 = \$250.00$$

2. Find the overhead cost.

$$\text{Overhead} = \text{Selling Price} \times \text{Overhead Percent}$$

$$\$579 \times 40\% = \$231.60$$

3. Find the net profit.

$$\text{Net Profit} = \text{Markup} - \text{Overhead}$$

$$\$250 - \$231.60 = \$18.40 \text{ net profit}$$

**Practice**

**Find the net profit.**

	<b>Markup</b>	<b>Selling Price</b>	<b>Overhead Percent</b>	<b>Net Profit</b>
1.	\$ 60.00	\$150.00	35%	
2.	54.00	225.00	20%	
3.	112.00	337.50	30%	
4.	236.88	791.95	25%	

5. It costs Bulky Bakery \$2.45 to make each fruit-filled pie. It sells the pies for \$4.99 each.

The labor and other overhead costs for each pie are \$1.79. What is the net profit per pie?

6. Valley Auto Dealer purchases a new pickup truck for \$12,189 and sells it for \$16,536. Valley estimates its overhead to be 24 percent of the selling price of each vehicle. What is the net profit on the truck?

7. Smith Hardware buys riding lawnmowers for \$950 each and sells them for \$1,499 each. Smith estimates its overhead costs at 31 percent of the selling price. What is the net profit on each mower?

8. **Standardized Test Practice** Marion Simpson owns a bridal boutique. She buys a wedding gown for \$600 and sells it for \$1,175. She estimates her overhead costs to be 30 percent of the selling price of each item. What is her net profit on the wedding gown?

- A. \$575.00    B. \$352.50    C. \$222.50    D. She has a net loss.



16-4

# Determining the Net Profit as a Percentage of the Selling Price

The **net-profit rate** of an item your business sells is the net profit expressed as a percentage of the selling price of the item.

**Example**

**Find the net profit.**

Safe Appliances purchased 10 electric ranges for \$329 each. It sells the ranges for \$579 each. Safe's owner, Lester Mills, estimates his overhead costs to be 30 percent of the selling price. What is the net profit on each range?

- |  |  |
|--|--|
| <p>1. Find the markup.<br/> <b>Markup = Selling Price – Cost</b><br/> <math>\\$579 - \\$329 = \\$250.00</math></p> <p>3. Find the net profit.<br/> <b>Net Profit = Markup – Overhead</b><br/> <math>\\$250 - \\$173.70 = \\$76.30</math></p> | <p>2. Find the overhead cost.<br/> <b>Overhead = Selling Price × Overhead Percent</b><br/> <math>\\$579 \times 30\% = \\$173.70</math></p> <p>4. Find the net-profit-rate.<br/> <b>Net-Profit Rate = Net Profit ÷ Selling Price</b><br/> <math>\\$76.30 \div \\$579 = 13.18\% \text{ net-profit rate}</math></p> |
|--|--|

**Practice**

Find the net profit and the net-profit rate, rounded to the nearest hundredth percent.

	Markup	Selling Price	Overhead Percent	Net Profit	Net-Profit Rate
1.	\$ 45.00	\$150.00	20%	a.	b.
2.	75.00	225.00	25%	a.	b.
3.	167.50	418.00	30%	a.	b.
4.	491.75	999.95	35%	a.	b.

5. Valley Auto Dealer purchases a new sports car for \$15,265. It sells the same sports car for \$22,756. Valley estimates its overhead to be 25 percent of the selling price of each vehicle. What is the net-profit rate on the car?
6. **Standardized Test Practice** Marion Simpson owns a bridal boutique. She buys white satin shoes for \$21.99 per pair. She sells them for \$40 per pair, or \$36 per pair for anyone buying 4 or more pairs. Simpson estimates her overhead costs to be 25 percent of the selling price of each item. What is her net-profit rate on a single pair of shoes when 5 pairs are purchased by a customer?
- A. 13.92%    B. 22.53%    C. \$9.01    D. \$5.01

16-5

# Confirming the Selling Price Based on Cost and Markup Rate

Using past sales and expense records, you can determine the best markup rate to cover your overhead costs and make a profit. Using the cost of an item and the desired markup rate based on the selling price, you can calculate the best selling price.

**Example**

**Find the selling price.**

Safe Appliances knows from previous sales and expense records that it needs a markup that is 35 percent of the selling price of its goods. The store purchased electric ranges for \$329 each. What is the minimum selling price the store should charge for the ranges to make a profit?

- Find the complement of the markup rate.  
 $\text{Complement of Markup Rate} = 100\% - 35\% = 65\%$

- Find the selling price.

**Selling Price = Cost ÷ Complement of Markup Rate**

$\$329 \div 65\% = \$506.15$  selling price

**Practice**

Find the complement of the markup rate and the selling price, rounded to the nearest cent.

	<b>Cost</b>	<b>Markup Rate</b>	<b>Complement of Markup Rate</b>	<b>Selling Price (Nearest Cent)</b>
1.	\$100.00	30%	a.	b.
2.	225.00	25%	a.	b.
3.	389.50	35%	a.	b.
4.	562.99	40%	a.	b.

- The markup rate on Bulky Bakery’s double-layer cake is 32 percent of the selling price. The cake costs Bulky Bakery \$3.47 to make. What is the selling price?
- Smith Hardware purchases air conditioners for \$250 each. It knows from past records that the markup on its merchandise must be 27.5 percent of the selling price. What is the selling price for the air conditioners?
- Standardized Test Practice** Marion Simpson owns a bridal boutique. She previously estimated the markup rate on her merchandise to be 30 percent of its selling price. She realizes this is not earning her enough of a profit, so she increases her markup rate to 35 percent. If a pair of white satin shoes costs her \$21.99, how much *more* must she sell the pair for to achieve her new profit goal?  
**A. \$2.42    B. 5%    C. \$31.41    D. \$33.83**



16-6

# Computing the Markup Rate Based on Cost

You may use the cost of a product as the base for the markup rate. To do this, divide the markup by the cost.

**Example**

**Find the markup rate based on cost.**

Safe Appliances purchases electric ranges for \$329 each. It sells each range for \$519. What is the markup rate based on cost?

1. Find the markup.  
 $\text{Markup} = \text{Selling Price} - \text{Cost}$   
 $\$519 - \$329 = \$190$
2. Find the markup rate.  
 $\text{Markup Rate} = \text{Markup} \div \text{Cost}$   
 $\$190 \div \$329 = 57.75\% \text{ markup rate}$

**Practice**

**Find the markup and the markup rate. Round to the nearest hundredth percent.**

	<b>Selling Price</b>	<b>Cost</b>	<b>Markup</b>	<b>Markup Rate</b>
1.	\$ 3.99	\$ 0.29	a.	b.
2.	77.50	52.75	a.	b.
3.	363.49	234.67	a.	b.
4.	1,187.57	846.71	a.	b.

5. A double-layer chocolate cake costs Bulky Bakery \$3.47 to make. The company marks up the price of each cake \$1.50. What is the markup rate based on cost?
6. Valley Auto Dealer purchases a new minivan for \$9,289. The selling price for the minivan is \$14,985. What is the markup rate based on cost?
7. Smith Hardware purchases air conditioners for \$250 each. They strive for a markup rate based on cost of 48 percent. What is the markup on an air conditioner? What is the selling price?
8. **Standardized Test Practice** The cost of a designer wedding gown is \$899. Marion Simpson normally sells the gown for \$1,449 but has marked it down to \$1,289. What is the difference in markup rates based on cost between the original selling price and the sale price?  
**A.** 61.18%    **B.** 43.38%    **C.** 17.8%    **D.** \$160.00

16-7

# Computing the Selling Price Based on Cost and Markup Rate

If you know the cost of an item and the desired markup rate based on cost, you can compute the selling price of that item.

**Example**

**Find the selling price.**

Safe Appliances purchases electric ranges for \$329 each. Safe normally sells its appliances at a markup rate based on cost of 125 percent. What selling price should Safe put on each range?

1. Find the markup.

**Markup = Cost × Markup Rate**

$\$329 \times 125\% = \$411.25$

2. Find the selling price.

**Selling Price = Cost + Markup**

$\$329 + \$411.25 = \$740.25$  selling price

**Practice**

**Find the markup and the selling price.**

	<b>Cost</b>	<b>Markup Rate</b>	<b>Markup</b>	<b>Selling Price</b>
1.	\$ 98.00	90%	a.	b.
2.	227.00	110%	a.	b.
3.	318.51	130%	a.	b.
4.	426.83	195%	a.	b.

5. The ingredients to make a double-layer chocolate cake cost Bulky Bakery \$3.47. The cakes are marked up at a rate of 80 percent of cost. What is the selling price of each cake?
6. Valley Auto Dealer purchases a new minivan for \$9,289. The markup rate based on cost of all its vehicles is 65 percent. What is the selling price of the minivan?
7. Smith Hardware purchases light bulbs at a cost of \$0.12 each. The markup rate based on cost is 150 percent. What is the selling price of a dozen light bulbs?
8. **Standardized Test Practice** The cost of a designer wedding gown is \$899. Marion Simpson normally sells gowns at a markup rate of 75 percent of cost, but she has decided to increase her profits by increasing the markup rate to 85 percent of cost? How much will the selling price of the designer gown increase?  
 A. 10%    B. \$89.90    C. \$224.75    D. \$134.85



16-8

## Calculating the Markdown in Dollars as a Percentage of Regular Selling Price

Sometimes your business will offer sale prices to attract customers or to clear out old merchandise. The **markdown**, or discount, is the difference between the regular selling price of an item and its sale price. The **markdown rate** is the markdown expressed as a percentage of the regular selling price.

### Example

**Find the markdown rate.**

Safe Appliances wants to clear out an old model of microwave oven. The microwaves normally sell for \$159, but have been marked down to \$125. What is the markdown rate on the microwave ovens?

1. Find the markdown.

$$\text{Markdown} = \text{Regular Selling Price} - \text{Sale Price}$$

$$\$159 - \$125 = \$34$$

2. Find the markdown rate.

$$\text{Markdown Rate} = \text{Markdown} \div \text{Regular Selling Price}$$

$$\$34 \div \$159 = 21.38\% \text{ markdown rate}$$

### Practice

**Find the markdown and the markdown rate. Round to the nearest hundredth percent.**

	<b>Regular Price</b>	<b>Sale Price</b>	<b>Markdown</b>	<b>Markdown Rate</b>
1.	\$ 50.00	\$ 35.00	a.	b.
2.	87.50	75.25	a.	b.
3.	198.79	147.49	a.	b.
4.	572.98	494.74	a.	b.

5. Bulky Bakery normally sells strawberry shortcakes for \$5.29 each. It has marked them down to \$4.49 for quicker sale. What is the markdown rate on the shortcake?
6. Valley Auto Dealer normally sells a minivan for \$14,389. To make room for the new models, it has reduced the price to \$12,750. What is the markdown rate on the minivan?
7. Smith Hardware has marked down floor fans by \$8.50 to a price of \$29.99. What is the markdown rate on the fans?
8. **Standardized Test Practice** The cost of a designer wedding gown is \$899. Marion Simpson normally sells the gown for \$1,475, but she has marked it down to \$1,250. What is the markdown rate on the gown?  
**A.** 15.25%    **B.** 18%    **C.** 28.08%    **D.** 39.05%



# 16 Chapter Review

## *You Are the Manager*

You're the manager of a health and beauty aids store. As one of your job responsibilities, you are required to set prices. This is not as easy as it sounds. You'll need to set your prices high enough to earn a reasonable profit, but not so high that you drive customers away. Let's see how well you know your stuff. (Round all answers to the nearest cent or hundredth percent.)

1. A bottle of shampoo costs you \$1.45. You sell the shampoo for \$2.29. What is your markup on the shampoo?
2. A tube of toothpaste costs you \$1.19 and you sell it for a price of \$1.98. What is your markup rate based on the selling price of the toothpaste?
3. You estimate your overhead costs to be 35 percent of the selling price of each item. A pump container of skin lotion that costs you \$2.40 sells for \$4.18. What is the overhead cost for the lotion?
4. What is your net profit on the sale of the lotion?
5. What is your net-profit rate on the lotion?
6. A pack of 3 bars of soap costs you \$0.77. You estimate your markup rate to be 40 percent of the selling price. What is the selling price of the pack of soap?
7. A tube of lipstick costs you \$2.75. You sell the lipstick for \$4.48. What is the markup rate based on the cost of the lipstick?
8. You estimate your markup to be 90 percent of the cost of each item you sell. A manicure set costs you \$6.66. What is the markup on the manicure set?
9. What is the selling price of the manicure set?
10. A can of shaving cream normally sells for \$2.19. The product has been discontinued, so to make room on your shelves, you mark it down to \$1.75. What is the markdown rate on the shaving cream?