

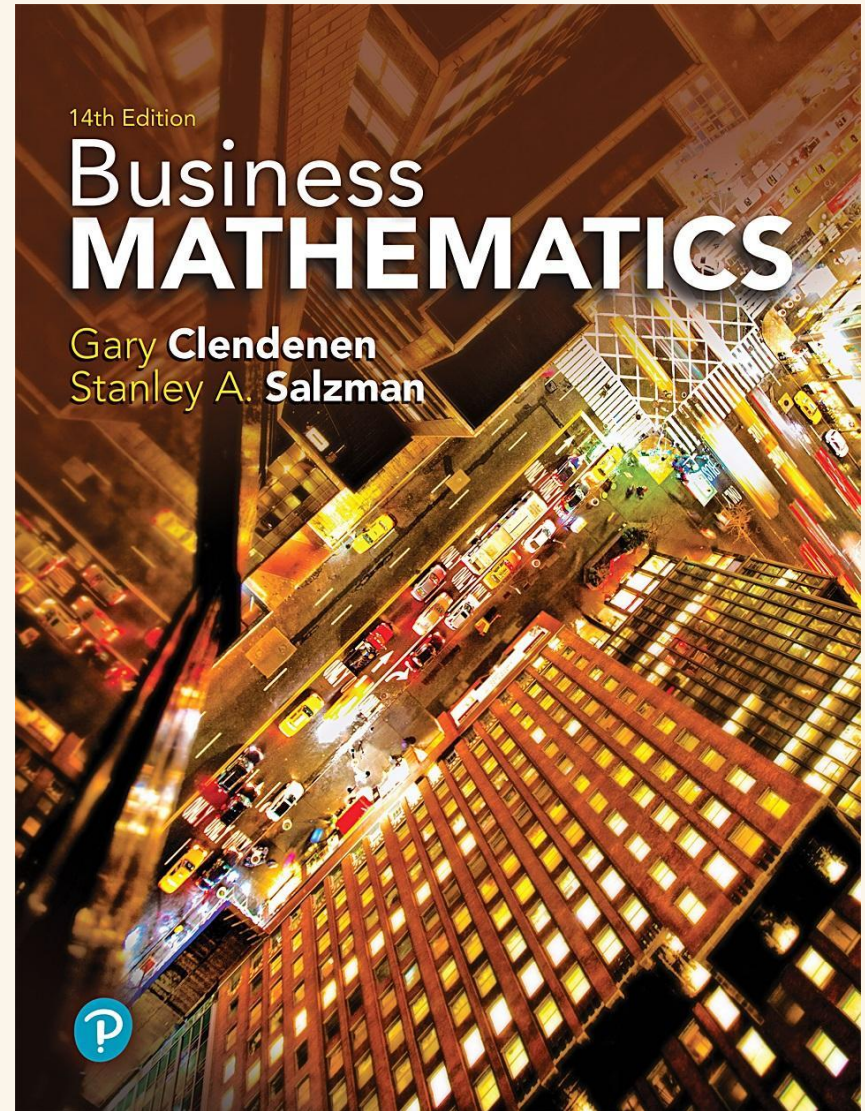
Chapter 8

Mathematics of

Selling

Section 1

Markup on Cost



Objectives

1. Recognize the terms used in selling.
2. Use the basic formula for markup.
3. Calculate markup based on cost.
4. Apply percent to markup problems.

Recognize the Terms Used in Selling

Cost is the amount paid to the manufacturer or supplier after trade and cash discounts have been taken. Shipping and insurance charges are included in cost.

Selling price is the price at which merchandise is sold to the public.

Recognize the Terms Used in Selling

Markup, margin, or gross profit is selling price minus cost.

Operating expenses, or overhead, include the expenses of operating the business, such as wages, rent for buildings and equipment, utilities, insurance, and advertising.

Net profit (net earnings) is gross profit minus operating expenses.

Use the Basic Formula for Markup

The basic **markup formula** that follows shows that the selling price is the sum of the cost and the markup.

Selling Price = Cost + Markup

$$S = C + M$$

Example 1(1 of 2)

REI received three different items used by snowboarders. Use the basic markup formula to find the unknown for each of the following.

$$\begin{array}{r} \text{(a)} \quad C \quad \$34.48 \\ + M \quad \$13.40 \\ \hline S \quad \$ \end{array}$$

$$\begin{array}{r} \text{(b)} \quad C \quad \$83.82 \\ + M \quad \$ \\ \hline S \quad \$124.99 \end{array}$$

$$\begin{array}{r} \text{(c)} \quad C \quad \$ \\ + M \quad \$68.17 \\ \hline S \quad \$227.24 \end{array}$$

Example 1 (2 of 2)

$$\begin{array}{r} \text{(a)} \quad C \quad \$34.48 \\ + M \quad \$13.40 \\ \hline S \quad \$47.88 \end{array}$$

$$\begin{array}{r} \text{(b)} \quad C \quad \$83.82 \\ + M \quad \$41.17 \\ \hline S \quad \$124.99 \end{array}$$

$$\begin{array}{r} \text{(c)} \quad C \quad \$159.07 \\ + M \quad \$68.17 \\ \hline S \quad \$227.24 \end{array}$$

Calculate Markup Based on Cost

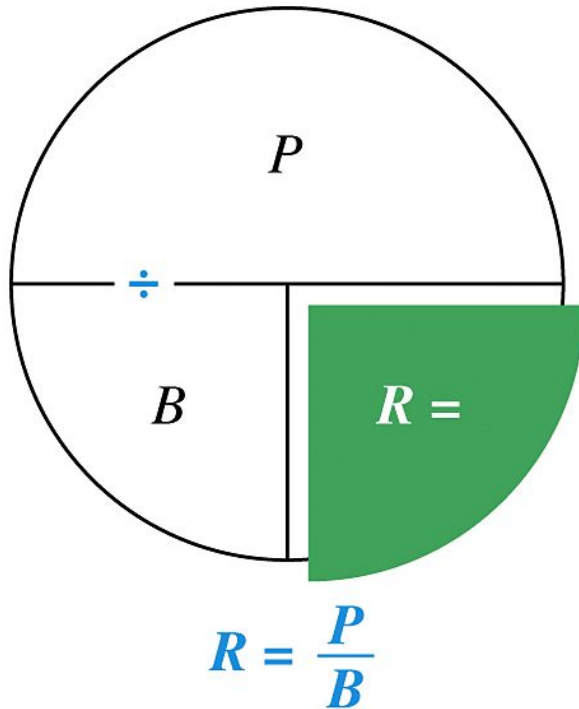
Markup on cost: markup is stated as a percent of cost

Application of basic percent equation

Base is cost, or 100%

Finding Markup on Cost

$$\text{Markup on cost} = \frac{\text{Amount of markup}}{\text{Cost}}$$



Apply Percent to Markup Problems

Use the formulas:

Markup = Selling price – Cost

Markup as a percent of Cost = Markup $\div$ Cost

Selling price as a percent of Cost

= Selling price $\div$ Cost

State the markup as a percent

Example 2 (1 of 3)

A discount store bought hiking boots manufactured in Mexico for \$60 and plans to sell them for \$81 a pair. Find the percent of markup based on cost.

Example 2 (2 of 3)

Cost is the base, or 100%. All other percents *must be in terms of cost.*

$$\begin{array}{rclcl} 100\% & C & \$60 \\ & ?\% & M & \$? \\ \hline & ?\% & S & \$81 \end{array}$$

Find the unknown values as follows.

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

$$= \$81 - \$60 = \$21$$

Example 2 (3 of 3)

$$\begin{aligned}\text{Markup percent} &= \text{Markup} \div \text{Cost} \\ &= \$21 \div \$60 = 35\%\end{aligned}$$

$$\begin{aligned}\text{Selling price percent} &= 100\% + \text{Markup \%} \\ &= 100\% + 35\% = 135\%\end{aligned}$$

Markup based on cost is 35% and selling price is 135% of cost.

$$\begin{array}{rcl} 100\% & C & \$60 \\ 35\% & M & \$21 \\ \hline 135\% & S & \$81 \end{array}$$

Example 3 (1 of 3)

Dick's Sporting Goods puts a markup on a dumbbell set of \$16, which is 50% of the firm's cost. Find the cost and the selling price.

Example 3 (2 of 3)

Cost is the base, or 100%. Cost is not known.

$$\begin{array}{rcl} 100\% & C & \$? \\ 50\% & M & \$16 \\ \hline ?\% & S & \$? \end{array}$$

Find the cost using the fact that markup of \$16 is 50% of cost.

$$\text{Markup} = 50\% \times \text{Cost}$$

$$\$16 = .5 \times C$$

Example 3 (3 of 3)

Divide both sides of the equation by .5

$$C = \$16 \div .5 = \$32$$

Complete the table by adding the percent and dollar columns to find the totals.

100%	C	\$32
+ 50%	M	\$16
150%	S	\$48

The cost to the retailer is \$32, the selling price is \$48, or 150% of the cost.

Example 4 (1 of 3)

Find the markup and the selling price for a belt if the cost is \$23.60 and the markup is 45% of cost.

Example 4 (2 of 3)

Cost is the base, or 100%. Cost is known.

$$\begin{array}{rcl} 100\% & C & \$23.60 \\ 45\% & M & \$? \\ \hline ?\% & S & \$? \end{array}$$

Percent column totals 145%. Use the basic percent equation to find the following.

$$M = 45\% \text{ of Cost} = .45 \times \$23.60 = \$10.62$$

Example 4 (3 of 3)

The selling price can be found either by adding the cost of \$23.60 to the markup of \$10.62, or as follows:

$$S = 145\% \text{ of Cost} = 1.45 \times \$23.60 = \$34.22$$

The selling price of the belt is \$34.22.

$$\begin{array}{r} 100\% \quad C \quad \$23.60 \\ + \quad 45\% \quad M \quad \$10.62 \\ \hline 145\% \quad S \quad \$34.22 \end{array}$$

Example 6 (1 of 3)

The retail price of a 54-inch portable basketball system is \$549.99. The retailer has operating expenses of 29.5% and wants a 5.5% profit, both based on cost, on this item. First find the total percent of markup on cost, then find cost and markup.

Add operating expense and profit percents to find the percent markup on cost required by the retailer.

Example 6 (2 of 3)

$$\begin{aligned}\text{Markup on cost} &= \text{operating expense} + \text{profit} \\ &= 29.5\% + 5.5\% = 35\%\end{aligned}$$

Now set the problem up in table form.

$$\begin{array}{rcll}100\% & C & \$? & \\35\% & M & \$? & \\ \hline? \% & S & \$549.99 & \end{array}$$

The percent total is 135%. Find the base.

Example 6 (3 of 3)

$$\text{Cost} = \frac{\text{Selling Price}}{\text{Rate}} = \frac{\$549.99}{1.35} = \$407.40$$

$$\begin{aligned}\text{Markup} &= \text{Selling price} - \text{Cost} \\ &= \$549.99 - \$407.40 = \$142.59\end{aligned}$$

$$\begin{array}{rcl}100\% & C & \$407.40 \\ + & 35\% & M & \$142.59 \\ \hline135\% & S & \$549.99\end{array}$$

The cost is \$407.40 and the markup is \$142.59.