Section Overview

SECTION 6B

Percent Increase and Decrease — Lesson 6-5

Why? Percents are often used to describe changes.

> **Percent change** is the ratio of the *amount of change* to the *original amount*.
> **percent change** $= \frac{\text{amount of change}}{\text{original amount}}$

Find the percent change on a \$24 shirt that is on sale for \$20.

First, find the **amount of change.**

$\$24 - \$20 = \mathbf{\$4}$

Next, find the **percent change.**

$$\frac{\text{amount of change}}{\text{original amount}} = \frac{\$4}{\$24} = \frac{1}{6} = \mathbf{16\frac{2}{3}\%}$$

There was a $16\frac{2}{3}\%$ decrease in the price.

Applications of Percents — Lessons 6-6, 6-7

Why? Percents are used in banking and in sales.

Commission

Last month, a real estate agent sold one house for \$90,000, earning a 3% commission on the sale. The agent is paid a monthly salary of \$1200 plus com mission. What was her total pay last month?

$$\begin{aligned}\textbf{commission} &= \text{commission rate} \cdot \text{sales}\\ &= 0.03 \cdot 90{,}000\\ &= \mathbf{\$2700}\end{aligned}$$

$$\begin{aligned}\text{total pay} &= \text{commission} + \text{salary}\\ &= \mathbf{\$2700} + \$1200\\ &= \$3900\end{aligned}$$

The agent's total pay for last month was \$3900.

Compound Interest

Marcus invested \$750 in a savings account that pays 3% interest compounded monthly. Find the value of the investment after 5 years.

$$\begin{aligned}A &= P\left(1 + \frac{r}{n}\right)^{nt}\\ &= 750\left(1 + \frac{0.03}{12}\right)^{12(5)}\\ &= 750(1.0025)^{60}\\ &\approx 750(1.1616) = 871.2\end{aligned}$$

After 5 years, the investment will be worth about \$871.20.

Simple Interest

Find the amount repaid on a 4-year \$13,500 loan at an annual simple interest rate of 6%.

Find the simple interest:

$$\begin{aligned}\textbf{simple interest} &= \text{principal} \cdot \text{rate} \cdot \text{time}\\ I &= Prt\\ &= 13{,}500 \cdot 0.06 \cdot 4 = \mathbf{\$3240}\end{aligned}$$

Find the amount repaid:

$$\begin{aligned}\text{amount} &= \text{principal} + \textbf{simple interest}\\ A &= P + I\\ &= \$13{,}500 + \mathbf{\$3240} = \$16{,}740\end{aligned}$$

The amount repaid is \$16,740.