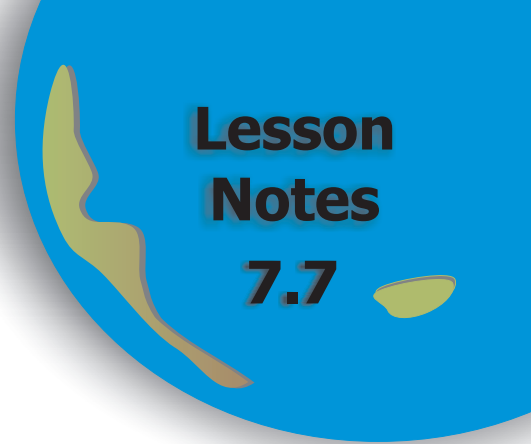


NAME _____

Module 7 Ratio, Proportion, and Percent
Lesson 7 Problem Solving with Percents



Lesson Objectives

- Solve real-world percent problems including percent of increase and decrease with or without technology.
- Solve real-world percent problems involving simple and compound interest with or without technology.

Subtopic 1 Percent of Increase and Percent of Decrease

$$\text{percent of change} = \frac{\text{amount of change}}{\text{original amount}}$$

- 1** Kathy used 240 cell phone minutes last month. This month, she used 600 minutes. What was the percent of change from last month to this month?

$$600 - 240 = 360$$

$$\text{percent of increase} = \frac{360}{240} = \frac{3}{2} = 1\frac{1}{2} = 150\%$$

- 2** The original price of a camera is \$300. The price decreased 20%. What is the new price of the camera?

$$\begin{aligned} &20\% \text{ of } 300 \\ &0.2 \times 300 = 60 \end{aligned}$$

$$\begin{aligned} &\text{Amount of decrease: } \$60 \\ &\text{New price} = \text{original price} - \text{amount of decrease} \\ &\text{New price: } \$300 - \$60 = \$240 \end{aligned}$$

Subtopic 2 Simple Interest

Interest is the amount paid for the use of money.

- When you save money, the bank pays you interest.
- If you borrow money, you have to pay the bank interest.

Simple Interest

$$I = Prt$$

I: Interest

P: Principal

r: rate

t: time in years

- 3** Lori saved \$400 for three years at a rate of 4%. Find the amount of simple interest and the total amount in the account.

$$\begin{aligned}I &= Prt \\I &= 400(0.04)(3) \\I &= 48 \\ \text{Total amount} &= \$400 + \$48 = \$448\end{aligned}$$

Subtopic 3 Compound Interest

Compound interest is interest calculated on both the principal and any interest already added on.

Annually: Once a year

Semiannually: Twice a year

Quarterly: Four times a year

Monthly: Twelve times a year

- 4** Five-thousand dollars was deposited at a rate of 6%, compounded annually. Find the amount of money after two years.

$$\begin{aligned}\text{Interest after one year:} \\I &= Prt \\I &= (\$5,000)(0.06)(1) = \$300 \\ \text{Amount in account after one year:} \\A &= P + I \\A &= \$5,000 + \$300 = \$5,300 \\ \text{Interest for year two:} \\I &= Prt \\I &= (\$5,300)(0.06)(1) = \$318 \\ \text{Amount in account after two years:} \\A &= P + I \\A &= \$5,300 + \$318 = \$5,618\end{aligned}$$