

## Lesson 2-5

## Example 1

Simplify.

a.  $3(p + 5)$

b.  $-10(3.5 - gh)$

c.  $-(3m + n)$

## Solution

$$\begin{aligned} \text{a. } 3(p + 5) &= 3p + 3(5) \\ &= 3p + 15 \end{aligned}$$

Use the Distributive Property.

$$\begin{aligned} \text{b. } -10(3.5 - gh) &= -10(3.5) - (-10)(gh) \\ &= -35 - (-10gh) \\ &= -35 + 10gh \end{aligned}$$

Use the Distributive Property.  
To subtract, add the opposite.

$$\begin{aligned} \text{c. } -(3m + n) &= (-1)(3m + n) \\ &= (-1)(3m) + (-1)(n) \\ &= -3m + (-n) \\ &= -3m - n \end{aligned}$$

Apply the Multiplication Property of -1.  
Use the Distributive Property.

## Example 2

Simplify.

a.  $\frac{3x + 9}{3}$

b.  $\frac{-5x - 12}{-2}$

c.  $\frac{2.8 + 1.6yz}{0.4}$

## Solution

$$\begin{aligned} \text{a. } \frac{3x + 9}{3} &= \frac{3x}{3} + \frac{9}{3} \\ &= x + 3 \end{aligned}$$

$$\begin{aligned} \text{b. } \frac{-5x - 12}{-2} &= \frac{-5x}{-2} - \frac{12}{-2} \\ &= \frac{5}{2}x + 6 \end{aligned}$$

$$\begin{aligned} \text{c. } \frac{2.8 + 1.6yz}{0.4} &= \frac{2.8}{0.4} + \frac{1.6yz}{0.4} \\ &= 7 + 4yz \end{aligned}$$

**Example 3**

Evaluate each expression when  $x = 4$ ,  $y = -3$ , and  $z = \frac{1}{2}$ .

a.  $-4(x + 5)$

b.  $\frac{2y - 8}{-7}$

c.  $12z(x - 2)$

**Solution**

First substitute the appropriate value for each variable. Then simplify the expression using the order of operations.

$$\begin{aligned} \text{a. } -4(x + 5) &= -4(4 + 5) \\ &= -4(9) \\ &= -36 \end{aligned}$$

$$\begin{aligned} \text{b. } \frac{2y - 8}{-7} &= \frac{2(-3) - 8}{-7} \\ &= \frac{-6 - 8}{-7} \\ &= \frac{-14}{-7} \\ &= 2 \end{aligned}$$

$$\begin{aligned} \text{c. } 12z(x - 2) &= 12\left(\frac{1}{2}\right)(4 - 2) \\ &= 6(2) \\ &= 12 \end{aligned}$$

**Example 4**

**MANUFACTURING** A computer company typically builds  $25x + 10$  computers each 5-day workweek. How many computers are built each day?

**Solution**

$$\begin{aligned} \frac{25x + 10}{5} &= \frac{25x}{5} + \frac{10}{5} \\ &= 5x + 2 \end{aligned}$$

The company builds  $5x + 2$  computers each day.