

## Lesson 2-6

## Example 1

Simplify.

a.  $4y + 3(2y - 2)$

b.  $12 - 5(x - 2)$

## Solution

$$\begin{aligned} \text{a. } 4y + 3(2y - 2) &= 4y + 3(2y) + 3(-2) \\ &= 4y + 6y + (-6) \\ &= 10y - 6 \end{aligned}$$

Use the Distributive Property.  
Simplify.  
Combine like terms.

$$\begin{aligned} \text{b. } 12 - 5(x - 2) &= 12 + (-5)[x + (-2)] \\ &= 12 + (-5)x + (-5)(-2) \\ &= 12 - 5x + 10 \\ &= 22 - 5x \end{aligned}$$

Rewrite subtraction as addition of the opposite.  
Use the Distributive Property.  
Simplify.  
Simplify.

## Example 2

Simplify.

a.  $4(x + 5) + 2(x - 3)$

b.  $4(mn - 2m) - 2(n + m)$

## Solution

$$\begin{aligned} \text{a. } 4(x + 5) + 2(x - 3) &= 4(x) + 4(5) + 2(x) + 2(-3) \\ &= 4x + 20 + 2x + (-6) \\ &= (4x + 2x) + [20 + (-6)] \\ &= 6x + 14 \end{aligned}$$

Use the Distributive Property.

Use the Associative Property.

$$\begin{aligned} \text{b. } 4(mn - 2m) - 2(n + m) &= 4(mn) + 4(-2m) + (-2)(n) + (-2)(m) \\ &= 4mn + (-8m) + (-2n) + (-2m) \\ &= 4mn + [(-8m) + (-2m)] + (-2n) \\ &= 4mn - 10m - 2n \end{aligned}$$

**Example 3**

**BUSINESS** The manager of a golf pro shop orders 15 drivers. Some of the drivers have steel shafts and some have graphite shafts. Steel shaft drivers cost the shop \$120, and graphite shaft drivers cost \$150. Write and simplify a variable expression for the total cost of the golf clubs.

**Solution**

Let  $n$  = the number of steel shaft drivers. If  $n$  of the drivers have steel shafts, then  $15 - n$  have graphite shafts. Write an expression for the amount spent on each type of driver.

steel:  $120n$

graphite:  $150(15 - n)$

Find the total cost.

$$\begin{aligned}120n + 150(15 - n) &= 120n + 150(15) + 150(-n) \\ &= 120n + 2250 + (-150n) \\ &= -30n + 2250\end{aligned}$$

The total cost of the golf clubs is  $-30n + 2250$  dollars.