

## Using the Distributive Principle

The terms  $x$  and  $3$  are not like terms, so we cannot simplify  $5(x + 3)$  by adding the terms in the parentheses. Instead, we use the Distributive Principle.

$$5(\overbrace{x + 3}) = 5x + 5 \cdot 3 = 5x + 15$$

$$5(x - 3) = 5x - 5 \cdot 3 = 5x - 15$$

Write an equivalent expression using the Distributive Principle.

$$2(\overbrace{x + 6}) = 2x + 12$$

$$2(x - 6) =$$

$$3(2x + 4) =$$

$$8(x + 2) =$$

$$8(x - 2) =$$

$$11(5x + 2) =$$

$$6(x + 4) =$$

$$6(x - 4) =$$

$$-2(3x + 1) =$$

$$(x + 3)4 =$$

$$(x - 3)4 =$$

$$6(2x - 3) =$$

$$(x + 9)7 =$$

$$(x - 9)7 =$$

$$5(5x - 2) =$$

$$-3(x + 1) =$$

$$(x + 1)(-3) =$$

$$(3x - 10)(-5) =$$

$$5(x^2 + 6) =$$

$$(x^2 - 6)5 =$$

$$(2x^2 + 1)(-3) =$$

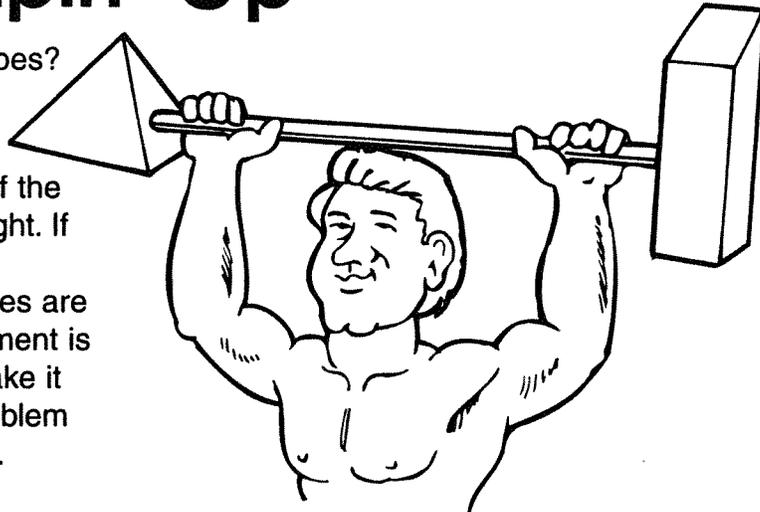
Simplify.

$8 + 3(x + 2)$ $8 + 3x + 6$ $3x + 14$	$x + 4(x - 6)$	$5(2x - 3) + 14$
$-2(x + 7) + 12x$	$x + 3(x - 4) + 2x$	$5x^2 + 3(x^2 - 1)$
$10a + 2(a + 9) + 25$	$5y + (x - 4)(-7)$	$x + 2(x + 1) + x^2$

# Shapin' Up

How well do you know your geometric shapes? Find out by testing your knowledge on the challenging "shaper-uppers" below.

Use the distributive property to determine if the left side of each equation is equal to the right. If both sides of the equation are equal, the corresponding statement is true; if both sides are not equal, the statement is false. If a statement is false, use your geometric knowledge to make it true. Correct each incorrect distribution problem on the blank provided below each problem.



1. A rhombus is a quadrilateral with sides of equal length and angles of equal measure.

$$5(x - 7) = x - 35$$

**True or False?**

2. An isosceles triangle is a triangle with all sides and angles congruent.

$$(x - 3)(-5) = -5x - 15$$

**True or False?**

3. A regular octagon is a polygon with eight sides of equal length and eight angles of equal measure.

$$(12x - 6)(-3) = -36x + 18$$

**True or False?**

4. A sphere is a globe-shaped figure with every point on its surface equidistant from its center.

$$(14 + 8x)(7) = 98 + 56x$$

**True or False?**

5. A trapezoid is a polygon with only two sides parallel and two angles congruent.

$$(20 - 6x)(-4) = -80 - 24x$$

**True or False?**