

To solve an equation with multiplication, first use the Distributive Property or a generic rectangle to rewrite the equation without parentheses, then solve in the usual way. See the Math Notes box on page 198.

Example 1

Solve $6(x+2) = 3(5x+1)$

Use the Distributive Property

$$6x + 12 = 15x + 3$$

Subtract $6x$

$$12 = 9x + 3$$

Subtract 3

$$9 = 9x$$

Divide by 9

$$1 = x$$

Example 2

Solve $x(2x-4) = (2x+1)(x+5)$

Rewrite using generic rectangles

$$2x^2 - 4x = 2x^2 + 11x + 5$$

Subtract $2x^2$

$$-4x = 11x + 5$$

Subtract $11x$

$$-15x = 5$$

Divide by -15

$$x = \frac{5}{-15} = -\frac{1}{3}$$

Problems

Solve each equation.

1. $3(c + 4) = 5c + 14$
2. $x - 4 = 5(x + 2)$
3. $7(x + 7) = 49 - x$
4. $8(x - 2) = 2(2 - x)$
5. $5x - 4(x - 3) = 8$
6. $4y - 2(6 - y) = 6$
7. $2x + 2(2x - 4) = 244$
8. $x(2x - 4) = (2x + 1)(x - 2)$
9. $(x - 1)(x + 7) = (x + 1)(x - 3)$
10. $(x + 3)(x + 4) = (x + 1)(x + 2)$
11. $2x - 5(x + 4) = -2(x + 3)$
12. $(x + 2)(x + 3) = x^2 + 5x + 6$
13. $(x - 3)(x + 5) = x^2 - 7x - 15$
14. $(x + 2)(x - 2) = (x + 3)(x - 3)$
15. $\frac{1}{2}x(x + 2) = (\frac{1}{2}x + 2)(x - 3)$