

## Study Guide

**Solving Quadratic Equations by Factoring**

The only way for the product of two numbers to equal 0 is for at least one of the factors to be 0. This fact is known as the **zero product property**. You use this property when you solve equations by factoring.

<b>Zero Product Property</b>	For any real numbers $a$ and $b$ , if $ab = 0$ , then $a = 0$ or $b = 0$ .
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**Example:** Solve  $x^2 - 4x = 12$  by factoring.

$$x^2 - 4x - 12 = 0$$

Rewrite the equation in standard form.

$$(x - 6)(x + 2) = 0$$

Factor.

$$x - 6 = 0 \quad x + 2 = 0$$

Use the zero product property.

$$x = 6 \quad x = -2$$

Set each factor equal to zero and solve.

**Solve each equation by factoring.**

1.  $z^2 - 12z + 27 = 0$

2.  $x^2 + 13x + 40 = 0$

3.  $x^2 - 7x - 44 = 0$

4.  $x^2 + 3x - 130 = 0$

5.  $x^2 - 12x = -36$

6.  $3s^2 - 13s = 10$

7.  $16x^2 = 49$

8.  $3s^2 - 13s = -10$

9.  $4k^2 - 35k - 9 = 0$

10.  $-2x^2 - 5x + 12 = 0$