



Algebra 2

Solving Quadratic Equations by Completing the Square

Today I will...	I'll know I've got it when...	Essential Question...

**Example 1:** Solve  $x^2 + 10x - 3 = 0$  by completing the square.

Step 1: Get the constant term( $c$ ) on one side of the equation and everything else on the other side of the equation.

Step 2: Is the leading coefficient 1? If yes, go to step 3. If not, divide by the leading coefficient on both sides of the equation.

Step 3: Calculate  $\left(\frac{b}{2}\right)^2$  and add it to both sides of the equation. Combine any like terms.

Step 4: Factor the trinomial.

Step 5: Take the square root of both sides. Remember:  $\sqrt{x^2} = \pm x$ . Simplify any square roots that can be simplified.

Step 6: Solve for the variable.

**Example 2:** Solve  $x^2 - 16x + 76 = 0$  by completing the square.

**Example You Try:** Solve  $x^2 + 6x - 8 = 0$  by completing the square.

**Example 3:** Solve  $3x^2 - 6x + 12 = 0$  by completing the square.

**Example 4:** Solve  $-4r^2 + 21r = r + 13$  by completing the square.

**Example You Try:** Solve  $5x^2 - 10x + 30 = 0$  by completing the square.

**When is completing the square a good choice for solving a quadratic equation?**