

Complete each problem.

1. The completing the square method can be used to solve any quadratic equation.

true

false

2. Write each expression below its matching perfect square trinomial.

$(x + 8)^2$	$(x - 1)^2$	$\left(x - \frac{1}{2}\right)^2$	$\left(x - \frac{1}{4}\right)^2$
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$x^2 + 16x + 64$ $(x + 8)^2$	$x^2 - 2x + 1$ $(x - 1)^2$
$x^2 - \frac{1}{2}x + \frac{1}{16}$ $\left(x - \frac{1}{4}\right)^2$	$x^2 - x + \frac{1}{4}$ $\left(x - \frac{1}{2}\right)^2$

3. Find the value of  $c$  that completes the square for the expression.

$$x^2 + 12x + c$$

144

36

12

6

4. Find the value of  $c$  that completes the square.

$$x^2 - 30x + c$$

$$c = 225$$

5. Find the value of  $c$  that completes the square.

$$x^2 + 5x + c$$

$$c = \frac{25}{4}$$

Write the trinomial as the square of a binomial.

$$(x - 15)^2$$

Write the trinomial as the square of a binomial.

$$\left(x + \frac{5}{2}\right)^2$$

Solve each quadratic equation by completing the square.

6.  $x^2 + 12x + 3 = 0$

$$x = -6 \pm \sqrt{33}$$

7.  $x^2 - 14x + 13 = 0$

$$x = 13 \text{ or } x = 1$$

8.  $x^2 - 5x - 8 = 0$

$$x = \frac{5 \pm \sqrt{57}}{2}$$

9. Explain the first step for solving the quadratic equation  $3x^2 - 24x + 24 = 0$  by completing the square.

**Sample answer:**

**The first step should be to divide each term by 3.**

Solve the equation  $3x^2 - 24x + 24 = 0$ .

$$x = 4 \pm 2\sqrt{2}$$

10. Solve the quadratic equation by completing the square.

$$-2x^2 - 14x + 30 = 0$$

$$x = \frac{-7 \pm \sqrt{109}}{2}$$