

Day 2 - Solving by Finding Square Roots/Completing the Square**Solving by Finding Square Roots :****Steps for Solving Quadratics by Finding Square Roots**

1. Add or Subtract any constants that are on the same side of x^2 .
2. Multiply or Divide any constants from x^2 terms. "Get x^2 by itself"
3. Take square root of both sides and set equal to positive and negative roots (\pm).

Ex: $x^2 = 25$

$$\sqrt{x^2} = \sqrt{25}$$

$$x = \pm 5$$

$$x = + 5 \text{ and } x = - 5$$

**REMEMBER WHEN SOLVING FOR X YOU GET A _____ AND _____
ANSWER!**

Solve the following for x:

1) $x^2 = 49$

2) $x^2 = 20$

3) $7x^2 - 6 = 57$

4) $10x^2 + 9 = 499$

5) $2x^2 + 8 = 170$

6) $x^2 = 0$

7) $\frac{1}{2}(x+8)^2 = 14$

8) $-2(x+3)^2 - 16 = -48$

9) $3(x-4)^2 + 7 = 67$

Solving by Completing the Square:

The Equation:

STEP 1: move constant term to the other side)

STEP 2: make the left hand side a perfect square

trinomial by adding $\left(\frac{b}{2}\right)^2$ to **both** sides

STEP 3: factor the left side, simplify the right side

STEP 4: solve by finding square roots

$$x^2 + 6x + 2 = 0$$

$$x^2 + 6x + \underline{\quad} = -2$$

$$x^2 + 6x + \boxed{9} = -2 + \boxed{9}$$

$$(x + 3)^2 = 7 \text{ (You've completed the square - time to solve!)}$$

$$\sqrt{(x + 3)^2} = \sqrt{7}$$

$$x + 3 = \sqrt{7} \text{ and } x + 3 = -\sqrt{7}$$

$$x = -3 + \sqrt{7} \text{ and } x = -3 - \sqrt{7}$$

Solve for x.

1. $x^2 - 6x - 72 = 0$

2. $x^2 + 80 = 18x$

X = _____

X = _____

3. $x^2 - 14x - 59 = -20$

4. $2x^2 - 36x + 10 = 0$

X = _____

X = _____