Name: ______Period: _____

NOTES: SOLVE QUADRATICS BY Completing the Square

The Goal of Completing the Square

To solve by completing the square, we will manipulate the equation to make it look something like this:

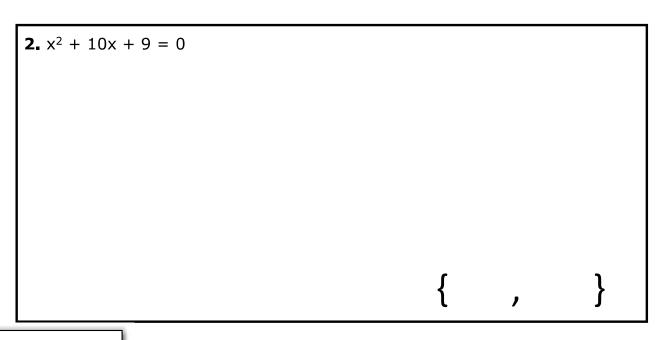
$$(x-4)^2=25$$

Steps to Solve:

- I. Move ______ to right side of equation.
- 2. Add $\left(\frac{b}{2}\right)^2$ to both sides of the equal sign, which will create a perfect square trinomial.
- 3. Factor the perfect square trinomial.
- 7. Take the _______ of both sides. Set up two equations and ______.

When a = 1

$$1. x^2 + 6x - 40 = 0$$



When $a \neq 1$

$$3. 2x^2 + 28x - 30 = 0$$

,

4.
$$2x^2 - 14x - 5 = 0$$

When a = -1

5.
$$-x^2 - 8x + 20 = 0$$

, }

6.
$$-x^2 - 5x + 5 = 0$$

Name:_______ Date:______Period:_____

A. SOLVE QUADRATICS BY Completing the Square

Solve each quadratic equation by completing the square.

1.
$$x^2 + 4x - 21 = 0$$

2.
$$x^2 + 2x - 63 = 0$$

$$3. x^2 - 18x + 45 = 0$$

4.
$$x^2 + 4x - 5 = 0$$

Scrambled answers:

$$x = \{-15, -5\}$$

$$x = \{-5, 1\}$$

$$x = \frac{-5 \pm \sqrt{33}}{4}$$

$$x = \{-7, 3\}$$

$$x = \frac{-9 \pm \sqrt{101}}{2}$$

$$x = \{-2, 6\}$$

 $x = \{-10, 2\}$

$$x = \{-9, 7\}$$

$$x = \{3, 15\}$$

$$x = \{-4, 2\}$$

5. $x^2 + 9x - 5 = 0$	6. $2x^2 + 16x - 40 = 0$
7. $3x^2 + 6x - 24 = 0$	8. $2x^2 + 5x - 1 = 0$
$9x^2 + 4x + 12 = 0$	10. $-x^2 - 20x - 75 = 0$