Name:_____ Date:_____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:

1. 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.
4. Take the _____of both sides. Set up two equations and _____.

When a = 1

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

{ , }

2. $x^2 + 10x + 9 = 0$

{ , }

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

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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:

$x = \{-15, -5\}$ $x = \{-5, 1\}$ $x = \frac{-5 \pm \sqrt{33}}{4}$ $x = \{-7, 3\}$

$x = \frac{-9 \pm \sqrt{101}}{2}$ $x = \{-2, 6\}$ $x = \{-9, 7\}$ $x = \{-4, 2\}$

$x = \{-10, 2\}$ $x = \{3, 15\}$

5. $x^2 + 9x - 5 = 0$

6. $2x^2 + 16x - 40 = 0$

7. $3x^2 + 6x - 24 = 0$

8. $2x^2 + 5x - 1 = 0$

9. $-x^2 + 4x + 12 = 0$

10. $-x^2 - 20x - 75 = 0$