Name: _____ Date: _____

Solving Quadratic Equations by Completing the Square

Today's Question: When is it useful to solve quadratics by completing the square?
MCC9-12.A.REI.4b

Solving Quadratic Equations by Completing the Square

1. Rewrite so all terms containing x are on one side.
2. Find the number that completes the square on the left side of the equation. Add that number to both sides. **(Half it, Square it, Add it!)**
3. Factor the perfect square trinomial on the left side of the equation. Simplify the right side of the equation.
4. Take the square root of each side.
5. Solve for x.
6. Check your answers!!!

Solve each equation.

1. $x^2 - 10x - 54 = 0$

2. $x^2 - 18x + 77 = 0$

3. $x^2 + 6x - 72 = -8$

4. $x^2 + 20x - 73 = 2$

5. $x^2 + 6x = 12$

6. $x^2 + 20x + 6 = 0$

Try these on your own.
Solve each equation.

1. $x^2 + 2x - 3 = 0$

2. $x^2 = 6x + 4$

3. $x^2 - 14x - 75 = 8$

4. $x^2 - 16x - 56 = 6$

5. The length of a rectangle is 4 cm greater than its width. If the area of the rectangle is 108 cm.^{2}, what are the approximate dimensions of the rectangle?

6. If the volume of this box is 96 cm.^{3}, find the dimensions of the box.