By the end of the lesson, we will be able to:

~ Solve quadratic equations by completing the square.

Look for a pattern...

Multiply:

a.) $(x+9)^2$

b.) $(x+12)^2$

Look for a pattern...

Multiply:

c.) $(x+2)^2$

d.) $(x+5)^2$

Have you noticed a pattern between the middle term and the last term?

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$$ax^2 + bx + c, \quad where\ c = \left(\frac{b}{2}\right)^2$$

Find the missing part (k). Then put in $(x + \_\_\_)^2$ form.

a.) $x^2 + 4x + k$

b.) $x^2 - 6x + k$

Steps for Solving Quadratics by Completing the Square:

Step 0:	Divide everything by "a" if "a" is something other than 1.
Step 1:	Move the constant to the right side of the equation.
Step 2:	Identify "b". Divide "b" by 2. $\left(\frac{b}{2}\right)$
Step 3:	Square $\left(\frac{b}{2}\right)$. Add $\left(\frac{b}{2}\right)^2$ to both sides of the equation.

Steps for Solving Quadratics by Completing the Square:

Step 4:	Factor the left side. Hint: It will look like $(x + \frac{b}{2})^2 =$ _____.
Step 5:	Combine terms on right side. (You are adding the numbers together).
Step 6:	Solve for x. Hint: Start by taking the square root of both sides. Remember to put $\pm$ with the square root.

Solve the equation by completing the square:

Example 1: $x^2 - 6x = 40$

Solve the equation by completing the square:

Example 2: $x^2 + 7x - 17 = 0$

Solve the equation by completing the square:

Example 3: $x^2 + 8x + 20 = 0$

Solve the equation by completing the square:

Example 4: $2x^2 + 8x + 22 = 0$

Solve the equation by completing the square:

Example 5: $x^2 + 6x + 9 = 0$

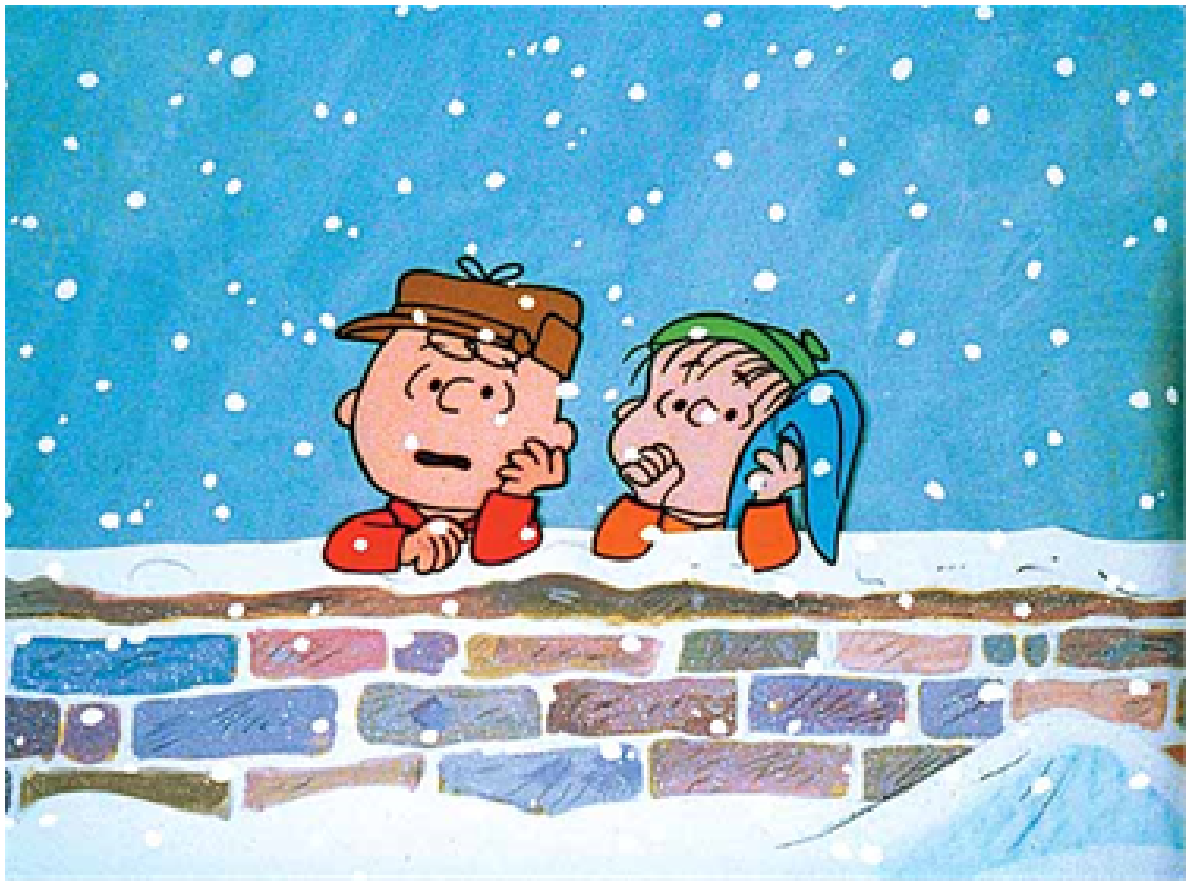
Solve the equation by completing the square:

Example 6: $ax^2 + bx + c = 0$

By the end of the lesson, we will be able to:

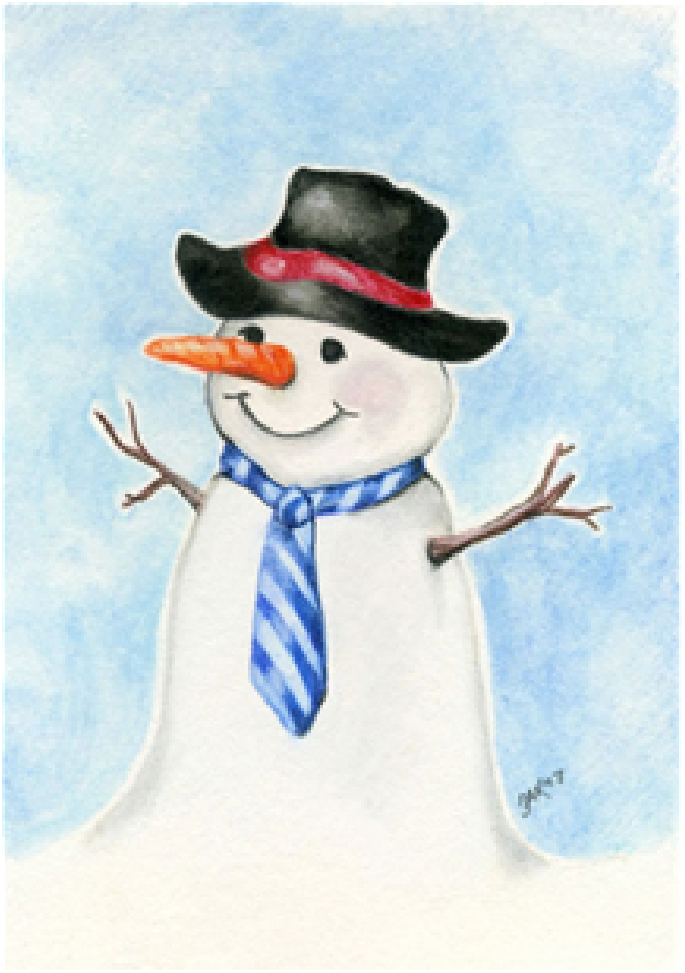
~ Solve quadratic equations by completing the square.

Can you?



Homework:

Assignment 30



Additional examples: (with A=something other than 1.

$4x^2 - 5x - 21 = 0$

$2x^2 - 7x + 12 = 0$