Complete the Square Name:_____

Activity

1. $x^2 + 2x + 1$ is a perfect square trinomial. This algebraic expression represents the area of a square. Create a model of the square on the applet. Draw a sketch of what it looks like below.

What did you have to do to the 2x in order to create a square? What is the side length of the square expressed as an algebraic expression? Since it is a square, both side lengths should be the same.

2. Try to create a square for $x^2 + 6x$. Draw a sketch of what it looks like below.

What did you do to the 6x in order to try to create a square? Remember we have to have even side lengths.

Do you need to add any units to the model in order to make it a square? If so, how many do you need? How could you quickly come up with this number using a short cut?

Sketch your complete square. Express your complete square as a perfect square trinomial. What are the side lengths?

3. Try to create a square for $x^2 + 4x$. Sketch the model below.

How many units do you need to add in order to have a complete square?

Sketch your complete square. Express your complete square as a perfect square trinomial. What are the side lengths of the square?

Complete the Square Name:_____

Quick Lesson Regroup

Example 1: Without a model complete the square for $x^2 + 8x$.

C is the number of units that you add to an expression after completing the square. Find the value of c, write the expression as a trinomial. What would the side length of the square be?

Steps for Completing the Square and rewriting as a perfect square binomial.

Example 2: Complete the square for $x^2 - 20x$.

Step 1: Half the middle term.

$\frac{-20}{2} = -10$

Step 2: Square the resulting number.

$(-10)^2 = 100$ (You would need 100 units to turn this model into a square)

This number will **ALWAYS** be **POSITIVE**.

Step 3: Write as a perfect square trinomial.

$x^2 - 20x + 100$

Step 4: Use the side lengths to write as a product of binomials (You can factor if necessary).

$(x - 10)^2$

Example 3: Complete the square for $x^2 - 12x$. Write the expression as the product of two binomials.