Completing the Square using Algebra Tiles

1. We are going to use algebra tiles to find the value of c that would make the expression $x^2 + 6x + c$ a perfect square trinomial.

   a. Use algebra tiles to model the expression $x^2 + 6x$.

   b. Arrange the tiles in a square (the length and width should be equal). The square will be incomplete in the lower corner.

   c. Determine how many unit tiles are needed to complete the square. Add the unit tiles to your arrangement. You now have a perfect square trinomial.

   d. Find the length and width of your rectangle, much how you factored expressions using algebra tiles. Write the product of the length and width as a squared binomial.

2. Use algebra tiles to find the value of c for each of the expressions in the table. Then, write the expression as a squared binomial.

Complete the Square		
Expression	**# of unit tiles needed to complete the square**	**Squared Binomial**
$x^2 + 6x + c$		
$x^2 + 2x + c$		
$x^2 + 4x + c$		
$x^2 + 8x + c$		

3. What is the relationship between the value of c and the coefficient of x for each expression? Explain how you can see this relationship in your model.

4. Therefore, how could you find the value of c directly when completing the square for any quadratic trinomial in the form $x^2 + bx + c$?