Writing a **Standard Form** equation

$$y = ax^2 + bx + c$$

as its equivalent **Vertex Form** equation

$$y = a(x - h)^2 + k$$

Steps:	*Example:*
Equation in standard form, $y = ax^2 + bx + c$:	$y = 2x^2 - 4x + 5$
To "complete the square", we will isolate the x^2 and x terms. In the example, this is accomplished by subtracting the constant, 5, from both sides of the original equation.	$y - 5 = 2x^2 - 4x$
Because we are completing *one* square, we need a leading coefficient of **1** before *completing the square*. To get this result, factor out the current leading coefficient 2, from each term.	$y - 5 = 2(\mathbf{1}x^2 - 2x)$
To develop the perfect square trinomial: find "c" by dividing the current coefficient of the x-term by 2, square it, and place the result in the parentheses as a constant. Consider the effect of the "2" on the current "c". Keep the equation balanced by adding that product to the left side of the equation.	$y - 5 = 2(x^2 - 2x + \_\_)$ $\frac{-2}{2} \rightarrow -1 \rightarrow (-1)^2 \rightarrow \mathbf{1}$ $y - 5 + 2 = 2(x^2 - 2x + \mathit{1})$
Because the parentheses now contains a "perfect square trinomial", you can rewrite the enclosed expression as a squared binomial. Simplify the left side of the equation.	$y - 3 = 2(x - 1)^2$
Isolate the y-term by adding 3 to both sides of the equation.	$y - 3 + 3 = 2(x - 1)^2 + 3$
Vertex form of the equation: Vertex = $(h, k) = (1, 3)$ The vertex of this graph will be moved one unit to the right and three units up from (0,0), the vertex of its parent function, $y = x^2$, and the graph has a stretch of 2.	$y = 2(x - 1)^2 + 3$