

Quadratic Relations: Day 2

Converting from Factored Form to Standard Form

Previously, we learned how to convert **factored form** quadratic equations into **standard form** quadratic equations using **THE GRID METHOD**.

Now, we will learn how to do the very same thing, but this time using **FOIL**.

Expanding Factored Form Quadratic Equations Using FOIL

Expand: $y = (x - 5)(x + 3)$

Insert arrows to identify what terms are being multiplied together (**Use FOIL**).

$$y = (x - 5)(x + 3)$$

F – First Term in each set of brackets
 O – Outside Term in each set of brackets
 I – Inside Term in each set of brackets
 L – Last Term in each set of brackets.

Write out all of the multiplications you will be performing separated by addition signs. ****Be sure to include +/- signs!****

$$y = \overset{\mathbf{F}}{(x)}(\overset{\mathbf{F}}{x}) + \overset{\mathbf{O}}{(x)}(\overset{\mathbf{O}}{+3}) + \overset{\mathbf{I}}{(-5)}(\overset{\mathbf{I}}{x}) + \overset{\mathbf{L}}{(-5)}(\overset{\mathbf{L}}{+3})$$

Perform all multiplications, remove brackets.

$$y = \overset{\mathbf{F}}{x^2} + \overset{\mathbf{O}}{3x} - \overset{\mathbf{I}}{5x} - \overset{\mathbf{L}}{15}$$

Simplify.

$$y = x^2 - 2x - 15$$

Therefore, the factored form equation $y = (x - 5)(x + 3)$ is equivalent to the standard form equation $y = x^2 - 2x - 15$. Both equations will produce the same parabolic graph!

Expand: $y = (x + 2)(x + 3)$

Expand: $y = (x + 6)(x - 5)$

Expand: $y = (x - 8)(x + 4)$

Expand: $y = (x + 2)(x - 2)$

Expand: $y = (x - 1)(x - 8)$

Expand: $y = (x - 7)(x - 4)$

Expand: $y = (x + 3)(x + 3)$

Expand: $y = (x - 5)(x - 5)$