Quadratic Relations: Day 2
Converting from Factored Form to Standard Form

Yesterday we were introduced to the **standard form** of a quadratic relation.
This was $\boldsymbol{y = ax^2 + bx + c}$.

Today, we will introduce the **factored form** of a quadratic relation.
This form is $\boldsymbol{y = a(x - r)(x - s)}$.

When a standard form equation and a factored form equation result in the same parabola, these equations are equivalent!

Sometimes it is useful to be able to go from one form to the other.

To go from the factored form to standard form we can use

The Grid Method

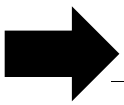
Let's use the factored form equation $\boldsymbol{y = (x + 3)(x - 4)}$ to practice.

To use the grid method, first rewrite your factored form equation in the grid as shown below.

	x	+3
x		
-4		

Next, fill in each cell by multiplying the terms in the corresponding column and row:

	x	+3
x	$\boldsymbol{x \times x}$	$\boldsymbol{+3 \times x}$
-4	$\boldsymbol{x \times -4}$	$\boldsymbol{+3 \times -4}$



	x	+3
x	$\boldsymbol{x^2}$	$\boldsymbol{+3x}$
-4	$\boldsymbol{-4x}$	$\boldsymbol{-12}$

Now simply write '**y =**' and add the contents of our grid:

$$y = x^2 + 3x - 4x - 12$$

The last step is to collect our like terms and simplify.
**You can combine this with the previous step if you wish.

$$y = x^2 - x - 12$$

Therefore, the factored form equation $y = (x + 3)(x - 4)$ and the standard form equation $y = x^2 - x - 12$ are equivalent.

Use the **Grid Method** convert the following Factored Form equations into Standard Form:

1. $y = (x + 5)(x + 3) =$ $x^2+8x+15$

y=	x	+5
x	x^2	5x
+3	3x	15

8x

2. $y = (x + 2)(x + 7) =$ $x^2+9x+14$

y=	x	+2
x	x^2	2x
+7	7x	14

9x

3. $y = (x + 6)(x - 1) =$ x^2+5x-6

y=	x	+6
x	x^2	6x
-1	-1x	-6

5x

4. $y = (x - 4)(x + 6) =$ $x^2+2x-24$

y=	x	-4
x	x^2	-4x
+6	6x	-24

2x

5. $y = (x - 1)(x - 1) =$ x^2-2x+1

y=	x	-1
x	x^2	-1x
-1	-1x	+1

-2x

6. $y = (x - 4)(x - 2) =$ x^2-6x+8

y=	x	-4
x	x^2	-4x
-2	-2x	+8

-6x