Date: _____

Learning Goal

Expand

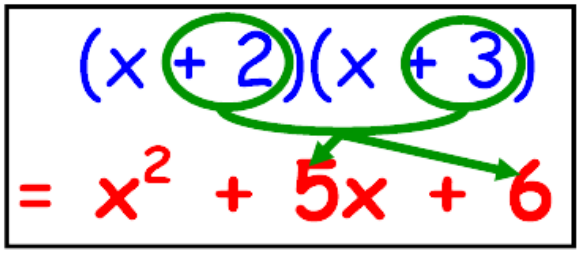
$(x + 2)(x + 3)$

$(x + 1)(x + 7)$

$(x + 4)(x + 2)$

$(x + 5)(x + 6)$

What's the Pattern?



The **coefficient on the *x*** (+5 in this case) is the **sum** of the two numbers in the original expression (+2 and +3 in this case)

The **constant term** (+6 in this case) is the **product** of the two numbers in the original expression (+2 and +3 in this case)

What's the Pattern?

$$(x + 9)(x + 4)$$

$= x^2$ _____x _____

What's the Pattern?

$$(x + 12)(x + 10)$$

$= x^2$ _____ x _____

What's the Pattern?

$$(x + 5)(x - 2)$$

$= x^2$ _____x _____

No Worries!

$$(x - 6)(x + 4)$$

$= x^2$ _____ x _____

No Worries!

$$(x - 3)(x - 7)$$

$= x^2$ _____ x _____

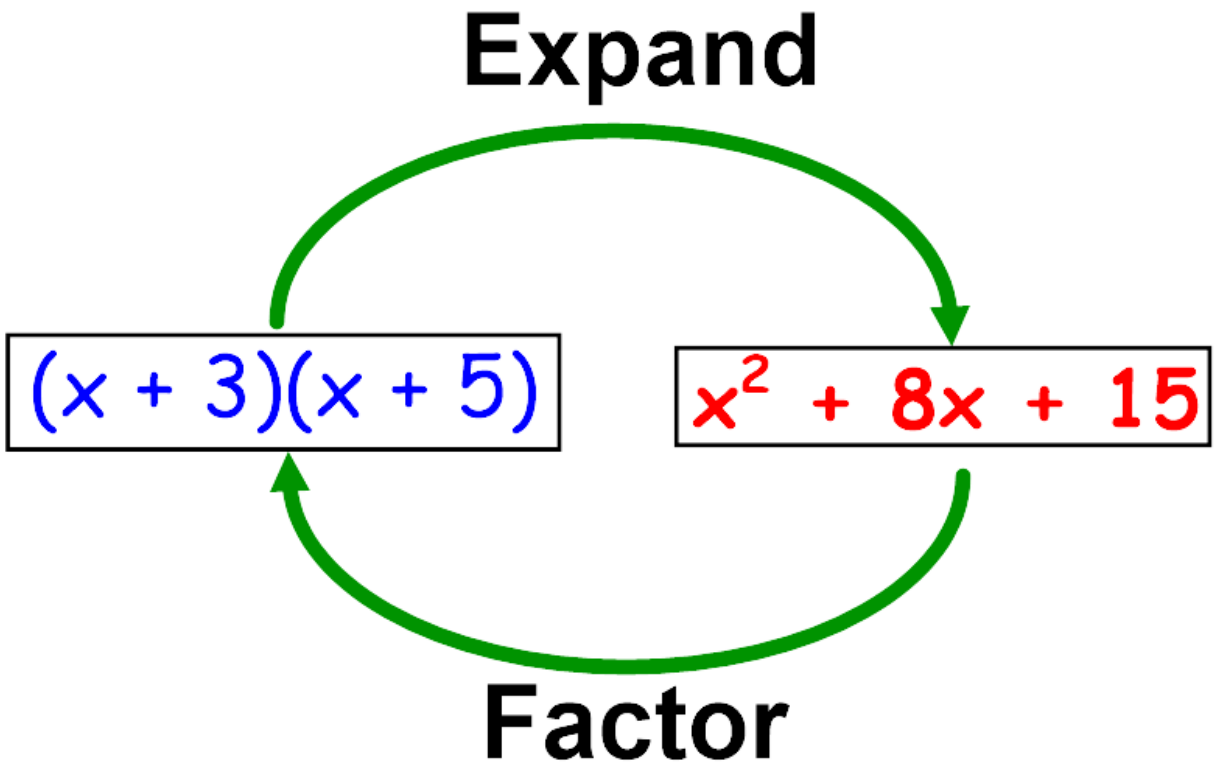
Working Backwards

$$x^2 + 8x + 15$$

$$= (x \_\_\_\_\_)(x \_\_\_\_\_)$$

Find two numbers that add to ____

and multiply to ____!


Expand
(x + 3)(x + 5)
x² + 8x + 15
Factor

Factoring

$x^2 + bx + c$

We have to find two numbers that multiply to ___ and add to ___.

1. Write out the **factors** of ___.
(Pairs of numbers that multiply to make ___)

2. Determine which pair **sums** to ___.
Those are your numbers!

Factoring

Factor

$$x^2 + 3x - 18$$

We have to find two numbers that multiply to ___ and add to ___.

1. Write out the **factors** of ___.
(Pairs of numbers that multiply to make ___)

2. Determine which pair **sums** to ___.
Those are your numbers!

Complete the table below by finding two numbers (a and b) that are the product and sum of the given numbers.

Product	Sum	a	b
10	7		
25	10		
32	12		
24	-14		
36	-20		
-30	1		
-42	-11		
-50	23		
-64	0		

Factor Me!

1. $x^2 + 7x + 10$

Find two numbers that multiply to _____

and add to _____

The numbers will be:

both positive both negative one of each

Factor Me!

2. $x^2 + 23x - 50$

Find two numbers that multiply to _____

and add to _____

The numbers will be:

both positive both negative one of each

Factor Me!

3. $x^2 - 11x - 42$

Find two numbers that multiply to _____

and add to _____

The numbers will be:

both positive both negative one of each

Factor Me!

4. $x^2 - 20x + 36$

Find two numbers that multiply to _____

and add to _____

The numbers will be:

both positive both negative one of each

Factor Me!

5. $x^2 + 12x + 32$

Find two numbers that multiply to _____

and add to _____

The numbers will be:

both positive both negative one of each

Factor Me!

6. $x^2 + x - 30$

Find two numbers that multiply to _____

and add to _____

The numbers will be:

both positive both negative one of each

Factor Me!

7. $x^2 - 14x + 24$

Find two numbers that multiply to _____

and add to _____

The numbers will be:

both positive both negative one of each

Factor Me!

8. $x^2 + 10x + 25$

Find two numbers that multiply to _____

and add to _____

The numbers will be:

both positive both negative one of each

Factor Me!

9. $x^2 - 6x + 9$

Find two numbers that multiply to _____

and add to _____

The numbers will be:

both positive both negative one of each

Factor Me!

10. $x^2 - 16$

Find two numbers that multiply to _____

and add to _____

The numbers will be:

both positive both negative one of each