

Math-2A

Lesson 2-12

Factoring Simple Trinomials

Multiplying Binomials The “Box Method”

$$(x - 3)(x + 4)$$

	x	4
x	x^2	$4x$
-3	$-3x$	-12

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

$$x^2 + x - 12$$

$$(x - 3)(x + 4)$$

Left times left is left

Right plus right is middle

Right times right is right

$$(x - 1)(x + 5)$$

	x	5
x	x^2	$5x$
-1	$-x$	-5

$$x^2 + 5x - x - 5$$

$$x^2 + 4x - 5$$

Multiplying Binomials The “Box Method”

$$(x + 2)(x + 6)$$

	x	6
x	x^2	$6x$
2	$2x$	12

$$x^2 + 6x + 2x + 12$$

$$x^2 + 8x + 12$$

Left times left is left

Right plus right is middle

Right times right is right

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

	x	4
x	x^2	$4x$
-4	$-4x$	-16

$$x^2 + 4x - 4x - 16$$

$$x^2 + 0x - 16$$

$$x^2 - 16$$

$$(x + 2)(x + 3)$$
$$= x^2 + (2 + 3)x + (2 * 3)$$

$$= x^2 + 5x + 6$$

Left times left is left

Right plus right is middle

Right times right is right

$$(x + 4)(x + 5)$$

$$= x^2 + (4 + 5)x + (4 * 5)$$

Left times left is left

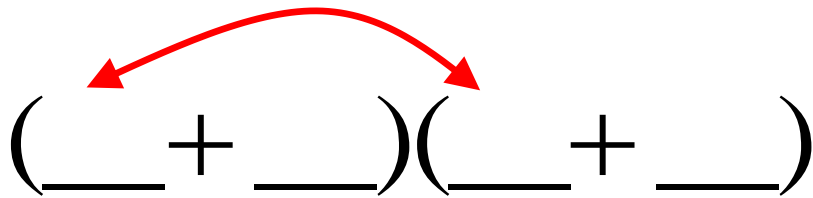
Right plus right is middle

Right times right is right

$$= x^2 + 9x + 20$$

$$\textcircled{x^2} + 5x + \textcircled{6}$$

Left times left is left


$$\left(\underline{\quad} + \underline{\quad}\right)\left(\underline{\quad} + \underline{\quad}\right)$$


$$\left(x + \underline{2}\right)\left(x + \underline{3}\right)$$

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

What are the factors of 6
that add up to 5?

$$6 = \underline{2} * \underline{3}$$

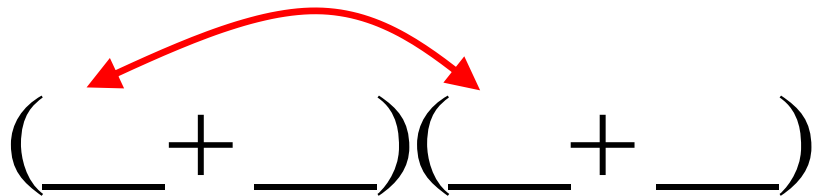
$$5 = \underline{2} + \underline{3}$$

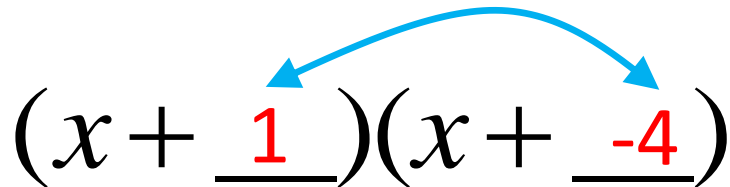
Right times right is right

Right plus right is middle

$$\textcircled{x^2} - 3x - \textcircled{4}$$

Left times left is left


$$(\underline{\quad} + \underline{\quad})(\underline{\quad} + \underline{\quad})$$


$$(x + \underline{1})(x + \underline{-4})$$

$$(x + 1)(x - 4)$$

What are the factors of -4
that add up to -3?

$$-4 = \underline{1} * \underline{-4}$$

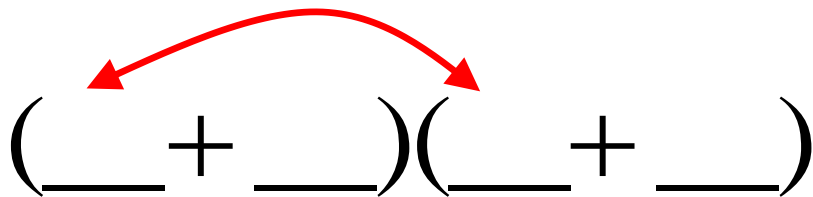
$$-3 = \underline{1} + \underline{-4}$$

Right times right is right

Right plus right is middle

$$\textcircled{x^2} + 8x + \textcircled{15}$$

Left times left is left


$$\left(\underline{\quad} + \underline{\quad}\right)\left(\underline{\quad} + \underline{\quad}\right)$$


$$\left(x + \underline{3}\right)\left(x + \underline{5}\right)$$

$$(x + 3)(x + 5)$$

What are the factors of 15 that add up to 8?

$$15 = \underline{3} * \underline{5}$$

$$8 = \underline{3} + \underline{5}$$

Right times right is right

Right plus right is middle

Try the following:

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

$$(x + \underline{\quad})(x + \underline{\quad})$$

Right times right is right


$$(x + \underline{\quad})(x + \underline{\quad})$$

Right plus right is middle

$$(3)(5) = 15$$

**What are the factors of 15
that add up to 8?**

$$3 + 5 = 8$$

Try the following:

$$x^2 + 10x + 21 = (x + 3)(x + 7)$$

$$x^2 - 6x - 16 = (x - 8)(x + 2)$$

$$x^2 - 9x + 18 = (x - 6)(x - 3)$$

$$2x^2 + 4x + 2$$

Always factor out the
common factor first.

$$2(x^2 + 2x + 1)$$

Now factor the trinomial.

$$2(x + 1)(x + 1)$$

Your turn:

$$6x^2 + 24x + 18$$

Always factor out the
common factor 1st.

$$6(x^2 + 4x + 3)$$

Now factor the trinomial.

$$6(x + 1)(x + 3)$$