Math-2A

Lesson 2-12

Factoring Simple Trinomials

Multiplying Binomials

The "Box Method"

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

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

	x	4
x	x^2	4x
-3	-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"

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

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

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

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

Left times left is left

Right plus right is middle

Right times right is right

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

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

	x	4
x	x^2	4x
-4	-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

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

$x^2 + 5x + 6$

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

Left times left is left

$6 = \_2\_ * \_3\_$

$5 = \_2\_ + \_3\_$

$(\_\_ + \_\_)(\_\_ + \_\_)$

$(x + \_2\_)(x + \_3\_)$

Right times right is right

Right plus right is middle

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

$x^2 - 3x - 4$

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

Left times left is left

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

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

$(\_\_ + \_\_)(\_\_ + \_\_)$

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

Right times right is right

Right plus right is middle

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

$x^2 + 8x + 15$

Left times left is left

$(\_\_ + \_\_)(\_\_ + \_\_)$

$(x + \_3\_)(x + \_5\_)$

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

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

$15 = \_3\_ * \_5\_$

$8 = \_3\_ + \_5\_$

Right times right is right

Right plus right is middle

Try the following:

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

$$(x+\_\_)(x+\_\_)$$

Right times right is right

$$(x+\_\_)(x+\_\_)$$

Right plus right is middle

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

$$3+5=8$$

What are the factors of 15 that add up to 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.

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