SM3-A HANDOUT 2-2 (Factor Simple Trinomials)

Multiplying Binomials

The "Box Method"

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

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

x^2+x-12

Standard Form
Quadratic Expression

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

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

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

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

x^2 "left times left is the left term"

$(x+2)(x+3)$ "right times right is the right term"

$x^2 \quad +6$

$(x+2)(x+3)$ "inner"

$x^2+2x \quad +6$

$(x+2)(x+3)$ "outer"

$x^2+2x+3x+6 = x^2+(2+3)x+(2*3)$

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

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

$= x^2+5x+6$

Left times left is left

Right plus right is middle

Right times right is right

$(x+4)(x+5) \quad = x^2+(\_\_\_\_\_)x+(\_\_\_\_\_)$

$= \_\_\_\_\_$

$(x-6)(x+1) \quad = x^2+(\_\_\_\_\_)x+(\_\_\_\_\_)$

$= \_\_\_\_\_$

$x^2 + 5x + 6$

Left times left is left

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

$(x + \_\_)(x + \_\_)$ Right times right is right

$(x + \_\_)(x + \_\_)$ Right plus right is middle

$(x+2)(x+3)$ **What are the factors of 6 that add up to 5?**

Try the following:

$x^2 - 3x - 4 = (x-4)(x+1)$

$(x + \_\_)(x + \_\_)$ Right times right is right

$(x + \_\_)(x + \_\_)$ Right plus right is middle

$(-4)(1) = -4$

$(-4) + (1) = -3$

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

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:

$x^2 + 10x + 21$

$x^2 - 6x - 16$

$x^2 - 9x + 18$

$2x^2 + 4x + 2$

Always factor out the common factor first.

Now factor the trinomial.

Your turn:

$6x^2 + 24x + 18$

Always factor out the common factor 1st.

Now factor the trinomial.

$x^2 - 1$

"the difference of two squares"

Two numbers multiplied = (-1) and added = 0

Vocabulary

Conjugate pair (of binomials)

two binomials whose terms are exactly the same except +/- for one pair of terms

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

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