Algebra I **Name**_____
Unit #1: Linear Equations & Inequalities **Period**____
Lesson #4: Multiplying Polynomials **Date**_____

Day 1

Review – Distributive Property

Multiplying a polynomial by a monomial is rather easy- In fact, we JUST DID THIS ON MONDAY!!! All we need to do is to distribute the monomial over each term in the polynomial and write our answer in standard form. Give it a try….

a.) $5(x^2 - 3x + 11)$

b.) $x(x^2 + 3x - 8)$

c.) $2x(x^2 - 4x + 5)$

d.) $-3x(2x^2 - 5x + 3)$

Lesson

One way to think about multiplying binomials is to use the distributive property twice. Some people call this 'double distributing' and others might call it FOILing. FOIL is an acronym that helps you remember which terms need to be multiplied.

F_____
O_____
I_____
L_____

***Directions*:** Use the distributive property to multiply the following binomials. Write your answer in standard form!

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

b.) $(2x - 3)(x + 6)$

c.) $(x - 5)(x - 1)$

d.) $(3x + 1)(2x - 7)$

e.) $(c + 4)(c - 4)$

f.) $(2x + 1)(2x - 1)$

Try these…

1.) $(x + 8)(x - 3)$

2.) $(d - 7)(d - 6)$

3.) $(2x + 1)(x - 4)$

4.) $(3b - 1)(b + 4)$

5.) $(x - 5)(x + 5)$

6.) $(2x + 3)(2x - 3)$

Day 2

Lesson

Yesterday we reviewed the distributive property and learned how to multiply 2 binomials. Today we're going to learn another method to multiplying polynomials….then we'll take it up a notch.

Review – What does it mean to square something?

a.) 5^2 = _____ = _____ **b.)** $(3x)^2$ = _____ = _____

c.) $(x + 2)^2$ = _____ = _____ = _____

Example #1: Square the following binomials and express the solution as a trinomial in standard form.

a.) $(x - 5)^2$ b.) $(x + 10)^2$

c.) $(2x - 3)^2$ d.) $(4x + 1)^2$

WHENEVER you see a binomial (2 terms) being SQUARED, you **MUST** write out the term twice. Then you multiply the two binomials together by distributive property or by using a geometric diagram.

A ***geometric diagram***? What's that? Let's talk about it.

Using a geometric diagram can help you keep your work organized, especially if the problem starts to get trickier (and TRUST ME, they will).

Example #2: Use a geometric diagram to find the product of (x + 5) and (x – 3).

Product means we need to _____. So, what we're asked to find is (x +5)(x – 3).

Ask yourself: How many terms are in (x + 5)? _____ How many terms are in (x – 3)?_____

That means we need to draw a rectangle that has _____ rows and _____ columns.
Label each side with the terms from each binomial. It is SUPER IMPORTANT that you do NOT FORGET the subtraction signs when you label your diagram!!!

Example #3: Use a geometric diagram to multiply the following polynomials. Write your answer in standard form!

a.) (x + 5)(x – 2)

b.) (x – 3)(x + 6)

c.) (3x + 2)(x – 7)

d.) (2x – 5)(3x – 2)

Try these…

a.) $(x + 7)(x + 4)$

b.) $(x - 8)(x - 3)$

c.) $(4x - 5)(x + 7)$

d.) $(5x - 2)(x + 11)$

e.) $(2b + 5)(3b - 8)$

f.) $(2d - 11)(3d - 10)$

Day 3

Review

Use a geometric diagram to multiply the following polynomials. Express your answer in standard form!

a.) $(x + 9)(x - 4)$

b.) $(2x - 3)(x + 5)$

c.) $(5x + 2)(x - 4)$

d.) $(3x - 2)(2x - 7)$

Not too bad, right? Let's get a little bit trickier….

Example #1:

a.) $(x^2 - 4x + 1)(x + 3)$

b.) $(n + 8)(n^2 - 2n + 2)$

c.) $(d - 3)(d^2 + 2d + 4)$

d.) $(x - 1)(x^2 - 3x - 2)$

Try these….

a.) $(m + 4)(m^2 - 3m + 7)$

b.) $(d - 3)(d^2 + 5d + 2)$

<u>Example #2</u>: Use a geometric diagram to multiply the following polynomials. Write your answer in standard form!

a.) $(x^2 + 5x - 2)(x^2 + 4x - 2)$

b.) $(x^2 - 3x - 1)(x^2 + 5x + 3)$

c.) $(x^2 - 2x + 3)(x^2 + 4x - 1)$

d.) $(x^2 + 5x + 3)(x^2 - 2x + 8)$

Try this…

a.) $(m^2 - 3m + 5)(m^2 + 8m + 11)$