## Algebra 1

Day 4 - Multiplying Polynomials Notes

Refresher:

Perform the indicated operation below.

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

$$2x^{6} + 6x^{5} - 4x^{4} + 10x^{3}$$

2.) 
$$5b^3 (4b^5 - 2b^3 + b^2 - 11) =$$

$$20b^{8} - 10b^{6} + 5b^{4} - 55b^{3}$$

What property did you use for each?



There are different ways to multiply polynomials...

Method 1

→ The Distributive Property

Example:





✓ Start with the first term in the first binomial. Multiply (distribute) this term times **EACH** of the terms in the second binomial.

✓ Now, take the second term in the first binomial (take the sign also). Multiply this term times **EACH** of the terms in the second binomial.

✓ Add the results:

$$\chi^2 + 10\chi + 21$$

Example 2:

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

$$2x^{2} + 8x - 3x - 12$$

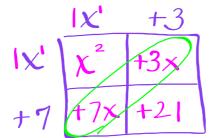
$$2x^{2} + 5x - 12$$

Example 3:

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

Method 2 → The Tabular Method (the box method)

**Example:** Use a geometric diagram to find the product (x+7)(x+3)



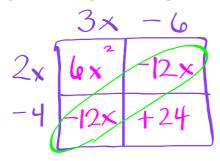
$$\left[ \begin{array}{c} 2 \\ \chi + 10 \times + 21 \end{array} \right]$$

**Example 2:** Use a geometric diagram to find the product (8x - 2)(6x + 2)

$$8 \times 48 \times^{2} + 16 \times$$

$$-2 - 12 \times -4$$

**Example 3**: Use a geometric diagram to find the product (2x - 4)(3x - 6)



$$6x^{2}-24x+24$$

These methods work for any number of terms (NOT just binomials!) ©