

Refresher: Perform the indicated operation below.

$$1.) \quad 2x^3(x^3 + 3x^2 - 2x + 5) = \underline{2x^6 + 6x^5 - 4x^4 + 10x^3}$$

$$2.) \quad 5b^3(4b^5 - 2b^3 + b - 11) = \underline{20b^8 - 10b^6 + 5b^4 - 55b^3}$$

What property did you use for each? Distributive Property

There are different ways to multiply polynomials...

Method 1 → The Distributive Property

Example: $(x + 3)(x + 7)$ "FOIL"

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

$$x^2 + 7x$$

- ✓ 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.

$$+3x + 21$$

- ✓ Add the results:

$$x^2 + 10x + 21$$

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

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

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

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

$$6x^2 - 2x - 18x + 6$$

$$6x^2 - 20x + 6$$

Method 2 → The Tabular Method (the box method)

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

	$1x$	$+3$	
$1x$	x^2	$+3x$	$x^2 + 10x + 21$
$+7$	$+7x$	$+21$	

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

	$6x$	$+2$	
$8x$	$48x^2$	$+16x$	$48x^2 + 4x - 4$
-2	$-12x$	-4	

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

	$3x$	-6	
$2x$	$6x^2$	$-12x$	$6x^2 - 24x + 24$
-4	$-12x$	$+24$	

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