Multiplying Polynomials Notes

There are several ways we can multiply polynomials.

Method 1: Distribution: a monomial and a polynomial (special case of method 4)

Distribution of multiplication over addition: $a(b + c) =$ _____

Apply to: $2x^3(x^3 + 3x^2 - 2x + 5)$

You try:

a) $4y(-y^3 - 2y - 1)$

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

Method 2: Table Multiplication

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

Create a table of products, and add them up:

	3x	2
x		
-4		

You try:

a) $(2x + 1)(x - 4)$

Method 3: Vertical Multiplication

How would you multiply 285 x 14? Follow the same method for polynomials!

Multiply each column, aligning by like terms, then add products.

Example: $(b^2 + 6b - 7)(3b - 4)$

$b^2 + 6b - 7$

X $3b - 4$

You try:

a) $(x^2 + 2x + 1)(x + 2)$

Method 4: Horizontal Multiplication (Repeated Distribution)

Repeat the distributive process for each term in the polynomial.

Example: $(2x^2 + 5x - 1)(4x - 3)$

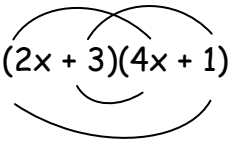
You try:

a) $(3n^2 + 4n)(-2n + 1)$

Method 5: FOIL (Make a "happy man"!)

Firsts **O**utsides **I**nsides **L**asts **Only works when multiplying two binomials!**

Example: $(2x + 3)(4x + 1)$



You try: $(3t - 4)(t + 6)$

Practice:

Find the products. You may use any method you wish, but try a few of them to help you find your favorite!

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

2) $-w^3(w^2 + 3w)$

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

4) $(3x - 2)(x + 5)$

5) $(w + 1)(w^2 + 2w + 1)$

6) $(8p - 3)(2p - 5)$

7) $(14t - 2)(t + 2)$

8) $(5b - 1)(3b + 2)$

9) $(x + 3)(x - 3)$

10) $(x - 4)(x - 4)$