

## Bellwork

Multiply each of the following expressions:

1.  $x^4x^{-8}x^{10}$

2.  $x^{-5}x^2$

3.  $6x^{-2}(-5x^3)$

## Recalling Polynomial Names

Monomial -

An expression that contains only one term.

For example,  $x$  or  $y$

Binomial -

An expression that contains two terms that are separated by a + or - sign.

For example,  $(x + 2)$  or  $(y - 6)$

Trinomial -

An expression that contains three terms that are separated by a + or - sign.

For example,  $(x^2 + 5x - 2)$  or  $(y^6 - 5y^4 + 2)$

## The Distributive Property

Distributive Property:

Basic Property -

$$a(b + c) = ab + ac$$

Binomials -

$$(a + b)(c + d) = a(c + d) + b(c + d)$$
$$ac + ad + bc + bd$$

## The Distributive Property Continued...

Binomial and Trinomial -

$$\begin{aligned}(a + b)(c + d + e) &= a(c + d + e) + b(c + d + e) \\ &= ac + ad + ae + bc + bd + be\end{aligned}$$

Trinomial and Binomial -

$$\begin{aligned}(c + d + e)(a + b) &= c(a + b) + d(a + b) + e(a + b) \\ &= ca + cb + da + db + ea + eb\end{aligned}$$

Trinomial and Trinomial -

$$\begin{aligned}(a + b + c)(d + e + f) &= a(d + e + f) + b(d + e + f) + c(d + e + f) \\ &= ad + ae + af + bd + be + bf + cd + ce + cf\end{aligned}$$

## Old News, but Good News

FOIL (**F**irst **O**uter **I**nner **L**ast) -

A process that helps to multiply polynomials.

Why are we not covering it in detail though?

FOIL is great when you are working with just a binomial times a binomial. However, we will be working with all the processes that have been described on the previous two pages.

## **Procedure**

Step 1:

Using the appropriate distributive property from the 5 that were covered expand.

Step 2:

Underline/Highlight like terms

Step 3:

Combine like terms.

Step 4:

Put the solution in standard form.

## Examples

Multiply the following polynomials:

1.  $5x(7x - 9)$

2.  $-3(-2x + 15)$

## More Examples

Multiply the following polynomials:

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

4.  $(2n - 3)(5n - 7)$

## More Examples

Multiply the following polynomials:

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

## More Examples

Multiply the following polynomials:

6.  $(5x^2 - 3x + 2)(-3x - 5)$

## More Examples

Multiply the following polynomials:

7.  $(2x^2 + x - 7)(-2x^2 - 3x + 7)$

## Final Example

Multiply the following polynomials:

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