



Multiplying Polynomials

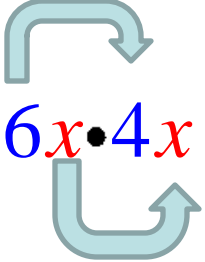
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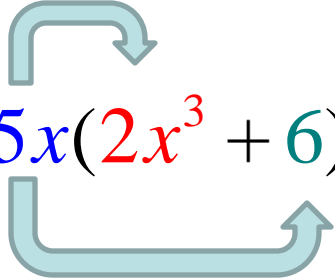
Exponent Rules

- First, remember your exponent rules for multiplying exponents. When multiplying exponents that have the same base, you add the exponents together.
- Second, remember how to add like terms. You can only add terms together that have the exact same variables and the exact same exponents together. That means you can add the coefficients of the variables together but do not change the variables or exponents.
- Third, after multiplying, remember to add the like terms together for a completely simplified answer.

Distributive Property

- Use the distributive property to multiply polynomials.


$$6x \cdot 4x = 6 \cdot 4 \cdot x \cdot x = 24x^2$$


$$5x(2x^3 + 6) = 5x(2x^3) + 5x(6) = 10x^4 + 30x$$

Multiplying Binomials

- Use the foil method

– First $(F + \quad)(F + \quad)$

– Outside $(O + \quad)(\quad + O)$

– Inside $(\quad + I)(I + \quad)$

– Last $(\quad + L)(\quad + L)$

FOIL - First, Outside, Inside, Last

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



$$\textit{First} : (3x + 2)(2x - 5) = 6x^2$$



$$\textit{Outside} : (3x + 2)(2x - 5) = -15x$$



$$\textit{Inside} : (3x + 2)(2x - 5) = 4x$$



$$\textit{Last} : (3x + 2)(2x - 5) = -10$$

Put it all together and
combine like terms:

$$6x^2 - 15x + 4x - 10$$

$$6x^2 - 11x - 10$$



Multiply a Binomial by a
Trinomial

You will use a similar procedure to FOIL to complete these problems:

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

Multiply the x term by everything in the second polynomial.

Then multiply everything in the second polynomial by -2 .

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

$$(-2)(x^2 - 3x + 7) = -2x^2 - 6x - 14$$

$$x^3 - 3x^2 + 7x - 2x^2 - 6x - 14$$

$$x^3 - 5x^2 + x - 14$$

Take the results of each and combine like terms.