

## Wednesday 9/4/19

1. Grab Notes/Calculator
2. Begin Warm-Up
3. Unit 2 Calendar
4. Notes: Operations w/Polynomials Notes
5. Practice
6. Go over Unit 1 Test

**Topic:** Operations w/Polynomials

**Name:** \_\_\_\_\_

**What am I learning today?**

**Warm-Up**

Simplify by combining like terms for the following:

1.  $3x - 6 + 2x - 8 = 5x - 14$     2.  $3x - 7 + 12x + 10 = 15x + 3$

3.  $10xy + 5y - 6xy - 14y = 4xy - 9y$     4.  $-4x^2 - 3xy + 3xy - 10x^2 = -14x^2$

**Vocabulary**

**Degree**  
The **degree** of a variable is the exponent (highest) of a variable.  
Example:  $y^{11}$  has a degree of \_\_\_\_\_

**Degree of a Polynomial**  
The **degree of a polynomial** is the highest exponent of the polynomial.  
Example:  $x^4 - x^3 + 3x - 2$     degree of the polynomial: 4

**Standard Form**  
**Standard Form** of a polynomial means the variables are placed in descending order by the DEGREE.  
Example:  $5x^3 - 2x^5 + 7 - x$     Standard Form =  $-2x^5 + 5x^3 - x + 7$

**Leading Coefficient**  
Once in standard form, the **Leading Coefficient** is the coefficient (+) in front of the 1<sup>st</sup> variable.  
Example:  $3x^7 - 6x^4 + 2x^2 - 2x^8$     Standard Form:  $-2x^8 + 3x^7 - 6x^4 + 2x^2$   
Degree: 8    LC: -2

**Classifying Polynomials**

By # Terms: "nomial"

By Degree:

# of Terms	Name by # of Terms	Degree (largest exponent)	Name by Degree
1	Monomial	0, 5, 2	Constant
2	$x^2 + 2$ : Binomial	1	Linear
3	$x^3 - 2x + 5$ : Trinomial	2	Quadratic
4	$x^4 - 2x^2 + 4x - 2$ : Polynomial	3	Cubic
		4	Quartic

**Examples**

Classifying Polynomials

Polynomial	Degree	Class by Degree	# of Terms	Class by Terms
7	0	Constant	1	Monom.
$3x + 9$	1	Linear	2	Binom.
$x^2 + 2x - 1$	2	Quadratic	3	Trinom.
$5x^3 - 8x$	3	Cubic	2	Binom.
$7x^4 - 3x^3 + 2x^2 + 1$	4	Quartic	4	Polynom.

**Topic:** Operations w/Polynomials

**Date:** \_\_\_\_\_

**Operations w/  
Polynomials**

Adding &  
Subtracting

Steps:

1. If there are parentheses, then distribute any + or - signs.
2. Drop the parentheses, combine like terms. (DO NOT change exponents add or subtract the coefficients)

Examples:

Ex 1:  $(8x - 4) + (7x - 5)$

$$\begin{aligned} & \cancel{8x} - \cancel{4} + \cancel{7x} - \cancel{5} \\ & 15x - 9 \end{aligned}$$

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

$$\begin{aligned} & \cancel{2x^2} + \cancel{3x} - \cancel{4} - \cancel{x^2} - \cancel{x} + \cancel{1} \\ & x^2 + 2x - 3 \end{aligned}$$

**You Try:**

$$\begin{aligned} & 2n^3 + 5n^3 \\ & 7n^3 \end{aligned}$$

1.  $(4 + 2n^3) + (5n^3 + 2)$   
 $= 4 + 2n^3 + 5n^3 + 2$   
 $= 7n^3 + 6$

2.  $(4n - 3n^3) - (3n^3 + 4n)$   
 $= 4n - 3n^3 - 3n^3 - 4n$   
 $= -6n^3$

3.  $(2x^3 - 4x^2 + 3x - 4) + (x^4 + 5x^2 - 12)$   
 $= 2x^3 - 4x^2 + 3x - 4 + x^4 + 5x^2 - 12$   
 $= x^4 + 2x^3 + x^2 + 3x - 16$

4.  $(12a^5 - 6a - 10a^3) - (10a - 2a^5 - 14a^4)$   
 $= 12a^5 - 6a - 10a^3 - 10a + 2a^5 + 14a^4$   
 $= 14a^5 + 14a^4 - 10a^3 - 16a$

**Operations w/  
Polynomials**

Multiplying

Steps:

1. Use the distributive property (or the box method).
2. Be sure to Multiply the coefficients & add the exponents.

Ex 3:  $(x + 4)(x^2 - 2x - 8)$

$$\begin{aligned} & = \cancel{x} \cdot \cancel{2x^2} - \cancel{8x} + \cancel{4x^2} - \cancel{8x} - 32 \\ & = x^3 + 2x^2 - 16x - 32 \end{aligned}$$

$$\begin{aligned} & 3x^4 \cdot 7x^0 \\ & = 21x^4 \end{aligned}$$

**You Try:**

1.  $3x(2x^2 - 5x + 3)$   
 $= 6x^3 - 15x^2 + 9x$

2.  $-8a^3(4a^2 - 3a - 7)$   
 $= -32a^5 + 24a^4 + 56a^3$

3.  $(x + 5)(x - 2)$   
 $= x^2 - 2x + 5x - 10$   
 $= x^2 + 3x - 10$

4.  $(x + 4)(x^2 - 2x - 8)$   
 $= x^3 - 2x^2 - 8x + 4x^2 - 8x - 32$   
 $= x^3 + 2x^2 - 16x - 32$

**Summary**

Summarize the lesson in your own words