Math 10C – Factors and Products

Date: _____KEY_____

Adding and Subtracting Polynomials Notes

Rule: Adding and subtracting polynomials is an exercise in combining like terms.

A **Term** is either a single number or a variable, or numbers and variables multiplied together. An Expression is a group of terms (the terms are separated by + or − signs).

Label the coefficient, variable, exponent, constant term, term one and term two:

$$\underset{\text{term 1}}{\underbrace{\underset{\uparrow\text{coefficient}}{4}\underset{\uparrow\text{Variable}}{x}\overset{\text{exponent}}{2}}} + \underset{\text{term 2}}{\underbrace{7}}\ \leftarrow \text{constant term}$$

Expression

Are the terms like terms? __No__   If not, why not? __7 does not have an x^2__
To be like term the expression would have to be $4x^2 + 7x^2$
They you could ask how many x^2 altogether? $11x^2$

"**Like terms**" are **terms** whose variables (and their exponents such as the 2 in x^2) are the same. In other words, **terms** that are "**like**" each other. Note: the coefficients (the numbers you multiply by, such as "5" in 5x) can be different.

Like terms	Unlike terms
2x, −7x	2x, −7y
$-8x^2$, $3x^2$	$-8x^2$, 3x
13xy, −7xy	13xy, −7xz
$5x^2y$, $3x^2y$	$5x^2y$, $3xy^2$
x, 4x	x, 4

Examples of like terms:

$x,\ 2x,\ 4x,\ 10x$ $\qquad\qquad$ $y^2,\ 3y^2,\ 6y^2,\ 7y^2$ $\qquad\qquad$ $xy^3,\ 2xy^3, 5xy^3, 8\,xy^3$

Write a set of terms that are like term:

$$2xy \quad 4xy \quad -6xy \quad 10xy \quad -3xy$$

like term $\rightarrow$ xy

Adding and subtracting polynomials is an exercise in **combining like terms.**

A) $2x + y - 6y + 3x - x + 4y$ $\qquad$ 1. What are the like terms?

How many x's ?

How many y's

$$2x + 3x - x \qquad +y - 6y + 4y$$

2. Add the like terms.

$$4x - 1y$$

Distributive Property

A) $(3x^2 + 4x - 7) + (2x^2 + x + 6)$ $\qquad$ 1. Run the positive through to remove the brackets.

$$3x^2 + 4x - 7 + 2x^2 + x + 6$$

2. What are the like terms?

$$3x^2 + 2x^2 + 4x + x - 7 + 6$$

3. Add the like terms

$$5x^2 + 5x - 1$$

Distributive Property

B) $(3x^2 - 2x + 4) - 1(2x^2 + 3x - 1)$ 1. Run the negative through to remove the brackets.

When you run the
negative through it
$$3x^2 - 2x + 4 - 2x^2 - 3x + 1$$

changes the signs (+ or -)
in the brackets

2. What are the like terms?

$$3x^2 - 2x^2 - 2x - 3x + 4 + 1$$

$-x + = -$

$+ x + = +$

$- x - = -$

3. Add the like terms.

$$1x^2 - 5x + 5$$

Distributive property

C) $(7x - 5) + (3x + 4) - 1(2x + 1)$ 1. Run the negative through to remove the brackets.

$$7x - 5 + 3x + 4 - 2x - 1$$

2. What are the like terms?

$$7x + 3x - 2x - 5 + 4 - 1$$

3. Add the like terms.

$$8x - 2$$