

LEARNING OBJECTIVE: We will add and subtract polynomials. (Lesson 81)

ACTIVATING PRIOR KNOWLEDGE:

We know how to combine like terms with monomials

$\begin{aligned} & \underline{4x^2} + \underline{5x} + \underline{3x^2} + \underline{xy^2} + \underline{12x} \\ & [4x^2 + (-3x^2)] + [(-5x) + 12x] + xy^2 \\ & \boxed{x^2 + 7x + xy^2} \end{aligned}$	$\begin{aligned} & 3a^3b^4 + 2a^4b^3 - 12a^3b^4 - a^4b^3 \\ & a^4b^3 - 9a^3b^4 \\ & 7^{\text{th}} \text{ degree binomial} \end{aligned}$
---	--

CONCEPT DEVELOPMENT:

We need to use the **commutative property** when adding polynomials to group like terms together.

Example:

$$\begin{aligned} & (5x^2 + 3) + (x^2 - 6) \\ & \text{binomial} \quad \text{binomial} \quad \text{COMMUTATIVE} \\ & [5x^2 + x^2] + [3 + (-6)] \quad \text{ASSOC.} \end{aligned}$$

We need to use the **distributive property** when subtracting polynomials to distribute the negative.

Example:

$$\begin{aligned} & (13y^3 - 2y^2) - (2y^3 + 6y^2) \leftarrow \\ & 13y^3 + (-2y^2) + (-2y^3) + (-6y^2) \\ & (13y^3 + (-2y^3)) + ((-2y^2) + (-6y^2)) \\ & 11y^3 - 8y^2 \end{aligned}$$

We can add or subtract vertically or horizontally.

Example:

$$\begin{aligned} & (5x^2 - 3x + 12) + (3x^2 - 12x - 1) \\ & + 3x^2 - 12x - 1 \\ & \boxed{8x^2 - 15x + 11} \end{aligned}$$

Name: _____

Math 7.2, Period _____

Mr. Rogove

Date: _____

GUIDED PRACTICE:**Steps for Adding Polynomials**

1. Use the commutative property to group like terms.
2. Combine like terms and restate the polynomial in standard form.

$(\underline{6x^2} + \underline{5x} + \underline{2}) + (\underline{-4x^2} + \underline{3x} - \underline{7})$ $(6x^2 + (-4x^2)) + (5x + 3x) + (2 + (-7))$ $\boxed{2x^2 + 8x - 5}$	$(5x^2 - 2x + 3) + (x^2 + x + 2)$
$(\underline{3a^3} - \underline{2a} + \underline{4a^2} - 14) + (5a + 6 - \underline{5a^3})$ $(3a^3 + (-5a^3)) + 4a^2 + (-2a + 5a) + (-14 + 6)$ $\boxed{-2a^3 + 4a^2 + 3a - 8}$	$(-2a^3 + 3a - 7a^2 - 4) + (2a^2 + 8a^3 - 6 + 10a^2)$
$\begin{array}{r} \cancel{\times} \quad 3a^3 + 4a^2 - 2a - 14 \\ + \quad -5a^3 + 0a^2 + 5a + 6 \\ \hline -2a^3 + 4a^2 + 3a - 8 \end{array}$	

Name: _____

Math 7.2, Period _____

Mr. Rogove

Date: _____

Steps for Subtracting Polynomials

1. Use the distributive property to distribute the negative sign.
2. Use the commutative property to group the like terms.
3. Combine like terms and restate the polynomial in standard form.
4. Or, line up vertically and subtract.

$(5n^2 + 4n + 3) - (2n^2 - 6n + 8)$	$(3a^2b^3 + a^3b^2 - 4a^3b^3) -$ $(-3a^3b^3 + 2a^3b^2 - 6a^2b^3)$
$(p^3 - 7p - 2p^2 - 4) - (3p^3 - 8p + 4p^2)$	$(-3b + 4b^3 + 9 - 7b^2) - (-6b^2 + 2 - b^3)$ $ \begin{array}{r} 4b^3 - 7b^2 - 3b + 9 \\ -b^3 - 6b^2 - 0b + 2 \\ \hline 5b^3 - b^2 - 3b + 7 \end{array} $
$(8r^3s^2 + 6rs^2 + 6r) - (4r^3s^2 - 2rs^2 - 5r)$	$(-5a^2 - 8 + 15a) - (-5a^2 - 7a + 12)$

Name: _____

Math 7.2, Period _____

Mr. Rogove

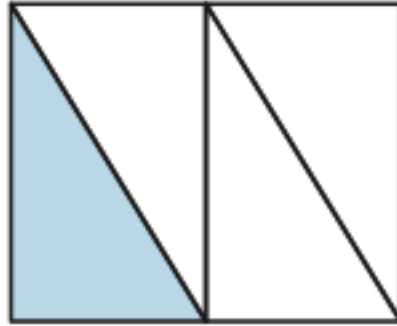
Date: _____

INDEPENDENT PRACTICE:

In square inches the area of the square is $4x^2 - 2x - 6$ and the area of the triangle is $2x^2 + 4x - 5$. What polynomial represents the shaded region?



The area of the shaded triangle is $5x^2 + 3x - 4$. What is the area of the entire figure?



Amelie subtracted a quantity from the polynomial $3y^2 + 8y - 16$ and produced the expression $(y + 2)(y - 2)$. What quantity did Amelie subtract?

Ash thinks that the sum of $5x^2y^3 + 6x + 7y$ and $8y + 4x^3y^2 + 2x$ is $9x^2y^3 + 8x + 15y$. Explain Ash's error and find the correct sum.

Name: _____

Math 7.2, Period _____

Mr. Rogove

Date: _____

CLOSURE:

How many terms will the polynomial have when all simplification is done? Simplify.

$$(31x^4y^6 - 2x^3 + 12xy^4 - 21x^4y^6) - (11x^3 + 10x^4y^6 - x^5y^5 - 12xy^4)$$
$$x^5y^5 - 13x^3 + 24xy^4$$

NOTES:

This is Go Math Pilot, mapping to lesson 14-2. In ENY, this translates to lesson 8 of Alg 1, module 1.

HW: Khan Adding and Subtracting Polynomials