

Name: key

Date: _____

Day 4- Adding and Subtracting Monomials/Polynomials

Do Now: Simplify the following exponentials. Write all answers with a positive exponent.

1. $\frac{x^3}{x^5}$

$x^{-2} = \frac{1}{x^2}$

2. $(x^3)^2$

x^6

3. $x(x^9)$

x^{10}

4. $(3x)^2$

$3^2 x^2 = 9x^2$

Important Vocabulary:

Like terms: two or more terms that have the same base with the same exponent/power

Monomial: an algebraic expression including one term

Polynomial: an algebraic expression including more than one term

Addition	Subtraction
Sum Added to	Decreased by Difference Subtracted from* Less Than* *Change order

Before we jump in, let's practice combining like terms.

1. $(5a) + 4 - 6b + (8a)$

$13a - 6b + 4$

2. $(8y) + 11 - (y) + 5$

$7y + 16$

Now let's try adding and subtracting monomials/polynomials.

1. $(6x + 2) + (3x - 6)$

$(6x + 2) + (3x - 6)$

$9x - 4$

2. $(4x - 12) - (3x + 12)$

$(4x - 12) - (3x + 12)$

$x - 24$

3. Find the sum of $-3a+2$ and $-6a-5$.

$$\begin{aligned} & (-3a+2) + (-6a-5) \\ & \boxed{-3a+2} + \boxed{-6a-5} \\ & -9a-3 \end{aligned}$$

4. Find the difference between $-5+2a$ and $5a+3$.

$$\begin{aligned} & (-5+2a) - (5a+3) \\ & \boxed{-5+2a} - \boxed{5a+3} \\ & -3a-8 \end{aligned}$$

5. What is the sum of $(3x^2 - 3x + 8)$ and $(-5x^2 + 4x + 2)$?

$$\begin{aligned} & (3x^2 - 3x + 8) + (-5x^2 + 4x + 2) \\ & \boxed{3x^2 - 3x + 8} + \boxed{-5x^2 + 4x + 2} \\ & -2x^2 + x + 10 \end{aligned}$$

6. What is the difference when $(4x^2 - 5x + 6)$ is subtracted from $(7x^2 + 8x - 3)$?

$$\begin{aligned} & (7x^2 + 8x - 3) - (4x^2 - 5x + 6) \\ & \boxed{7x^2 + 8x - 3} - \boxed{4x^2 - 5x + 6} \\ & 3x^2 + 13x - 9 \end{aligned}$$

7. From the sum of $6x - 5$ and $2x + 4$, subtract $3x - 9$.

$$\begin{aligned} & (6x-5) + (2x+4) - (3x-9) \\ & \boxed{6x-5} + \boxed{2x+4} - \boxed{3x-9} \\ & 5x+8 \end{aligned}$$

8. What is $(4x^2 - 8x - 3)$ less than $(x^2 - 2x + 1)$?

$$\begin{aligned} & (x^2 - 2x + 1) - (4x^2 - 8x - 3) \\ & \boxed{x^2 - 2x + 1} - \boxed{4x^2 - 8x - 3} \\ & -3x^2 + 6x + 4 \end{aligned}$$

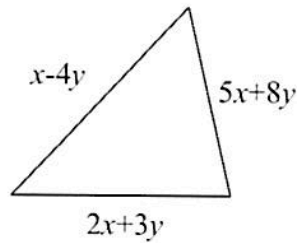
9. What is $-3a+5b$ decreased by $9a+2b$?

$$\begin{aligned} & (-3a+5b) - (9a+2b) \\ & \boxed{-3a+5b} - \boxed{9a+2b} \\ & -12a+3b \end{aligned}$$

10. Find the difference between $4x-3$ and $7x+5$?

$$\begin{aligned} & (4x-3) - (7x+5) \\ & \boxed{4x-3} - \boxed{7x+5} \\ & -3x-8 \end{aligned}$$

11. Express the perimeter of the triangle as a binomial in simplest form.



$$\begin{aligned} & (x-4y) + (5x+8y) + (2x+3y) \\ & 8x + 7y \end{aligned}$$

12. The perimeter of a triangle is given by the expression $7x^2 + 16x - 10$. Find the third side of the triangle if the other two sides measure $x^2 - x + 1$ and $2x^2 + 4x - 3$.

$$\begin{aligned} & (7x^2 + 16x - 10) - (x^2 - x + 1) - (2x^2 + 4x - 3) \\ & 7x^2 + 16x - 10 - x^2 + x - 1 - 2x^2 - 4x + 3 \\ & 4x^2 + 13x - 8 \end{aligned}$$

Challenge Problems:

$$\begin{aligned} & (y^2 - 4y) + (6 + 9y) - (2y^2 - 4) = \\ & y^2 - 4y + 6 + 9y - 2y^2 + 4 \\ & -y^2 + 5y + 10 \end{aligned}$$

$$\begin{aligned} & (4x^2y + 2xy - 3xy^2) - (4x^2y - 4xy + 2x^2y) \\ & 4x^2y + 2xy - 3xy^2 - 4x^2y + 4xy - 2x^2y \\ & 6xy - 3xy^2 + 2x^2y \end{aligned}$$

$$\begin{aligned} & (x^3 + 3x^2 - 5x + 6) - (3x^3 + 8x^2 + 8) \\ & x^3 + 3x^2 - 5x + 6 - 3x^3 - 8x^2 - 8 \\ & -2x^3 - 5x^2 - 5x - 2 \end{aligned}$$