

POLYNOMIALS

Like vs. Un-like Terms:

- Give an example of a pair of **like** terms. _____
- Give an example of **unlike** terms _____

Describe the following as either like or unlike terms:

- x^2 and x^3 _____ $5ad^3$ and $7d^3a$ _____
- $9ab$ and $4a$ _____ $2x^2y^3$ and $5x^3y^2$ _____

Polynomial: The sum of monomials.

- **Monomial:** ___ term: ex. _____
- **Binomial:** ___ unlike terms: ex. _____
- **Trinomial:** ___ unlike terms: ex. _____

Simplest form: When the polynomial contains no like terms.

$$5x^3 + 8x^2 + 2x^3 + 7 \quad \rightarrow \quad \boxed{}$$

Degree of a Polynomial: The **highest** of the degrees (exponents) after it has been simplified.

$$5x^3 + 8x^2 + 2x^3 + 7 \quad \rightarrow \quad \text{Degree of: } \underline{\hspace{2cm}}$$

STANDARD FORM: When exponents decrease from left to right. Polynomials should always be in standard form.

- Put the following in correct standard form: $5x + 7 - 2x^2 + 8x^3$

LEADING COEFFICIENT :

	<u>Standard Form</u>	<u>Degree</u>	<u>Leading Coefficient</u>
$3x^2 + x^5 - 7x$			
$5x^3 + 7 - x^6$			
$7 - 2x + 4x^3$			
$-9x^3 + 2x - x^2 + 1$			

ADDING/SUBTRACTING POLYNOMIALS

To add like monomials we use the distributive property:

$$9x + 2x = (9 + 2)x =$$

$$7x - 3x = (7 - 3)x =$$

Simplify the following expressions by adding or subtracting the monomials:

1. $(4c) + (6c) =$ _____

2. $(-39rs^3) - (+22rs^3) =$ _____

3. $(-19t) + 6t =$ _____

4. $14fg - (fg) =$ _____

5. $ab - 10ab =$ _____

To Subtract Polynomials: Distribute the subtraction sign & REWRITE the EXPRESSION!!

- Treat the negative sign in front of the parentheses like an invisible -1. Then distribute the -1 to the terms in the parentheses,

Example:

$$(10a + 8b) - (4a + 5b) \longrightarrow (10a + 8b) - 1(4a + 5b)$$

$$(10a + 8b) + (-4a - 5b) \longrightarrow 6a + 3b$$

Simplify the following polynomials:

1. $(9y + 6w) + (3w + y) =$ _____

2. $10y - (3y + 6) =$ _____

3. $(-4a + 6b) + (3a - b) =$ _____

4. $-5m + 6n + 8p - (6n + 3m) =$ _____

5. $(2x + 4x^2 - 7) - (x^2 + 7 - 8x) =$ _____

6. $(a^2 + 3b^2 - 4a) + (2a^2 - 6b^2) =$ _____

Whatever follows the word FROM is the expression that goes 1st when subtracting

7. Subtract $9a - 3b$, from $4a - 7b$

8. From $2x^3 - 4x^2 + x$, subtract $8x^3 + 2x^2 - 3x$

9. In the last basketball game of the season Tom scored $2x$ points, Tony scored $x + 5$ points, Walt scored $3x + 1$ points, Dick scored $4x - 7$ points, and Dan scored $2x - 2$ points. Represent the total points scored by these five players.

10. A cheeseburger cost three times as much as a soft drink, and an order of fries cost twice as much as a soft drink. If a soft drinks cost n cents, express the total cost of a cheeseburger, an order of fries, and a soft drink in terms of n .

FINDING THE POWER OF A POWER

Written all out $(x^3)^4 =$

Simplify: $(x^3)^4 =$

In general, when x is a signed number and a and c are positive integers:

$$(x^a)^c = x^{ac}$$

When an exponent is raised to a power....

The base remains the same, and the exponents are multiplied together.

An expression such as $(x^5y^2)^3$ can be simplified as: $(x^5y^2)(x^5y^2)(x^5y^2) = x^{15}y^6$

The rule is applied to EACH factor: $(x^5y^2)^3 = (x^5)^3 (y^2)^3 = x^{15}y^6$

Example:

$$(b^3)^3 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$(h^2g^3)^2 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

Practice: Simplify the following

1. $(a^4)^2 = \underline{\hspace{2cm}}$

2. $(y^6)^3 = \underline{\hspace{2cm}}$

3. $(x^4)^3 = \underline{\hspace{2cm}}$

4. $(x^3)^4 = \underline{\hspace{2cm}}$

5. $(rs)^3 = \underline{\hspace{2cm}}$

6. $(x^3y^4)^2 = \underline{\hspace{2cm}}$

7. $(5 \cdot 2^3)^4 = \underline{\hspace{2cm}}$

8. $(2^2 \cdot 3^2)^4 = \underline{\hspace{2cm}}$

9. $(xy^3)^2 = \underline{\hspace{2cm}}$

10. $(2^4 \cdot 3^2)^3 = \underline{\hspace{2cm}}$

State whether the following are true or false. If false, determine the correct solution:

11. $(2^2)^3 = 2^5$

12. $(m^4g)^3 = m^{12}g^3$

MULTIPLYING A MONOMIAL BY A MONOMIAL