

Introduction to Polynomials; Combining Like Terms

An expression that is a constant or a product of a constant and variables that are raised to whole number powers is called a _____.

ex: $4x$ $-2xy^4$ y^8 23

Why isn't $\frac{8}{xy}$ a monomial?

Why isn't $2x^2 - 3x + 2$ a monomial?

The numerical factor in a monomial is called the _____.

The sum of the exponents of all variables in a monomial is called the _____ of the monomial.

Ex 1.

Monomial	Coefficient	Degree
$-3y^2$		
$-xy^{65}$		
71		

A monomial or a sum of monomials is called a _____.

ex: $5x^4 + 3x + 7$ $9x + 8$ $-3xy + y^2 + 2x$ $x^2 - 4$ $3x^3$ 25

Note: In polynomials, we usually call each monomial a _____.

A polynomial with exactly one term is called a _____. (ex: $-10xy^2$)

A polynomial with exactly two terms is called a _____. (ex: $7x^5 + 2x$)

A polynomial with exactly three terms is called a _____. (ex: $x^2 - 5x + 6$)

Ex 2.

List the terms and coefficients of the polynomial $2x^4 - 3x^2 + x - 6$.

Term	Coefficient

The greatest degree of any of the terms in the polynomial is called the _____.

Ex 3.

What's the degree of $8x^4 + 3x^2 + 9x^7 - 4x^5 + x + 4$? _____

Ex 4.

What's the degree of $7a - 4a^3 + 2a^{11} - 5 + a^4$? _____

Note: Polynomials are usually written in descending order of degree.

Ex 5.

Write $8x^4 + 3x^2 + 9x^7 - 4x^5 + x + 4$ in descending order of degree.

Monomials that have the same variables raised to the same exponents are called _____.

Ex 6.

Are the following pairs of monomials like terms?

$3x^3$ and $-4x^3$

$4abc$ and $2ab$

$-3x^2y$ and $-3xy^2$

$6a$ and $9A$

Let's simplify the algebraic expression $3x + 2x$:

$$\begin{aligned} & 3x + 2x \\ &= x + x + x + x + x \\ &= 5x \end{aligned}$$

When combining like terms, we can just _____ their _____.

Ex 7.

Combine like terms.

$$6x + 7x =$$

$$-3x^3 - 2x^3 =$$

$$-8y^2 + 5y^2 =$$

$$-4g + 4g =$$

Note: Combining like terms is similar to adding measurements.

$$\text{ex: } 2 \text{ ft} + 3 \text{ cm} + 4 \text{ ft} + 5 \text{ cm} = (2 \text{ ft} + 4 \text{ ft}) + (3 \text{ cm} + 5 \text{ cm}) = 6 \text{ ft} + 8 \text{ cm}$$

Ex 8.

Combine like terms and write the resulting polynomial in descending order of degree.

$$12k^3 - 19k + k^7 + 19k - 6 - 5k^7 + 2k^3$$