

# LESSON 8-1 Adding and Subtracting Polynomials

**I can...** write polynomials in standard form, name leading coefficient, name degree and perform addition and subtraction on polynomials.

## VOCAB ANSWERS

Erase to uncover answers

<b>e</b>	1. Term	a. Number in front of a variable
<b>c</b>	2. Constant	b. A letter
<b>a</b>	3. Coefficient	c. A number that is by itself
<b>b</b>	4. Variable	d. Two or more terms that have the same variables/ exponents or two terms that have no exponents.
<b>h</b>	5. Exponent	e. A number, a variable or the product of a number and a variable.
<b>d</b>	6. Like Terms	f. 1
<b>g</b>	7. Expression	g. Shows a mathematical relationship. The difference between this and an equation is that there is no solution to this.
<b>f</b>	8. Exponent if none is shown is?	h. Raised to the power of

# Monomial (a term)

The **PRODUCT** of a number and one or more variables with non negative integer exponents.

No Negative Exponents

No Add and Subtract

No dividing by a variable

Bases don't repeat

## Examples/Non-Examples

$$8f^2g$$

$$\frac{3}{4}p^2q^7$$

$$\frac{9x}{y}$$

$$17 - c$$

Are these Monomials?

$$3x^2yx^5$$

$$a^2b^4$$

$$x^5$$

$$5x + 2x$$

$$7$$

$$3c^5$$

$$\frac{2}{5}x^{-2}yz^3$$

$$\sqrt{x}$$

## Binomial

The sum or difference of two monomials.

### Examples/Non-Examples

$$x - 5 \quad 2x^2 + 7 \quad \begin{array}{c} \uparrow \\ \downarrow \end{array} \quad \frac{2}{x^2} - x \quad \sqrt{x}$$

## Trinomial

The addition or subtraction of three monomials.

### Examples/Non-Examples

$$x^2 + 5x - 3 \quad 7x + y^2$$

## Polynomial \*General Term\*

The addition and subtraction of monomials.

a.  $6x - 4$

b.  $x^2 + 2xy - 7$

c.  $\frac{14d + 19e^3}{5d^4}$

d.  $26b^2$

## Degree of Monomial:

The sum of exponents of all of its variables

$$\frac{3}{4}p^2q^7 \quad 9^{\text{th}} \text{ Degree}$$

$$12pqrs^2t \quad 6^{\text{th}} \text{ Deg.}$$

$$14p^2qr^2st$$

## Degree of a Polynomial:

The TERM with the greatest degree

$$\frac{9x^2}{\text{2nd}} + \frac{3x^6}{\text{6th}} - \frac{4x}{\text{1st}}$$

6<sup>th</sup> Deg.  
Poly

Find the degree of each term.

**Standard Form:** Highest Degree to Lowest

$$+3x^6 + 9x^2 - 4x$$

**Leading Coefficient:** LC: 3

Number in Front of Degree

$$12 + 5y^1 + 6xy^1 + 8xy^2$$

0    1st    2nd    3rd

**Degree:** 3rd

**Standard Form:**

**Leading Coefficient:**

$$\frac{2}{3}p^3 + \frac{1}{2}p^2q^2r + \frac{9}{2}r^4$$

3    5    4

**Degree:**

**Standard Form:**

$$\frac{1}{2}p^2q^2r + \frac{9}{2}r^4 + \frac{2}{3}p^3$$

**Leading Coefficient:**

$$\frac{1}{2}$$

$$6 + 4 \quad 10$$

$$7 + 5x \quad 7 + 5x$$

$$\underline{5x} + \underline{9x} \quad \underline{14x}$$

$$\underline{10x^2} + \underline{12x^2} \quad \underline{22x^2}$$

# Adding Polynomials

When adding or subtracting polynomials the exponents of each term DOES NOT CHANGE!

Erase to uncover words.

Adding and subtracting polynomials is also known as Combining Like Terms.

Horizontal Example

$$(7y^2 + 2y - 3) + (2 - 4y + 5y^2)$$

$$\underline{7y^2} + \underline{2y} - \underline{3} + \underline{2} - \underline{4y} + \underline{5y^2}$$

$$\underline{12y^2} - \underline{2y} - \underline{1}$$

$$(6y^2 + 8y^4 - 5y) - (9y^4 - 7y + 2y^2)$$

$$\underline{6y^2} + \underline{8y^4} - \underline{5y} - \underline{9y^4} + \underline{7y} - \underline{2y^2}$$

$$4y^2 - y^4 + 2y$$

$$-y^4 + 4y^2 + 2y \leftarrow \text{Standard Form.}$$

Get rid of ( )  
Mark like terms.  
Add coefficient  
(Keep vars same)

subtraction!

$$xy^2 + 2xy + 3x^2$$



# Homework 8.1

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