

Algebra 1 8.1

Write polynomials in standard form

Add and subtract polynomials

monomial

number, variable, product

polynomial

more than 3 terms

binomial

$2a + 7n$

trinomial

$5x^2 + 2 + 7y$

degree (of a monomial)

degree (of a polynomial)

activ: algebra tiles

whiteboards

yes

-6	n	2xy
$\frac{3}{x}$	2+a	$2a^{-3} = \frac{2}{a^3}$

no

Monomial

$$5x$$

Binomial

$$2x^2 + 7$$

Trinomial

$$x^3 - 10x + 1$$

degree \rightarrow exponent (s)

p. 465

Degree	Name
0	constant
1	linear
2	quadratic
3	cubic
4	quartic
5	quintic
6 or more	6th degree, 7th degree, and so on



Polynomials are named based on their degree (exponents) and/or number of terms.

8th degree r^8

$$3x^2$$



Example 1 Identify Polynomials

Determine whether each expression is a polynomial. If it is a polynomial, find the degree and determine whether it is a *monomial, binomial, or trinomial*.

Number, variable or combinations of numbers and variables

Whole number exponents
(can't be fractions or negatives)
No exponents in denom

Expression
b. -6.5
c. $7a^{-2} + 9b$
d. $6x^3 + 4x + x + 3$

Is it a polynomial?

Degree

Name

yes 0 monomial

no (has neg exp.) -

yes 3 cubic polynomial

Guided Practice

1A. x' yes mono $d=1$

1C. $5r\ddot{x} + 7t\ddot{u}\ddot{v}$
 ↑ ↑ yes
 $d=2$ $d=3$ bi
 $d=3$

1B. $-3y^2 - 2y + 4y - 1$

1D. $10x^{-4} - 8x^a$
 no

y
 $d=2$
polyr.

leading coefficient

greatest degree

Standard form:

$$4x^3 - 5x^2 + 2x + 7$$

Standard form: decreasing degree, constant is always last



Example 2 Standard Form of a Polynomial

Write each polynomial in standard form. Identify the leading coefficient.

a. $3x^2 + 4x^5 - 7x$

$$4x^5 + 3x^2 - 7x$$

↑
LC = 4

b. $5y - 9 - 2y^4 - 6y^3$

$$-2y^4 - 6y^3 + 5y - 9$$

↑
LC = -2

· **Guided Practice**

2A. $8 - 2x^2 + 4x^4 - 3x$

$$4x^4 - 2x^2 - 3x + 8$$

$$LC = 4$$

$$d = 4$$

polyn.

2B. $y + 5y^3 - 2y^2 - 7y^6 + 10$

$$-7y^6 + 5y^3 - 2y^2 + y + 10$$

$$LC = -7$$

$$d = 6$$

polys

Algebra tiles

8.1 1-6
20-23

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Terms
Like terms

Example 3 Add Polynomials

Find each sum.

a. $(2x^2 + 5x - 7) + (3 - 4x^2 + 6x)$

b. $(3y + y^3 - 5) + (4y^2 - 4y + 2y^3 + 8)$

Activ: 5 in a row (if time)

Guided Practice

3A. $(5x^2 - 3x + 4) + (6x - 3x^2 - 3)$

3B. $(y^4 - 3y + 7) + (2y^3 + 2y - 2y^4 - 11)$

Distributive property

Example 4 Subtract Polynomials

Find each difference.

a. $(3 - 2x + 2x^2) - (4x - 5 + 3x^2)$

Danger!

b. $(7p + 4p^3 - 8) - (3p^2 + 2 - 9p)$

Guided Practice

4A. $(4x^3 - 3x^2 + 6x - 4) - (-2x^3 + x^2 - 2)$

4B. $(8y - 10 + 5y^2) - (7 - y^3 + 12y)$