Algebra 1 8.1

Write polynomials in standard form

Add and subtract polynomials

monomial number, variable product

polynomial

binomial $6 + n$

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

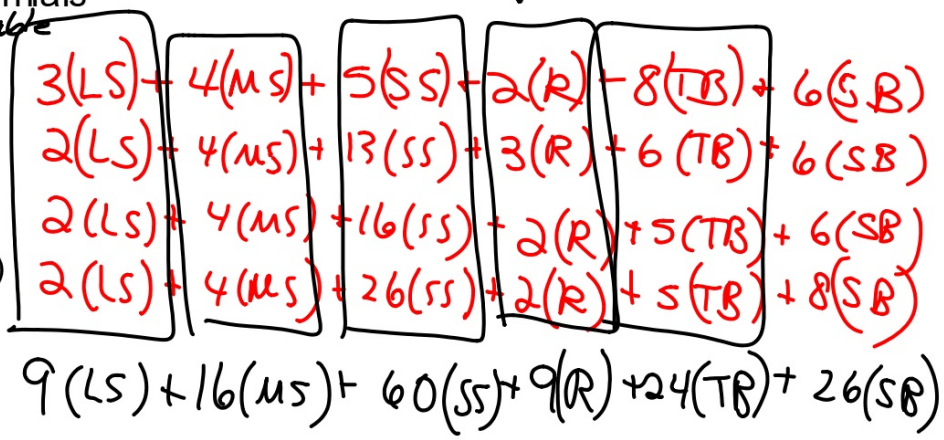
degree (of a monomial)

degree (of a polynomial)

activ: algebra tiles
whiteboards
5 in a row

6
n
$5x^1$
$17y^2$

Like terms
same shape



Monomial	Binomial	Trinomial
$5x$	$2x^2 + 7$	$x^3 - 10x + 1$

$$\frac{3}{x}$$

Degree	Name
0	constant
1	linear
2	quadratic
3	cubic

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

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*.

$$3x^{-2} = \frac{3}{x^2}$$

Term or products of terms
→ No negative exponents
→ No exponents in denom

Expression	Is it a polynomial?	Degree	Name
a. $4y$	yes	1	linear monomial
b. -6.5	yes	0	constant monomial
c. $7a^{-3} + 9b$	no		
d. $6x^3 + 4x + x + 3$	yes	3	Cubic polynomial trinomial

$6x^3+5x+3$

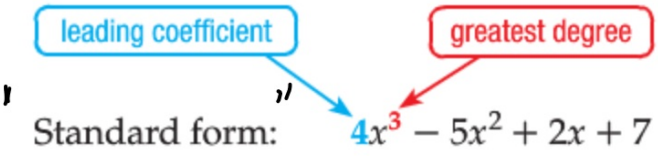
GuidedPractice

1A. x yes 1

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

1C. $5rx + 7tuv$ yes 3 cubic binomial

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


leading coefficient
greatest degree
Standard form: $4x^3 - 5x^2 + 2x + 7$

Standard form:

- degree from highest to lowest
- constant is always last

$x^2 \cdot y \cdot xy^4$

x^3y^5 LC = 4 LC = −2

Example 2 Standard Form of a Polynomial

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

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

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

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

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

Guided Practice

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

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

$LC = 4$

$d = 4$

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

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

Algebra tiles LS TB SS

Terms
Like terms

variable exponent

Example 3 Add Polynomials

Find each sum.

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

Tim Bill

$-2x^2 + 11x - 4$

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

Bill Tim

$3y^3 + 4y^2 - y - 3$

Activ: 5 in a row (if time)

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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. $\left(7p + 4p^3 - 8\right) - \left(3p^2 + 2 - 9p\right)$

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

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