Algebra 1

Our Goal: To learn to add and subtract polynomials

Warm Up: paper folding

Today's homework
· 7.1 Exercises, p.362-363: 6-46 (evens)

Previous homework
· Correct any test mistakes on a separate sheet of paper
   for partial credit

(x) folds	(y) layers	
0	1	$y = 2^x$
1	2	
2	4	
3	8	10 ft.
⋮		
15	$2^{15} = 32,768$	

.1 mm
10,000 sheets
meter

3,000 ft.

30	$\dfrac{2^{30}}{3000} = 357,000$

$$(-3x^2)^3$$

$$\boxed{-3x^6}$$

$$-3^3 x^6$$

$$-27x^6$$

The **degree of a monomial** is the <u>sum</u> of the exponents on the <u>variables only</u>.

Find the degree of each monomial.

a. $5x^2$ **b.** $-\dfrac{1}{2}xy^3$ **c.** $8x^3y^3$ **d.** $-3\ x^0$

a. polynomial is an expression whose <u>variables</u> are raised to whole #'s.

Find the degree of the monomial.

1. $-3x^4$

2. $7c^3d^2$

3. $\frac{5}{3}y^1$

4. $-20.5\,x^0$

The degree of a
monomial is the sum
of the exponents on
the <u>variables</u> <u>only.</u>

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⑤ Core Concept

Polynomials

A **polynomial** is a monomial or a sum of monomials. Each monomial is called a *term* of the polynomial. A polynomial with two terms is a **binomial**. A polynomial with three terms is a **trinomial**.
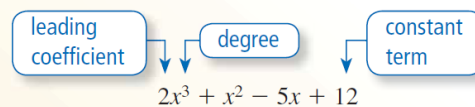
Binomial	Trinomial
$5x + 2$	$x^2 + 5x + 2$

The **degree of a polynomial** is the greatest degree of its terms. A polynomial in one variable is in **standard form** when the exponents of the terms decrease from left to right. When you write a polynomial in standard form, the coefficient of the first term is the **leading coefficient**.

leading coefficient · degree · constant term

$2x^3 + x^2 - 5x + 12$

Write $15x - x^3 + 3$ in standard form. Identify the degree and leading coefficient of the polynomial.

$$-x^3 + 15x + 3$$

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

Write each polynomial in standard form. Identify the degree and classify each polynomial by the number of terms.

a. $-3z^4$ **b.** $4 + 5x^2 - x$ **c.** $8q + q^5$

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

trinomial

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Write the polynomial in standard form. Identify the degree and leading coefficient of the polynomial. Then classify the polynomial by the number of terms.

5. $4 - 9z$ **6.** $t^2 - t^3 - 10t$ **7.** $2.8x + x^3$

Find the sum. *to add polynomials is to combine like terms*

a. $(2x^3 - 5x^2 + x) + (2x^2 + x^3 - 1)$ **b.** $(3x^2 + x - 6) + (x^2 + 4x + 10)$

$3x^3 - 3x^2 + x - 1$

$4x^2 + 5x + 4$

Find the difference. *Subtracting is adding the opposite*

a. $(4n^2 + 5) - (-2n^2 + 2n - 4)$

$$(4n^2 + 5) + (2n^2 - 2n + 4)$$

$$6n^2 - 2n + 9$$

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

$$(4x^2 - 3x + 5) + (-3x^2 + x + 8)$$
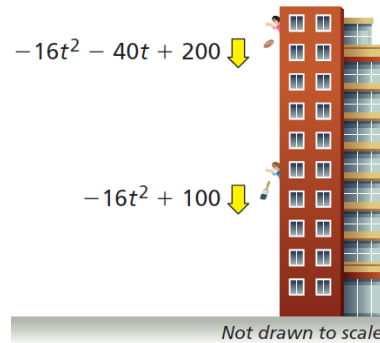
$$x^2 - 2x + 13$$

Find the sum or difference.

8. $(b - 10) + (4b - 3)$

9. $(x^2 - x - 2) + (7x^2 - x)$

10. $(p^2 + p + 3) - (-4p^2 - p + 3)$

11. $(-k + 5) - (3k^2 - 6)$

A penny is thrown straight down from a height of 200 feet. At the same time, a paintbrush is dropped from a height of 100 feet. The polynomials represent the heights (in feet) of the objects after t seconds.

$-16t^2 - 40t + 200$

$-16t^2 + 100$

Not drawn to scale

a. Write a polynomial that represents the distance between the penny and the paintbrush after t seconds.

b. Interpret the coefficients of the polynomial in part (a).

$$3x^4 + \left(4x^3 + 5x^4\right)$$

$$3x^4\left(4x^3 + 5x^4\right)$$

$$12x^7 + 15x^8$$