Simplify.

1. $2 + (-17)$ → -15
2. $7 - 6$ → 1
3. $-38 + (-14)$ → -52
4. $14 - (-24)$ → 38
5. $0 + (-9)$ → -9
6. $6 - 15$ → -9

Warm Up

· Review of addition and subtraction with signed numbers.

· Be careful as you enter values on your calculator.

Solve the system of linear equations by elimination. Check your solution.

1. $x + y = 8$
   $x - y = 6$
   $2x = 14$, $x = 7$, $7 + y = 8$, $y = 1$, $(7, 1)$
2. $x - 3y = -7$
   $x + 2y = 18$
   $-x + 3y = 7$
   $x + 2y = 18$
   $5y = 25$, $y = 5$
   $x + 2(5) = 18$, $x + 10 = 18$, $x = 8$, $(8, 5)$
3. $4x - 5y = -114$
   $x + 2y = 30$
   $4x - 5y = -114$
   $-4x - 8y = -120$
   $-13y = -234$, $y = 18$
   $x + 2(18) = 30$, $x + 36 = 30$, $x = -6$, $(-6, 18)$
4. $x + 3y = 4$
   $3x - 9y = -6$

Cumulative Warm Up

· Review elimination

Essential Question

How can you add and subtract polynomials?

Essential Question

· Complete definitions

* additive inverse property:

Allowed to change subtraction to addition as long as ~~to~~ change each term that follows.

Work with a partner. Write the expression modeled by the algebra tiles in each step.

Step 1  $(3x + 2) + (x - 5)$

Step 2 

Step 3 

Step 4 

Exploration 1

- Algebra tiles

https://technology.cpm.org/general/tiles/

Work with a partner. Write the expression modeled by the algebra tiles in each step.

Step 1  $(x^2 + 2x + 2) - (x - 1)$

Step 2 

Step 3 

Step 4 

Step 5 

Exploration 2

Find the degree of each monomial.

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

2nd degree 4th degree 6th degree NO degree.

Example 1

If just a constant number → 0 degrees

Find the degree of the monomial.

1. $-3x^4$
2. $7c^3d^2$
3. $\frac{5}{3}y$
4. -20.5

Monitoring Progress 1-4

* Student practice *

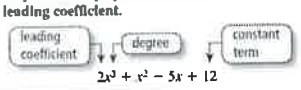
Core Concept

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**.



Core Concept

* book definitions for vocabulary *

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

$-x^3 + 15x + 3$

L.C. $= -1$

degree $= 3^{rd}$

trinomial

Example 2

- begin with largest degree down to no degree
- keep operation in front of number as you move the terms

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. $8q + q^5$

4th degree polynomial monomial

$5x^2 - x + 4$ L.C = 5 2nd deg. trinomial

$q^5 + 8q$ 5th deg. binomial L.C = 1

Example 3

* Remember to follow directions - read through and do each part.

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. $2.8x + x^3$

Monitoring Progress 5-7

* Student practice *

Find the sum.

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

$2x^3 - 5x^2 + x + 0$

$+ x^3 + 2x^2 + 0x - 1$

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

- use vertical set up
- use place holders

$3x^2 + x - 6$

$+ x^2 + 4x + 10$

$4x^2 + 5x + 4$

Example 4

Find the difference.

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

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

$4n^2 + 0n + 5$
$+ \ 2n^2 - 2n + 4$
$6n^2 - 2n + 9$

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

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

$4x^2 - 3x + 5$
$+ \ -3x^2 + x + 8$
$x^2 - 2x + 13$

Example 5

Find the sum or difference.

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

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

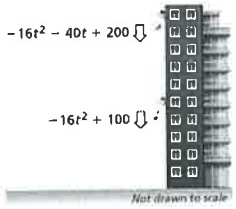
10. $(p^2 + p + 3) - (-4p^2 - p + 3)$

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

* Student practice

Monitoring Progress 8-11

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.



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).

Example 6

12. WHAT IF? The polynomial $-16t^2 - 25t + 200$ represents the height of the penny after t seconds.

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).

Monitoring Progress 12

• **Exit Ticket:** Write an example of the sum of a trinomial and a binomial that is a binomial.

Closure

Name _____ Date _____

7.1 Notetaking with Vocabulary

For use after Lesson 7.1

In your own words, write the meaning of each vocabulary term.

monomial a number, a variable or the product of a number and variable.

degree of a monomial the sum of the exponents

polynomial multiple monomial terms.

binomial two monomial terms

trinomial three monomial terms

degree of a polynomial the largest monomial degree

standard form the largest monomial degree to the smallest

leading coefficient after placing the polynomial in standard form - the leading number.

closed when you add or subtract two polynomials and the answer is a polynomial.

term: anything seperated by addition or subtraction

Notes:

exponent

$3x^2$ ← base

↑ Coefficient