

# Chapter P Prerequisites

## Section P.1 Real Numbers

**Objective:** In this lesson you learned how to represent, classify, and order real numbers and use inequalities and how to evaluate algebraic expressions using the basic rules of algebra.

Course Number

Instructor

Date

### Important Vocabulary

Define each term or concept.

**Real numbers**

**Real number line**

**Origin**

**Inequality**

**Absolute value**

**Variable**

**Constant**

**Evaluate**

**Additive inverse**

**Multiplicative inverse**

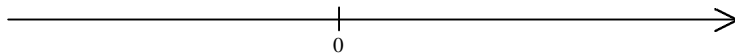
**Factors**

### I. Real Numbers (Page 2)

A real number is **rational** if it can be written as . . .

A real number that cannot be written as \_\_\_\_\_  
\_\_\_\_\_ is called **irrational**.

On the number line shown below, the numbers to the left of 0 are  
\_\_\_\_\_. The numbers to the right of 0 are  
\_\_\_\_\_.



### *What you should learn*

How to represent and classify real numbers

Every point on the real number line corresponds to exactly one real number called its \_\_\_\_\_.

**Example 1:** Give an example of  
(a) a rational number      (b) an irrational number

## II. Ordering Real Numbers (Pages 3–4)

The symbol  $<$  means \_\_\_\_\_.

The symbol  $>$  means \_\_\_\_\_.

The symbol  $\geq$  means \_\_\_\_\_.

The symbol  $\leq$  means \_\_\_\_\_.

***What you should learn***  
How to order real numbers and use inequalities

**Example 2:** Place the correct symbol ( $<$  or  $>$ ) between the numbers:  $-\frac{14}{3}$  \_\_\_\_\_  $-\sqrt{26}$ .

Inequalities can be used to describe subsets of real numbers called \_\_\_\_\_. In the interval  $[a, b]$ , the real numbers  $a$  and  $b$  are the \_\_\_\_\_ of the interval. The interval  $(a, b)$  is called a \_\_\_\_\_ interval.

**Positive infinity**, represented by the symbol \_\_\_\_\_, and **negative infinity**, represented by the symbol \_\_\_\_\_, do not represent real numbers. Instead, these symbols are used to describe the unboundedness of an interval.

**Example 3:** Write an interval representing the entire real line.

## III. Absolute Value and Distance (Page 5)

If  $a$  is a real number, then the absolute value of  $a$  is:

$$|a| = \begin{cases} \text{_____} \\ \text{_____} \end{cases}$$

***What you should learn***  
How to find the absolute values of real numbers and find the distance between two real numbers

Let  $a$  and  $b$  be real numbers. The **distance between  $a$  and  $b$**  is

\_\_\_\_\_.

**Example 4:** Explain how to find the absolute value of a negative number.

#### IV. Algebraic Expressions (Page 6)

An **algebraic expression** is . . . .

***What you should learn***  
How to evaluate algebraic expressions

The **terms** of an algebraic expression are those parts that are separated by \_\_\_\_\_.

A term that contains variables is called a \_\_\_\_\_ term, and a term that consists of a number alone is called a \_\_\_\_\_ term. The numerical factor of a variable term is the \_\_\_\_\_ of the variable term.

The **Substitution Principle**, used when an algebraic expression is evaluated, states that . . .

**Example 5:** Use the Substitution Principle to evaluate the algebraic expression  $2x + 5$  when  $x = -2$ .

#### V. Basic Rules of Algebra (Pages 6–8)

Let  $r$ ,  $s$ , and  $t$  be real numbers, variables, or algebraic expressions. Use  $r$ ,  $s$ , and  $t$  to write an example of each of the following properties:

Commutative Property of Multiplication: \_\_\_\_\_

Associative Property of Addition: \_\_\_\_\_

Distributive Property: \_\_\_\_\_

Multiplicative Identity Property: \_\_\_\_\_

Additive Inverse Property: \_\_\_\_\_

***What you should learn***  
How to use the basic rules and properties of algebra

List nine Properties of Negation and Equality.

- 1)
- 2)
- 3)
- 4)
- 5)
- 6)
- 7)
- 8)
- 9)

List five Properties of Zero.

- 1)
- 2)
- 3)
- 4)
- 5)

To add or subtract fractions with like denominators, . . .

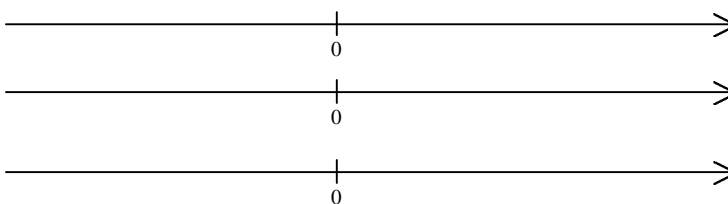
To multiply two fractions, . . .

A **prime number** is an integer that . . .

A **composite number** can be written as . . .

The number \_\_\_\_\_ is neither prime nor composite.

**Additional notes**



### Homework Assignment

Page(s)

Exercises