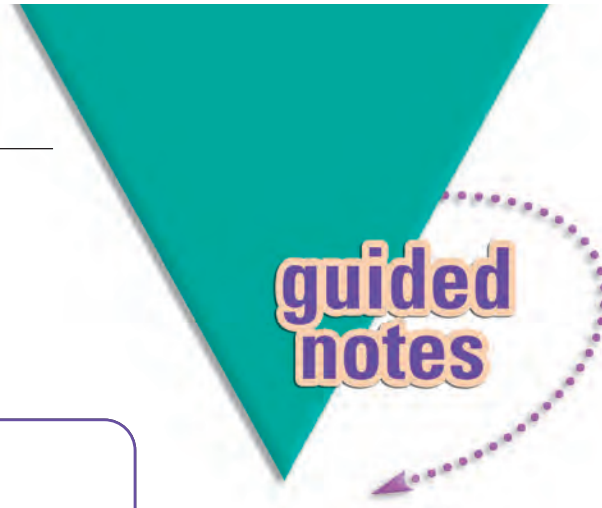


NAME _____

Module 1 Getting Ready for Algebra
Lesson 1 Defining Sets and Real Numbers



guided
notes

Lesson Objectives

- Use appropriate set notation.
- Use Venn diagrams to show set relationships.
- Describe sets of numbers.
- Classify numbers into sets.
- Graph numbers on a number line.

A set is a collection of objects.

The symbol \in means “is an element of.”

The symbol \subset means “is a subset of.”

1 Name an element of set X. possible answer $2 \in X$

2 Name a subset of set Y. possible answer $\{3, 5, 7\} \subset Y$

Sets that have no elements in common are called disjoint.

A Venn diagram uses rectangles and circles to show the relationship of sets.

3 Are sets A and X disjoint? No, because 2 and 4 are in both sets.

The intersection of two or more sets is the set of elements those sets have in common.

This is shown in a Venn diagram when circles overlap.

The symbol \cap is used to show an intersection.

The union of two or more sets is the set of all the elements contained in those sets.

The symbol \cup is used to show a union.

$N = \{1, 2, 3, 4, \dots\}$ is a listing of the natural numbers.

Another name for natural numbers is counting numbers.

The whole numbers are the elements of the set of natural numbers and zero.

The set of whole numbers is represented by the letter W.

The set of integers includes all the whole numbers and their opposites. The letter Z is often used to represent the set of integers.

4 Write an example of how negative integers are used in the real world?

possible answer: to report temperatures

The rational numbers can be written as $Q = \left\{ \frac{a}{b} : a, b \in Z; b \neq 0 \right\}$.

A ratio is another name for a fraction and belongs to the set of rational numbers.

5 Where could you see rational numbers used in the real world?

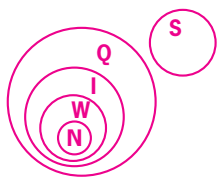
possible answers: gas prices, shoe sizes, ruler measurements

The set of real numbers that are not rational is called irrational numbers.

Irrational numbers include numbers such as possible answers: π , $\sqrt{2}$, and other nonterminating and nonrepeating decimals.

The set which is the union of the rational numbers and the irrational numbers is called the set of real numbers. This set is represented by the letter R.

Use the space below to draw the Venn diagram of the real numbers.



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Use the number line to graph the numbers -2.3 , 2 , $\sqrt{8}$, and $\frac{1}{5}$.

