

2.1 Notes: Basic Concepts of Sets

Read pages 44-49 then fill in the notes below:

A collection of objects is called a _____.

The objects in a set are called _____ or _____ of the set.

A well defined set is _____

An empty set or null set contains _____ The empty set is represented by _____ or _____ but not _____.

What are the 3 methods commonly used to represent a set? _____,
_____, _____

The set of natural numbers is represent by _____

What does \in mean? _____

Which method is being used to describe each set?

a) $B = \{1, 2, 3, 4, 5\}$

b) $B = \{x | x \in \mathbb{N} \text{ and } 1 \leq x \leq 5\}$

c) B is the set of natural numbers from 1 through 5.

1. Write a description of the following sets:

a) $K = \{2, 4, 6, 8\}$

b) $L = \{\text{Oregon, Ohio, Oklahoma}\}$

2. Express each set using the roster method.

a) C is the set of natural odd numbers greater than 2, but less than 11.

b) $F = \{x | x \in \mathbb{N} \text{ and } 4 < x \leq 15\}$

3. Express each set in set builder notation.

a) $E = \{2, 3, 4, 5, 6\}$

b) $G = \{7, 9, 11, \dots, 49\}$

c) $R = \{11, 12, 13, 14, \dots\}$

4. Determine which sets represent the empty set.

a) the set of individuals in this class who are 80 years old or older

b) $\{x | x \in \mathbb{N} \text{ and } 3 < x < 15\}$

c) $\{x | x < 2 \text{ and } x > 10\}$

d) $\{x | x < 2 \text{ or } x > 10\}$

e) $\{x | x > 3 \text{ and } x < 7\}$

5. Is the statement true or false?

a) $2 \in \{x | x \in \mathbb{N} \text{ and } 2 < x \leq 5\}$

b) $5 \notin \{x | x \in \mathbb{N} \text{ and } x > 4\}$