

# Set Theory pt.1

Set - a set is an ordered collection of things (numbers, etc.).

Sets are denoted by brackets  $\{ \}$  and the members of a set are placed inside of the brackets.

Ex. set of even whole numbers =  $\{0,2,4,\dots\}$

Note: elipsis (...) are used to say that th numbers continue in the previous pattern.

Ex. set of odd whole numbers =  $\{1,3,5,\dots\}$

Sometimes sets are given symbols to represent the set. If the letter "A" represents a set, then the following notations say, " the set A is such that A represents or contains the following...".

$\{A: A = \dots\}$     $\{A| A = \dots\}$     $\{A \mapsto A = \dots\}$

Each object in a set is called a member or element of the set.

We use the symbol  $\in$  to say " is an element of" and the symbol  $\notin$  says "is not an element of."

$2 \in \{0,2,4,6,\dots\}$

$3 \notin \{0,2,4,\dots\}$

Sets are specified so that you can tell if an element is in or not in the set. Each element is listed, and no element is listed more than once.

The set having no members is called the empty set, or null set. We represent it by the symbol  $\emptyset$ .

The set of days ending in x =  $\emptyset$ .

Exercises:

Find the next three elements of the following sets:

1.)  $\{1,2,3,\dots\}$

2.)  $\{0,2,4,6,\dots\}$

3.)  $\{1,4,7,10,\dots\}$

4.)  $\{1,2,4,7,11,16,\dots\}$

5.)  $\{1,2,4,5,7,8,10,11,\dots\}$

True or false:

6.)  $3 \in \{1,3,5\}$

7.)  $\emptyset = \{0\}$

8.)  $8 \notin \{0,2,4,6,\dots\}$

9.) Friday  $\in$  {days ending in y}

10.)  $2.5 \notin \{1,3,5,\dots\}$