

# Riviera International Academy

## Assignment-2077

(Ashad 02, 2077, Tuesday)

Class: Nine

Subject – Mathematics

Source: Photo of exercise is given below:

### 1.1 Set - Review

Let's take a collection of odd numbers less than 10. The members of this collection are definitely 1, 3, 5, 7 and 9. These members are distinct objects when considered separately. However, when they are considered collectively they form a single set of size five, written  $\{1, 3, 5, 7, 9\}$ . Thus it is a set of odd numbers less than 10. Here, any odd number less than 10 is definitely the member of the set. Therefore, a set is a collection of 'well-defined object'.

### 1.2 Notation and specification of sets

We usually denote sets by capital letters and the members or elements of the sets are enclosed inside the braces  $\{ \}$  separating with commas. The table given below shows a summary of the use of symbols in sets. Here, we are taking any two sets:  $N = \{1, 2, 3, 4, 5\}$  and  $E = \{2, 4, 6, 8\}$  to discuss about the use of symbols.

Symbol	Name	Example	Explanation
$\{ \}$	Set	$N = \{1, 2, 3, 4, 5\}$ $E = \{2, 4, 6, 8\}$	The members of the sets are enclosed inside braces.
$\in$	Membership	$2 \in N, 5 \in N, 4 \in N$ $6 \in E, 8 \in E$	The symbol ' $\in$ ' denotes the membership of an element of the given set.
$\notin$	Non-membership	$6 \notin N, 8 \notin N,$ $3 \notin E, 5 \notin E$	The symbol ' $\notin$ ' denotes the non-membership of an element to the given set.
$\subset$	Proper subset	$\{1, 2\} \subset N, \{4, 6, 8\} \subset E$	A set that is contained in another set.
$\subseteq$	Improper subset	$\{2, 4, 6, 8\} \subseteq E$ , it means $\{2, 4, 6, 8\} \subset E$ and $\{2, 4, 6, 8\} = E$	A set which is contained in and equal to another set.
$\supset$	Super set	$N \supset \{1, 2\}, E \supset \{4, 6, 8\}$	Set N includes $\{1, 2\}$ and Set E includes $\{4, 6, 8\}$ .
$\cup$	Union	$N \cup E = \{1, 2, 3, 4, 5, 6, 8\}$	$N \cup E$ belongs to set N or set E.
$\cap$	Intersection	$N \cap E = \{2, 4\}$	$N \cap E$ belongs to both set N and E.

We usually describe a set by three methods: description, listing (or roster) and set-builder (or rule) methods.

Method	Example	Explanation
Description	A is a set of prime numbers less than 10.	Words description of common properties of elements of a set.
Listing (or roster)	$A = \{2, 3, 5, 7\}$	The distinct elements of a set are listed inside curly brackets { }.
Set-builder (or rule)	$A = \{x : x \in \text{prime numbers, } x < 10\}$	A variable is used to describe the common properties of the elements of a set by using symbols.

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### 1.3 Types of sets

On the basis of the number of elements contained by sets, we classify sets into four types: empty (or null) set, singleton (or unit) set, finite set and infinite set.

Type of sets	Examples	Explanation
Empty or null set	The set of whole numbers less than 0. $W = \{ \}$ or $\phi$ .	It does not contain any element. It is denoted by empty braces { } or by $\phi$ (Phi)
Unit or singleton set	The set of even numbers between 3 and 5, $P = \{4\}$	It contains only one element.
Finite set	$W = \{0, 1, 2, 3, \dots, 100\}$	It contains finite number of elements.
Infinite set	$W = \{0, 1, 2, 3, \dots\}$	It contains infinite number of elements.

On the basis of the types of elements contained by two or more sets, the types of their relationship can be defined in the following ways.

Type of relationship	Examples	Explanation
Equal sets	$A = \{\text{क, ख, ग, घ, ङ}\}$ $B = \{\text{घ, ख, ङ, क, ग}\}$ $\therefore A = B$	They have exactly the same elements.
Equivalent sets	$P = \{2, 3, 5, 7\}$ $Q = \{1, 4, 9, 16\}$ $\therefore P \sim Q$	They have equal number of elements.
Overlapping sets	$M = \{2, 4, 6, 8, 10\}$ $N = \{1, 2, 5, 10\}$ $\therefore M$ and $N$ are overlapping sets.	They have at least one element common. 2 and 10 are the common elements of sets $M$ and $N$ .
Disjoint sets	$X = \{\text{अ, आ, इ, ई}\}$ $Y = \{\text{च, छ, ज, झ, ञ}\}$ $\therefore X$ and $Y$ are disjoint sets.	They do not have any element common.

Homework: Read & write all the definitions with examples.  
Complete your work neatly.

**Subject- Computer**

**Perform binary calculation:**

- a)  $101 \times 110$       b)  $111 \times 101$       c)  $110 \times 11$       d)  $1001 \times 111$   
e)  $1110 \div 10$       f)  $11101 \div 101$       g)  $10111 \div 110$       h)  $11110 \div 100$

**Subject- HPE**

1. What is bio-diversity? Write in two paragraphs.
2. What is eco-system? Explain in details.

**The End.**