Riviera International Academy

Assignment-2077

(Ashwin 06, 2077, Tuesday)

Class: Six

Subject- Mathematics

Source: Photos of exercises are given below.

Work: Read & write all definitions

Do your work neatly

Page no. 5,6,7 &8

Unit 1

Set

1.1 Set - Looking back

Classroom - Exercise

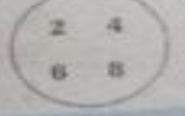
1. **Let's tick the well-defined collections.**
   a) A collection of delicious fruits.
   b) A collection of fruits.
   c) A collection of high mountains which are more than 7000 m.
   d) A collection of high mountains.

2. **Let's tell and write the members of these sets inside curly brackets and name the sets**
   a) A set of the first five letters of 'Nepali Barnamala'.
   .....
   b) A set of four planets closer to the Sun in solar system.
   .....
   c) The set of prime numbers less than 10.
   .....
   d) A = { x : x is an even number less than 10 }.
   .....

3. **Let's rewrite the following sets in set - builder form.**
   a) W = {0, 1, 2, 3, 4} .....
   b) A = {1, 3, 5, 7, 9} .....

Let's study the following illustrations and investigate the idea about sets.

It is a collection of stationery items. Any type of stationery can be included in this collection. So, it is a **well-defined** collection. A well-defined collection of objects is called a set.



It is a collection of even numbers less than 10. It definitely includes the members like 2, 4, 6 and 8. It is also a collection of well defined members because we are able to say whether any member can be included in this collection or not. Therefore, it is also a set.

On the other hand, 'a collection of tall students in class 6 is not a set. In this case we are not able to say that whether a student 4 feet tall, 4.5 feet tall, etc. can be included or not in the collection because the term **'tall'** is not well-defined. So it does not clearly distinguish the members of the collection.

1.2 Membership of a set

Let's take a set of prime numbers less than 10.

$P = \{2, 3, 5, 7\}$

Here, 2, 3, 5 and 7 are the members (or elements) of the set P.

Each member of this set **belongs to** the set P.

We denote the membership of an element of a set by the symbol '$\in$'. For example:

2 belongs to the set P is written as $2 \in P$.

3 belongs to the set P is written as $3 \in P$, and so on.

However, in $P = \{2, 3, 5, 7\}$, 4 does not belong to the set P.

We write it as $4 \notin P$. Similarly, $6 \notin P$, $8 \notin P$, and so on.

1. 3 Set notation

(i) We denote sets by capital letters like A, B, C, N, W, etc. For example, a set of whole numbers can be denoted by W, a set of natural numbers by N, and so on.

(ii) The members or elements of a set are enclosed in braces { } and they are separated by commas (,). For examples,

$W = \{0, 1, 2, 3, 4, 5\}$, $M = \{3, 6, 9, 12\}$. , $V = \{a, e, i, o, u\}$, and so on.

1.4 Methods of writing members of set

We usually write the members of a set by the following four methods.

(i) Diagrammatic method

In this method, we write the members of a set inside a circular oval or rectangular diagram. A set of square numbers less than 10 are shown in the given diagram.

(ii) Description method

In this method, we describe the common property (or properties) of the members of the set inside the braces. For example,

A = {square numbers less than 10} , B = {factors of 18}, and so on.

(iii) Listing method

In this method, we list the members of a set inside the braces and the members are separated by commas. For example

$A = \{1, 4, 9\}$, $B = \{1, 2, 3, 6, 9, 18\}$, etc.

(iv) Set - builder method

In this method, we represent the members of a set by a variable (x, y, z, p, q, ...) .Then the common property (or properties) of the members are described by the variable inside the braces. For example:

$A = \{1, 4, 9\} \rightarrow A = \{x : x \text{ is a square number less than } 10\}$.

We read it as '**A is the set of all values of x such that (:) x is a square number less than 10**'.

$B = \{1, 2, 3, 6, 9, 18\} \rightarrow B = \{y : y \text{ is a factor of } 18\}$

We read it as '**B is the set of all values of y such that (:) y is a factor of 18**'.

Now, let's recall to describe sets by these four methods at a glance.

Methods	Examples
Diagrammatic method	
Descriptive method	A = {square numbers less than 10}
Listing method	A = {1, 4, 9}
Set-builder method	A = {x : x is a square number less than 10}

Worked-out examples

Example 1 : Let's express the following sets in descriptive method.

a) A = {4, 6, 8, 9} b) B = {a, e, i, o, u}

Solution :

a) A = {4, 6, 8, 9} → A = {composite numbers less than 10}

b) B = {a, e, i, o, u} → A = {vowels of English alphabets}

Example 2 : Let's describe the following sets in listing method.

a) P = {letters of the word 'teacher'}

b) Q = {x : x is a cube number, x < 30}

Solution :

a) P = {letters of the word 'teacher'} → P = {t, e, a, c, h, r}

b) Q = {x : x is cube number, x < 30} → Q = {1, 8, 27}

In the word 'teacher' the letter **e** is repeated. Such repeated members are listed only one time.

Example 3 : Describe the following sets in set-builder method.

a) P = {prime numbers less than 10} b) F = {1, 2, 3, 4, 6, 12}

c) M = {3, 6, 9, 12, 15}

Solution :

a) P = {prime number less than 10} → P = {x : x is a prime number, x < 10}

b) F = {1, 2, 3, 4, 6, 12} → F = {x : x is a factor of 12}

c) M = {3, 6, 9, 12, 15} → M = {x : x is the first five multiples of 3} or M = {x : x is a multiple of 3, x < 16}

EXERCISE 1.1

General Section - Classwork

1. **Let's tick (√) to the well-defined collections.**

   a) A collection of tasty fruits. ☑

   b) A collection of fruits. ☐

   c) A collection of long rivers of Nepal. ☑

   d) A collection of rivers of Nepal. ☐

2. **If N = {1, 2, 3, 4, 5} and O = {1, 3, 5, 7, 9}, let's tell and write 'True' or 'False' in the blank spaces.**

   a) 4 ∈ N True b) 4 ∈ O false c) 5 ∉ N True

   d) 7 ∈ O True e) 6 ∉ N False f) 1 ∈ O True

3. **If W = {0, 1, 2, 3, 4} and E = {2, 4, 6, 8}, let's insert the appropriate symbol '∈' or '∉' in the blank.**

   a) 6 ∈ E b) 3 ∉ E c) 5 ∉ W

   d) 1 ∈ W e) 4 ∈ W f) 7 ∉ E

4. **Let's tell and write the members of these sets in listing method.**

   a) A = {prime numbers between 10 and 20} A = {11, 13, 17, 19}

   b) B = {letters of the word 'elephant'} B = {e, l, p, h, a, n, t}

   c) C = {x : x is an odd number less than 5} C = {1, 3}

   d) D = {y : y is a factor of 12} D = {1, 2, 3, 4, 6, 12}

Creative Section

5. **Let's answer the following questions.**

   a) What is a set? Give an example of a set.

   b) Is the collection of nice Nepali songs a set? Why?

   c) Write three methods of writing sets. Give one example of each method.

   d) How do we write a set in set-builder method?

Subject- HPE

Topic - Diabetes and Obesity

Study the following text and answer the following questions:

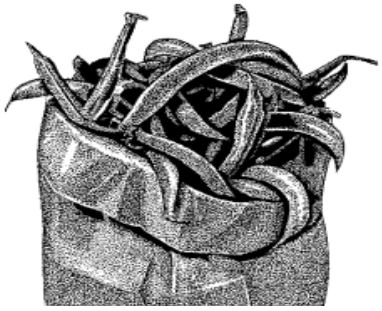
Dr. Quackenscam's Diet Plan

Dr. Quackenscam says, "Follow my diet plan, and you'll be buff and healthy."

1. "Green beans are good for you! So eat green beans (and only green beans) at every meal, every day. Want a snack? Have more green beans!"
2. "Drink fruit juice whenever you're thirsty. You should have at least 8 glasses of fruit juice a day. Forget about drinking water. More than half of the weight of your body is water, so you don't need any more of it."
3. "Conserve your energy by moving as little as possible throughout the day. Don't exercise more than 10 minutes daily, so your muscles have the rest of the day to grow. You'll have couch-pack abs in no time!"
4. "Watching TV, using a computer, and playing video games as much as possible are good for your health because they strengthen your brain muscles. These activities also help you conserve energy (see tip 3)."

When assessing Dr. Quackenscam's Diet Plan, keep these questions in mind:

- Is it good to eat only one kind of food, even if it is a healthy food? If your doctor is concerned about your weight, what's the best way to diet?
- Do you need to drink water, even though your body is made up of a lot of water? What could be wrong with drinking a lot of fruit juice, since eating fruits is good for you?
- What can happen if people don't get enough exercise?
- How can sitting in front of a TV, computer, smartphone, or video game screen affect your health?



1. Fill in the blank: Kids and teens should exercise at least _____ minutes a day.
2. True or false: Kids and teens who spend lots of time sitting in front of TV, video, and computer screens and using their smartphones or are more likely to be overweight.
3. True or false: Eating food on a smaller plate can help with portion control.
4. Underline three health problems that can be caused by being overweight:
   a) High blood pressure
   b) Scurvy
   c) Diabetes
   d) Schistosomiasis
   e) Depression
   f) Scoliosis
5. Name three things kids and teens can do to reach and maintain a healthy weight:

Subject- Science

• Do exercise no. H from lesson 5.

विषय – नेपाली

प्रश्न नम्बर आठको लामो उत्तर गर।

The End.