

# SETS

**SUBJECT : MATHEMATICS**

**CHAPTER NUMBER:10**

**CHAPTER NAME :SETS**

**SUBTOPIC :** Presentation of Sets, Description method,

Roster or Tabular Method

**PERIOD NO: 3**

**CHANGING YOUR TOMORROW**

# Learning outcomes

- Students will be able to represent set in Roster form .
- Students will be able to represent set in set builder form

## PREVIOUS KNOWLEDGE TEST

1.i) Write the set of letters used in the word  
'BHUBANESWAR'.

(ii) Write the set of vowels used in the word 'CUTTACK'

(iii) Write the set of consonants used in the word 'ODISHA'

# Negative numbers and Integers

- Students will Learn set builder form and roster form with the help of a video .
- [https://www.youtube.com/watch?v=FLgiccWI434&list=RDCMUCEWpbFLzoYGPfuWUMFPSaoA&start\\_radio=1&rv=FLgiccWI434&t=31&t=0\(14:35\)](https://www.youtube.com/watch?v=FLgiccWI434&list=RDCMUCEWpbFLzoYGPfuWUMFPSaoA&start_radio=1&rv=FLgiccWI434&t=31&t=0(14:35))

# Set Builder Notation

$$A = \{1, 2, 3, 4, 5\}$$

$$A = \{x \mid x \in \mathbb{N}, 1 \leq x \leq 5\}$$

$$D = \{2, 4, 6, 8, 10, 12, 14\}$$

$$D = \{2x \mid x \in \mathbb{N}, 1 \leq x \leq 7\}$$

### Your Task 😊

- Write the following sets in the set builder form.
- (a)  $A = \{2, 4, 6, 8\}$
- (b)  $B = \{3, 9, 27, 81\}$
- (c)  $C = \{1, 4, 9, 16, 25\}$
- (d)  $D = \{1, 3, 5, \dots\}$
- (e)  $E = \{a, e, i, o, u\}$

## Evaluation Question Ex-10C

**2. Write each given set in the Roster Form:**

- (i) All prime numbers between one and twenty**
- (ii) The squares of first four natural numbers**
- (iii) Even numbers between 1 and 9**
- (iv) First eight letters of the English alphabet**
- (v) The letters of the word 'BASKET'**

## Evaluation Question

### Solution:

(i)  $\{2, 3, 5, 7, 11, 13, 17, 19\}$  is the Roster form for all prime numbers between one and twenty

(ii)  $\{1, 4, 9, 16\}$  is the Roster form for the squares of first four natural numbers

(iii)  $\{2, 4, 6, 8\}$  is the Roster form for even numbers between 1 and 9

(iv)  $\{A, B, C, D, E, F, G, H\}$  is the Roster form for first eight letters of the English alphabet

(v)  $\{B, A, S, K, E, T\}$  is the Roster form for the letters of the word 'BASKET'



## Evaluation Question

3. Write each given set in the Set-Builder Form:

(i) {2, 4, 6, 8, 10}

(ii) {2, 3, 5, 7, 11}

(iii) {January, June, July}

(iv) {a, e, i, o, u}

(v) {Tuesday, Thursday}

**Solution:**

(i)  $\{x: x \text{ is an even natural number less than } 12\}$  is the Set- Builder form for {2, 4, 6, 8, 10}

(ii)  $\{x: x \text{ is a prime number less than } 12\}$  is the Set-Builder form for {2, 3, 5, 7, 11}

## Evaluation Question

(iii)  $\{x: x \text{ is a month of the year whose names starts with letter J}\}$   
is the Set-Builder form for  $\{\text{January, July, June}\}$

(iv)  $\{x: x \text{ is a vowel in English alphabets}\}$  is the  
Set-Builder form for  $\{a, e, i, o, u\}$

(v)  $\{x: x \text{ is a day of the week whose names starts with letter T}\}$   
is the Set-Builder form for  $\{\text{Tuesday, Thursday}\}$

## Evaluation Question

**4. Write each of the following sets in Roster (tabular) Form and also in Set-Builder Form**

- (i) Set of all natural numbers that can divide 24 completely**
- (ii) Set of odd numbers between 20 and 35**
- (iii) Set of letters used in the word 'CALCUTTA'**
- (iv) Set of names of the first five months of a year**
- (v) Set of all two digit numbers that are perfect square as well**

## Evaluation Question

**Solution:** (i) The Roster Form is  $\{1, 2, 3, 4, 6, 8, 12, 24\}$

The Set-Builder Form is  $\{x: x \text{ is a natural number which divides } 24 \text{ completely}\}$

(ii) The Roster Form is  $\{21, 23, 25, 27, 29, 31, 33\}$

The Set-Builder Form is  $\{x: x \text{ is an odd number between } 20 \text{ and } 35\}$

(iii) The Roster Form is  $\{C, A, L, U, T\}$

The Set-Builder Form is  $\{x: x \text{ is a letter used in the word 'CALCUTTA'}\}$

(iv) The Roster Form is  $\{\text{January, February, March, April, May}\}$

The Set-Builder Form is  $\{x: x \text{ is a name of the first five months of a year}\}$

(v) The Roster Form is  $\{16, 25, 36, 49, 64, 81\}$

The Set-Builder Form is  $\{x: x \text{ is a perfect square of two digit numbers}\}$

## Evaluation Question

5. Write, in Roster Form, the set of:

(i) the first four odd natural numbers each divisible by 5

(ii) the counting numbers between 15 and 35, each of which is divisible by 6

(iii) the names of the last three days of a week

(iv) the names of the last four months of a year

**Solution:**

(i)  $\{5, 15, 25, 35\}$  is a Roster Form for the first four odd natural numbers each divisible by 5

(ii)  $\{18, 24, 30\}$  is a Roster Form for the counting numbers between 15 and 35, each of which is divisible by 6

(iii)  $\{\text{Friday, Saturday, Sunday}\}$  is a Roster Form for names of the last three days of a week

(iv)  $\{\text{September, October, November, December}\}$  is a Roster Form for the last four months of a year

# Additional Homework

1. Write the following sets in tabular form:
- (i)  $\{x : x \text{ is a natural number and } x < 7\}$
  - (ii)  $\{x : x \in W \text{ and } x \leq 5\}$
  - (iii)  $\{x : x \text{ is a month of a year having less than 31 days}\}$

HW  
Ex.10C

**THANKING YOU**  
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