ODM EDUCATIONAL GROUP
Changing your Tomorrow

SETS

SUBJECT : MATHEMATICS
CHAPTER NUMBER:10
CHAPTER NAME :SETS
SUBTOPIC : Introduction, Idea of Sets.
PERIOD NO: 1

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Learning outcomes

- Students will be able to define sets .
- Students will be able to define elements of set.

sets

Sets, in mathematics, are an organized collection of objects and can be represented in set-builder form or roster form.

Usually, sets are represented in curly braces {}, for example, A = {1,2,3,4} is a set.

Let us take an example:

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

Since a set is usually represented by the capital letter. Thus, A is the set and 1, 2, 3, 4, 5 are the elements of the set or members of the set. The elements that are written in the set can be in any order but cannot be repeated. All the set elements are represented in small letter in case of alphabets. Also, we can write it as $1 \in A$, $2 \in A$ etc.

- N: Set of all natural numbers
- Z: Set of all integers
- Q: Set of all rational numbers
- R: Set of all real numbers
- Z^+: Set of all positive integers

Sets

- Students will Learn set with the help of a video .
- https://www.youtube.com/watch?v=VdfDAFBwKWQ(11.32)

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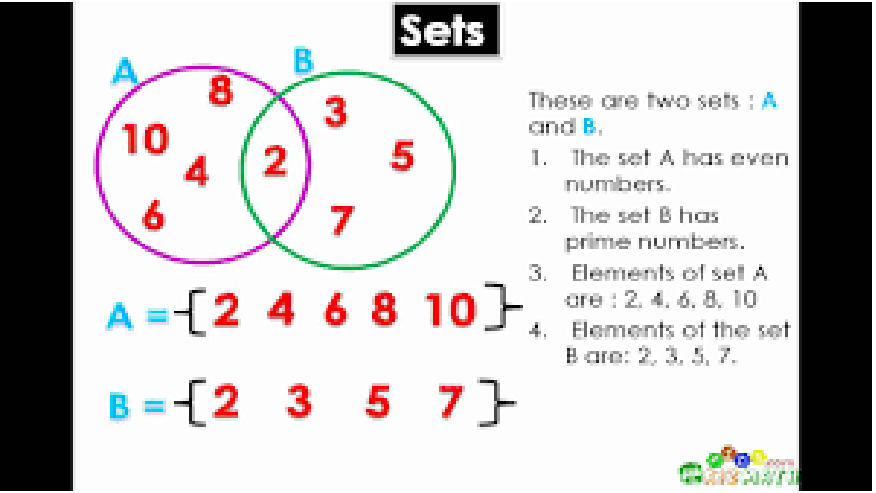
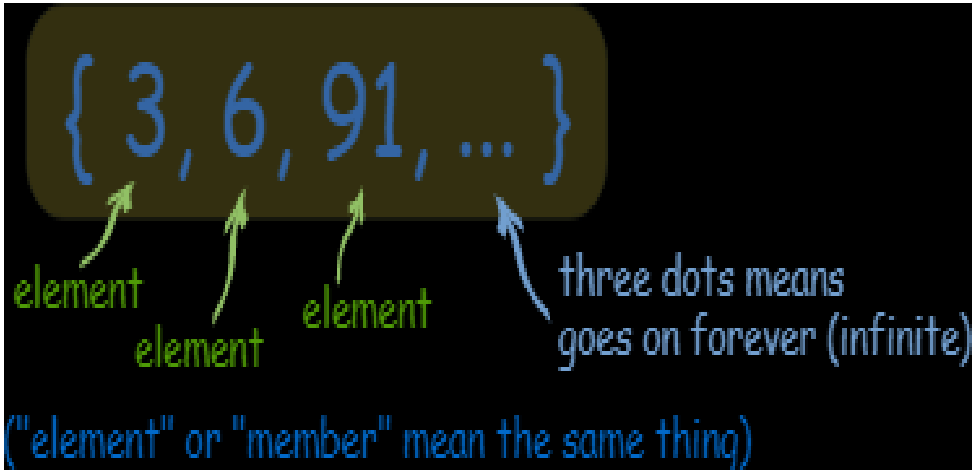
Sets

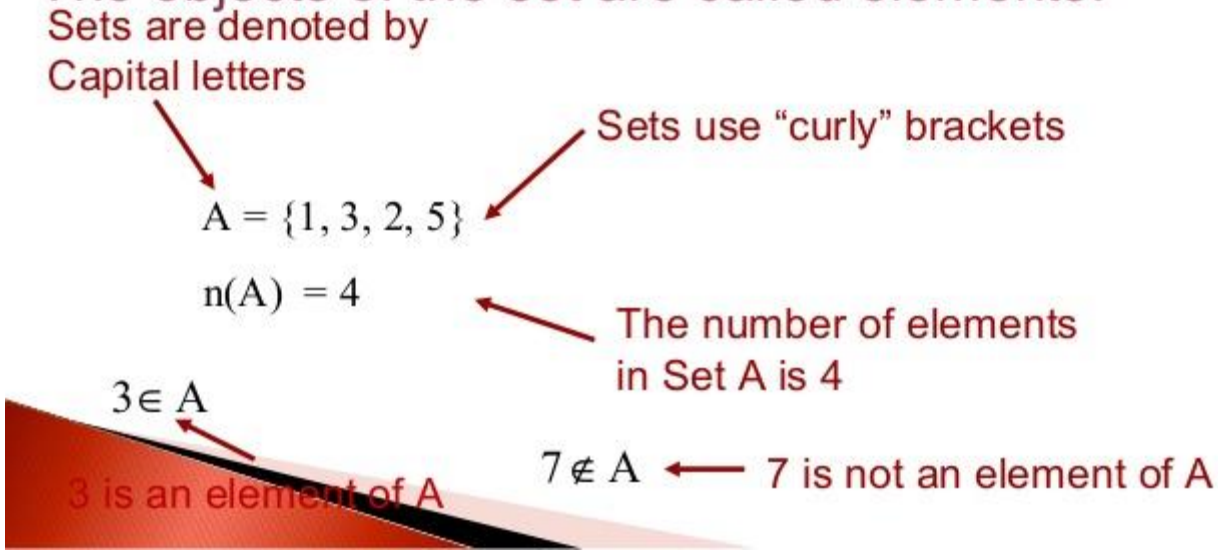




SETS

A set is a collection of well defined distinct objects.

The objects of the set are called elements.



Evaluation Question Exercise 10-A

1. State whether or not the following elements form a set, if not, give reason:

(i) All easy problems in your text book.

(ii) All three sided figures.

(iii) The first five counting numbers.

(iv) All the tall boys of your class.

(v) The last three days of the week.

(vi) All triangle that are difficult to draw.

(vii) The first three letters of the English alphabet.

Evaluation Question

(viii) All tasty fruits.

(ix) All clever boys of class 6.

(x) All good schools in Delhi.

(xi) All the girls in your class, whose heights are less than your height.

(xii) All the boys in your class, whose heights are more than your height.

(xiii) All the problems in your Mathematics book, which are difficult for Amit.

Evaluation Question

Solutions:

(i) No, the given elements do not form a set because some problems may be easy for one person but difficult to some other person. Here the objects are not well defined.

(ii) Yes, the given elements form a set.

(iii) Yes, the given elements form a set.

(iv) No, the objects given here do not form a set because the definition of tall boys is not well defined

(v) Yes, the given elements form a set

(vi) No, the objects given here do not form a set, because it may be difficult to draw a given triangle for a boy but it may be easy for another to draw a same triangle

Evaluation Question

(vii) Yes, the given elements form a set

(viii) No, the objects given here do not form a set, because a fruit may be tasty for one person but it may not be tasty for another person

(ix) No, the objects given here do not form a set, because cleverness of boys is not well defined

(x) No, the objects given here do not form a set, because all the people do not find the same schools as good as other

(xi) Yes, the given elements form a set

(xii) Yes, the given elements form a set

Evaluation Question Exercise 10-B

1. If set A = {2, 3, 4, 5, 6}, state which of the following statements are true and which are false:

(i) 2 ε A **(ii) 5, 6 ε A**

(iii) 3, 4, 7 ε A **(iv) 2, 8 ε A**

Solution:

i)Set A = {2, 3, 4, 5, 6}

Here, element 2 belongs to set A

Hence, the given statement is true

(ii)Set A = {2, 3, 4, 5, 6}

Here, element 5 and 6 belongs to set A

Hence, the given statement is true

Evaluation Question

(iii) Set A = {2, 3, 4, 5, 6}

Here, element 7 does not belongs to set A

Hence, the given statement is false

(iv) Set A = {2, 3, 4, 5, 6}

Here, element 8 does not belongs to set A

Hence, the given statement is false

2. If set B = {4, 6, 8, 10, 12, 14}. State, which of the following statements is correct and which is wrong:

(i) 5 ε B **(ii) 12 ε B**

(iii) 14 ε B **(iv) 9 ε B**

(v) B is a set of even numbers between 2 and 16.

Evaluation Question

(vi) 4, 6 and 10 are die members of the set B. Also, write the wrong statements correctly.

(i) Set B = {4, 6, 8, 10, 12, 14}

Here, element 5 does not belongs to set B

Hence, the given statement is false

(ii) Set B = {4, 6, 8, 10, 12, 14}

Here, element 12 belongs to set B

Hence, the given statement is true

(iii) Set B = {4, 6, 8, 10, 12, 14}

Here, element 14 belongs to set B

Hence, the given statement is true

Evaluation Question

(iv) Set B = {4, 6, 8, 10, 12, 14}

Here, element 9 does not belongs to set B

Hence, the given statement is false

(v) Set B = {4, 6, 8, 10, 12, 14}

Here, B is a set of even numbers between 2 and 16

Hence, the given statement is true

(vi) Set B = {4, 6, 8, 10, 12, 14}

Here, elements 4, 6, and 10 belongs to set B

Hence, the given statement is true

Additional Homework

1. State whether true or false:

(i) Set {4, 5, 8} is same as the set {5, 4, 8} and the set {8, 4, 5}

(ii) Sets {a, b, m, n} and {a, a, m, b, n, n) are same.

(iii) Set of letters in the word 'suchismita' is {s, u, c, h, i, m, t, a}

(iv) Set of letters in the word 'MAHMOOD' is {M, A, H, O, D}.

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