ODM EDUCATIONAL GROUP
Changing your Tomorrow

SETS

SUBJECT : MATHEMATICS
CHAPTER NUMBER:10
CHAPTER NAME :SETS

SUBTOPIC : Equal sets and Equivalent sets

PERIOD NO: 6

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Learning outcomes

- Students will be able to define equal and equivalent sets .
- Students will be able to solve sums based on disjoint sets and overlapping sets.

PREVIOUS KNOWLEDGE TEST

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1. State, giving reasons, which of the following pairs of sets disjoint sets and which are overlapping sets:

(i) A = {Girls with ages below 15 years} and B = {Girls with ages above 15 years}

(ii) C = {Boys with ages above 20 years} and D = {Boys with ages above 27 years}

Evaluation Question

7. State, whether the following are finite or infinite sets:

(i) {2, 4, 6, 8, …… 800}

(ii) {……, -5, -4, -3, -2}

(iii) {x: x is an integer between -60 and 60}

(iv) {No. of electrical appliances working in your house}

(v) {x: x is a whole number greater than 20}

Evaluation Question

Solution:

(i) Given set {2, 4, 6, 8, ….. 800}

Here, the given set has finite number of elements

Hence, the set is finite

(ii) Given set {……, -5, -4, -3, -2}

Here, the given set has infinite number of elements

Hence, the set is infinite

(iii) Given set {x: x is an integer between -60 and 60}

Here, the given set has finite number of elements

Hence, the set is finite

Evaluation Question

(iv) Given set

{No. of electrical appliances working in your house}

Here, the numbers of electrical appliances in house are finite

Hence, the set is finite

(v) Given set

{x: x is a whole number greater than 20}

Here, the number of whole numbers greater than 20 is infinite

Hence, the set is infinite

Evaluation Question

8. For each statement, given below, write True or False:

(i) {…., -8, -4, 0, 4, 8}is a finite set

(ii) {-32, -28, -24, -20, ……., 0, 4, 8, 16} is an infinite set

(iii) {x: x is a natural number less than 1} is the empty set

(iv) {Whole numbers between 15 and 16} = {Natural numbers between 5 and 6}

(v) {Odd numbers divisible by 2} is the empty set

Evaluation Question

Solution:

(i) {……-8, -4, 0, 4, 8}is infinite set

Hence, the given statement is false

(ii) {-32, -28, -24, -20, ……., 0, 4, 8, 16} is finite set

Hence, the given statement is false

(iii) {x: x is a natural number less than 1} is an empty set

Hence, the given statement is true

Evaluation Question

(iv) Both the sets are empty sets and we know that all empty sets are equal

Hence, the given statement is true

(v) We know that, there is no odd number that is divisible by 2

Thus, the given set is empty set

Hence, the given statement is true

Evaluation Question

9. State, giving reasons, which of the following pairs of sets disjoint sets and which are overlapping sets:

(i) A = {Girls with ages below 15 years} and B = {Girls with ages above 15 years}

(ii) C = {Boys with ages above 20 years} and D = {Boys with ages above 27 years}

(iii) A = {Natural numbers between 35 and 60} and B = {Natural numbers between 50 and 80}

(iv) P = {Students of class IX studying in I.C.S.E. Board} and Q = {Students of class IX}

(v) A = {Natural numbers multiples of 3 and less than 30} and B= {Natural numbers divisible by 4 and between 20 and 45}

Evaluation Question

Solution:

(i) No girl can be of age below 15 years and also above 15 years.

Hence, the given sets are disjoint sets

(ii) There are possibilities when the boys have age greater than 20 years and also above 27 years

Hence, the given sets are overlapping

(iii) There are common natural numbers that lies between 35 and 60 and also lies between 50 and 80

Hence, the given sets are overlapping

Evaluation Question

(iv) There are possibilities that students of class IX studying in I.C.S.E. board are common

Hence, the given sets are overlapping

(v) Since, 24 is the common natural number in both the given sets

Hence, the given sets are overlapping

HW
Ex.10D Q.NO 7 TO 9

Additional Homework

1. State whether the given pairs of sets are equal or equivalent.
   (i) A = {first four natural numbers} and B = {first four whole numbers}.
   (ii) A = Set of letters of the word "FOLLOW" and B = Set of letters of the word "WOLF".
   (iii) E = {even natural numbers less than 10} and O = {odd natural numbers less than 9}
   (iv) A = {days of the week starting with letter S} and B = {days of the week starting with letter T}.
   (v) M = {multiples of 2 and 3 between 10 and 20} and N = {multiples of 2 and 5 between 10 and 20}.
   (vi) P = {prime numbers which divide 70 exactly} and Q = {prime numbers which divide 105 exactly}.

THANKING YOU

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