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Date
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EXERCISE - 10(D)

(1) State whether the given set is infinite or finite:

i) $\{3, 5, 7, \ldots\}$ Infinite Set

ii) $\{1, 2, 3, 4\}$ Finite Set

iii) $\{\ldots, -3, -2, -1, 0, 1, 2\}$ Infinite Set

iv) $\{20, 30, 40, 50, \ldots, 200\}$ Finite Set

(2) which of the following sets is empty?

i) Set of counting no.s between 5 and 6.

There no counting no.s between 5 and 6, as they are adjacent no.s.
So, this an empty set.

ii) Set of odd no.s between 7 and 19.

There are odd no.s between 7 and 19.
Hence, this set consists the elements 9, 11, 13, 15, and 17.
So, this is not an empty set.

iii) Set of odd no.s between 7 and 9.

There are no odd no.s between 7 and 9, as 7 and 9 are adjacent odd no.s.
So, this is an empty set.

iv) Set of even no.s that are not divisible by 2.

Here, the elements of the set are the even no.s that are not divisible by 2.
But, such no. doesn't exist.
So, this is an empty set.

v) {0}

Here, 0 is the element in the given set.
So, this is not an empty set.

(3) State which pair of sets given below are equal, and which are equivalent:

i) {3, 5, 7} and {5, 3, 7}

Here, all the elements (i.e. 3, 5 and 7) are common.
No. of elements in both sets = 3

∴ These set are equal and equivalent.

ii) {8, 6, 10, 12} and {3, 2 4, 6}

No. of elements in both sets = 4

∴ These set are only equivalent.

iii) {7, 7, 2, 1, 2} and {1, 2, 7}

$\{7, 7, 2, 1, 2\}$

$= \{7, 2, 1\}$

No. of elements in both sets - 3

Here, all the elements (i.e. 7, 2, 1) are in common.

∴ These sets are equal and equivalent.

iv) $\{2, 4, 6, 8, 10\}$ and $\{a, b, d, e, m\}$

No. of elements in both sets - 5

∴ These sets are equivalent.

(4) State which of the following are finite sets and which are infinite:

i) Set of integers. Infinite Sets

ii) {Multiples of 5}. Infinite Sets

iii) {Fractions between 1 and 2}. Infinite Sets

iv) {No. of people of India}. Finite Sets

v) Set of trees in the world. Infinite Sets

vi) Set of leaves on a tree. Finite Sets

vii) Set of children in all the schools of Delhi.
Finite Sets

viii) $\{\ldots, -4, -2, 0, 2, 4, 6, 8\}$. Infinite Sets

ix) $\{-12, -9, -6, -3, 0, 3, 6, \ldots\}$ Infinite Sets

x) {No. of points in a line segment 4 cm long}.
Infinite Sets.

(5) State whether or not the following sets are empty:

i) {Prime no.s divisible by 2} not empty

ii) {Negative natural no.s} empty

iii) {women with height 5 metre} empty

iv) {Integers less than 5} not empty

v) {Prime no.s between 14 and 23} not empty

vi) Set of even no.s not divisible by 2. empty

vii) Set of multiples of 3 that are more than 9 and less than 15. not empty

(6) State if the given sets are equal sets or equivalent sets:

i) {Natural no.s less than five} and {letters of the word 'BOAT'}. Equivalent sets

ii) $\{2, 4, 6, 8, 10\}$ and {even natural no.s less than 12}.
Equal sets

set of

iii) $\{1, 3, 5, 7, \ldots\}$ and odd natural nos.

Equal sets

iv) {letters of the word 'MEMBER'} and {letters of the word 'REMEMBER'}.

Equal sets

v) {Negative natural nos.} and {50th day of a month}.

Equal sets

vi) {Even natural numbers} and {Odd natural numbers}.

Equivalent sets

(7) State whether the following are finite or infinite sets:

i) $\{2, 4, 6, 8, \ldots, 800\}$ Finite

ii) $\{\ldots, -5, -4, -3, -2\}$ Infinite

iii) $\{x : x$ is an integer between -60 and $60\}$.

Finite

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

Finite

v) $\{x : x$ is a whole no. greater than $20\}$

Infinite

vi) $\{x : x$ is a whole no. less than $20\}$

Finite

(8) For each statement given below, write True or False:-

i) $\{\ldots, -8, -4, 0, 4, 8\}$ is a finite set. False

ii) $\{-32, -28, -24, -20, \ldots, 0, 4, 8, 16\}$ is an infinite set. False

iii) $\{x : x$ is a natural no. less than $1\}$ is the empty set. True

iv) {whole no.s between 15 and 16} = {Natural no.s between 5 and 6}. True

v) {Odd no.s divisible by 2} is the empty set. True

vi) {Even natural no.s divisible by 3} is the empty set. False

vii) $\{x : x$ is positive and $x < 0\}$ is the empty set. True

viii) $\{\ldots, -5, -3, -1, 1, 3, 5, \ldots\}$ is a finite set. False.

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

i) A = {Girls with ages below 15 years} and
B = {Girls with ages above 15 years} Disjoint sets.

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

iii) A = {Natural no.s between 35 and 60} and
B = {Natural no.s between 50 and 80}
Overlapping Sets

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

v) A = {Natural no.s that are multiples of 3 and less than 30}
and
B = {Natural no.s divisible by 4 and lying between 20 and 45}
Overlapping Set.

vi) P = {letters in the word 'ALLAHABAD' and
Q = {letters in the word 'MUSSOORIE'}.
Disjoint Set.

(9) Reasons -

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

ii) Boys above 27 years are also above 20 years.

iii) Natural No.s from 51 to 59 are common to both the sets.

iv) Students of class IX studying in ICSE are common.

v) Natural no. 24 is common to both the sets.

vi) No letter is common to both the sets.