

Exercise - 10 (D)

- 1) (i) $\{3, 5, 7, \dots\}$ - infinite
(ii) $\{1, 2, 3, 4\}$ - finite
(iii) $\{\dots, -3, -2, -1, 0, 1, 2\}$ - infinite
(iv) $\{20, 30, 40, 50, \dots, 200\}$ - finite

- 2) (i) set of counting numbers between 5 and 6 - empty set
(ii) set of odd numbers between 7 and 19 ^{not empty} set
(iii) set of odd numbers between 7 and 7 - empty set
(iv) set of even numbers that are not divisible by 2 - empty set
(v) $\{0\}$ - not empty set

- 3) (i) $\{3, 5, 7\}$ and $\{5, 3, 7\}$ - equal sets
(ii) $\{8, 6, 10, 12\}$ and $\{3, 2, 4, 6\}$ - equivalent sets
(iii) $\{7, 7, 2, 1, 2, 3\}$ and $\{1, 2, 7\}$ - equal sets
(iv) $\{2, 4, 6, 8, 10\}$ and $\{a, b, d, e, m\}$ - equivalent sets

- 4) (i) set of integers - infinite
(ii) $\{\text{Multiples of } 5\}$ - infinite
(iii) $\{\text{Fractions between } 1 \text{ and } 2\}$ - infinite
(iv) $\{\text{Number of people in India}\}$ - finite
(v) set of trees in the world - infinite
(vi) set of leaves on a tree - finite
(vii) set of children in all the schools of Delhi - finite
(viii) $\{\dots, -4, -2, 0, 2, 4, 6, 8\}$ - infinite
(ix) $\{-12, -9, -6, -3, 0, 3, 6, \dots\}$ - infinite
(x) $\{\text{Number of points in a line segment } 4 \text{ cm long}\}$ - infinite

- 5) (i) $\{\text{Prime numbers divisible by } 2\}$ - not empty set
(ii) $\{\text{Negative natural numbers}\}$ - empty set

- (iii) {Woman with height 5 metre} - empty
- (iv) {Integers less than 5} - not empty
- (v) "prime numbers" between 17 and 23 - not empty
- (vi) set of even numbers not divisible by 2 - empty
- (vii) set of multiples of 3 that are more than 14 and less than 15 - not empty

6. (i) {Natural numbers less than five} and {Letters of the word 'BOAT'} - equivalent sets
- (ii) {2, 4, 6, 8, 10} and {even natural numbers less than 12} - equal sets
- (iii) {1, 3, 5, 7, ...} and set of odd natural numbers - equal sets
- (iv) {Letters of the word 'MEMBER'} and {Letters of the word 'REMEMBER'} - equal sets
- (v) {Negative natural numbers} and {50th day of a month} - equal sets
- (vi) {Even natural numbers} and {odd natural numbers} - equivalent sets

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~~{2, 4, 6, 8, 10} and even numbers~~

- (i) {2, 4, 6, 8, ..., 80} - finite sets
- (ii) {..., -5, -4, -3, -2} - infinite sets
- (iii) {x: x is an integer between -60 and 60} - finite sets
- (iv) {NO. of electrical appliances working in your house} - finite sets
- (v) {x: x is a whole number greater than 20} - infinite sets
- (vi) {x: x is a whole number less than 20} - finite sets

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

(iii) $\{x : x \text{ is a natural number less than } 1\}$ is the empty set. (True)

(iv) $\{\text{whole numbers between } 15 \text{ and } 16\} = \text{Natural numbers between } 5 \text{ and } 6$. (True)

(v) $\{\text{Odd numbers divisible by } 2\}$ is the empty set. (True)

(vi) $\{\text{Even natural numbers divisible by } 3\}$ is the empty set. (False)

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

(viii) $\dots, -5, -3, -1, 1, 3, 5, \dots$ is a finite set. (False)

96) $A = \text{Girls with ages below } 15 \text{ years and}$

$B = \text{Girls with ages below } 15 \text{ years}$

Ans: Disjoint sets since girls with ages below 15 and above 15 are not common

(ii) $C = \text{Boys with ages above } 20 \text{ years and}$

$D = \text{Boys with ages above } 27 \text{ years}$

Ans: Overlapping sets, since boys above 27 years are also above 20 years

(iii) $A = \text{Natural numbers between } 35 \text{ and } 60$ and

$B = \text{Natural numbers between } 50 \text{ and } 80$

Ans: Overlapping sets, as natural numbers from 51 to 59 are common to both the sets

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

$Q = \text{Students of class IX}$

Ans: Overlapping sets, as students of class IX studying in I.C.S.E. Board are common

(v) $A = \text{Natural numbers that are multiples of } 3$ and

$B = \text{Natural numbers divisible by } 4 \text{ and lying between } 20 \text{ and } 53$

Ans: Overlapping sets as natural numbers 24 is common to both the sets.

(vi) $P = \text{Letters in the word 'ALLAHABAD'}$ and

$Q = \text{Letters in the word 'MISSOURIE'}$

Ans: Disjoint sets since no letter is common to both the sets.

