

## Venn Diagram-Exercise Questions updated on Jan 2025

**I. Directions for questions 1 to 5:** These questions are based on the following diagram.

Circle A represents even numbers from 2 to 50.

Circle B represents odd numbers from 2 to 50.

Circle C, represents prime numbers from 2 to 50.

1. How many elements are there in set A only?

- a. 25    b. 24    c. 23    d. 22

2. How many elements are there in set B only?

- a. 14    b. 25    c. 10    d. 13

3. How many elements are there in  $B \cap C$ ?

- a. 14    b. 11    c. 24    d. 13

4. How many elements are there in  $A \cup C$ ?

- a. 0    b. 1    c. 2    d. 3

5. How many elements are there in  $C'$  (complement of C)?

- a. 35    b. 25    c. 34    d. 14

**II. Directions for questions 6 to 10:** Read the following data and then answer the questions that follow.

In a class, there are 60 students. For every 8 students learning Judo there are 4 students who learn Karate. For every 14 students learning Judo there are 7 students who learn both Judo and Karate and 7 students learning none.

6. How many students learn only Karate?

- a. 20    b. 30    c. 0    d. 40

7. How many students learn only Judo?

- a. 20    b. 40    c. 0    d. 14

8. How many students learn both Karate and Judo?

- a. 0    b. 10    c. 60    d. 20

9. If the students who learn both Judo and Karate stop learning Judo, then what percentage of the total number of students learn Judo?

- a. 50%    b.  $33\frac{1}{3}\%$     c. 40%    d. 55%

10. If 50% of those learning only Karate stop learning Karate and start learning Judo, then what is the ratio of the number of students learning Judo to those learning Karate?

- a. 3 : 1    b. 2 : 1    c. 4 : 1    d. Cannot be determined

### Answer & Explanations

I. Number of even numbers from 2 to 50 are 25.

Number of odd numbers from 2 to 50 are 24.

Number of prime numbers from 2 to 50 are 15.

1. Number of elements in set A only = 24

i.e, the even numbers which are not primes. Choice (2).

2. There are 10 elements in only set B, i.e, there are 10 odd numbers which are not primes.

Choice (3).

3. There are 14 elements in B n C i.e, there are 14 odd prime numbers. Choice (1).

4. There is only one element in A n C i.e, 2 is the only even prime number. Choice (2).

5. Number of elements in C' = the elements which do not belong to the set C. There are

$(24 + 10) = 34$  such numbers i.e, numbers are non-primes. Choice (3).

II. From the given data, we get the following diagram.

Taken = 60 students

$$J : K = 8 : 4 = 2 : 1$$

J : Both : None = 14 : 7 : 7 = 2 : 1 : 1 @ 2x, x, x (After removing the ratio)

$$\Rightarrow x + x + x = 3x = 60$$

$$= x = 20$$

Hence

1.  $x = 20$  students learn only Judo.
  2. None learn only Karate.
  3.  $x = 20$  students learn both.
6. None learn only Karate. Choice (3)
7. 20 students learn only Judo. Choice (1)
8. 20 students learn both. Choice (4)
9. 20 students learn both Judo and Karate. If they stop learning Judo then only 20 students would learn Judo. The total number of students is 60.
- Percentage of class learning only Judo =  $\frac{20}{60} \times 100$
- =  $33 \frac{1}{3}\%$ . Choice (2)
10. Since none learn only Karate, so the given statement does not make any sense. The number of students learning Judo therefore remains the same.
- $2x = 2 \times 20 = 40$  students learn Judo.
- Ratio:  $40 : 20 = 2 : 1$ . Choice (2)