

Que The total membership of Mathematical Society and Science club is 122. If 50 students are the members of Mathematical Society and 28 students are members of both the organisations. Find, how many students are the members of Science club?

Ans Let $A = \{ \text{is the member of Maths Society} \}$
 $B = \{ \text{is the member of Science club} \}$

$$\therefore n(A) = 50$$

$$n(A \cup B) = 122, n(A \cap B) = 28$$

$$n(B) = ?$$

$$n(A \cup B) = (n(A) + n(B) - n(A \cap B))$$

$$122 = 50 + n(B) - 28$$

$$122 - 50 + 28 = n(B)$$

$$n(B) = 100$$

\therefore So number of members of Science club = 100 Ans

Que In a group of 26 persons, 8 persons take tea instead of coffee and 16 persons take tea. How many persons take only coffee, not taking tea?

Ans let $A = \{ \text{person takes tea} \}$
 $B = \{ \text{person takes coffee} \}$

According to que;

$$n(A) = 16$$

$$n(A \cup B) = 26$$

$$n(A) - n(A \cap B) = 8 \quad \text{--- (i)}$$

$$\therefore 16 - 8 = n(A \cap B) = 8 \quad \text{--- (ii)}$$

By formula.

$$n(A \cup B) = n(A) + n(B) - n(A \cap B)$$

$$26 = n(B) + n(A) - n(A \cap B)$$

$$26 = n(B) + 8$$

$$n(B) = 26 - 8$$

$$= 18$$

(from eq (i))

We have to find

$$\therefore n(B) - n(A \cap B) = ?$$

$$18 - 8 = 10 \quad \text{(from eq ii)}$$

10 persons is taking only coffee. Ans

Que If $n(A \cup B) = 50$
 $n(A) = 28$
 $n(B) = 32$
Find $n(A \cap B) = ?$

Ans $n(A \cup B) = n(A) + n(B) - n(A \cap B)$

$$50 = 28 + 32 - n(A \cap B)$$

$$\begin{aligned} n(A \cap B) &= 60 - 50 \\ &= 10 \quad \underline{\text{Ans}} \end{aligned}$$

Que If $n(A) = 20$, $n(B) = 30$
 $n(A \cap B) = 10$ find $n(A \cup B) = ?$

Ans $n(A \cup B) = n(A) + n(B) - n(A \cap B)$

$$\begin{aligned} &= 20 + 30 - 10 \\ &= 50 - 10 \\ &= 40 \quad \underline{\text{Ans}} \end{aligned}$$

Que In a group of 70 persons, 37 persons likes coffee, 52 likes tea and each one is like the one of the two drinks Find how many persons like both coffee and tea?

Ans Let, $n(A) = \{ \text{persons who like coffee} \}$

$n(B) = \{ \text{persons who like tea} \}$

According to que,

$$\begin{aligned} n(A \cup B) &= 70 & n(A) &= 37 \\ n(B) &= 52 & n(A \cap B) &= ? \end{aligned}$$

$$n(A \cup B) = n(A) + n(B) - (n(A \cap B))$$

$$\therefore, n(A \cap B) = n(A) + n(B) - n(A \cup B)$$

$$= 37 + 52 - 70$$

$$= 89 - 70$$

$$= 19 \quad \underline{\underline{\text{Ans}}}$$