

General instructions for Students: Whatever be the notes provided, everything must be copied in the Mathematics copy and then do the HOMEWORK in the same copy.

CLASS – VIII 6. OPERATIONS ON SETS: VENN DIAGRAMS (PART – II) MATHS

EXERCISE – 6.1

8. If $\xi = \{x : x \in W, x \leq 10\}$, $A = \{x : x \geq 5\}$ and $B = \{x : 3 \leq x < 8\}$, then

verify that : (i) $(A \cup B)' = A' \cap B'$

(iv) $B - A = B \cap A'$

Solution: $\xi = \{x : x \in W, x \leq 10\} \Rightarrow \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$

$$A = \{x : x \geq 5\} \Rightarrow \{5, 6, 7, 8, 9, 10\}$$

$$B = \{x : 3 \leq x < 8\} \Rightarrow \{3, 4, 5, 6, 7\}$$

$$A \cup B = \{3, 4, 5, 6, 7, 8, 9, 10\}$$

$$\text{LHS} \Rightarrow (A \cup B)' = \{0, 1, 2\}$$

$$A' = \{0, 1, 2, 3, 4\}$$

$$B' = \{0, 1, 2, 8, 9, 10\}$$

$$\text{RHS} \Rightarrow A' \cap B' = \{0, 1, 2\}$$

Hence, **LHS = RHS Verified (i)**

$$\text{LHS} \Rightarrow B - A = \{3, 4\}$$

$$\text{RHS} \Rightarrow B \cap A' = \{3, 4\}$$

Hence, **LHS = RHS Verified (ii)**

11. If $n(\xi) = 40$, $n(A) = 20$, $n(B') = 16$ and $n(A \cup B) = 32$, then find $n(B)$ and $n(A \cap B)$

Solution: $n(B) = n(\xi) - n(B')$

$$= 40 - 16 = 24 \quad \text{Ans.}$$

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

$$= 20 + 24 - 32 = 12 \quad \text{Ans.}$$

14. If $n(A - B) = 12$, $n(B - A) = 16$ and $n(A \cap B) = 5$, find:

- (i) $n(A)$ (ii) $n(B)$ (iii) $n(A \cup B)$

Solution: $n(A) = n(A - B) + n(A \cap B)$

$$= 12 + 5 = 17 \quad \text{Ans. (i)}$$

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

$$= 16 + 5 = 21 \quad \text{Ans. (ii)}$$

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

$$= 12 + 16 + 5 = 33 \quad \text{Ans. (iii)}$$



HOMEWORK

EXERCISE – 6.1

QUESTION NUMBERS: 9, 12 and 13

