

SET THEORY

Q1. If $A = \{1, 2, 4, 5\}$, $B = \{2, 3, 5, 6\}$ and $C = \{4, 5, 6, 7\}$
then verify: $A \cap (B - C) = (A \cap B) - (A \cap C)$

Q2. If $A = \{1, 2, 3, 4, 5\}$, $B = \{2, 3, 5, 7, 9\}$ and
 $C = \{3, 4, 6, 8, 10\}$ prove that
 $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$

Q3. A survey shows that 63% of the Americans like cheese whereas 76% like apples. If $x\%$ of the Americans like both cheese and apples, find the value of x
[Ans:- 39]

Q4. Out of 20 members in a family, 11 like to take tea and 14 like coffee. Assume that each one likes at least one of the two drinks. How many like only tea and not coffee

Q5. If $U = \{2, 3, 5, 7, 9\}$, $A = \{3, 7\}$; $B = \{2, 5, 7, 9\}$
then prove the De Morgan's Law

Q6. In a group of 100 people; 65 like to play Cricket; 40 like to play tennis and 55 like to play Volleyball. All of them like

to play both Cricket and tennis, 24 like to play both tennis and Volleyball and 22 like to play Cricket and Volleyball then

i) how many like to play all the three games

ii) " " " " " " Cricket only?

[Ans i) 11 ii) 29]

Q7. In a group of Athletic teams in a school 21 are in the basketball team; 26 in the hockey team and 29 in the football team. If 14 play hockey and basketball; 12 play football and basketball; 15 play hockey and football and 8 play all the three games find how many players are there in all.

[Ans :- 43]

Q8. For any set A, B, C , prove that

$$A - (B \cap C) = (A - B) \cup (A - C)$$

Q9. Write the following as intervals

i) $\{x: x \in \mathbb{R}, -3 < x \leq 5\}$ ii) $\{x: x \in \mathbb{R}, -10 \leq x < 3\}$

iii) $\{x: x \in \mathbb{R}, -5 \leq x \leq 5\}$ iv) $\{x: x \in \mathbb{R}, -2 \leq x < 5\}$

[Ans :- i) $(-3, 5]$ ii) $[-10, 3)$ iii) $[-5, 5]$ iv) $[-2, 5)$