

- Write following intervals in set-builder form :
 (i) $(-7, 0)$ (ii) $[6, 12]$ (iii) $(6, 12)$ (iv) $[-20, 3)$ (v) $(-3, 3]$
- If $A = \{5, 7, 9, 10, 11, 12\}$, $B = \{9, 10, 13, 14, 16\}$, then Verify :
 i) $(A - B) \cup (B - A) = (A \cup B) - (A \cap B)$ ii) $A - (B \cap C) = (A - B) \cup (A - C)$
- If $U = \{x : x \in \mathbb{N} \text{ and } x \leq 12\}$, $A = \{x : x \text{ is even prime no}\}$ and $B = \{x : x \text{ is a factor of } 24\}$ then Verify: $A' - B' = B - A$
- Let A and B be two sets such that $n(A) = 20$, $n(A \cup B) = 42$ and $n(A \cap B) = 4$. Find
 i) $n(B)$ ii) $n(A - B)$ iii) $n(B - A)$.
- A and B are two sets such that $n(A) = 3$, $n(B) = 6$. Find the maximum and min. values of $n(A \cap B)$.
- If $n(U) = 25$, $n(A) = 15$, $n(A \cap B) = 6$ and $n(A \cup B)' = 8$, then find i) $n(B - A)$. ii) $n(B)$.
- If $U = \{2, 3, 5, 7, 9\}$ is universal set & $A = \{3, 2\}$ and $B = \{2, 5, 7, 9\}$ then prove that:
 (i) $(A \cup B)' = A' \cap B'$ (ii) $(A \cap B)' = A' \cup B'$.
- Let $U = \{1, 2, 3, 4, 5, 6\}$, $A = \{2, 3\}$ and $B = \{3, 4, 5\}$.
 Find A' , B' , $A' \cup B'$, $A \cap B$ and hence show that $(A \cap B)' = A' \cup B'$
- If $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$, $A = \{2, 4, 6, 8\}$, $B = \{2, 3, 5, 7\}$, Verify De-Morgan's laws.
- If $A = \{2, 6, 8\}$, $B = \{1, 3, 7, 8\}$, $U = \{1, 2, 3, 6, 7, 8, 9\}$ then Verify both the De Morgan's laws.
- List all subsets of i) $\{-1, 0, 1\}$ ii) $\{a, b\}$ iii) ϕ
- Write down the subsets of $\{2, \{3\}\}$. Also find the power set.
- Let $A = \{e, f, g\}$, Write the subsets and power set of set A.
- Show that: $n\{P[P(P(\phi))]\} = 4$.
- Prove : $n(A \cup B) = n(A) + n(B) - n(A \cap B)$, Where A, B are finite sets.
- Let U be the set of all triangles in a plane. If A is the set of all triangles with at least one angle different from 60° , what is A' .
- If X and Y are two sets such that $X \cup Y$ has 18 elements, X has 8 elements and Y has 15 elements, How many elements $X \cap Y$ have?
- Out of 500 car owners investigated, 400 owned car A and 200 owned car B, 50 owned both A and B cars. Is this data correct?
- Draw the Venn-Diagrams for
 (i) $A - B$ (ii) $A^1 \cap B^1$ (iii) $A' \cup B'$ (iv) $(B - A)'$ (v) $(A \cap B)'$ and (vi) $A' \cup B'$
- In a survey of 600 students in a school, 150 students were found to be taking tea and 225 taking coffee, 100 were taking both tea and coffee. Find how many students were taking neither taking tea nor coffee.
- A survey of 500 television viewers, produced the following information; 285 watch football, 195 watch hockey, 115 watch basketball, 45 watch football and basketball, 70 watch football and hockey, 50 watch hockey and basketball, 50 do not watch any of the three games. How many watch all the three games? How many watch exactly one of the three games? How many watch atleast one of the games?
- In a survey it was found that 21 people liked product A, 26 liked product B and 29 liked product C. If 14 people liked products A and B, 12 people liked products C and A, 14 people liked products B and C and 8 liked all the three products. Find how many liked product C only.
- In a survey of 700 students in a college, 180 were listed as drinking Limca, 275 as drinking Mirinda and 95 were listed as both drinking Limca as well as Mirinda. Find how many students were drinking neither Limca nor Mirinda.
- Out of a group of 50 persons, 32 take eggs, 25 take meat and 15 take both eggs and meat. How many of them are pure vegetarians?
- In an exam, 80 students secured first class marks in English or Maths. Out of these 50 students obtained first class marks in Maths and 10 students in English and Maths both. How many students secured first class marks in English only.
- In a survey of 25 students, it was found that 15 had taken mathematics, 12 had taken physics and 11 had taken chemistry, 5 had taken maths and chemistry, 9 had taken maths and physics, 4 had taken physics and chemistry and 3 had taken all three subjects. Find the number of students who had taken. i) Only Maths (ii) Physics and Chemistry but not Maths (iii) Atleast one of the three subjects (iv) Only one of the subjects (v) Maths and Physics but not Chemistry (vi) None of the three subjects.

27. A college awarded 38 medals in Football, 15 in Basketball and 20 in cricket. If these medals went to 58 men and only 3 men got medals in all the three sports, how many received medals in exactly two of the 3 sports?
28. In a survey of 60 people, it was found that 25 people read newspaper H, 26 read newspaper T, 26 read newspaper I, 9 read both H and I, 11 read both H and T, 8 read both T and I, 3 read all three newspapers. Find:
 (i) the number of people who read at least one of the newspapers.
 (ii) the number of people who read exactly one newspaper.
29. In a survey of 400 students in a school, 100 were listed as drinking apple juice, 150 as drinking orange juice and 75 were listed as drinking apple as well as orange juice. Find how many students were drinking neither apple juice nor orange juice?
30. If A and B are two given sets, then prove that $A - B = A \cap B'$.
31. In a group of 950 persons, 750 can speak Punjabi and 460 can speak English. Find (i) how many can speak both?
32. A and B are two sets such that $n(A - B) = 20 + x$, $n(B - A) = 3x$ and $n(A \cap B) = x + 1$. Draw a Venn diagram to illustrate this information. Find (i) the value of x (ii) $n(A \cup B)$.
33. In a survey of 600 students in a school, 150 students were found to be taking tea and 225 taking coffee, 100 were taking both tea and coffee. Find how many students were taking neither tea nor coffee?
34. In a survey of 100 students, the number of students studying the various languages were found to be: English only 18, English but not Hindi 23, English and Sanskrit 8, English 26, Sanskrit 48, Sanskrit and Hindi 8, no language 24. Find i) How many students were studying Hindi?
 ii) How many students were studying English and Hindi?
35. In a survey of 500 persons it was found that 285 watch football, 195 watch hockey, 115 watch basketball, 45 watch football and basketball, 70 watch football and hockey, 50 watch Hockey and basketball, 50 do not watch do not watch any of the three games. How many watch all the three games? How many watch exactly one of the three games? How many watch at least one of these games?
36. In a survey of 100 persons it was found that 28 read magazine A, 30 read magazine B, 42 read magazine C, 8 read magazines A and B, 10 read magazines A and C, 5 read magazines B and C and 3 read all three magazines. Find: a) How many read none of three magazines? b) How many read magazine C only?
37. In an university, out of 100 students 15 offered Mathematics only; 12 offered statistics only; 8 offered only Physics; 40 offered Physics and Mathematics; 20 offered Physics and Statistics; 10 offered Mathematics and Statistics, 65 offered Physics. Find the number of students who
 (i) offered Mathematics (ii) offered Statistics (iii) did not offer any of the above three subjects.