

S.D. Public School, Pitampura

Class XI

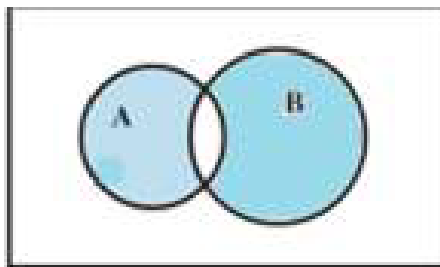
2026-27

Mathematics

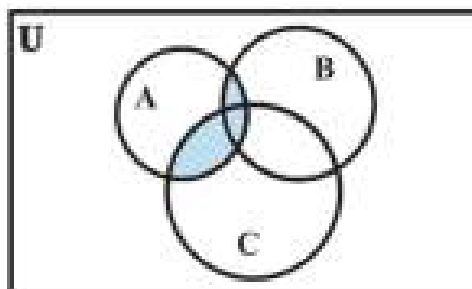
Holiday's Homework Assignment

1. Write the set  $\left\{\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}, \frac{6}{7}, \frac{7}{8}\right\}$  in set builder form
2. Write the interval  $(6, 12]$  in set builder form
3. Let  $A = \{1, 2, 3\}$ ,  $B = \{1, 2, 3\}$  and  $C = \{2, 4\}$ . Find all sets  $X$  satisfying the conditions:  $X \subset B$ ,  $X \neq B$  and  $X \not\subset C$
4. Show that for any two Sets  $A$  and  $B$   
 $A = (A \cap B) \cup (A - B)$
5. If  $A = \{2, 4, 6, 8, 10\}$ ,  $B = \{1, 2, 3, 4, 5, 6, 7\}$  and  $C = \{2, 6, 7, 10\}$ , then show that  
 $A - (B \cup C) = (A - B) \cap (A - C)$
6. A market research group conducted a survey of 1000 consumers and reported that 720 consumers like product  $A$  and 450 consumers like product  $B$ , what is the least number that must have liked both products?
7. Find the number of subsets of a set having 4 elements.
8. If  $A = \{x : x \text{ is an even natural number}\}$  and  $B = \{x : x \text{ is a prime number}\}$ , then find  $A - B$
9. Write the set  $B = \{3, 9, 27, 81\}$  in set-builder form.
10. Let  $A$  and  $B$  be two sets having 5 and 7 elements respectively. Write the minimum and maximum number of elements in (i)  $A \cap B$  (ii)  $A \cup B$
11. If  $U = \{x : x \in \mathbb{N} \text{ and } x \leq 10\}$ ,  $A = \{x : x \text{ is prime and } x \leq 10\}$  and  $B = \{x : x \text{ is a factor of } 24\}$   
Verify the following result  
(i)  $A - B = A \cap B'$  (ii)  $(A \cup B)' = A' \cap B'$  (iii)  $(A \cap B)' = A' \cup B'$
12. What is represented by the shaded regions in each of the following Venn-diagrams?

(i)



(ii)



- 13.** On the Real axis, If  $A = [0, 3]$  and  $B = [2, 6]$ , then find the following  
 (i)  $A'$             (ii)  $A \cup B$             (iii)  $A \cap B$             (iv)  $A - B$
- 14.** Two sets  $A$  and  $B$  are such that  $n(A \cup B) = 21$ ,  $n(A' \cap B') = 9$ ,  $n(A \cap B) = 7$ , find  $n(A \cap B)'$
- 15.** A survey shows that 63% people watch news channel whereas 76% people watch news channel B. If  $x\%$  of people watch both news channels, then prove that  $39 \leq x \leq 63$ .
- 16.** Two finite sets have  $m$  and  $n$  elements. The number of elements in power set of first is 48 more than number of elements in power set of the other, values of  $m$  and  $n$  are
- 17.** Draw the Venn diagrams to illustrate the following relationship among sets  $E$ ,  $M$  and  $U$ , where  $E$  is the set of students studying English in a school,  $M$  is the set of students studying Mathematics in the same school,  $U$  is the set of all students in that school.
- All the students who study Mathematics study English, but some students who study English do not study Mathematics.
  - Some of the student study Mathematics but do not study English, some study English but do not study Mathematics, and some study both.
- 18.** There are 200 individuals with a skin disorder, 120 had been exposed to the chemical  $C_1$ , 50 to chemical  $C_2$ , and 30 to both the chemicals  $C_1$  and  $C_2$ . Find the number of individuals exposed to
- Chemical  $C_1$  but not chemical  $C_2$
  - Chemical  $C_2$  but not chemical  $C_1$
  - Chemical  $C_1$  or  $C_2$
- 19.** In a town of 10,000 families, it was found that 40% families buy newspaper A, 20% families buy newspaper B and 10% families by newspaper C. 5% families buy A and B, 3%, buy B and C and 4% buy A and C. If 2% families buy all the three newspapers, find the no. of families which buy (1) A only (2) B only (3) none of A, B and C (4) exactly two newspapers (5) exactly one newspaper (6) A and C but not B (7) at least one of A, B, C.
- 20.** Out of 100 students; 15 passed in English, 12 passed in Mathematics, 8 in science, 6 in English and Mathematics, 7 in Mathematics and Science; 4 in English and Science; 4 in all the three. Find how many passed
- In English and Mathematics but not in science
  - In Mathematics only
  - In more than one subject only