ACTIVITY No. 2

OBJECTIVE

To represent set theoretic operations using Venn diagrams.

MATERIAL REQUIRED

Hardboard, white thick sheets of paper, pencils, colours, scissors, adhesive.

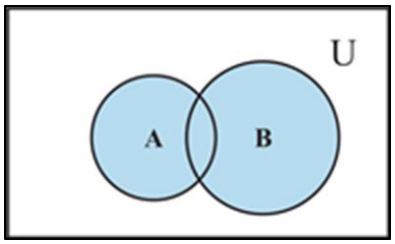
METHOD OF CONSTRUCTION

1. Cut rectangular strips from a sheet of paper and paste them on hardboard.
   Write the symbol U in the left/right top corner of each rectangle.
2. Draw circles A and B inside each of the rectangular strips and shade/colour different portions as shown in Fig. 1 to Fig.10.

DEMONSTRATION

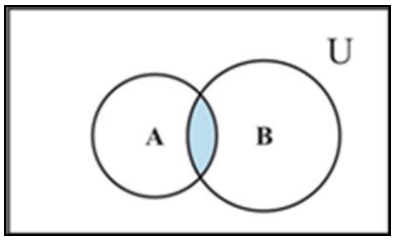
1. U denotes the universal set represented by the rectangle.
2. Circles A and B represent the subsets of the universal set U as shown in the Fig. 1 to 10.
3. A' denote the complement of the set A, and B' denote the complement of the set B as shown in the Fig. 3 and Fig. 4.
4. Coloured portion in Fig.1 represents $(A \cup B)$.

(Fig. 1)



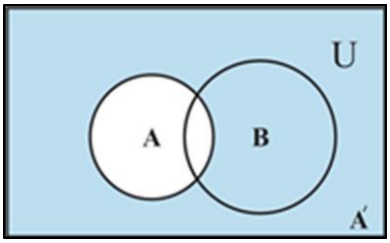
5. Coloured portion in Fig. 2 represents $(A \cap B)$

(Fig.2)



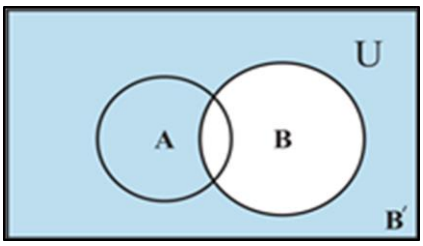
6. *Coloured portion in Fig.3 represents* A'

(Fig.3)



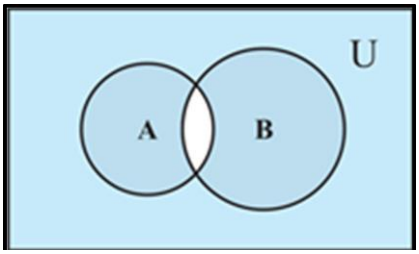
7. *Coloured portion in Fig. 4 represents* B'

(Fig.4)



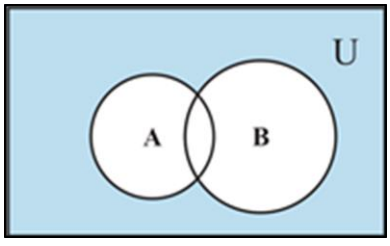
8. *Coloured portion in Fig. 5 represents* $(A \cap B)'$

(Fig.5)



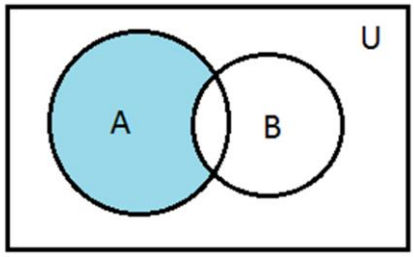
9. *Coloured portion in Fig. 6 represents* $(A \cup B)'$

(Fig.6)



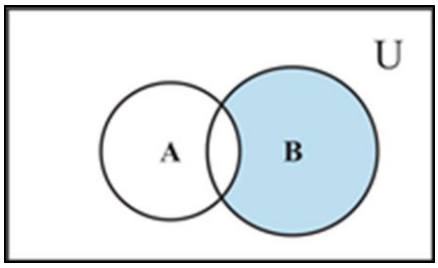
10. *Coloured portion in Fig. 7 represents* $(A - B)$

(Fig.7)



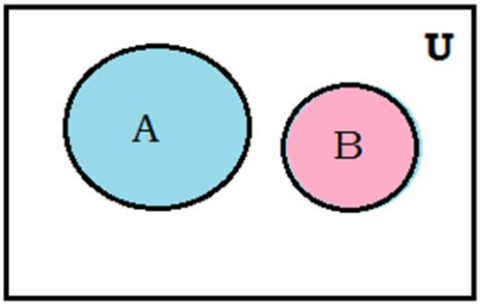
11. *Coloured portion in Fig. 8 represents* $(B - A)$.

(Fig.8)



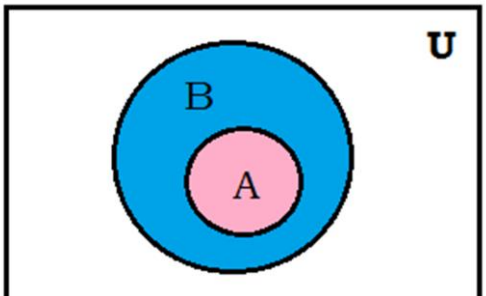
12. *Fig. 9 shows disjoint sets i.e.* $A \cap B = \emptyset$

(Fig.9)



13. *Fig. 10 shows* $A \cap B = A, if\ A \subset B,$

(Fig.10)



OBSERVATION

1. *In figure No.1 the coloured portion represents:* $(A \cup B)$
2. *In figure No.2 the coloured portion represents:* $(A \cap B)$
3. *In figure No.3 the coloured portion represents:* A'
4. *In figure No.4 the coloured portion represents:* B'
5. *In figure No.5 the coloured portion represents:* $(A \cap B)'$
6. *In figure No.6 the coloured portion represents:* $(A \cup B)'$
7. *In figure No.7 the coloured portion represents:* $(A - B)$
8. *In figure No.8 the coloured portion represents:* $(B - A)$
9. *In figure No.9 shows: Disjoint sets A and B*
10. *In figure No.10 shows:* $A \cap B = A, if\ A \subset B$

APPLICATION

Set theoretic representation of Venn diagrams are used in Logic and Mathematics.