

ques:- 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 chemical  $C_1$  and  $C_2$ . find the number of individuals exposed to.

- (i) chemical  $C_1$  but not chemical  $C_2$
- (ii) chemical  $C_2$  but not chemical  $C_1$
- (iii) chemical  $C_1$  or chemical  $C_2$ .

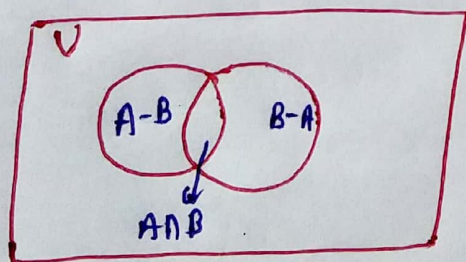
solution:- let  $U$  denote the universal set consisting of individuals suffering from the skin disorder.  $A$  denote the set of individuals exposed to the chemical  $C_1$  and  $B$  denote the set of individuals exposed to the chemical  $C_2$ .

so we have

$$n(U) = 200, \quad n(A) = 120, \quad n(B) = 50,$$

$$n(A \cap B) = 30.$$

now we will ans queries from venn diagram.



so we have  $n(A) = n(A-B) + n(A \cap B)$

$$\begin{aligned} \therefore n(A-B) &= n(A) - n(A \cap B) \\ &= 120 - 30 = 90. \end{aligned}$$

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

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

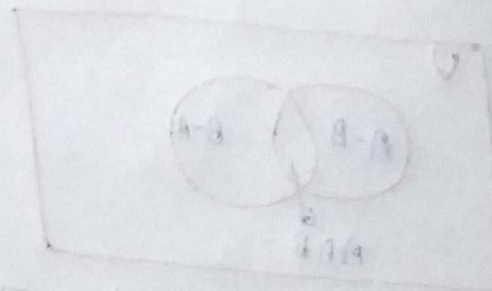
$$\Rightarrow n(B-A) = n(B) - n(A \cap B)$$

$$= 50 - 30 = 20$$

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

$$= (20 + 50) - 30$$

$$= 140$$



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

$$= (20 + 50) - 30$$

$$= 140$$