

## Chapter 1

# Sets

### Example 1:

Let  $n(u) = 750$ ,  $n(A) = 200$ ,  $n(B) = 300$  and  $n(A \cap B) = 100$ , then find  $n(A^c \cap B^c)$ .

Sol. We know that

$$\begin{aligned} n(A^c \cap B^c) &= n(A \cup B)^c \\ &= n(u) - n(A \cup B) \\ &= n(u) - n(A) - n(B) + n(A \cap B) \\ &= 750 - 200 - 300 + 100 \end{aligned}$$

$$n(A^c \cap B^c) = 300$$

### Example 2:

In a group of 1000 people, there are 750 people who can speak Hindi and 400 who can speak English. Then number of persons who can speak Hindi only is equal to.

Sol.

$$n(H) = 750 \text{ (H: Set of Hindi speaks)}$$

$$n(E) = 400 \text{ (E: Set of English speaks)}$$

Assuming that there is no person who speaks neither English nor Hindi.

$$\Rightarrow n(H \cup E) = 1000 = n(H) + n(E) - n(H \cap E)$$

$$\Rightarrow n(H \cap E) = 750 + 400 - 1000$$

$$\Rightarrow n(H \cap E) = 150$$

Number of persons, who speak Hindi only,

$$= 750 - 150 = \mathbf{600}.$$