Chapter Eight

<u>Set</u>

Two set Problems:

N/B: (Supplementary Notes)

1.



Shaded portion represents those who study English.

2.



Shaded portion represents those who study only English.

3.



Shaded portion represents those who study both English and Maths.

4.



Shaded portion represents those who study Maths. 5.



Shaded portion represents those who study only Maths.



Shaded portion represents those who study English or Maths (i.e English or Maths or both) .

Example:



- 1. Number of those who study only English = 3.
- 2. Number of those who study English = 3 + 1 = 4.
- 3. Number of those who study both English and Maths = 1.
- 4. Number of those who study Maths = 1 + 5 = 6.
- 5. Number of those who study only Maths = 5.
- 6. Number of those who study English or Maths i.e English or Maths or both = 3+1+5=9.

Example1. In a class 30 students study Maths, or English or both. 5 study both subjects while 10 study only Maths. Find the number of those who study a) only English . b) English.



Let x = number of those who study only English.

Since 30 students study English or Maths or both , $\Rightarrow x + 5 + 10 = 30$, $\Rightarrow x + 15 = 30$, $\therefore x = 30 - 15 \Rightarrow x = 15$.



a) The number of those who study only English = 15.

b) The number of those who study English = 15 + 5 = 20.

Example 2. In a certain school, 10 students play football or volleyball or both. Of this number, 5 play only football while 3 play only volleyball. Find the number of those who play

(a) both football and volleyball,

(b) volleyball.

Soln.



Let x = the number of those who play both games.

Since the number of those who play football or volleyball or both = 10, then 5 + x + 3 = 10, $\Rightarrow 8 + x = 10$, $\Rightarrow x$

= 10 - 8 = 2.

The Venn diagram becomes as shown next:



(a) n (those who play both games) = 2.

(b) n (those who play volley ball) = 2 + 3 = 5.

Example3. During a birthday party, 17 people ate rice or yam or both. While 3 ate both rice and yam, 8 ate rice. Find the number of those who ate

- (i) only yam.
- (ii) yam.

N/B



Let y = the number of those who ate only rice. Since 8 people ate rice, then the number of those within the shaded portion = $8, \Rightarrow y + 3 = 8, \Rightarrow y = 8 - 3 = 5$.





Let x = the number of those who took in only yam.

Since the number of those who took in rice or yam or both = 17, then 5 + 3 + x = 17, $\Rightarrow 8 + x = 17$, $\Rightarrow x = 17 - 8 = 9$.

The Venn diagram therefore becomes as shown next:



- (i) n (those who ate yam only) = 9.
- (ii) n (those who ate yam) = 3 + 9 = 12.