DAY 3

In last section, we have discussed Arithmetic Mean with various methods. In this section we shall discuss **missing frequencies, unequal class intervals and inclusive classes** when Arithmetic Mean is given. To find missing frequency, Direct Method is convenient

1. Find the missing frequency of the following series if Arithmetic Mean is 18:

Daily pocket	**11-13**	**13-15**	**15-17**	**17-19**	**19-21**	**21-23**	**23-25**
No. of children	**7**	**6**	**9**	**13**	f	**5**	**4**

Sol:-

Daily Pocket	f	Mid-value x	fx
11-13	7	12	84
13-15	6	14	84
15-17	9	16	144
17-19	13	18	234
19-21	f	20	$20f$
21-23	5	22	110
23-25	4	24	96
Total	$\Sigma f = 44 + f$		$\Sigma fx = 752 + 20f$

$$\text{Mean} = \frac{\Sigma fx}{\Sigma f}$$

$$\Rightarrow 18 = \frac{752+20f}{44+f}$$

$$\Rightarrow 18(44 + f) = 752 + 20f \qquad \Rightarrow 792 + 18f = 752 + 20f$$

$$\Rightarrow 792 - 752 = 20f - 18f \qquad \Rightarrow 40 = 2f$$

$$\Rightarrow f = \frac{40}{2} = 20$$

2. In a retail market, fruit vendors were selling mangoes kept in packing boxes. These boxes contained varying number of mangoes. The following was the distribution of mangoes according to the number of boxes.

No. of mangoes	**50-52**	**53-55**	**56-58**	**59-61**	**62-64**
No. of boxes	**15**	**110**	**135**	**115**	**25**

Find the mean number of mangoes kept in a packing box. [Ex 14.1, Q5]

Sol:-

No. of mangoes	No. of boxes f	Mid-value x	fx
50-52	15	51	765
53-55	110	54	5940
56-58	135	57	7695
59-61	115	60	6900

62-64	25	63	1575
Total	$\Sigma f = 400$		$\Sigma fx = 22875$

$$\overline{X} = \frac{\Sigma fx}{\Sigma f} = \frac{22875}{400} = 57.19 \text{ (app)}$$

3. A class teacher has the following absentee record of 40 students of a class for the whole term. Find the mean number of days a student was absent. [Ex 14.1, Q8]

No. of days	**0-6**	**6-10**	**10-14**	**14-20**	**20-28**	**28-38**	**38-40**
No. of students	**11**	**10**	**7**	**4**	**4**	**3**	**1**

Sol:-

No. of days	No. of boxes f	Mid-value x	fx
0-6	11	3	33
6-10	10	8	80
10-14	7	12	84
14-20	4	17	68
20-28	4	24	96
28-38	3	33	99
38-40	1	39	39
Total	$\Sigma f = 40$		$\Sigma fx = 499$

$$\overline{X} = \frac{\Sigma fx}{\Sigma f} = \frac{499}{40} = 12.475$$

EXERCISE

1. Find the missing frequency of the following series if Arithmetic Mean is 30.9:

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. of students	2	15	30	40	f	4	4

2. Find the missing frequency of the following series if Arithmetic Mean is 11:

Class Interval	5-7	7-9	9-11	11-13	13-15	15-17	17-19
Frequency	5	7	6	f	3	4	2