



#### Exercise 14F

Question 8:

Let  $f_1$  and  $f_2$  be the missing frequencies.

We prepare the following frequency distribution table.

$(X_i)$	$(f_i)$	$f_i x_i$
10	17	170
30	$f_1$	$30f_1$
50	32	1600
70	$f_2$	$70f_2$
90	19	1710
Total	120	$3480 + 30f_1 + 70f_2$

Here,

$$\sum f_i = 68 + f_1 + f_2$$

But  $68 + f_1 + f_2 = 120$  (Given)

Therefore,

$$68 + f_1 + f_2 = 120$$

$$\Rightarrow f_1 + f_2 = 120 - 68 = 52$$

Thus,  $f_2 = 52 - f_1$  .....(1)

Also,

$$\begin{aligned}\text{Mean} &= \frac{\sum f_i x_i}{\sum f_i} = \frac{3480 + 30f_1 + 70f_2}{120} \\ &= \frac{3480 + 30f_1 + 70(52 - f_1)}{120} \quad \text{using equation 1} \\ &= \frac{3480 + 30f_1 + 3640 - 70f_1}{120} \\ &= \frac{7120 - 40f_1}{120}\end{aligned}$$

But mean = 50 (given)

Therefore, we have,

$$50 = \frac{7120 - 40f_1}{120}$$

$$6000 = 7120 - 40f_1$$

$$40f_1 = 1120$$

$$f_1 = \frac{1120}{40} = 28$$

Substituting the value of  $f_1$  in equation 1, we have,

$$f_2 = 52 - 28 = 24$$

Thus, the missing frequencies are  $f_1 = 28$  and  $f_2 = 24$  respectively.

\*\*\*\*\* END \*\*\*\*\*