

Statistics Ex 7.5 Q17

Answer:

Consider the following table

| Daily income (in Rs.) | Number of workers (f _i) | Xi | $f_i x_i$ | C.f. |
|-----------------------|--|-----|-----------------------|------|
| 100-120 | 12 | 110 | 1320 | 12 |
| 120-140 | 14 | 130 | 1820 | 26 |
| 140-160 | 8 | 150 | 1200 | 34 |
| 160-180 | 6 | 170 | 1020 | 40 |
| 180-200 | 10 | 190 | 1900 | 50 |
| | $N = \sum f = 50$ | | $\sum f_i x_i = 7260$ | |

Here, the maximum frequency is 14 so the modal class is 120-140.

l = 120

h = 20

f = 14

 $f_1 = 12$

 $f_2 = 8$

$$F = 12$$

$$Mean = \frac{\sum f_i x_i}{\sum f}$$

$$= \frac{7260}{50}$$

$$=\frac{7260}{50}$$

Mean =
$$145.20$$

Thus, the mean daily income of the workers is Rs 145.20.

Median =
$$l + \frac{\frac{N}{2} - F}{f} \times h$$

= $120 + \frac{25 - 12}{14} \times 20$
= $120 + \frac{13}{14} \times 20$
= $120 + \frac{130}{7}$
Median = 138.57

Thus, the median of the daily income of the workers is Rs 138.57.

Mode =
$$l + \frac{f - f_1}{2f - f_1 - f_2} \times h$$

= $120 + \frac{2}{8} \times 20$
= $120 + 5$
[Mode = 125]

Thus, the mode of the daily income of the workers is Rs 125.