Statistics Ex 7.5 Q16

Answer :

Classes	Frequency (f_i)	x_i	$f_i x_i$	C.f.
0–50	2	25	50	2
50–100	3	75	225	5
100–150	5	125	625	10
150–200	6	175	1050	16
200–250	5	225	1125	21
250–300	3	275	825	24
300–350	1	325	325	25
	$N = \sum f = 25$		$\sum f_i x_i = 4225$	

Here, the maximum frequency is 6 so the modal class 150–200.

Therefore,

$l = 150$

$h = 50$

$f = 6$

$f_1 = 5$

$f_2 = 5$

$F = 10$

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

$$= \frac{4225}{25}$$

$$\boxed{\text{Mean} = 169}$$

Thus, the mean of the data is 169.

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

$$= 150 + \frac{12.5 - 10}{6} \times 50$$

$$= 150 + \frac{2.5}{6} \times 50$$

$$= 150 + \frac{125}{6}$$

$$\boxed{\text{Median} = 170.83}$$

Thus, the median of the data is 170.83.

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

$$= 150 + \frac{6 - 5}{12 - 5 - 5} \times 50$$

$$= 150 + \frac{1}{2} \times 50$$

$$= 150 + 25$$

$$= 175$$

Thus, the mode of the data is 175.

********** END **********