Statistics Ex 7.5 Q15

Answer :

Consider the following data.

Class	Frequency (f_i)	x_i	$f_i x_i$	C.f.
0–20	6	10	60	6
20–40	8	30	240	14
40–60	10	50	500	24
60–80	12	70	840	36
80–100	6	90	540	42
100–120	5	110	550	47
120–140	3	130	390	50
	$N = \sum f = 50$		$\sum f_i x_i = 3120$	

Here, the maximum frequency is 12 so the modal class is 60–80.

Therefore,

$l = 60$

$h = 20$

$f = 12$

$f_1 = 10$

$f_2 = 6$

$F = 24$

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

$$= 60 + \frac{25 - 24}{12} \times 20$$

$$= 60 + \frac{1}{12} \times 20$$

$$\boxed{\text{Median} = 61.66}$$

Thus, the median of the data is 61.66.

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

$$= \frac{3120}{50}$$

$$\boxed{\text{Mean} = 62.4}$$

Thus, the mean of the data is 62.4.

Mode

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

$$= 60 + \frac{12 - 10}{24 - 10 - 6} \times 20$$

$$= 60 + \frac{2}{8} \times 20$$

$$\boxed{\text{Mode} = 65}$$

Thus, the mode of the data is 65.

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