Statistics Ex 7.5 Q10

Answer :

Number of students per teacher	Number of states/U.T. (f_i)	x_i	$f_i x_i$
15–20	3	17.5	52.5
20–25	8	22.5	180.0
25–30	9	27.5	247.5
30–35	10	32.5	325.0
35–40	3	37.5	112.5
40–45	0	42.5	0
45–50	0	47.5	0
50–55	2	52.5	105.0
	$\sum f_i = 35$		$\sum f_i x_i = 1022.5$

Here, the maximum frequency is 10 so the modal class is 30–35.

Therefore,

$l = 30$

$h = 5$

$f = 10$

$f_1 = 9$

$f_2 = 3$

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

$$= 30 + \frac{10-9}{20-9-3} \times 5$$

$$= 30 + \frac{1}{8} \times 5$$

$$= 30 + 0.625$$

$$\boxed{\text{Mode} = 30.6}$$

Thus, the mode of the data is 30.6.

Now,

Mean of the data = $\frac{\sum f_i x_i}{\sum f_i} = \frac{1022.5}{35} = 29.2$

Thus, the mean of the data is 29.2.

The mode of the number of students per teacher in the states is more than the mean of the number of students per teacher in the states.

Statistics Ex 7.5 Q11

Answer :

The given data is shown below.

Runs scored	Number of batsmen
3000–4000	4
4000–5000	18
5000–6000	9
6000–7000	7
7000–8000	6
8000–9000	3
9000–10000	1
10000–11000	1

Here, the maximum frequency is 18 so the modal class is 4000-5000.

Therefore,

$l = 4000$

$h = 1000$

$f = 18$

$f_1 = 4$

$f_2 = 9$

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

$$= 4000 + \frac{18 - 4}{2 \times 18 - 4 - 9} \times 1000$$

$$= 4000 + \frac{14}{23} \times 1000$$

$$= 4000 + 608.7$$

$$= 4608.7$$

Thus, the mode of the data (or runs scored) is 4608.7.

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