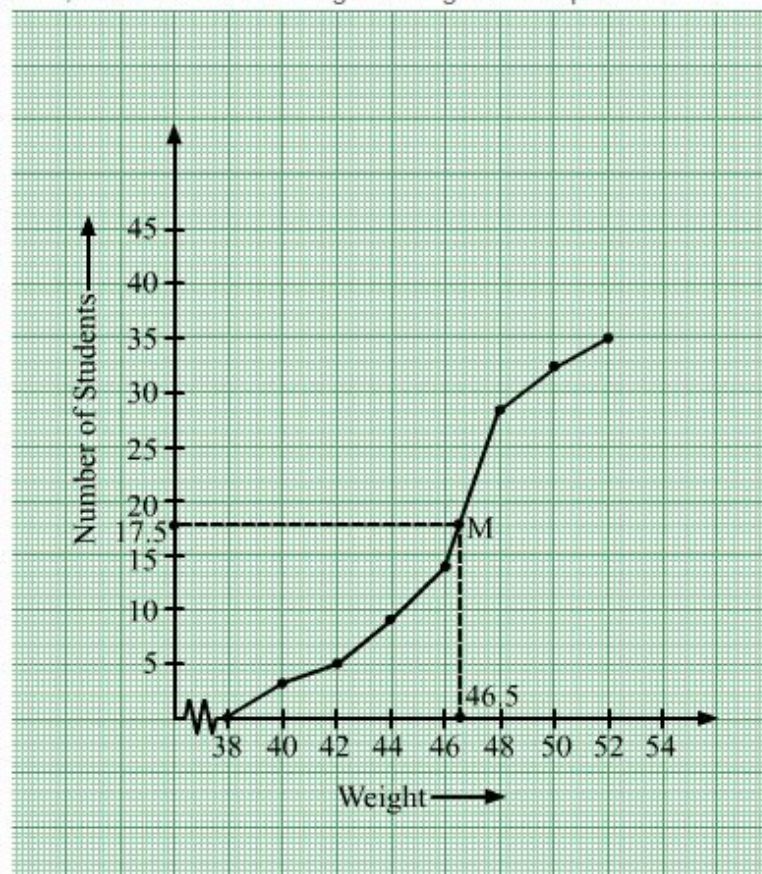Statistics Ex 7.6 Q9

Answer :

Prepare the table for cumulative frequency for less than type.

Weight (in kg)	No. of students	Weight (less than)	Cumulative frequency	Suitable points
36–38	0	38	0	(38, 0)
38–40	3	40	3	(40, 3)
40–42	2	42	5	(42, 5)
42–44	4	44	9	(44, 9)
44–46	5	46	14	(46, 14)
46–48	14	48	28	(48, 28)
48–50	4	50	32	(50, 32)
50–52	3	52	35	(52, 35)

Now, draw the less than ogive using suitable points.

Here, $\dfrac{N}{2} = \dfrac{\Sigma f}{2} = = \dfrac{35}{2} = 17.5$

From (0, 17.5) draw a line parallel to horizontal axis, which intersects the graph at the point M having x-coordinate as 46.5.

Therefore, the median is 46.5 kg.

Calculation for median using formula.

Now, $\dfrac{N}{2} = \dfrac{35}{2} = 17.5$

So, 46–48 is the median class.

Here, $l = 46, h = 2, f = 14, F = 14$

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

$$= 46 + \dfrac{\dfrac{35}{2} - 14}{14} \times 2$$

$$= 46 + 0.5 = 46.5 \text{ kg}$$

Hence, both the methods give same result.

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