



Exercise 14H

Question 6:

We may prepare the table, given below:

Marks(x)	No of students (f)	Cumulative Frequency	$f \times x$
10	3	3	30
11	5	8	55
12	4	12	48
13	5	17	65
14	2	19	28
16	3	22	48
19	2	24	38
20	1	25	20
	N=25		$\sum f \times x = 332$

Here, $N = 25$ which is odd

$$\begin{aligned} \therefore \text{median} &= \left(\frac{N+1}{2} \right) \text{th term} \\ &= \left(\frac{25+1}{2} \right) \text{th term} \\ &= \text{value of the 13th term} \\ &= 13 \end{aligned}$$

Now, $\sum f \times x = 332$ and $\sum f = 25$

$$\therefore \text{mean} = \frac{\sum f \times x}{\sum f} = \frac{332}{25} = 13.28$$

$$\begin{aligned} \text{Mode} &= 3(\text{median}) - 2(\text{mean}) \\ &= (3 \times 13) - (2 \times 13.28) \\ &= 39 - 26.56 \\ &= 12.44 \end{aligned}$$

Thus mode = 12.4

Question 7:

We may prepare the table, given below:

Item(x)	Frequency(f)	Cumulative Frequency	$f \times x$
5	6	6	30
7	5	11	35
9	3	14	27
12	6	20	72
14	5	25	70
17	3	28	51
19	2	30	38
21	4	34	84
	$N = \sum f = 34$		$\sum f \times x = 407$

Here, $N = 34$, which is even .

$$\begin{aligned}
 \text{Median} &= \frac{1}{2} \left[\left[\left(\frac{n}{2} \right) \right] \text{th term} + \left(\frac{n}{2} + 1 \right) \text{th term} \right] \\
 &= \frac{1}{2} [(17\text{th term} + 18\text{th term})] [\because n = 34] \\
 &= \frac{1}{2} (12 + 12) = \left(\frac{1}{2} \times 24 \right) = 12
 \end{aligned}$$

Now, $\sum f \times x = 407$ and $\sum f = 34$

$$\therefore \text{mean} = \frac{\sum f \times x}{\sum f} = \frac{407}{34} = 11.97$$

$$\begin{aligned}
 \text{Mode} &= 3(\text{median}) - 2(\text{mean}) \\
 &= (3 \times 12) - (2 \times 11.97) \\
 &= 36 - 23.94 \\
 &= 12.06
 \end{aligned}$$

Thus, mode = 12.06

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