



Statistics Ex 7.4 Q12

Answer :

Given: Median = 525

We prepare the cumulative frequency table, as given below.

Class interval:	Frequency: (f_i)	Cumulative frequency ($c.f.$)
0-100	2	2
100-200	5	7
200-300	f_1	$7 + f_1$
300-400	12	$19 + f_1$
400-500	17	$36 + f_1$
500-600	20	$56 + f_1$
600-700	f_2	$56 + f_1 + f_2$
700-800	9	$65 + f_1 + f_2$
800-900	7	$72 + f_1 + f_2$
900-1000	4	$76 + f_1 + f_2$
	$N = 100 = 76 + f_1 + f_2$	

Now, we have

$$N = 100$$

$$76 + f_1 + f_2 = 100$$

$$f_2 = 24 - f_1 \quad \dots(1)$$

$$\text{So, } \frac{N}{2} = 50$$

Since median = 525 so the median class is 500 – 600 .

Here, $l = 500, f = 20, F = 36 + f_1$ and $h = 100$

We know that

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

$$525 = 500 + \left\{ \frac{50 - (36 + f_1)}{20} \right\} \times 100$$

$$25 = \frac{(14 - f_1) \times 100}{20}$$

$$25 \times 20 = 1400 - 100f_1$$

$$100f_1 = 1400 - 500$$

$$f_1 = \frac{900}{100}$$

$$= 9$$

Putting the value of f_1 in (1), we get

$$f_2 = 24 - 9$$

$$= 15$$

Hence, the missing frequencies are 9 and 15.

Statistics Ex 7.4 Q13

Answer :

Given: Median = 32.5

We prepare the cumulative frequency table, as given below.

Class interval:	Frequency: (f_i)	Cumulative frequency ($c.f.$)
0-10	f_1	f_1
10-20	5	$5 + f_1$
20-30	9	$14 + f_1$
30-40	12	$26 + f_1$
40-50	f_2	$26 + f_1 + f_2$
50-60	3	$29 + f_1 + f_2$
60-70	2	$31 + f_1 + f_2$
	$N = 40 = 31 + f_1 + f_2$	

Now, we have

$$N = 40$$

$$31 + f_1 + f_2 = 40$$

$$f_2 = 9 - f_1 \quad \dots\dots(1)$$

$$\text{Also, } \frac{N}{2} = 20$$

Since median = 32.5 so the median class is 30 – 40 .

Here, $l = 30, f = 12, F = 14 + f_1$ and $h = 10$

We know that

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

$$32.5 = 30 + \left\{ \frac{20 - (14 + f_1)}{12} \right\} \times 10$$

$$2.5 = \frac{(6 - f_1) \times 10}{12}$$

$$2.5 \times 12 = 60 - 10f_1$$

$$10f_1 = 60 + 30$$

$$f_1 = \frac{30}{10}$$

$$= 3$$

Putting the value of f_1 in (1), we get

$$f_2 = 9 - 3$$

$$= 6$$

Hence, the missing frequencies are 3 and 6.

***** END *****