Exercise 9B

Question 13: The given series is converted from inclusive to exclusive form and preparing the cumulative frequency table, we get

Marks	Frequency f_i	C.F
0.5 - 5.5	7	7
5.5 - 10.5	10	17
10.5 - 15.5	16	33
15.5 - 20.5	32	65
20.5 - 25.5	24	89
25.5 - 30.5	16	105
30.5 - 35.5	11	116
35.5 - 40.5	5	121
40.5 - 45.5	2	123
	$\Sigma f_i = N = 123$	

$$N = 123 \Rightarrow \frac{N}{2} = \frac{123}{2} = 61.5$$

The cumulative frequency just greater than 61.5 is 65.

∴ The corresponding median class is 15.5 - 20.5.

Then the median class is 15.5 - 20.5

∴ l = 15.5, h = 5, f = 32, c = C.F. preceding median class = 33

$$Median = l + \left[h \times \frac{\left(\frac{N}{2} - c\right)}{f} \right] = 15.5 + \left[5 \times \frac{(61.5 - 33)}{32} \right]$$

$$= 15.5 + 4.45 = 19.95$$

Hence, Median = 19.95

Question 14:

Marks	Frequency f_i	C.F
0 - 10	12	12
10 - 20	20	32
20 - 30	25	57
30 - 40	23	80
40 - 50	12	92
50 - 60	24	116
60 - 70	48	164
70 - 80	36	200
	N = Σf_i = 200	

$N = 200 = \dfrac{N}{2} = 100$

The cumulative frequency just greater than 100 is 116 and the corresponding class is 50 - 60.

Thus the median class is 50 - 60

$\therefore$ l = 50, h = 10, f = 24, c = C.F. preceding median class = 92, $\dfrac{N}{2}$ = 100

$$Median = l + \left[h \times \dfrac{\left(\dfrac{N}{2} - c \right)}{f} \right]$$

$$= 50 + \left[10 \times \dfrac{(100 - 92)}{24} \right]$$

$$= 50 + \left[10 \times \dfrac{84}{24} \right]$$

$$= 50 + 3.33 = 53.33$$

Hence, Median = 53.33

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