

Median - (5).

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→ Inclusive Series and the Median.

Calculate Median of the following data:

Marks	46-50	41-45	36-40	31-35	26-30	21-25	16-20	11-15
No. of students	5	11	22	35	26	13	10	7

Soln

This is an inclusive series given in the descending order. It should first be converted into an exclusive series and placed in the ascending order, as in the following table.

Conversion into Exclusive Series	frequency	Cumulative frequency.
10.5 - 15.5	7	7
15.5 - 20.5	10	17
20.5 - 25.5	13	30
25.5 - 30.5	26	56
30.5 - 35.5	35	91
35.5 - 40.5	22	113
40.5 - 45.5	11	124
45.5 - 50.5	5	129
	$N = 129$	

$$M = \text{Size of } \left(\frac{N}{2} \right)^{\text{th}} \text{ items}$$

$$= \frac{129}{2} = 64.5$$

64.5 is just coming from c.f. 91

So that median class to be 30.5 - 35.5

$$M = l_1 + \frac{\frac{N}{2} - C}{f} \times i$$

Here l_1 = lower limit of the median class = 30.5

C = c.f. of the pre median class = 56

f = frequency of the median class = 35

i = class interval of the median class = 5

N = 129 sum of frequencies.

$$M = 30.5 + \frac{\frac{129}{2} - 56}{35} \times 5$$

$$= 30.5 + \frac{64.5 - 56}{35} \times 5$$

$$= 30.5 + \frac{8.5}{35} \times 5$$

$$30 + 1.2 = 31.2$$

Median = 31.2

