

Grouped / continuous series - सतत श्रेणी

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

Where,

m = median

N = total frequency

l_1 = lower limit of median class

i = width of median class

f = frequency of median class

C = cumulative frequency of the class preceding the median class.

Ex- calculate median of the following data.

Wage (in ₹):	10-20	20-30	30-40	40-50	50-60	60-70
No. of workers:	8	10	11	16	20	25

Solution →

Wage	f (workers)	C.f
10-20	8	8
20-30	10	18
30-40	11	29
40-50	16	45

Wage	f	c.f
50-60	20	65
60-70	25	90
$\Sigma f = 90$		

$$\begin{aligned} \therefore m &= \left(\frac{N}{2}\right)^{\text{th}} \text{ item} \\ &= \left(\frac{90}{2}\right)^{\text{th}} \text{ item} \\ &= (45)^{\text{th}} \text{ item.} \end{aligned}$$

Now, 45 lies in c.f. 45.

So, median class 40-45

$$\therefore N = 90$$

$$d_1 = 40$$

$$d = 10$$

$$c = 29$$

$$f = 16$$

$$\therefore m = d_1 + \frac{\frac{N}{2} - c}{f} \times d$$

$$= 40 + \frac{45 - 29}{16} \times 10$$

$$= 40 + \frac{160}{16}$$

$$= 40 + 10 = 50 \text{ ₹ -}$$