

Special condition. (Descending class intervals)

$$\text{Median} = L_2 - \frac{(N/2 - C)}{f} \times i$$

Q. marks: 30-35 | 25-30 | 20-25 | 15-20 | 10-15 | 5-10 | 0-5

No. of students: 4 | 8 | 13 | 15 | 12 | 10 | 2

Solution - We can solve it in both ascending and descending order.

Ascending order			Descending order		
class	f	C.f	class	f	C.f
0-5	2	2	30-35	4	4
5-10	10	12	25-30	8	12
10-15	12	24	20-25	13	25
15-20	15	39	15-20	15	40
20-25	13	52	10-15	12	52
25-30	8	60	5-10	10	62
30-35	4	64	0-5	2	64

$$N = 64$$

$$m = \left(\frac{N}{2}\right)^{\text{th}} \text{ item}$$

$$= \frac{64}{2} = 32$$

32 lies in ~~C.f~~ 39 so,

(15-20) is the median class

$$N = 64$$

$$m = \left(\frac{N}{2}\right)^{\text{th}} \text{ item}$$

$$= \frac{64}{2} = 32$$

32 lies in C.f ~~39~~ 40, so, (15-20) is the median class

So,

$$d_1 = 15$$

$$N/2 = 32$$

$$c = 24$$

$$d = 5$$

$$f = 15$$

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

$$m = 15 + \frac{(32 - 24)}{15} \times 5$$

$$= 15 + \frac{8 \times 5}{15}$$

$$= 15 + \frac{40}{15}$$

$$= 15 + 2.67$$

$$= 17.67 \quad \downarrow$$

So,

$$d_2 = 20$$

$$N/2 = 32$$

$$c = 25$$

$$d = 5$$

$$f = 15$$

$$\therefore m = d_2 - \frac{(N/2 - c)}{f} \times d$$

$$= 20 - \frac{(32 - 25)}{15} \times 5$$

$$= 20 - \frac{7 \times 5}{15}$$

$$= 20 - \frac{35}{15}$$

$$= 20 - 2.33$$

$$= 17.67 \quad \downarrow$$

So, we can solve the above problem with both method with little change.