

15. Weekly income of 600 families is tabulated below :

Weekly income (in Rs)	Number of families
0-1000	250
1000-2000	190
2000-3000	100
3000-4000	40
4000-5000	15
5000-6000	5
<b>Total</b>	<b>600</b>

Compute the median income.

**Solution:**

Weekly Income	Number of families ( $f_i$ )	Cumulative frequency ( $cf$ )
0-1000	250	250
1000-2000	190	250 + 190 = 440
2000-3000	100	440 + 100 = 540
3000-4000	40	540 + 40 = 580
4000-5000	15	580 + 15 = 595
5000-6000	5	595 + 5 = 600

According to the question,

$$n = 600$$

$$\therefore n/2 = 600/2 = 300$$

Cumulative frequency 440 lies in the interval 1000 - 2000.

Hence, lower median class,  $l = 1000$

$$f = 190,$$

$$c_f = 250,$$

$$\text{Class width, } h = 1000$$

And total observation  $n = 600$

$$\begin{aligned}\therefore \text{Median} &= l + \frac{\left(\frac{n}{2} - c_f\right)}{f} \times h \\ &= 1000 + \frac{(300 - 250)}{190} \times 1000 \\ &= 1000 + \frac{50}{190} \times 1000\end{aligned}$$

$$= 1000 + 5000/19$$

$$= 1000 + 263.15 = 1263.15$$

Hence, the median income is Rs.1263.15.