

17. The monthly income of 100 families are given as below :

Income (in Rs) Number of families

0-5000 8

5000-10000 26

10000-15000 41

15000-20000 16

20000-25000 3

25000-30000 3

30000-35000 2

35000-40000 1

Calculate the modal income.

Solution:

According to the data given,

The highest frequency = 41,

41 lies in the interval 10000 - 15000.

Here, $l = 10000$, $f_m = 41$, $f_1 = 26$, $f_2 = 16$ and $h = 5000$

$$\begin{aligned}\therefore \text{Mode} &= l + \left(\frac{f_m - f_1}{2f_m - f_1 - f_2} \right) \times h \\ &= 10000 + \left(\frac{41 - 26}{2 \times 41 - 26 - 16} \right) \times 5000 \\ &= 10000 + \left(\frac{15}{82 - 42} \right) \times 5000 \\ &= 10000 + \left(\frac{15}{40} \right) \times 5000\end{aligned}$$

$$= 10000 + 15 \times 125$$

$$= 10000 + 1875$$

$$= 11875$$

Hence, the modal income = Rs.11875 per month.