

NCERT Maths Class X - Statistics Ex 14.2 - Question 3

Solutions by Dev Anoop (Bathinda)

Expenditure (in Rs)	no. of families $f_i$	class Marks $x_i$	$u_i = \frac{x_i - a}{h}$	$f_i u_i$
1000 - 1500	24 $f_0$	1250	-4	-96
<u>1500 - 2000</u>	<u>40</u> $f_1$	1750	-3	-120
2000 - 2500	33 $f_2$	2250	-2	-66
2500 - 3000	28	2750	-1	-28
3000 - 3500	30	3250 = a	0	0
3500 - 4000				
4000 - 4500	22	3750	1	22
4500 - 5000	16	4250	2	32
	7	4750	3	21
	<u>200</u>			<u>-235</u>

Modal class 1500 - 2000,  $l = 1500$ ,  $h = 500$

$$\text{Mode} = l + \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \times h$$

$$= 1500 + \frac{40 - 24}{80 - 24 - 33}$$

$$= 1500 + \frac{16}{23} \times 500$$

$$= 1500 + 347.83$$

$$= 1847.83, \text{ Modal exp.} = \text{Rs } 1847.83$$

Mean expenditure

$$= a + \frac{\sum f_i u_i}{\sum f_i}$$

$$= 3250 + \frac{-235}{200} \times 500$$

$$= 3250 - 587.50$$

$$= \text{Rs } 2662.50$$