Statistics Ex 7.3 Q1

Answer :

Given:

Expenditure (in Rs.) (x_i):	frequency (f_i):
100 – 150	24
150 – 200	40
200 – 250	33
250 – 300	28
300 – 350	30
350 – 400	22
400 – 450	16
450 – 500	7

Let the assumed mean be $A = 275$ and $h = 50$.

Expenditure (in Rs.)	Mid value (x_i):	frequency (f_i)	$d_i = x_i - A$ $= x_i - 275$	$u_i = \frac{1}{h}(d_i)$ $= \frac{1}{50}(d_i)$	$f_i u_i$
100 – 150	125	24	−150	−3	−72
150 – 200	175	40	−100	−2	−80
200 – 250	225	33	−50	−1	−33
250 – 300	275	28	0	0	0
300 – 350	325	30	50	1	30
350 – 400	375	22	100	2	44
400 – 450	425	16	150	3	48
450 – 500	475	7	200	4	28
		$\sum f_i = 200$			$\sum f_i u_i = -35$

We know that mean, $\overline{X} = A + h\left(\frac{1}{N}\sum f_i u_i\right)$

Now, we have $N = \sum f_i = 200$, $\sum f_i u_i = -35$, $h = 50$ and $A = 275$.

Putting the values in the above formula, we get

Statistics Ex 7.3 Q2

$$\overline{X} = A + h\left(\frac{1}{N}\sum f_i u_i\right)$$
$$= 275 + 50\left(\frac{1}{200} \times (-35)\right)$$
$$= 275 - \frac{1750}{200}$$
$$= 275 - 8.75$$
$$= 266.25$$

Hence, the average expenditure (in Rs.) per household is 266.25.

Answer :

We may prepare the table as shown:

No. of plants	Mid value (x_i)	No. of Houses (f_i)	$f_i x_i$
0 – 2	1	1	1
2 – 4	3	2	6
4 – 6	5	1	5
6 – 8	7	5	35
8 – 10	9	6	54
10 – 12	11	2	22
12 – 14	13	3	39
		$\sum f_i = 20$	$\sum f_i x_i = 162$

We know that mean, $\overline{X} = \frac{\sum f_i x_i}{\sum f_i}$

$$= \frac{162}{20}$$
$$= 8.1$$

Hence, mean = 8.1

Direct method is easier than other methods. Therefore, we used direct method.

********** END **********