Statistics Ex 7.3 Q13

Answer :

Let the assumed mean be $A = 50$ and $h = 10$.

Class interval :	Mid value (x_i) :	frequency: (f_i)	$d_i = x_i - A = x_i - 50$	$u_i = \frac{1}{h}(d_i) = \frac{1}{10}(d_i)$	$f_i u_i$
25 – 35	30	6	–20	–2	–12
35 – 45	40	10	–10	–1	–10
45 – 55	50	8	0	0	0
55 – 65	60	12	10	1	12
65 – 75	70	4	20	2	8
		$\sum f_i = 40$			$\sum f_i u_i = -2$

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

Now, we have $N = \sum f_i = 40, \sum f_i u_i = -2,\ h = 10$ and $A = 50$.

Putting the values in the above formula, we have

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

$$= 50 + 10\left(\frac{1}{40} \times (-2)\right)$$

$$= 50 - \frac{20}{40}$$

$$= 50 - 0.5$$

$$= 49.5$$

Hence, the mean is 49.5.

Statistics Ex 7.3 Q14

Answer :

The given series is an inclusive series. Firstly, make it an exclusive series.

Class Interval	Mid-Value(x_i)	Frequency(f_i)	$d_i = x_i - A = x_i - 42$	$u_i = \frac{d_i}{h} = \frac{d_i}{5}$	$f_i u_i$
24.5–29.5	27	14	−15	−3	−42
29.5–34.5	32	22	−10	−2	−44
34.5–39.5	37	16	−5	−1	−16
39.5–44.5	**A = 42**	6	0	0	0
44.5–49.5	47	5	5	1	5
49.5–54.5	52	3	10	2	6
54.5–59.5	57	4	15	3	12
		$\sum f_i = 70$			$\sum f_i u_i = -79$

Let the assumed mean be $A = 42$ and $h = 5$.

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

Now, we have $N = \sum f_i = 70$, $\sum f_i u_i = -79$, $h = 5$ and $A = 42$.

Putting the values in the above formula, we have

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

$$= 42 + 5\left(\frac{1}{70} \times (-79)\right)$$

$$= 42 - \frac{395}{70}$$

$$= 42 - 5.6438$$

$$= 36.3571$$

Hence, the mean is 36.357.

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