Statistics Ex 7.3 Q11

Answer :

Let the assumed mean be $A = 20$ and $h = 8$.

Class interval :	Mid value (x_i) :	frequency: (f_i)	$d_i = x_i - A = x_i - 20$	$u_i = \frac{1}{h}(d_i) = \frac{1}{8}(d_i)$	$f_i u_i$
0 – 8	4	5	−16	−2	−10
8 – 16	12	6	−8	−1	−6
16 – 24	20	4	0	0	0
24 – 32	28	3	8	1	3
32 – 40	36	2	16	2	4
		$\sum f_i = 20$			$\sum f_i u_i = -9$

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

Now, we have $N = \sum f_i = 20, \sum f_i u_i = -9,\ h = 8$ and $A = 20$.

Putting the values in the above formula, we get

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

$$= 20 + 8\left(\frac{1}{20} \times (-9)\right)$$

$$= 20 - \frac{72}{20}$$

$$= 20 - 3.6$$

$$= 16.4$$

Hence, the mean is 16.4.

Statistics Ex 7.3 Q12

Answer :

Let the assumed mean be $A = 60$ and $h = 20$.

Class interval:	Mid value (x_i):	frequency (f_i)	$d_i = x_i - A$ $= x_i - 60$	$u_i = \frac{1}{h}(d_i)$ $= \frac{1}{20}(d_i)$	$f_i u_i$
10 – 30	20	5	–40	–2	–10
30 – 50	40	8	–20	–1	–8
50 – 70	60	12	0	0	0
70 – 90	80	20	20	1	20
90 – 110	100	3	40	2	6
110 – 130	120	2	60	3	6
		$\sum f_i = 50$			$\sum f_i u_i = 14$

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

Now, we have $N = \sum f_i = 50$, $\sum f_i u_i = 14$, $h = 20$ and $A = 60$.

Putting the values in the above formula, we have

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

$$= 60 + 20\left(\frac{1}{50} \times (14)\right)$$

$$= 60 + \frac{280}{50}$$

$$= 60 + 5.6$$

$$= 65.6$$

Hence, the mean is 65.6.

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