Statistics Ex 7.3 Q5

Answer :

Let the assumed mean be $A = 15$ and $h = 6$.

Class interval :	Mid value (x_i) :	frequency: (f_i)	$d_i = x_i - A = x_i - 15$	$u_i = \frac{1}{h}(d_i) = \frac{1}{6}(d_i)$	$f_i u_i$
0 – 6	3	6	−12	−2	−12
6 – 12	9	8	−6	−1	−8
12 – 18	15	10	0	0	0
18 – 24	21	9	6	1	9
24 – 30	27	7	12	2	14
		$\sum f_i = 40$			$\sum f_i u_i = 3$

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

Now, we have $N = \sum f_i = 40$, $\sum f_i u_i = 3$, $h = 6$ and $A = 15$.

Putting the values in the above formula, we get

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

$$= 15 + 6\left(\frac{1}{40} \times (3)\right)$$

$$= 15 + \frac{18}{40}$$

$$= 15 + 0.45$$

$$= 15.45$$

Hence, the mean is 15.45.

Statistics Ex 7.3 Q6

Answer :

Let the assumed mean be $A = 100$ and $h = 20$.

Class interval:	Mid value (x_i):	frequency (f_i)	$d_i = x_i - A$ $= x_i - 100$	$u_i = \frac{1}{h}(d_i)$ $= \frac{1}{20}(d_i)$	$f_i u_i$
50 – 70	60	18	−40	−2	−36
70 – 90	80	12	−20	−1	−12
90 – 110	100	13	0	0	0
110 – 130	120	27	20	1	27
130 – 150	140	8	40	2	16
150 – 170	160	22	60	3	66
		$\sum f_i = 100$			$\sum f_i u_i = 61$

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

Now we have $N = \sum f_i = 100, \sum f_i u_i = 61,\ h = 20 \text{ and } A = 100$

Putting the values in the above formula, we get

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

$$= 100 + 20\left(\frac{1}{100} \times (61)\right)$$

$$= 100 + \frac{1220}{100}$$

$$= 100 + 12.20$$

$$= 112.20$$

Hence, the mean is 112.20.

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