

Statistics Ex 7.3 Q5

Answer:

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

| Classinterval: | $Midvalue(x_i)$: | $\text{frequency:}\big(f_i\big)$ | $d_i = x_i - A$ $= x_i - 15$ | $u_i = \frac{1}{h}(d_i)$ | $f_i u_i$ |
|----------------|-------------------|----------------------------------|------------------------------|--------------------------|--------------------|
| 0-6 | 3 | 6 | -12 | $=\frac{1}{6}(d_i)$ -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 $N=\sum f_i=40, \sum f_iu_i=3, \ h=6$ and A=15.

Putting the values in the above formula, we get

$$\overline{X} = A + h \left(\frac{1}{N} \sum_{i} f_{i} u_{i} \right)$$

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

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

$$= 15 + 0.45$$

$$= 15.45$$

Hence, the mean is 15.45.

Statistics Ex 7.3 Q6

Answer:

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

| Class interval: | $Midvalue(x_i)$: | $frequency \left(f_i \right)$ | $d_i = x_i - A$ $= x_i - 100$ | $u_i = \frac{1}{h}(d_i)$ $= \frac{1}{20}(d_i)$ | $f_i u_i$ |
|-----------------|-------------------|--------------------------------|-------------------------------|--|---------------------|
| 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
$$N = \sum f_i = 100$$
, $\sum f_i u_i = 61$, $h = 20$ and $A = 100$

Putting the values in the above formula, we get

$$\overline{X} = A + h \left(\frac{1}{N} \sum_{i} f_{i} u_{i} \right)$$

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

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

$$= 100 + 12.20$$

$$= 112.20$$

Hence, the mean is 112.20.

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