



Exercise 14F

Question 11:

Clearly, $h=1$. Let the assumed mean $A=21$

(X_i)	(f_i)	$u_i = \frac{x_i - 21}{1}$	$f_i u_i$
18	170	-3	-510
19	320	-2	-640
20	530	-1	-530
21	700	0	0
22	230	1	230
23	140	2	280
24	110	3	330
Total	$\sum f_i = 2200$		$\sum f_i u_i = -840$

Let \bar{x} be the mean.

Using formula,

$$\begin{aligned}
 \text{Mean, } \bar{x} &= A + h \times \frac{\sum f_i u_i}{\sum f_i} \\
 &= 21 + 1 \times \left(\frac{-840}{2200} \right) \\
 &= 21 + (-0.38) \\
 &= 20.62
 \end{aligned}$$

Thus the mean is 20.62

Question 12:

Clearly, $h = (x_2 - x_1)$

$$= (600 - 200) = 400$$

Let assumed mean $A = 1000$

Height (in m) (X_i)	No of villages (f_i)	$U_i = \frac{x_i - 1000}{400}$	$f_i x_i$
200	142	-2	-284
600	265	-1	-265
1000	560	0	0
1400	271	1	271
1800	89	2	178
2200	16	3	48
Total	$\sum f_i = 1343$		$\sum f_i u_i = -52$

Let \bar{x} be the mean.

Using formula,

$$\begin{aligned}\text{Mean, } \bar{x} &= A + h \times \frac{\sum f_i u_i}{\sum f_i} \\ &= 1000 + 400 \times \left(\frac{-52}{1343} \right) \\ &= 1000 + 400 \times (-0.0387) \\ &= 1000 + (-15.488) \\ &= 984.51\end{aligned}$$

Thus, the mean height is 984.51 m

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