



Exercise 9D

Question 2:

Let assumed mean A be 8.5. Class interval h = 3

Class	Frequency f_i	Mid-value x_i	$u_i = \left(\frac{x_i - A}{h}\right)$	$f_i u_i$	C.F.
1-4	6	2.5	-2	-12	6
4-7	30	5.5	-1	-30	36
7-10	40	8.5 = A	0	0	76
10-13	16	11.5	1	16	92
13-16	4	14.5	2	8	96
16-19	4	17.5	3	12	100
	N = 100			$\Sigma f_i u_i = -6$	

N = total frequency = 100

$$\begin{aligned}
 \text{(i) Mean } \bar{x} &= A + h \left(\frac{\Sigma f_i u_i}{N} \right) \\
 &= 8.5 + 3 \times \frac{-6}{100} = 8.5 - \frac{18}{100} \\
 &= 8.5 - 0.18 = 8.32
 \end{aligned}$$

(ii) $\frac{N}{2} = 50$, Cumulative frequency just after 50 is 76
 \therefore Median class is 7 - 10

$\therefore l = 7, h = 3, N = 100, f = 40, c = 36$

$$\begin{aligned}
 \text{Median } M_e &= l + h \left(\frac{\frac{N}{2} - c}{f} \right) = 7 + 3 \times \left(\frac{50 - 36}{40} \right) \\
 &= 7 + 3 \times \frac{14}{40} = 7 + \frac{21}{20} = 7 + 1.05 = 8.05
 \end{aligned}$$

$$\begin{aligned}
 \text{(iii) Mode} &= 3 \times \text{Median} - 2 \times \text{Mean} \\
 &= 3 \times 8.05 - 2 \times 8.32 = 24.15 - 16.64 \\
 &= 7.51
 \end{aligned}$$

Thus, mean = 8.32, Median = 8.05, Mode = 7.51

***** END *****