



### Exercise 9C

Question 1:

As the class 50 - 60 has maximum frequency, so it is the modal class:

$$\therefore x_k = 50, h = 10, f_k = 20 \text{ and } f_{k-1} = 13 \text{ and } f_{k+1} = 6$$

$$\begin{aligned}\text{Mode } M_0 &= x_k + \left[ h \times \frac{(f_k - f_{k-1})}{(2f_k - f_{k-1} - f_{k+1})} \right] \\ &= 50 + \left[ 10 \times \frac{(20 - 13)}{(2 \times 20 - 13 - 6)} \right] \\ &= 50 + \left( \frac{70}{21} \right) = (50 + 3.33) = 53.33\end{aligned}$$

Hence, mode = 53.33

Question 2:

As the class 40 - 50 has maximum frequency, so it is modal class.

$$x_k = 40, h = 10, f_k = 62, \text{ and } f_{k-1} = 47 \text{ and } f_{k+1} = 37$$

$$\begin{aligned}\text{Mode } m_0 &= x_k + \left[ h \times \frac{(f_k - f_{k-1})}{(2f_k - f_{k-1} - f_{k+1})} \right] \\ &= 40 + \left[ 10 \times \frac{(62 - 47)}{(2 \times 62 - 47 - 37)} \right] \\ &= 40 + \left[ \frac{150}{40} \right] = 40 + 3.75 = 43.75\end{aligned}$$

Hence, mode = 43.75 years

Question 3:

As the class 26 - 30 has maximum frequency so it is modal class

$$x_k = 26, f_k = 25, f_{k-1} = 20, f_{k+1} = 22, h = 4$$

$$\begin{aligned}\text{Mode, } m_0 &= x_k + \left[ h \times \frac{(f_k - f_{k-1})}{(2f_k - f_{k-1} - f_{k+1})} \right] \\ &= 26 + \left( \frac{(25 - 20)}{(2 \times 25 - 20 - 22)} \times 4 \right) \\ &= 26 + \frac{5}{2} = 26 + 2.5 = 28.5\end{aligned}$$

Hence, mode = 28.5

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