



Statistics Ex 7.5 Q4

**Answer :**

Age (in years)	Group 'A'	Group 'B'
16–18	50	54
18–20	78	89
20–22	46	40
22–24	28	25
24–25	23	17

For **group “A”**

The maximum frequency is 78 so the modal class is 18–20.

Therefore,

$$l = 18$$

$$h = 2$$

$$f = 78$$

$$f_1 = 50$$

$$f_2 = 46$$

$$\begin{aligned}\Rightarrow \text{Mode} &= l + \frac{f - f_1}{2f - f_1 - f_2} \times h \\ &= 18 + \frac{78 - 50}{156 - 50 - 46} \times 2 \\ &= 18 + \frac{28}{60} \times 2 \\ &= 18 + \frac{14}{15} \\ &= 18 + 0.93\end{aligned}$$

$$\boxed{\text{Mode} = 18.93}$$

For **group “B”**

The maximum frequency 89 so modal class 18–20.

Therefore,

$$l = 18$$

$$h = 2$$

$$f = 89$$

$$f_1 = 54$$

$$f_2 = 40$$

$$\begin{aligned}\Rightarrow \text{Mode} &= 18 + \frac{89 - 54}{178 - 54 - 40} \times 2 \\ &= 18 + \frac{35}{84} \times 2 \\ &= 18 + \frac{35}{42} \\ &= 18 + \frac{5}{6} \\ &= 18 + 0.83\end{aligned}$$

$$\boxed{\text{Mode} = 18.83}$$

Thus, the modal age of group A is 18.93 years whereas the modal age of group B is 18.83 years.

Statistics Ex 7.5 Q5

Answer :

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Frequency	3	5	16	12	13	20	5	4	1	1

Here, the maximum frequency is 20 so the modal class is 50-60.

Therefore,

$$l = 50$$

$$h = 10$$

$$f = 20$$

$$f_1 = 13$$

$$f_2 = 5$$

Now,

$$\text{Mode} = l + \frac{f - f_1}{2f - f_1 - f_2} \times h$$

$$= 50 + \frac{20 - 13}{40 - 13 - 5} \times 10$$

$$= 50 + \frac{7}{22} \times 10$$

$$= 50 + \frac{70}{22}$$

$$= 50 + 3.17$$

$$\boxed{\text{Mode} = 53.17}$$

Thus, the mode of the marks obtained by the students in science is 53.17.

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