



1 CHAPTER SNAPSHOT

- We organise raw data into grouped and ungrouped frequency distributions.
- Data can be represented in tabular and pictorial forms.
- Measures of Central Tendency (MCT) tell us the central or typical value around which data cluster.
- The three main MCTs are:
Mean (Average), Median and Mode.
- Mean is most widely used and can be calculated for both ungrouped and grouped data.



2 HIGH-YIELD CONCEPTS

- ★ **Measures of Central Tendency:** values that tend to cluster around the middle value of the data.
- ★ **Ungrouped Frequency Distribution:** data in individual values with their frequencies.
- ★ **Grouped Frequency Distribution:** data arranged in class intervals (ranges) with frequencies.
- ★ **Class Mark (Midpoint):** represents each class interval.

Formula for class mark (midpoint):

$$\text{Midpoint } (x_i) = \frac{UCL + LCL}{2}$$

Where UCL = Upper Class Limit, LCL = Lower Class Limit

3 FORMULAS

(A) MEAN – UNGROUPED DATA

If x_i are the values with frequencies f_i ,

$$\bar{X} = \frac{\sum_{i=1}^n f_i x_i}{\sum_{i=1}^n f_i}$$

Where f_i = frequency of x_i , n = number of observations

(B) MEAN – GROUPED DATA (Direct Method)

If x_i are class marks (midpoints) and f_i are frequencies,

$$\bar{X} = \frac{\sum f_i x_i}{\sum f_i}$$

$$\text{Midpoint } (x_i) = \frac{UCL + LCL}{2}$$

Represents all values in that class.

Steps (Direct Method):

- 1 Find class mark x_i for each class interval.
- 2 Multiply x_i with f_i to get $f_i x_i$.
- 3 Find $\sum f_i x_i$ and $\sum f_i$.
- 4 Divide $\sum f_i x_i$ by $\sum f_i$ to get the mean.

4 BOARD EXAM FOCUS (HOTSPOTS)



Calculate Mean (Ungrouped)

- Given raw data or a table of values and frequencies.
- Expect: $\bar{X} = \frac{\sum f_i x_i}{\sum f_i}$



Calculate Mean (Grouped – Direct Method)

- Given class intervals and frequencies.
- Find class marks first, then apply formula.



Find Class Mark / Midpoint

- Frequently asked directly.
- Use **Midpoint** = $\frac{UCL + LCL}{2}$



Convert Ungrouped to Grouped Data

- Form suitable class intervals.
- Count frequencies correctly.



Real-Life / Application Based

- Mean height, average marks, daily wages, etc.
- Interpret the mean in the context of the data.

5 SMART REVISION TIPS

- ✓ Always write class intervals in ascending order and non-overlapping.
- ✓ Choose equal class width.
- ✓ Find class marks carefully; they represent the entire class.
- ✓ Maintain a neat table: Class Interval | f_i | x_i | $f_i x_i$.
- ✓ Don't forget units in the final answer.
- ✓ Check calculations of $\sum f_i$ and $\sum f_i x_i$ twice.

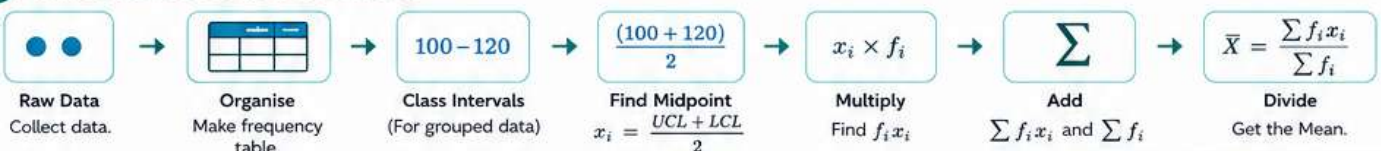
6 COMMON MISTAKES

- ✗ Using upper limit as class mark.
- ✗ Not finding class marks before applying formula.
- ✗ Mistakes in multiplying f_i and x_i .
- ✗ Wrong addition of $\sum f_i x_i$ or $\sum f_i$.
- ✗ Using unequal or overlapping class intervals.
- ✗ Forgetting interpretation of mean.

7 MUST REMEMBER (RAPID SUMMARY)

- ★ MCTs: Mean, Median, Mode.
- ★ Mean is most widely used.
- ★ Ungrouped Mean: $\bar{X} = \frac{\sum f_i x_i}{\sum f_i}$
- ★ Grouped Mean (Direct): $\bar{X} = \frac{\sum f_i x_i}{\sum f_i}$ where x_i = class mark.
- ★ Class Mark (Midpoint): $x_i = \frac{UCL + LCL}{2}$
- ★ Steps: Find $x_i \rightarrow$ find $f_i x_i \rightarrow \sum f_i x_i$ & $\sum f_i \rightarrow$ mean.

8 RAPID REVISION (30 SECONDS)



KEY TAKEAWAY

Mean gives the average or typical value of the data. Organise data well, find class marks carefully, follow the steps and calculate accurately – that's the key to scoring full marks!