

CLASS 10 MATHS – CHAPTER 13

STATISTICS – ALL FORMULAE

Basic Idea

- Study of data
- Collection & organization
- Analysis & interpretation
- Used in real life
- Helps in decision making
- Data-based chapter
- Practical applications

Types Of Data

- Ungrouped → raw data
- Small data size
- Easy calculation
- Grouped → class intervals
- Used for large data
- Organized form
- Table representation

Basic Terms

- Frequency (f) → number of occurrences
- Class interval → range
- Class limits → lower & upper
- Class size (h) = upper – lower
- Class mark (x_i) → midpoint

Central Tendencies

- Represents whole data
- Types → Mean, Median, Mode
- Gives central value
- Simplifies data
- Used in analysis

Mean

- Most common measure
- Uses all values
- Affected by extremes
- Formula: $\Sigma fxi / \Sigma fi$
- Used in grouped data
- Needs table
- Accurate method

Mean Methods

- Direct method
- Assumed mean method
- Step-deviation method
- All give same result
- Step-deviation is fastest
- Used for large data
- Simplifies calculation

Mode

- Most frequent value
- Based on highest frequency
- Find modal class
- Formula-based
- Lies in modal class
- Used in real life

Median

- Middle value of data
- Divides into two parts
- Based on cumulative frequency
- Find $n/2$
- Identify median class

Commulative Frequency

- Running total of frequencies
- Helps find median
- Less than type
- More than type
- Used in tables
- Important step
- Must calculate correctly

Ogive (Graph)

- Graph of cumulative frequency
- Two types → less & more
- Used to find median
- Intersection point = median
- Graph-based method
- Visual representation

Relation & Comparison

- Mean, Median, Mode relation
- $3 \text{ Median} = \text{Mode} + 2 \text{ Mean}$
- Mean → average
- Median → middle
- Mode → most frequent
- Different uses
- Comparison important

Formula & Tips

- Mean = $\frac{\sum f_i x_i}{\sum f_i}$
- Median formula important
- Mode formula important
- Use correct class
- Make proper table
- Convert intervals if needed