

CA FOUNDATION
JANUARY'25

QUANTITATIVE APTITUDE

👉 **TOPIC** : **STATISTICAL DESCRIPTION OF DATA**

😊 **REVISION OF ENTIRE TOPIC IN 20 MINUTES** 🔥

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11 .STATISTICAL DESCRIPTION OF DATA

①.

STATISTICS

COLLECTION

CLASSIFICATION

PRESENTATION

Analysis

②.

MEANING OF STATISTICS

SINGULAR
SENSE

PLURAL
SENSE

→ It involves Method used for collection, presentation and analysis of data

→ It refers to Quantitative and Qualitative data

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COLLECTION OF DATA

PRIMARY SOURCE

(1st Hand, 1st Time, Direct)

→ Direct personal Interview

→ Personal Interview

→ Telephonic Interview
(Quick, non expensive, large coverage area)

→ Questionnaire's
(non-responsive is Max, large coverage area)

→ Data through enumerator

SECONDARY SOURCE

(non 1st hand, Indirect)

Published sources

→ Newspapers

→ periodicals

→ International organization

(WHO, IMF)

→ publication From central or state govt

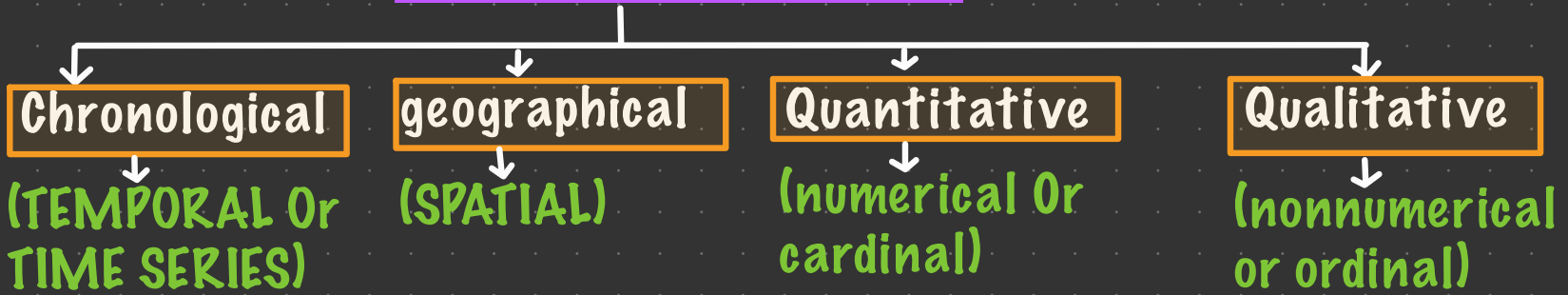
→ LOCAL Authorities

(BMC, TMC)

UnPublished sources

→ private organisation

④ . **CLASSIFICATION OF DATA**



⑤ . **DATA**

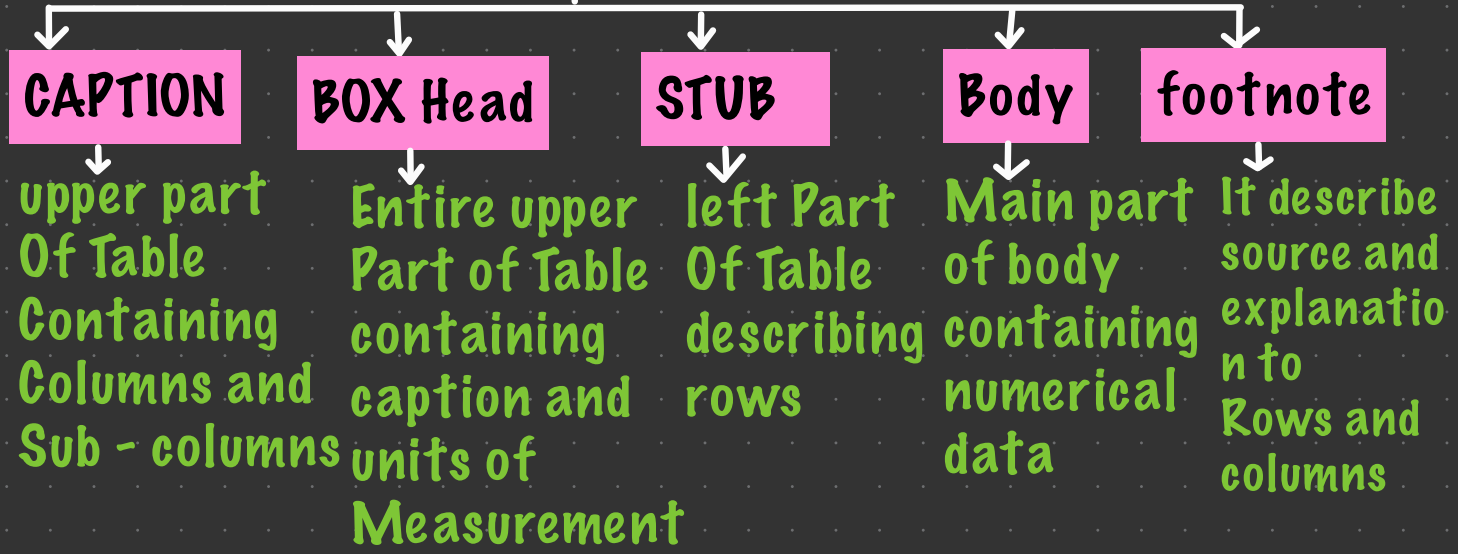


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- ⇒ **TEXTUAL FORM** :- (Boring , data not properly conveyed)
- ⇒ **TABULAR FORM** :- (Most Accurate)

COMPONENT OF TABLE



⇒ **DIAGRAMATIC FORM** :- (Attractive, Used For educated and non-educated class, **hidden trend can be understood**)

DIAGRAMATIC FORM

LINE DIAGRAM

(**Historiagram**)

- **SIMPLE LINE DIAGRAM** : (Used for time series data for single variable)
- **log or ratio chart** : (Used when time series data shows wide range of fluctuation and plot log values on y-axis.)
- **Multiple line diagram** : (2 Or More related time series with same unit of measurement)
- **Multiple axis diagram** : (2 Or More related time series with different unit of measurement)

BAR DIAGRAM

- **Horizontal Bar diagram** (Qualitative data, data over space)
- **Vertical Bar diagram** (Quantitative data, data over time)

⇒

BAR DIAGRAM

One Dimensional

- single bar diagram
- Multiple bar diagram
- Sub-divided bar diagram
- % bar diagram

2- Dimensional

→ Pie diagram

$$\left(\text{Angle} = \frac{\text{value of component} \times 360^\circ}{\text{Total}} \right)$$

- Rectangular diagram
- square diagram

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HISTORY OF STATISTICS

0-

Latin → status

Italian → statista

german → statistik

French → statistique

- In 4th century B.c during Chandragupta's regime, statistics was Used by Kautilya to Maintain Records Of birth, death and some Other Information in a book called "ARTHASHASTRA".
- In 16th century A.D, Abu Fazal used statistics to maintain Agricultural data in a book called "AIN - I- AKBARI".
- Statistics was first used in recording census by "Pharoah" in Egypt.

⑧ **SCRUTINY OF DATA** - If Inter-related series of data is given then we can check for Internal consistency and Scrutinize the data

⑨ **CLASS LIMITS** - ① For Discrete data, Mutually Inclusive
② When Class Intervals are discontinuous Or non-overlapping then the extreme values are called class limits.

UCL : UPPER class limit
LCL : Lower class limit

⑩ **CLASS BOUNDARIES** - ① For continuous data, Mutually exclusive
② Here, Class Intervals are continuous or overlapping

UCB: UPPER CLASS BOUNDARY
LCB: LOWER CLASS BOUNDARY

II IMPORTANT FORMULAE

1) CLASS length (width) = $UCB - LCB$

2) CLASS MARK = $\frac{UCB + LCB}{2}$ OR $\frac{UCL + LCL}{2}$

3) for Discrete C.I, to Make continuous C.I %

$$UCB = UCL + \frac{D}{2}$$

$$LCB = LCL - \frac{D}{2}$$

(D \Rightarrow Difference between U.C.L OF 1st C.I and L.C.L OF 2nd C.I)

4) Number Of CLASS Interval = $\frac{H - L}{\text{class length}}$ (where H = Highest obs
L = Lowest obs)

5) Frequency Density = $\frac{\text{Frequency of C.I}}{\text{CLASS LENGTH}}$

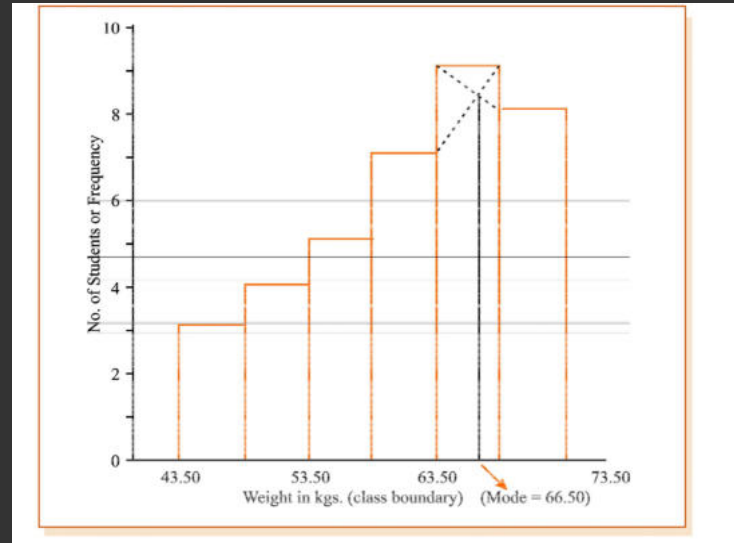
6) Relative Frequency =
$$\frac{\text{frequency of a class}}{\text{Total frequency}}$$

7) Relative percentage =
$$\text{Relative frequency} \times 100$$

12 GRAPHICAL REPRESENTATION OF FREQUENCY DISTRIBUTION

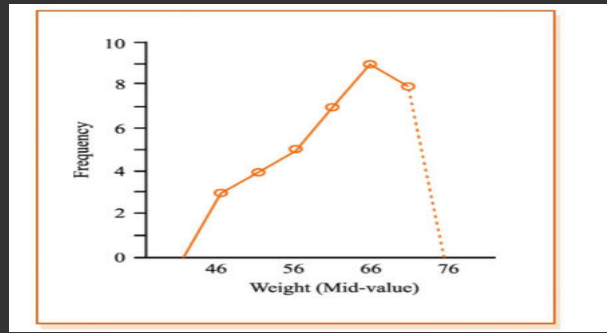
1. Histogram (Area diagram)

- On X-Axis → Class Boundaries
- On y-Axis → Frequencies
- When c. l are of unequal lengths, we plot Frequency density
- It is used to find **Mode**



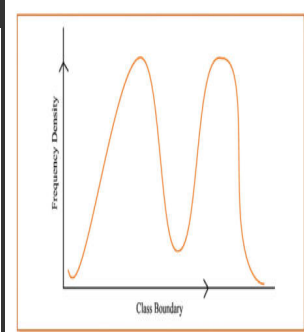
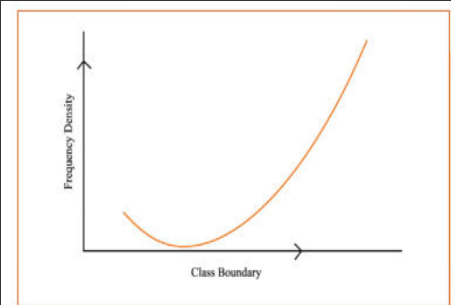
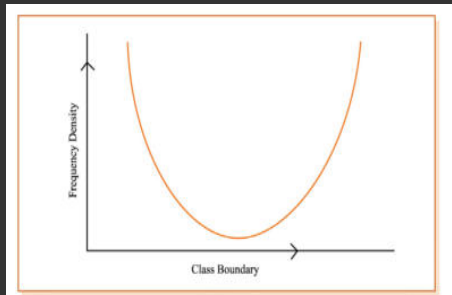
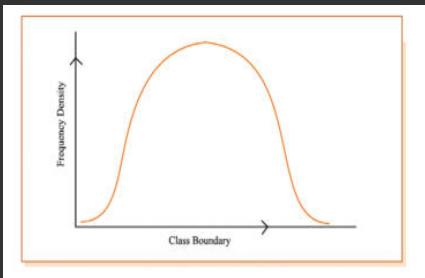
2. frequency Polygon

- On X -Axis → Mid value / class mark
- on y-axis → Frequency



3. Frequency curve

- limiting form of Histogram or frequency polygon
- Total Area under curve is unity.
- Eg: Bell shaped, U Shaped, J Shaped, Mixed curve
- Bell shaped curve is widely used especially for data like height, Marks, Profit etc.



4. OGIVE GRAPH

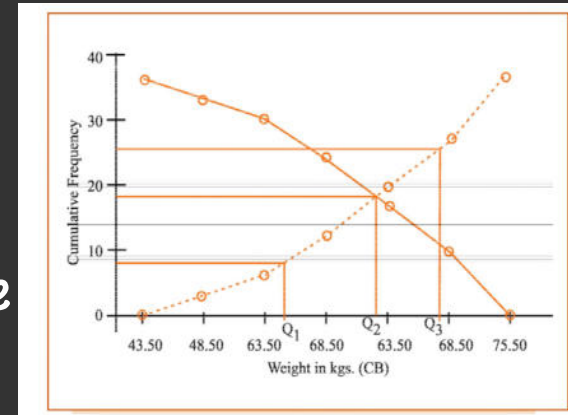
LESS THAN

On X -Axis \rightarrow UCB
On Y-Axis \rightarrow less than C.f
It is \curvearrowright -Shaped (S-shaped)

- \rightarrow Here, Class Interval can be of unequal length
- \rightarrow It is used to find **Quartiles**
- \rightarrow Intersection of less than and more than ogive is **Median**

MORE THAN

On X -Axis \rightarrow LCB
On Y-Axis \rightarrow More than C.f



5. FALSE BASE LINE GRAPH

→ When values are very large but fluctuations are small, we use these graphs.

