Toppersnotes
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CA FOUNDATION

The Institute of Chartered Accountants of India

Statistics

SIERRA INNOVATIONS
Private Limited

CONTENTS

STATICAL DESCRIPTION OF DATA

★ Origin of the word statistics :→

Latin → Status

Italian → statista

German → statistik (statistic)

French → Statistique.

Statistics may be define as the Science of collection, Presentation, Analysis and the Interpretation of numerical data

→ Statistics is used in business forecasting, for testing of hypothesis, framing of government and non-government policies and birth rate and death rate in Vital Statistics.

→ Sampling is very important part of statistic which is widely used in Sample Survey and Statistical Quality Control.

In singular form → Statistical Method.

In plural form → Statistical Data.

Characteristics of Statistical data :-

→ Statistics are aggregates of facts.

→ Statistics are numerically Expressed.

→ Statistics are affected to a marked Extent by multiplicity of causes.

→ Statistics are Enumerated or Estimated according to a reasonable standard of accuracy.

→ Statistics are collected for a predetermined Purpose

→ Statistics are collected in a systemetic manner.

→ Statistics must be comparable to each other.

Limitation of statistics :→

(i). Statistics deals with the aggregates. An Individual to a statistician has no significance except the fact that it is a part of aggregate.

(ii). Statistics is concerned with quantitative data. However quantative data also can be converted to quantative data by providing a numerical description to the corresponding quantitative data.

(iii). future projections of sales, production, price and quantity etc. are possible under a specific set of conditions If any of these conditions is violated Projections are likely

to be inaccurate.

(4) The theory of statical inference is built upon random sampling. If the rules for random sampling are not strictly adhered to, the conclusion drawn on the basis of these unrepresentative samples would be erroneous.

In other words, the experts should be consulted before deciding the sampling scheme.

- Actuarial science:-

Is a discipline that applies mathematical and statistical methods to asses risk in the insurance and finance industries.

- Astrostatistics:-

Is the discipline that applies statistical analysis to the understanding of astronomical data.

- Biostatistics:-

Is a rapidly developing business process that applies statistical methots to data sets (often very large) to develop new insights and understanding of business performance and opportunities.

Econometrics :→

Is a branch of economics that applies statistical methods to the empirical study of economic theories and relationships.

- Environmental Statistics :-

is the application of statistical methods to environmental science. Weather, climate, air and water Quality are included, as are studies of plant and animal populations.

- population Ecology :-

is a sub-field of Ecology that deals with the dynamics of species populations and how these populations intract with the environment.

- Psychometrics :-

is the theory and technique of Educational and psychological measurement of knowledge, ability, attitudes of personality trails.

- Statistical finance :-

an are of econophysics, is an empirical attempt to shift finance from its normative roots to a positivist framework using exemplars from statistical physics with an emphasis on emergent or collective properties of financial markets

Data

Data are individual pieces of factual information recorded and used for the purpose of analysis.

It is the raw information from which statistics are created

"Data is a numerical information which is obtained during investigation".

Types of data

Primary data

(i) Refers to Original data collected for 1st time.

Crux :- collected by 1st person.

Secondary data

(i). Refers to the data originary collected by the person other than who requires it.

Crux :- collected by 3rd Person.

Methods of Collecting Primary Data :-

(i) Direct personal Interview.

(ii). Indirect Oral Interview.

③ Investigation through local correspondence

④ Mailed Question Pair Method.

⑤ Schedulers sent through Information.

Methods of collecting Secondary data :-

(i) Published Sources → WHO, ILO, IMF, World bank etc
→ ISI, ICAR, NCERT ETC.

(ii) Unplished Sources

Security of data :-

Statistical analysis are made only on the basis of data, it is necessary to check whether the data under consideration are accurate as well as consistence.

No hard and fast rules can be recommended for the Security of data.

Ex :- If the data for population, area and density for some places are given then we may verify whether they are internally consistent by examining whether the relation.

Density = Area / Population holds.

Classification of data :→

Classification as defined as the process of arranging data in group or classes according to Occurance and given Expression to the unity of attribute that may Subsits amongst the diversity of Individuals.

Principal objective of classification :-

(i). for comparison of data.

(ii). To utilize data for further statistical analysis.

(iii). To present data more clearly.

(iv) To condense the mass of data in such a manner that similarities and dissimilarities are readily comprehensive.

Main characteristics of the good classification :-

(i). It should be Exhaustive.

(ii). It should be homogeneous

(iii). It should be mutually exclusive.

(iv). It should be stable.

(v). It should be flexible.

(vi). It should have suitability.

classification

Quantitative data

→ not based on measurable terms

→ classification on some attributes like - honesty beauty, colour.

- simple
- mainfold

chronological data

→ classified in ascending or descending order

→ according to Time of occurance i.e. yearly, monthly etc.

Geographical Data.

→ classification of data on the based of some location. city etc.

Quantitative data.

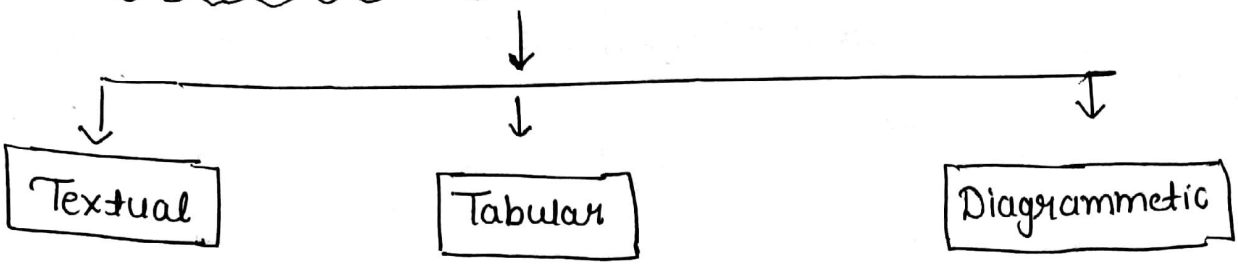
Based on some measurable terms.

→ classification of data on some characteristics age, marks etc

→ Also known as cardinal classification.

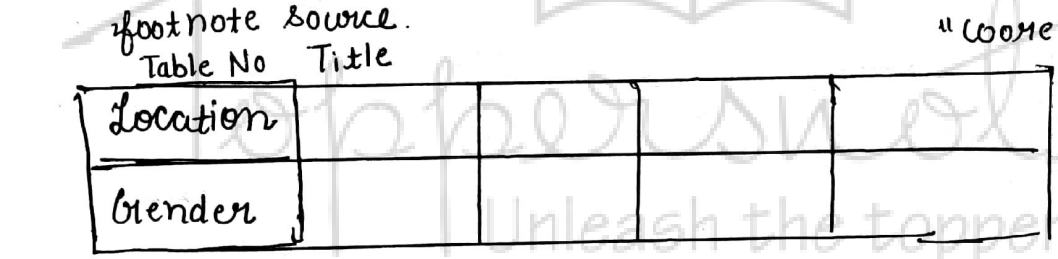
- Individual
  - Raw data
  - Array
- frequency
  - discret
    - Exclusive
    - Inclusive.
  - continuous
  - Commulatics
    - <
    - >

Mode of Presentation of Data :-



- Data is presented with the help of Paragraph or number of paragraph.

- Process of condensing data in table
- Furnish maximum information in minimum possible sacrificing quality.



Row heading stubs.

Body of table.

★ Elements of table :→

1) Table No → upper side, left side.
2) Title → parallel to table No.
3) Date → Anywhere.
4) Stubs → Row heading is called Stubs.
5) Caption → Vertical heading is called Captions.
6) Headnote → Under the title.
7) Body →
8) Unit of Measurement → P- right hand side, upper side.

9.) Source → under the footnote.

10) foot note → by foot note we describe special element

Diagrametic presentation of data.

Dygrametic & Graphical.

Dygrametic	Graphical
(i) Line diagram	(i) Histogram
(ii) Bar diagram	(ii). frequency polygon
(iii) Pie diagram	(iii) Ogive and cummulative freq.

(i) Diagrametic Presentation:-

Diagrametic presentation is a technique of presenting numeric data through pictograms cartograms, Bar Diagrams and Pie diagrams.

→ Advantages of Diagrammetic Presentation:→

(1) Diagrams Are Attractive and Impressive.

. Data presented in the form of diagrams are able to attract the attention of even a common man

(2.) Easy to Remember;-

Diagrams have a great memorizing effect. The picture created in the mind by diagrams last much longer than those created by figures presented through the tabular form.

(3). Diagrams Save time :→

- It presents complex mass data in a simplified manner.
- Data presented in the form of diagrams can be understood by the user very quickly.

(4.) Diagrams simplify data :→

- Diagrams are used to represent a huge mass of complex data in a simplified and intelligible form, which is easy to understand.

(5.) Diagrams are useful in making Comparisons :→

- It becomes easy to compare two sets of data visually by presenting them through diagrams.

(6). More Informative :-

- Diagrams not only depict the characteristics of data but along bring out hidden facts and relations which are not possible from the classified and tabulated Data.

Line diagram :→

In a line diagram, we can represent diff. values using lines of varying length.

→ these lines are either horizontal or vertical.

→ these lines have a uniform gap b/w successful lines.

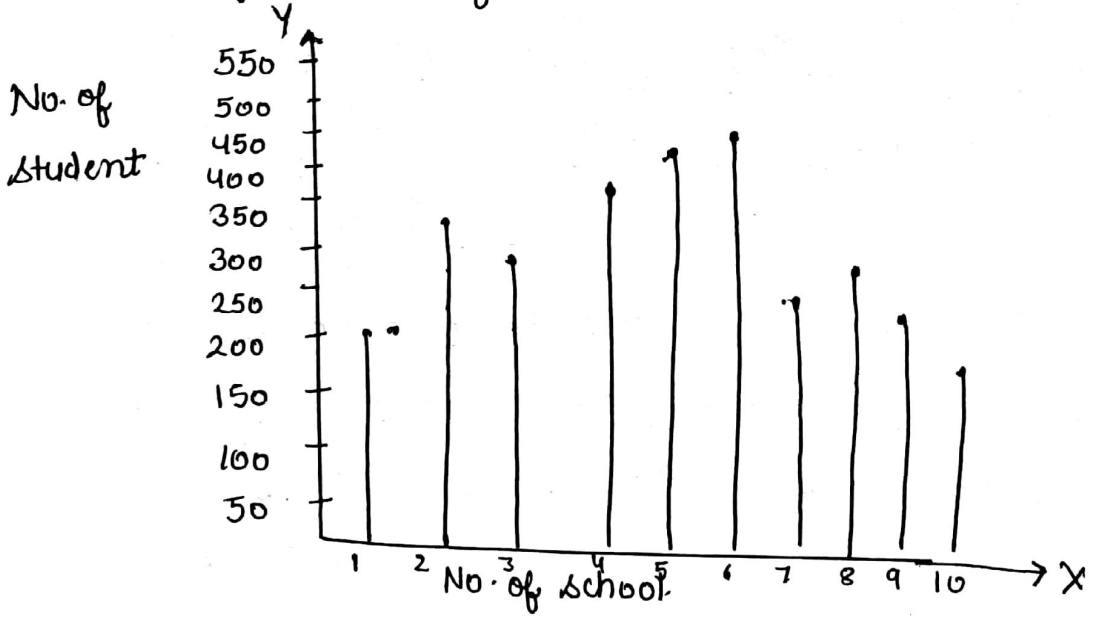
→ We can use this when the number of items is very large.

For Example :-

The no. of student of 10 school in a particular year was recorded as given below. Represent the data by a line diagram.

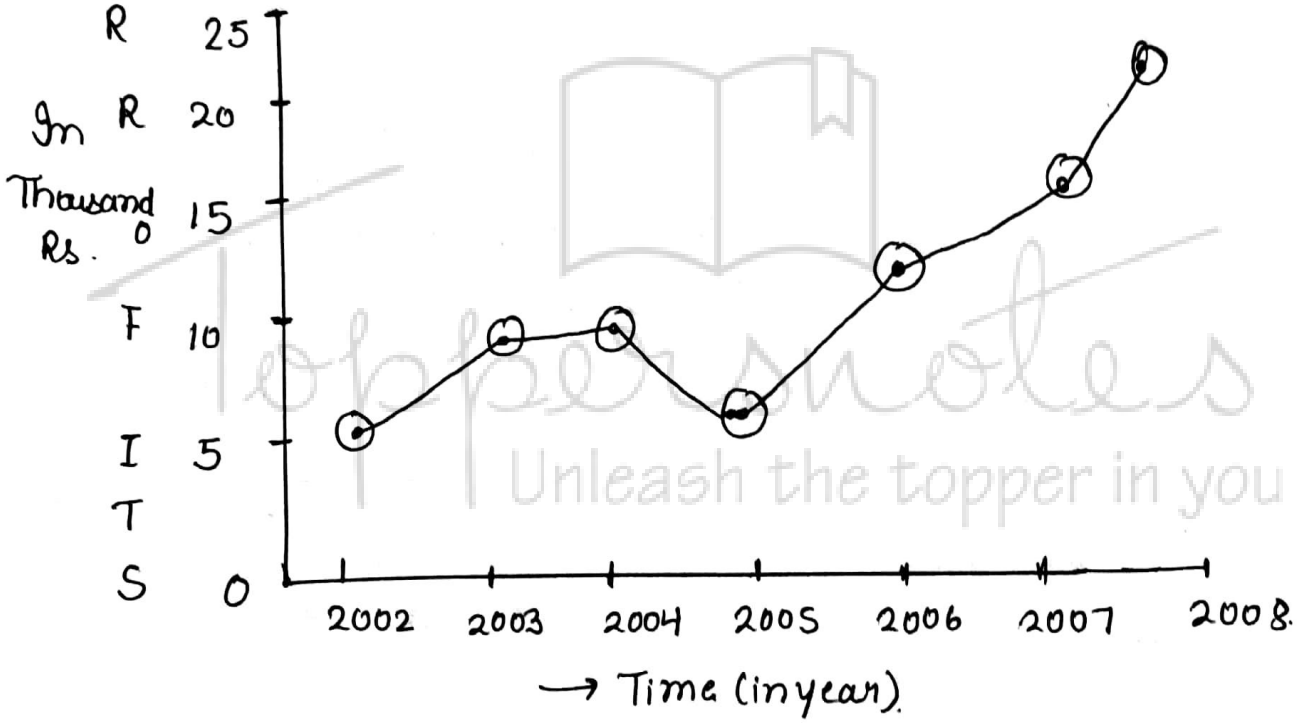
No. of school	1	2	3	4	5	6	7	8	9	10
No. of student	240	350	290	400	420	450	200	300	250	200

The diagram is as follows :-



Line diagram of Income of 10 workers

Example 2:→ The profits in thousand of Rs. of an Industrial factory for 2002, 2003, 2004, 2005, 2006 2007 and 2008 are 5, 8, 9, 6, 12, 15 and 24 respectively. Represent these data using a suitable diagram.



Bar diagram :→

When data is presented in form of bars or rectangles, it is termed to be a bar diagram

Features of a Bar diagram :-

→ The rectangular box in a bar diagram is known as a bar. It represents the value of a variable.

→ These bars can be either Vertically or horizontally arranged.

→ Bars are equidistant from each other.

→ Each bar Originates from a common baseline or a common axis.

→ The width of bars remain same but the height changes, according to the value of a Variables to denote the difference b/w their values.

→ unless they are in a specific Order, the convention is that bars can be arranged in an ascending or descending order.

Types of Bar diagram ⇒

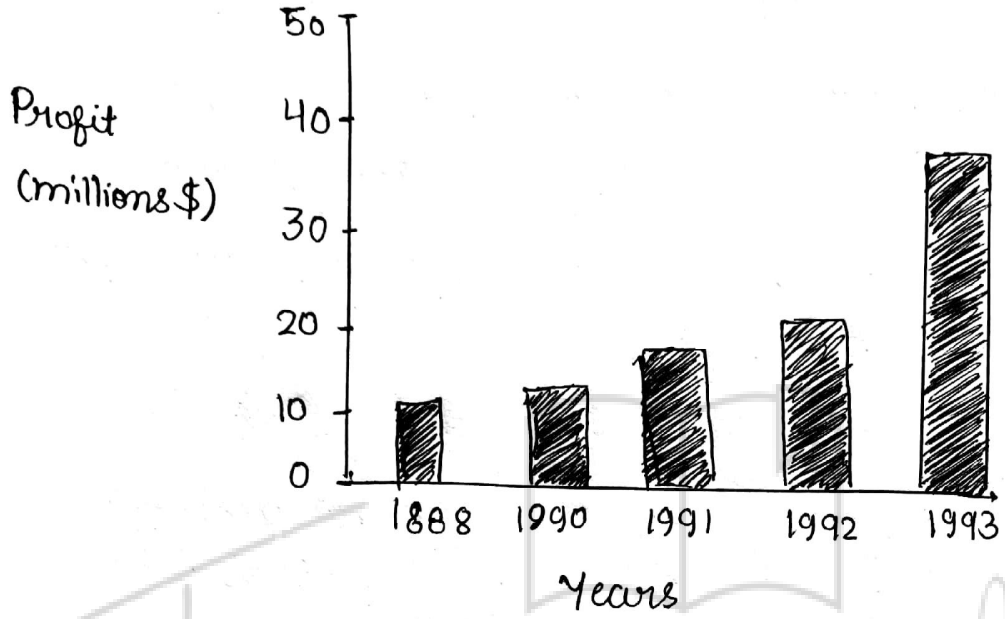
(i) Simple bar diagram.
(ii) Multiple bar diagram
(iii). Sub divided or diffential Bar diagrams

(i). Simple Bar diagram :→

A Simple bar diagram represents only a single set of numerical data.

Example :→

Simple bar chart



② Multiple Bar diagram :-

A multiple bar diagram can represent two or more set of numerical data on the same bar diagram.

Multiple Bar diagram