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INTRODUCTION
STATISTICAL DATA PRESENTATION

Data, in simple language, is the name given to basic facts like names and numbers. Time, dates, weights, prices, number of items bought and sold are some simple examples of data. Questions of data interpretation include questions on tables, bar diagrams, pie charts and line graphs. Handling numbers is not difficult. However, it is important to be clear about the basics. Get them right and everything neatly slots into the places.

The tool of data analysis can help us understand data in an enlightened way. Data analysis is one of the important aspects of almost every competitive examination. Consequently, the success in the examination depends much upon the candidate's performance in questions on Data Interpretation.

Very often, students get confused by just looking at tables, graphs and pie charts. It is important to understand how the data presented in scatterplots is to be interpreted. **To solve questions in this book, you should be prepared to work through this book rather than merely read it**. Perception of graphs needs to be thoroughly understood. Try and study the graphs so that they force you to notice what you never expected to see. Try and solve each question independently without referring to the key. You will find it useful to have paper and pencil in hand. It involves extensive calculations but try and use shortcuts for percentages, averages, ratios and avoid unnecessary calculations. Prime objective here is to enable you to learn the principles and methods of data interpretation.

Four principal methods of statistical data presentation are : (1) Tables, (2) Diagrams, (3) Pie Charts and (4) Graphs. Each method has its advantages and disadvantages. A brief introduction of each method given below will help you in solving questions on them.

Tables :- Tabulation is a common method of presenting statistical data. A table displays detailed numerical information concisely. It is an arrangement of data in rows and columns. Generally, it is easier to process the data in a table having more number of rows than columns. Sometimes, the columns in a table are subdivided to show further breakdown of the data. By and large, the layout of tables is dependent on the information to be presented and the purpose for which it is prepared. Tables can be classified as informative tables, reference tables, summary tables, simple and complex tables.

1) **Informative tables** :- These tables contain systematically arranged data compiled for record and further use. In short, they merely provide a convenient means of compiling data in a form for easy reference.

2) **General or reference tables** :- These usually contain summarised information. They usually do not give averages, ratios or other computed measures.

3) **Text or summary tables** :- These tables are used to assist in the analysis of classified data. They give only the relevant data of the question being discussed. Most of the questions on tables in the examinations are based on these tables. They include ratios, percentages, averages and other computed measures. These tables are interpretative, derivative and analytical in nature and are prepared to present significant aspects of data.

4) **Simple tables** :- They present the number or measurement of a single set of items having the characteristics stated at the head of the column or row which forms the basis of tables.

The following table shows the marks obtained by a student in the first and the second semester examinations in four subjects.

Subjects	1st Semester	2nd Semester
Physics	75	70
Chemistry	60	65
Mathematics	65	55
Social Science	80	85

5) **Complex tables** :- They present the number or measurements of more than one group of items set out in additional columns or rows and the table is often divided into sections. These tables usually show relationship of one set of data to another and are arranged to make comparisons of related facts. The table given below is an example of a complex table :

Number of candidates who appeared and the percentage of candidates who qualified under different disciplines over the years.

Year	Arts		Science		Commerce		Agriculture		Engineering	
	App.	Qual.%	App.	Qual.%	App.	Qual.%	App.	Qual.%	App.	Qual.%
2013	842	29	1928	40	908	21	843	42	579	45
2014	1019	27	2028	38	878	28	719	36	608	38
2015	985	31	2536	42	1156	31	645	41	492	42
2016	1215	28	2113	45	1290	32	720	39	714	55
2017	1429	34	1725	36	1025	24	586	48	801	48
2018	1128	24	1820	39	1416	35	620	35	726	51

App. - appeared
Qual. - qualified

In the examinations questions on tables are usually of the following types :-

(A)   Finding change (increase or decrease).
(B)   Studying the anomalous change in property of items.
(C)   Reading the nature of dependent variables.
(D)   Finding the percentage, ratio, rate, average etc.

Diagrams :- This is one of the most appealing and convincing way of data presentation. It is used to give a pictorial presentation of data. The most important advantage of this is that important characteristics of data are known at a glance. It may not present information as precisely as a table but it gives a quick overall impression of the findings.

Diagrams are broadly divided into the following three categories :-

(A)   Single dimensional or Line diagrams.
(B)   Two dimensional or Area diagrams.
(C)   Three dimensional or Volume diagrams.

Bar diagrams :- A bar is just another name for a thick line. In a bar diagram, the length of the bar represents either the frequency with which the different values of a variable occur or more generally

the value taken by a variable. Bar diagrams are also known as Column Graphs. The thickness or width of the bar is of no consequence. Usually, an uniform gap is left between successive bars. The vertical scale starts at zero because the height of the bar represents the quantum. These bar diagrams are of two types :-

(A)   **Vertical bar diagrams** :- In this type the bars are placed vertically, e.g. - the following bar diagram shows wheat import (in thousand tonnes) in different years.
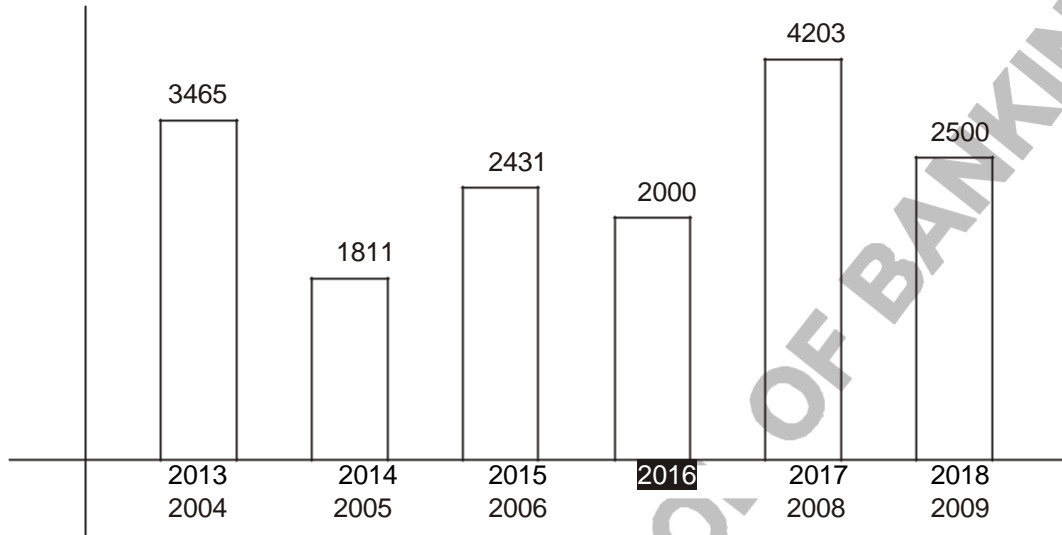
(B)   **Horizontal bar diagrams** :- In this type, the bars are placed horizontally, e.g.- the following bar diagram gives the enrolment in a school on different dates.