Welcome To….

Data Presentation (part -2)

Learning outcomes

❑ Know the appropriate tool for data presentation

❑ Exploring fact from data

Contents

☐ Construction of Frequency Distribution for qualitative data

☐ Graphical presentation of qualitative data

☐ Time series data and Line graph

☐ Uses of Diagrams

Presentation of Tabular Data

A chart can take the shape of either a diagram or a graph. For the sake of clarity we will discuss them under two separate heads:

(i)   Diagrams, and
(ii) Graphs.

General Rule for constructing Diagrams

The following general rules should be observed while constructing diagrams:

(i)   Title
(ii) Proportion between width and height
(iii) Selection of appropriate scale
(iv) Footnotes
(v) Index
(vi) Neatness and cleanliness
(vii) Simplicity.

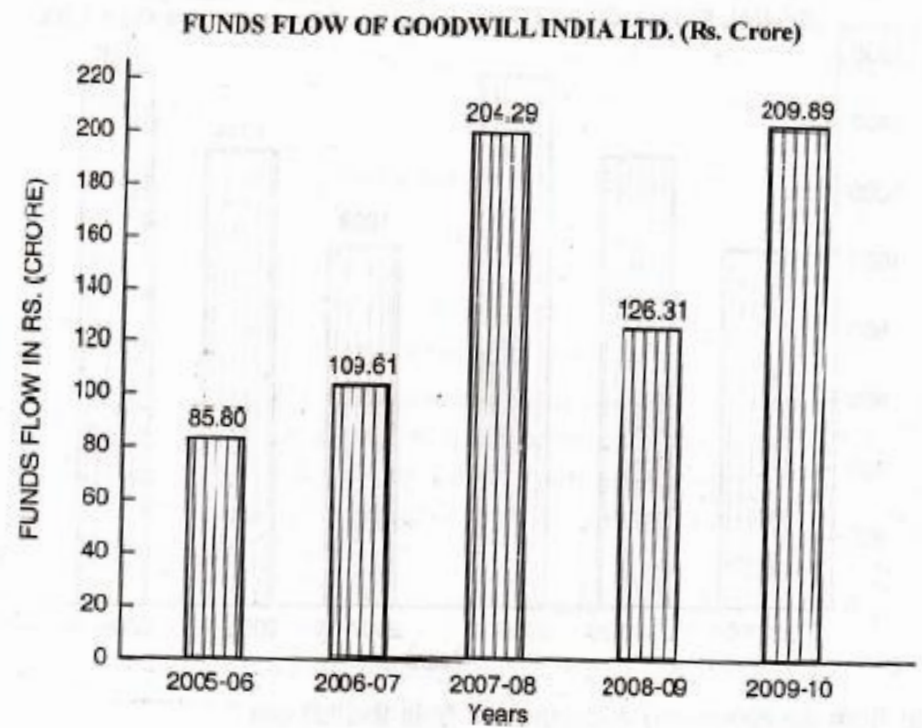# Types of Diagrams

i)   One-dimensional diagrams, e.g., bar diagrams.
ii) Two-dimensional diagrams, e.g., rectangles, squares and circles
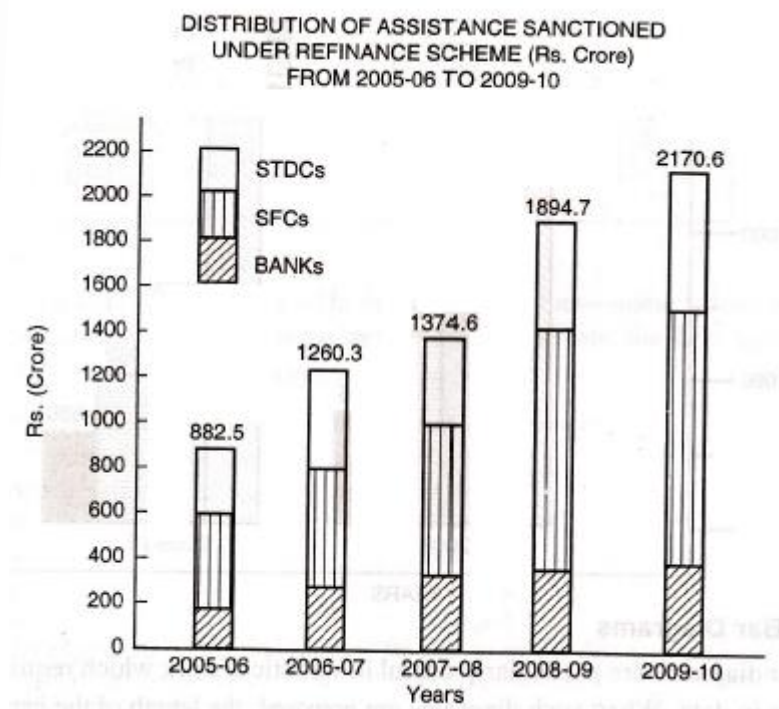iii) Pictograms and cartograms

Types of Bar Diagrams

i)   Simple bar diagrams
ii) Subdivided bar diagrams
iii) Multiple bar diagrams
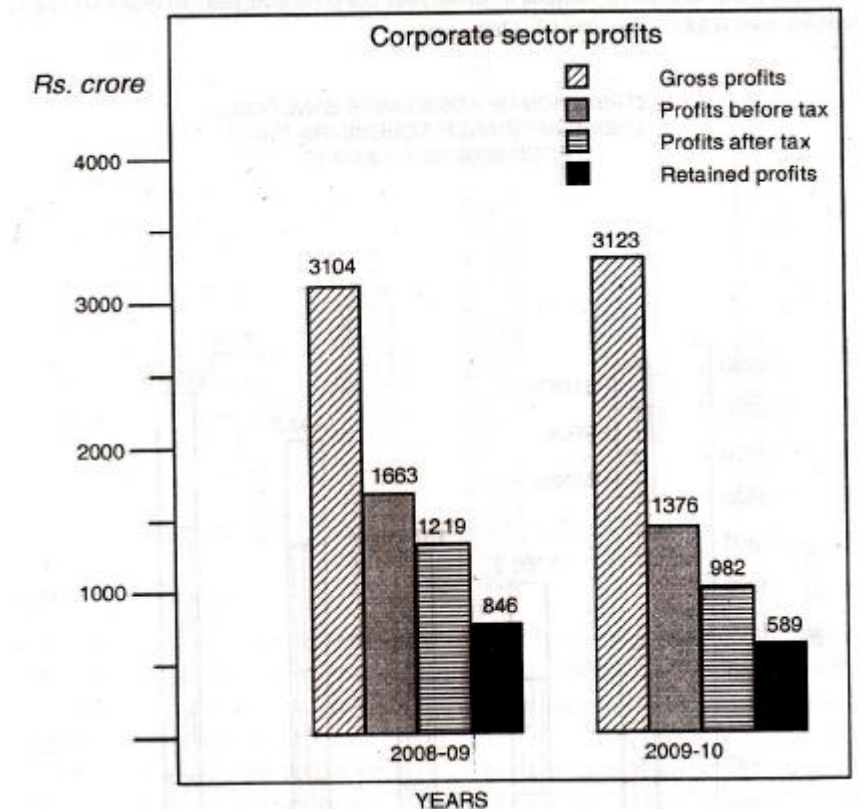iv) Percentage bar diagrams
v)   Deviation bars
vi) Broken bars

FUNDS FLOW OF GOODWILL INDIA LTD. (Rs. Crore)

DISTRIBUTION OF ASSISTANCE SANCTIONED UNDER REFINANCE SCHEME (Rs. Crore) FROM 2005-06 TO 2009-10

Corporate sector profits

Percentage bar diagrams

Deviation bar diagrams

Broken bar diagrams
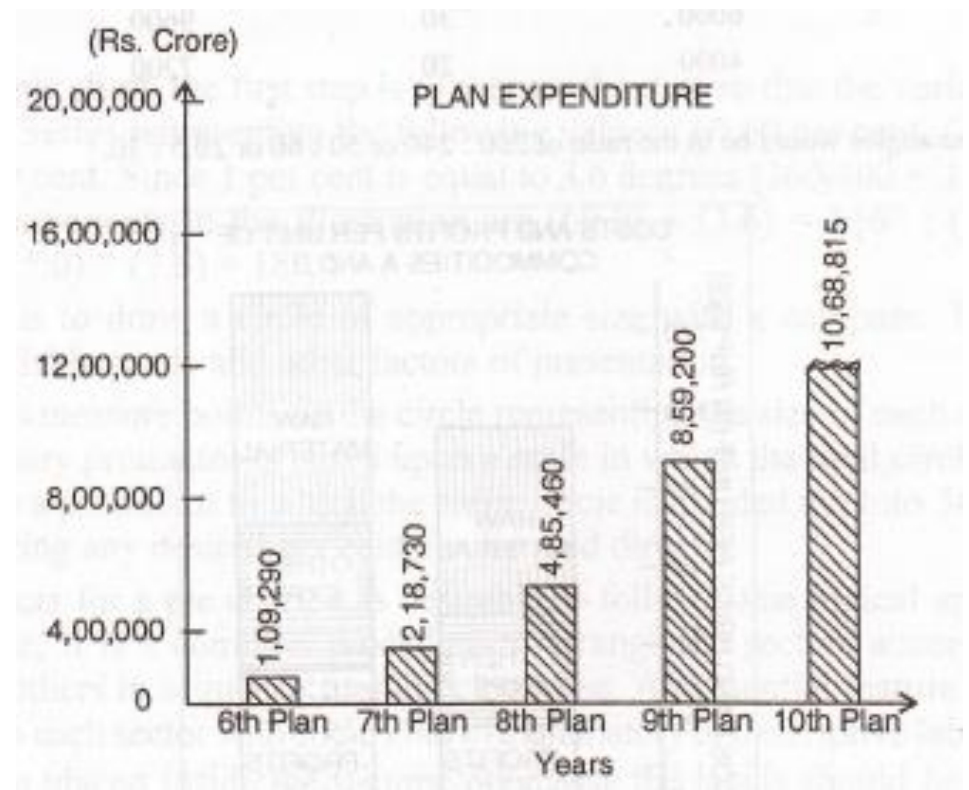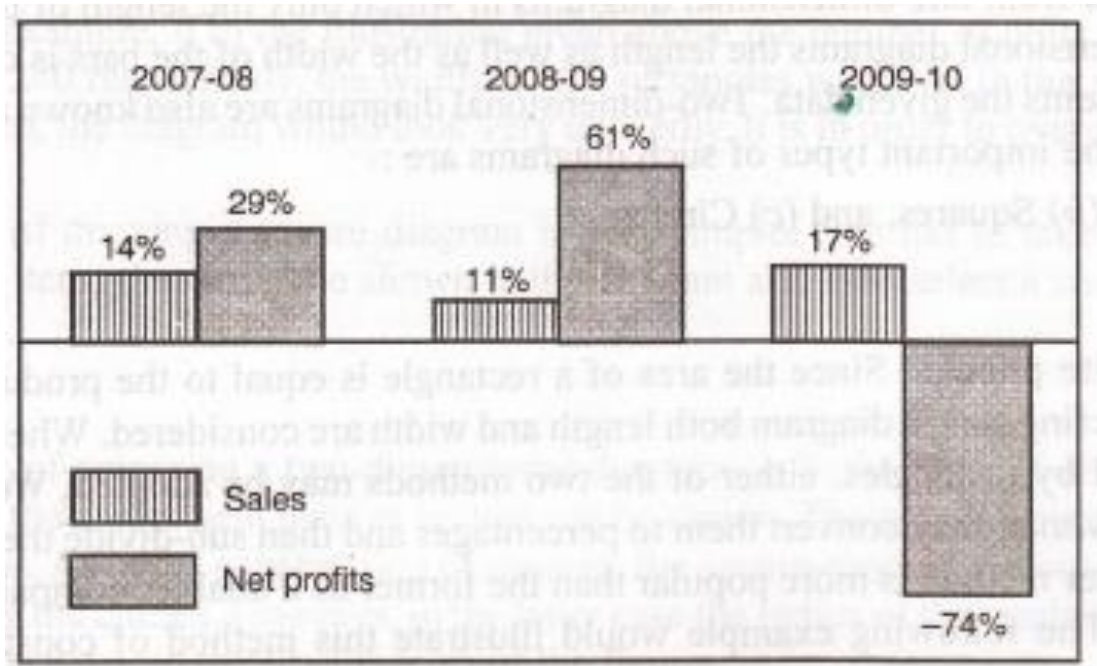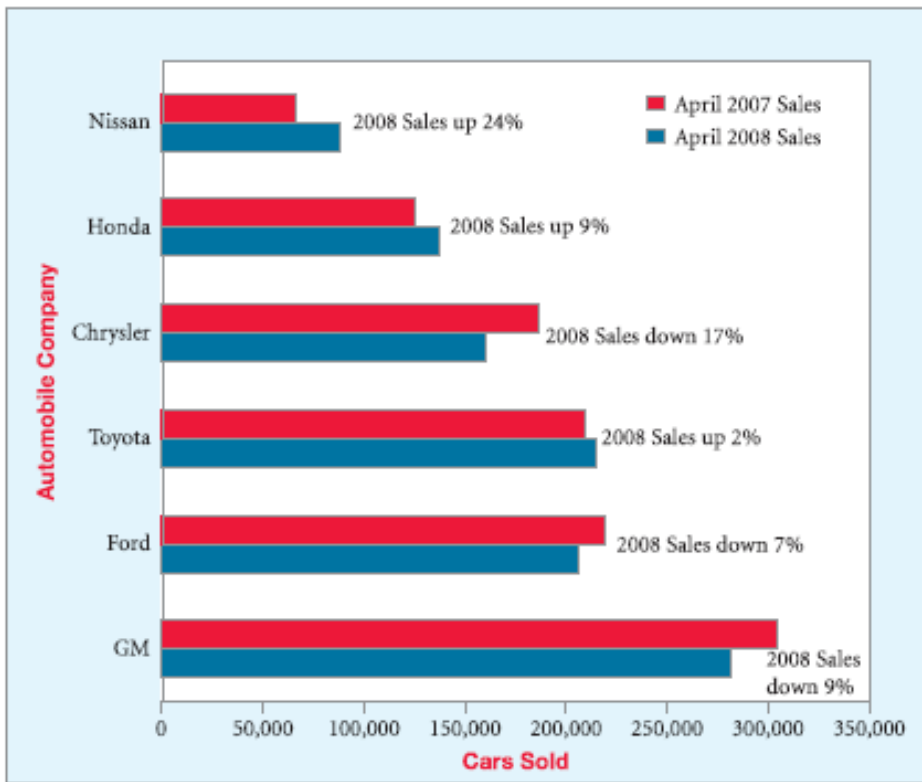
PICTOGRAM

PRODUCTION OF TEA

YEAR		(million kgs)
2006		421
2007		561
2008		587
2009		645
2010		660

Population
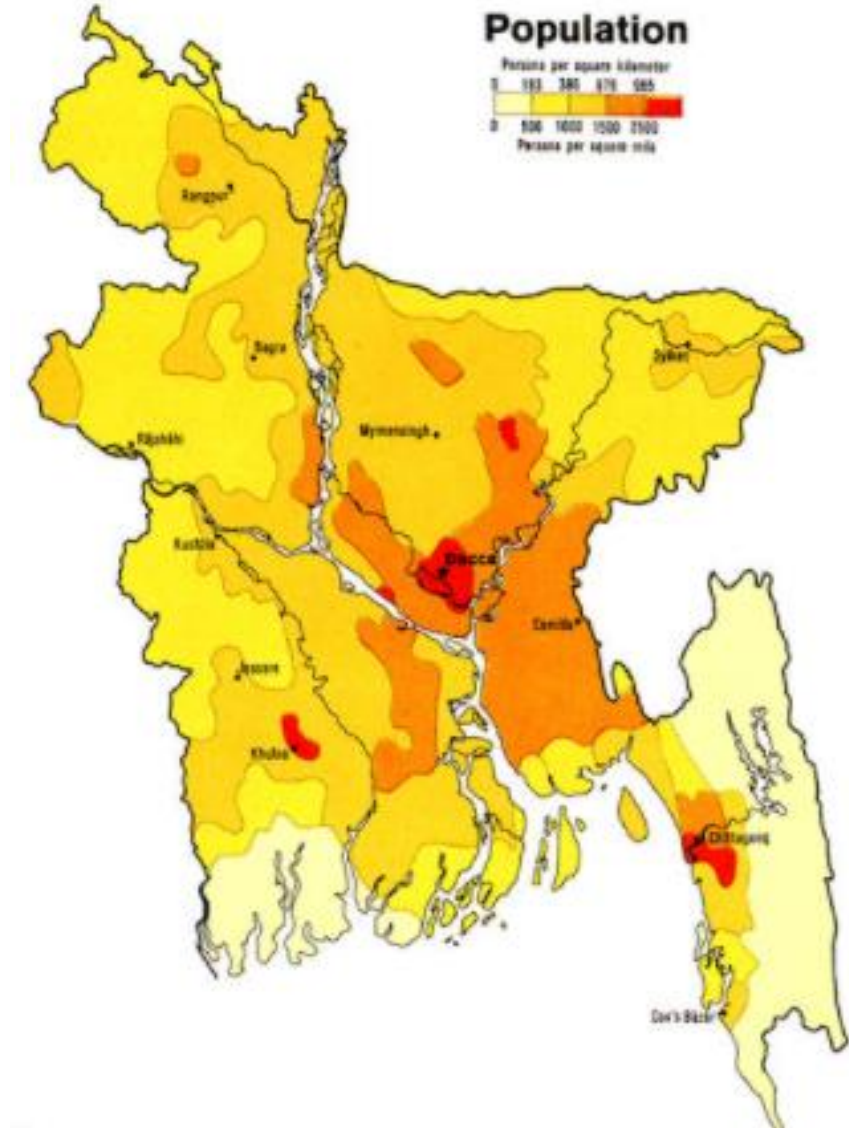
Tabular presentation for qualitative data

The following data give the number of shoes in different sizes sold by a shop on last one week:
L, M, S, M,M, S, L, L, S, M,M S, L, M, M, S, L, S, M, M, M, M, S, L, S, S, S, S, M, M, M, L, S, M.

Construct a frequency distribution table for this qualitative data..

Solution:

There are 34 observations having 3 categories which are 'L'= Large, 'M'= Medium and 'S'=Small.
So the frequency table will be as follows:

Shoe size	No of shoes
S	12
M	15
L	7
Total	**34**

Shoe size	No of shoes
S	12
M	15
L	7
Total	**34**

Steps to draw Bar diagram:

1. Show the categories on the horizontal axis.
2. Show the frequencies on the vertical axis.
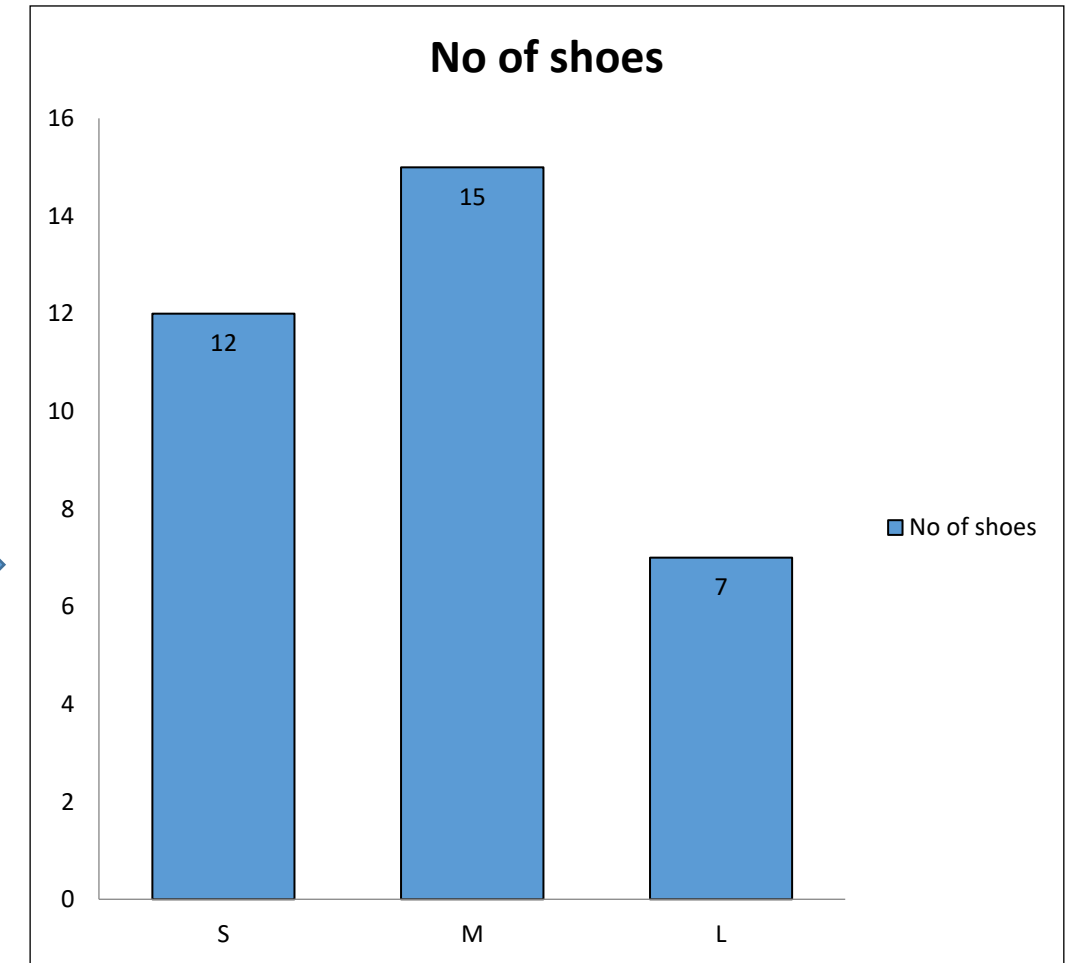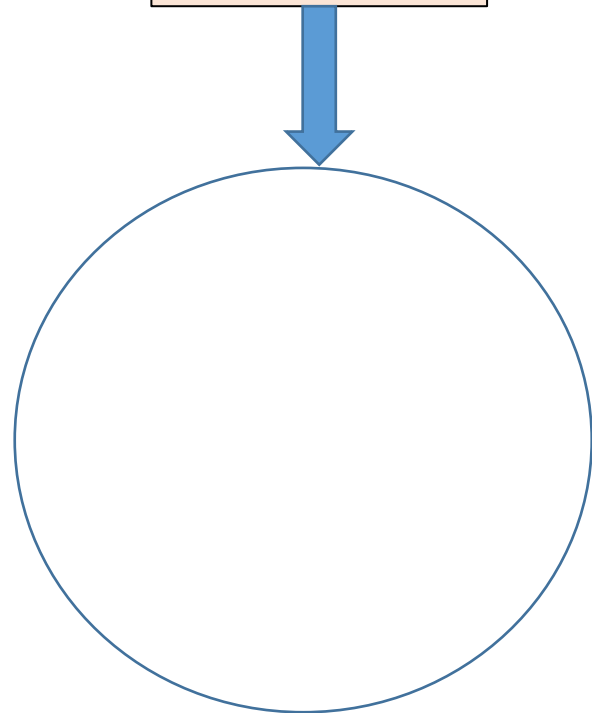

No of shoes

Graphical presentation of frequency distribution for qualitative data

Shoe size	No of shoes	Percentages
S	12	35%
M	15	44%
L	7	21%
Total	34	100

Steps to draw Pie chart:

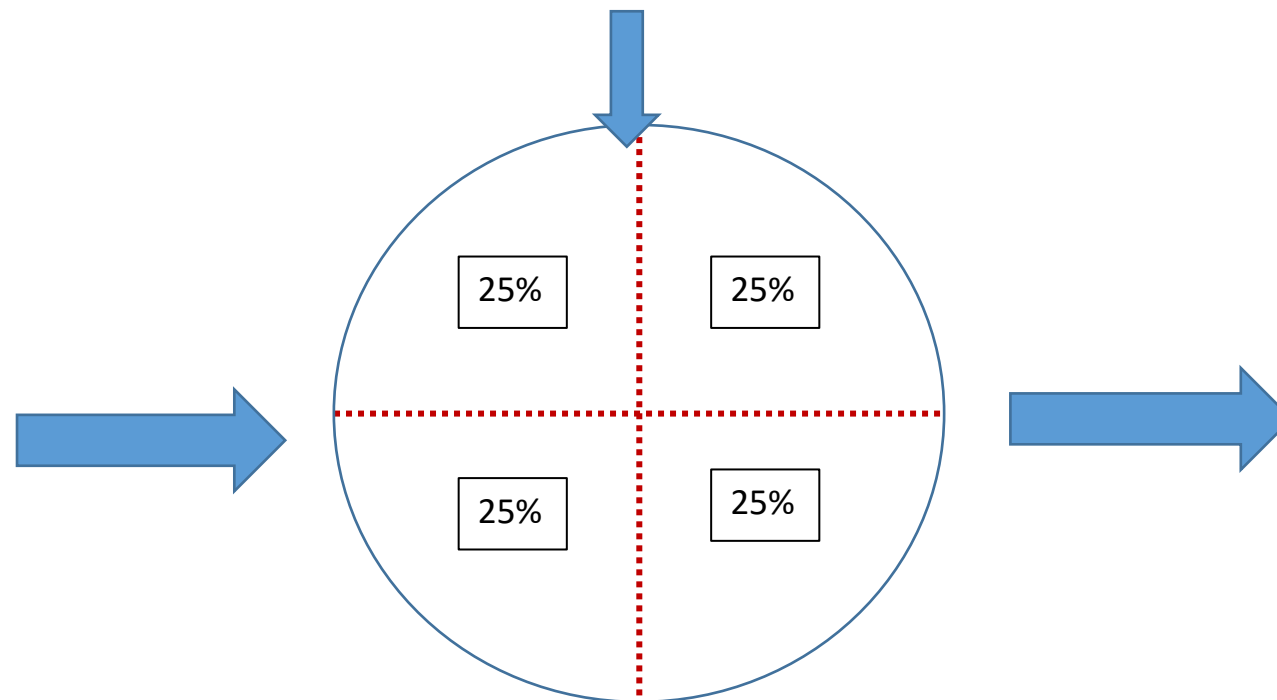**Step 1:**
Draw a circle.

Step 2:
Divide the whole circle into 4 parts by using dash lines so that each portion is of 25%.

25% 25%
25% 25%

Step 3:
Divide the whole circle proportional to the percentage of each of the categories approximately.

No of shoes

■ S ■ M □ L

44%
35%
21%

Example

The table shown here displays the number of crimes investigated by law enforcement officers in U.S. national parks during 1995. Construct a Bar chart for the data.

Type	Number
Homicide	13
Rape	34
Robbery	29
Assault	164

Total number of crime: 234

Figure: Bar Diagram

We need to find percentages for each category and then compute the corresponding sectors so that we divide the circle proportionally.

Snack	Million pounds	percentage	Degree
Potato Chips	11.2	37.33%	≈134°
Tortilla Chips	8.2	27.33%	≈98°
Pretzels	4.3	14.33%	≈41°
Popcorn	3.8	12.67%	≈46°
Snack nuts	2.5	8.33%	≈30°
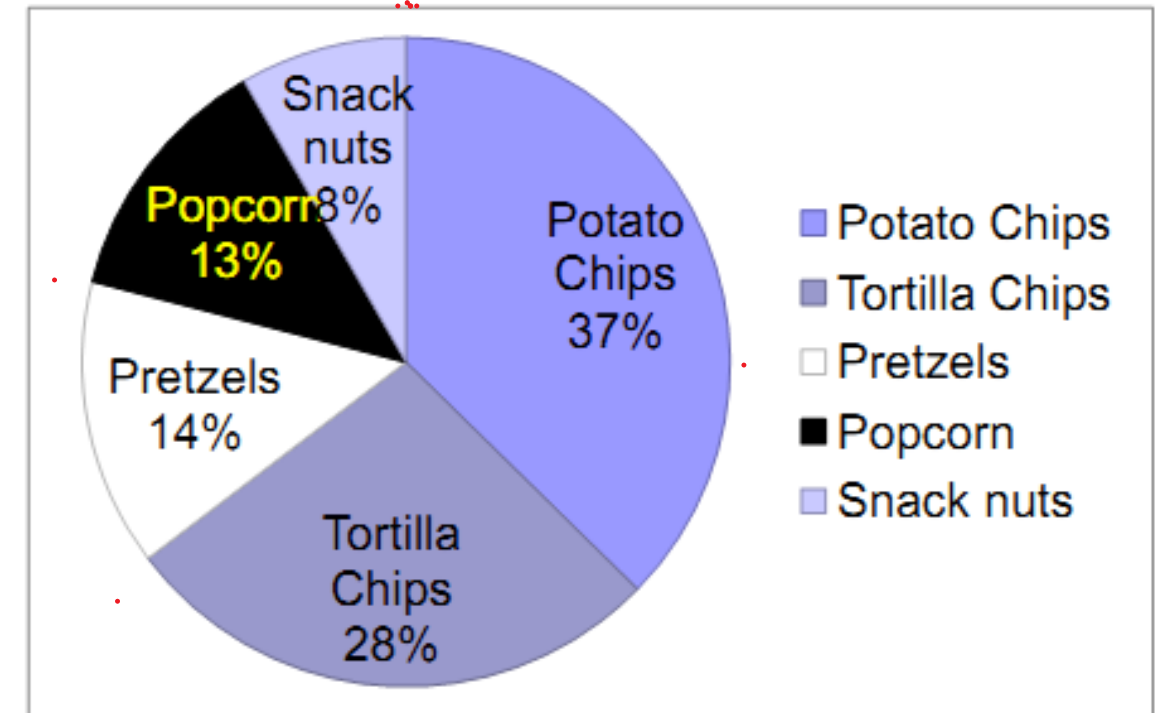
Figure: Pie chart

Degree of proportion=360* Percentage

Time Series Data:

A **time series** data is simply a series of **data** points ordered in time. Most commonly, a time series is a sequence taken at successive equally spaced points in time. Thus it is a sequence of discrete-time data.

Line Graph:

A **line graph** is a type of chart used to show information that changes over time. So Time series data can be drawn by Line Graph.

Year	Males	Females
1992	30.5	32.9
1993	30.8	33.2
1994	31.1	33.5
1995	31.4	33.8
1996	31.6	34.0
1997	31.9	34.3
1998	32.2	34.6
1999	32.5	34.9
2000	32.8	35.2
2001	33.2	35.5
2002	33.5	35.8
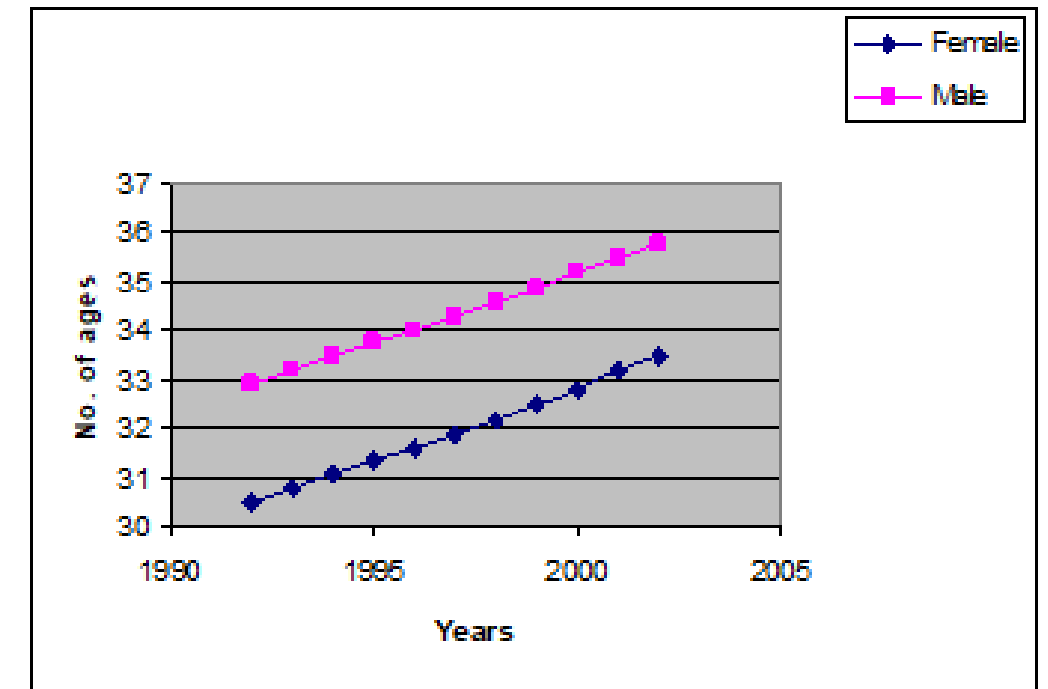
Figure: Line Diagram

Use of Diagrams:

Uses of bar chart:
- It is useful to represent discrete or qualitative data.
- Useful to compare several sets of data.

Uses of histogram:

- Useful for representing continuous data sets.

Uses Pie Chart:

- Shows the portioning of a total into component parts.
- Helps to compare part of a whole at a given point in time.

Uses of Cumulative frequency curve:

- To determine the number or proportion of cases above or below a given   value
- To compare 2 or more frequency distributions.

Uses of line graph:
- For analyzing the changes at different points of time.

Difference between Histogram and bar diagram:

1. A histogram is constructed for a continuous frequency distribution while a bar diagram is usually constructed for categorical/ qualitative data.
2. In a histogram the areas of the rectangles represents the frequencies but in a bar diagram heights of bars represent the frequencies.
3. A histogram is a two dimensional figure, while a bar diagram is a unidimensional figure.
4. The rectangles of a histogram are adjacent whereas the rectangles of a bar diagram may or may not be adjacent.

A country has four political parties say A, B ,C, D. An opinion survey was conducted on 30 people randomly. The data were obtained as follows:

B, C, A, B, A, C, D, A, A, B, C, A, B, C, D, A, A, B, C, A, B, D, A, A, A, D, C, D, B, A.

- Construct a frequency distribution table.
- Which one is the most popular party based on the survey?
- What is the percentage of people liked party B?
- Construct an appropriate graph.

The table given below gives population of Bangladesh in million for the period 1988 to 1993:

Year	1988	1989	1990	1991	1992	1993
Population (in million)	103	105	107	109	111	113

- Construct an appropriate graph and specify the reasons of using it.

SkiLodges.com is test marketing its new website and is interested in how easy its Web page design is to navigate. It randomly selected 200 regular internet users and asked them to perform a search task on the Web page. Each person was asked to rate the relative ease of navigation as poor, good, excellent or awesome. The results are shown in the following table:

Ease of Navigation	Awesome	Excellent	Good	Poor
No of person	102	58	30	10

- What type of measurement level can be used for the variable "Ease of Navigation"?
- Draw a bar chart for the survey results.

- Draw a pie chart for the survey results.

1. Draw the histogram, frequency curve and the ogive curve for the following data pertaining to income distribution for 1500 employees working in a company.

Monthly income (in thousand Rs.)	No. of employees	Monthly income (in thousand Rs.)	No. of Employees
18–20	10	28–30	320
20–22	35	30–32	200
22–24	140	32–34	75
24–26	300	34–36	35
26–28	370	36–38	15

2. Draw a line graph for the following data:

The data below give the yearly profits (in thousand rupees) of two companies A and B:

Year	Company A	Profits (In '000 Rs.) Company B
2005–06	120	90
2006–07	135	95
2007–08	140	108
2008–09	160	120
2009–10	175	130

3. The proprietor of Goodwill Tyres Co. kept a record of the number of car tyres of each brand that were sold during

He arranged the data as follows :

Brand	No. of Tyres Sold
Dunlop	280
Modi	270
Firestone	200
Ceat	190
Goodyear	160
J.K.	100

(a) What kind of a distribution is this?

(b) Construct a bar chart that effectively displays these data.

(c) Construct a pie chart to display these data.

4. The following data reflect the number of equipments in a GYM.

Equipment	Frequency
Golf ball	81
Club head material	66
Shaft material	63
Club head size	63
Shaft length	3
Don't know	24

(a) What kind of a distribution is this?

(b) Construct a bar chart that effectively displays these data.

(c) Construct a pie chart to display these data.

5. A university has the following number of students at each grade level.

Freshman	3,450
Sophomore	3,190
Junior	2,780
Senior	1,980
Graduate	750

a. Construct a bar chart that effectively displays these data.

b. Construct a pie chart to display these data.

6. The following data reflect the percentages of employees with different levels of education:

Education Level	Percentage
Less than high school graduate	18
High school graduate	34
Some college	14
College graduate	30
Graduate degree	4
	Total = 100

a. Develop a pie chart to illustrate these data.

b. Develop a horizontal bar chart to illustrate these data.