Graphs : Graphs are a common method to visually illustrate relationships in the data.

The purpose of the graph: is to show numerical facts in visual form so that they can be understood quickly, easily and clearly.

Advantages:

1- Thus graphs are visual representations of data collected.

2-Data can also be presented in the form of a table; but a graphical presentation is easier to understand.

3- The design and presentation of the graph help the reader or audience interpret the data.

4- There are many different graph types to choose from to ensure that the graph type selected is the most appropriate for the data.

Bar graph: Bar charts are one of the most commonly used types of graph and are used to display and compare the number, frequency or other measure (e.g. mean) for different categories or groups.

1- The x-axis (the horizontal axis) represents the different categories it has no scale.

2- The y-axis (the vertical axis) does have a scale and this indicates the units of measurement.

Data is displayed either horizontally or vertically and allows viewers to compare items, such as amounts, characteristics, times, and frequency.

The length of the bar is proportional to the number of observations for that value or category. The bars are separated by a space. The best use of a bar chart is to compare size or frequency of different values or categories of a variable.

Ex: In a recent test, this many students got these grades:

Grade: **A**   **B**   **C**   **D**

Students: 4   12   10   2

And here is the bar graph:
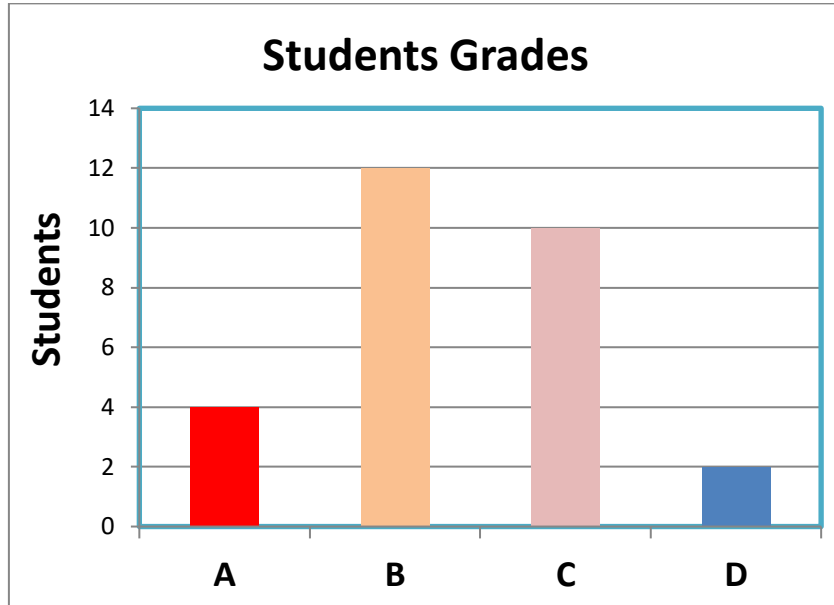
A grouped bar chart: is a special type of bar chart used to illustrate data from the cross-tabulation of two variables which results in multiple subcategories. The subcategories of the variables are individually represented by bars on the same chart and are clustered together into meaningful groups. The best use of a grouped bar chart is to compare size or frequency of subcategories within multiple categories.
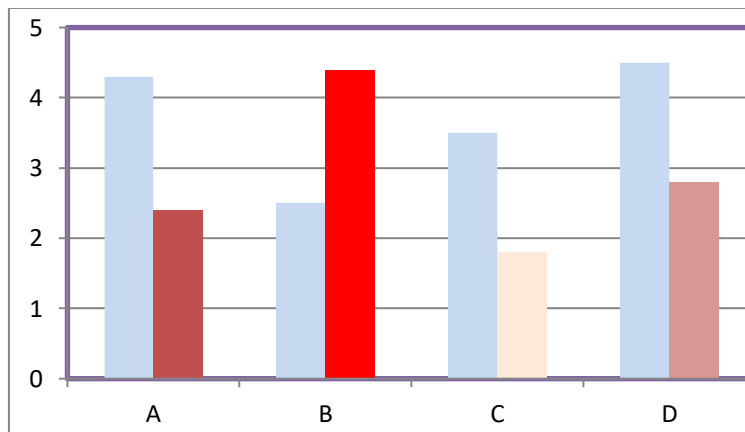
Line graph Line graphs can be used to show how information or data change over time. They have an x-axis (horizontal) and y-axis (vertical). Usually the x-axis shows the time period and the y-axis shows what is being measured.

Elapsed Time (s)	Speed (m s^{-1})
0	0
1	3
2	7
3	12
4	20
5	30
6	45.6
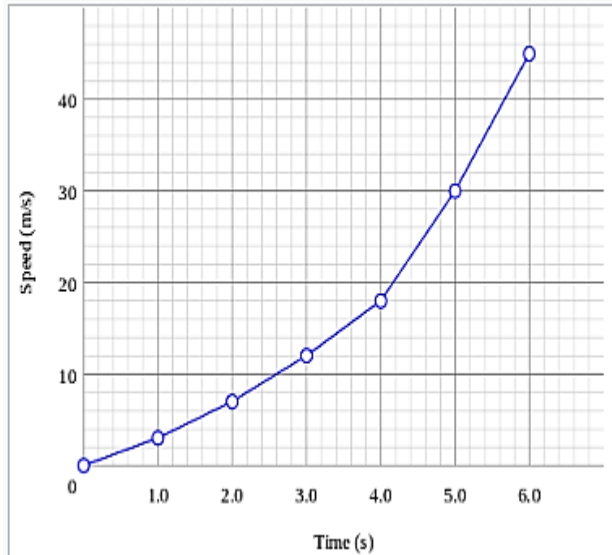
Histogram : also called a **frequency distributions graph**, is a specialized type of bar graph that resembles a column graph, but without any gaps between the columns. It is used to represent data from the measurement of a continuous variable. Individual data points are grouped together in classes to show the frequency of data in each class. The frequency is measured by the area of the column. These can be used to show how a measured category is distributed along a measured variable.

Example

CLASSES	FREQUENCY
12 – 21	8
21 – 30	6
30 – 39	6
39 – 48	6
48 – 57	2
57 – 66	2
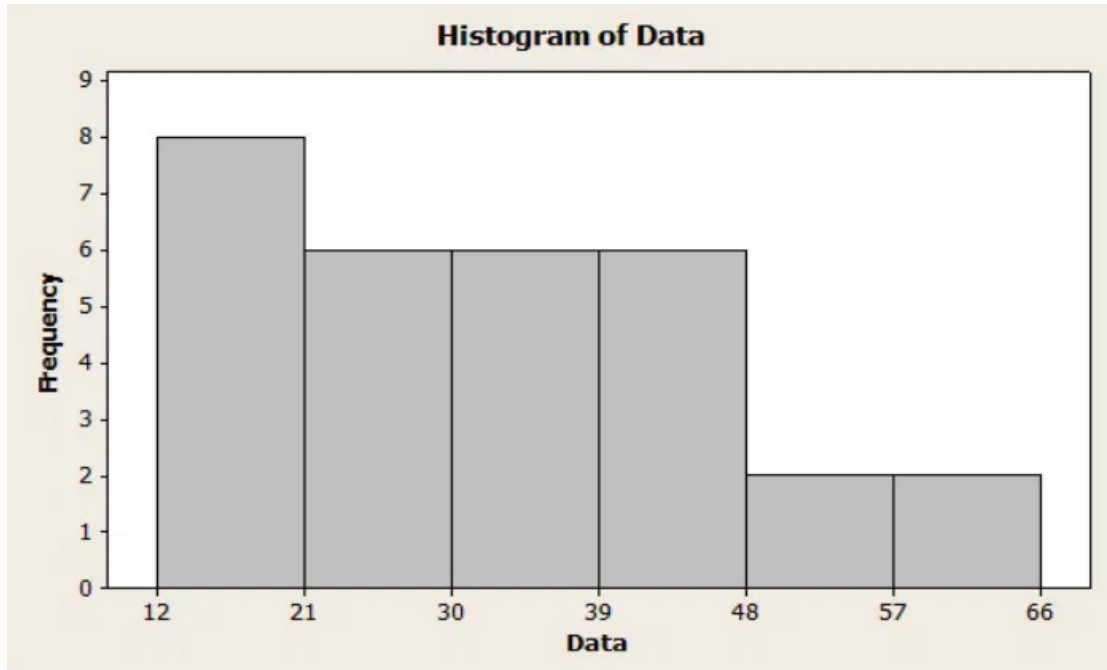
Pie chart A pie chart shows classes or groups of data in proportion to the whole data set. The entire pie represents all the data, while each slice or segment represents a different class or group within the whole. Each slice should show significant variations. The number of categories should be generally limited to between 3 and 10.

Example:

Gender	Frequency
Male	15
Female	25