Presentation Statistical Data:

Data are collected often in raw form. These are then not useable unless summarized. The techniques of presentation in tabular and graphical forms are introduced. Some illustrations provided are real-world examples. Graphical presentations cover bar chart, pie chart, histogram, frequency polygon, pareto chart, frequency curve and line diagram.

Data are a set of facts, and provide a partial picture of reality. Whether data are being collected with a certain purpose or collected data are being utilized, questions regarding what in-formation the data are conveying, how the data can be used, and what must be done to include more useful information must constantly be kept in mind.

Line Graphs:

A line graph is usually meant for showing the frequencies for various values of a variable. Successive points are joined by means of line segments so that a glance at the graph is enough for the reader to understand the distribution of the variable.

The simplest of line graphs is the *single line graph*, so called because it displays information concerning one variable only, in terms of its frequencies.
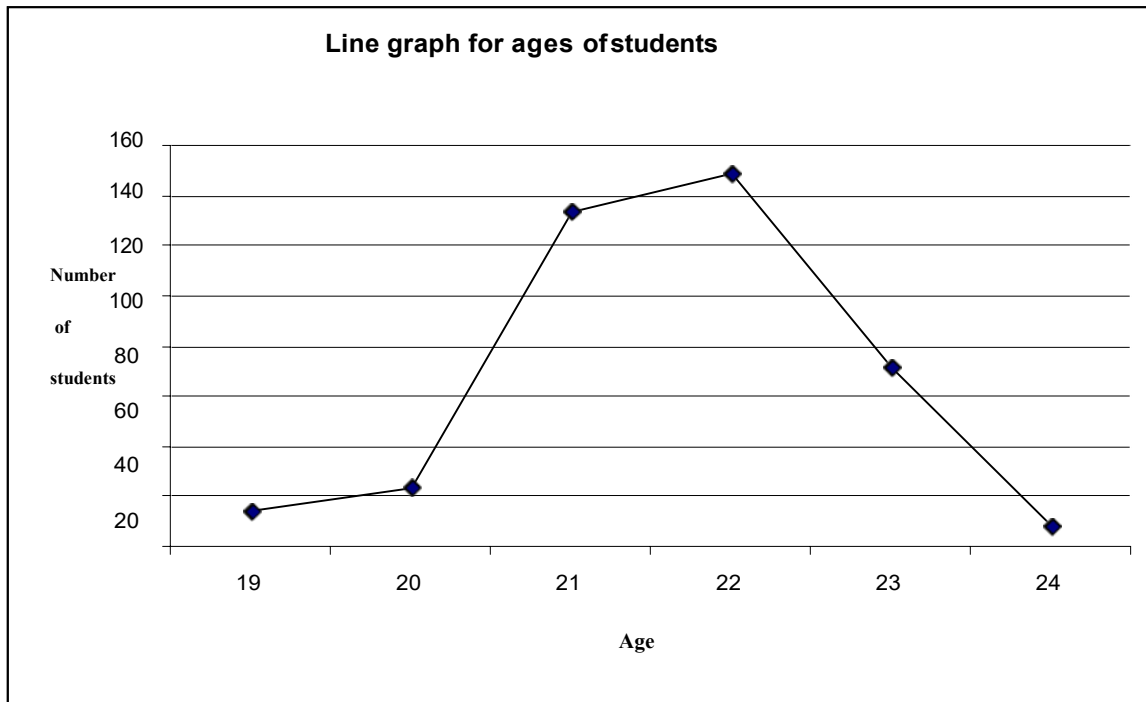
Example

Using the data from the table below,

Age of students	Number of students (frequency)
19	14
20	23
21	134
22	149
23	71
24	8

Total	399

we may generate the following line graph:

Line graph for ages of students

BAR CHART

A bar chart or bar graph is a chart or graph that presents categorical data with rectangular bars with heights or lengths proportional to the values that they represent. The bars can be plotted vertically or horizontally. A vertical bar chart is sometimes called a column chart.
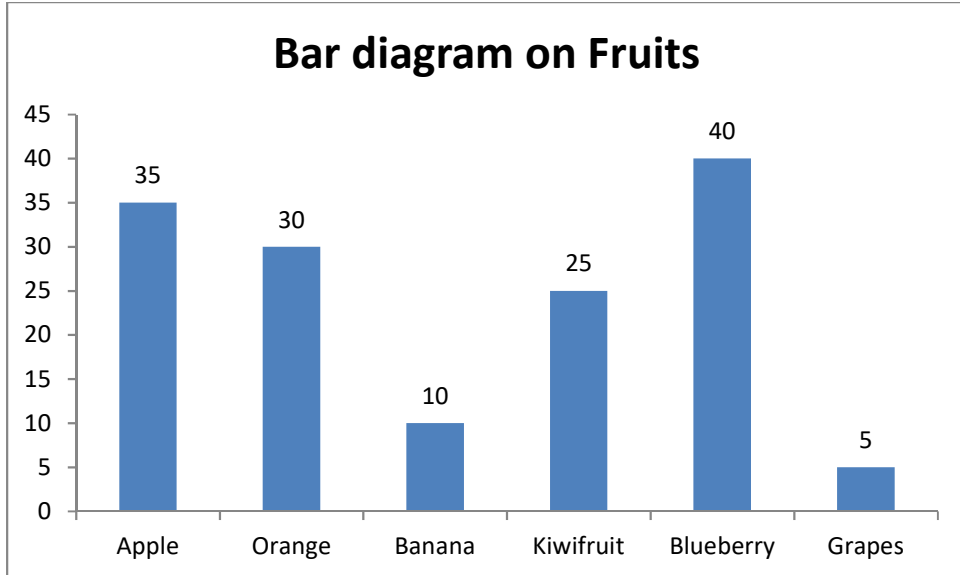
A bar graph shows comparisons among discrete categories. One axis of the chart shows the specific categories being compared, and the other axis represents a measured value

Example

A survey of 145 people asked them "Which is the nicest fruit?":

Fruit:	Apple	Orange	Banana	Kiwifruit	Blueberry	Grapes
People:	35	30	10	25	40	5

And here is the bar graph:

Bar diagram on Fruits

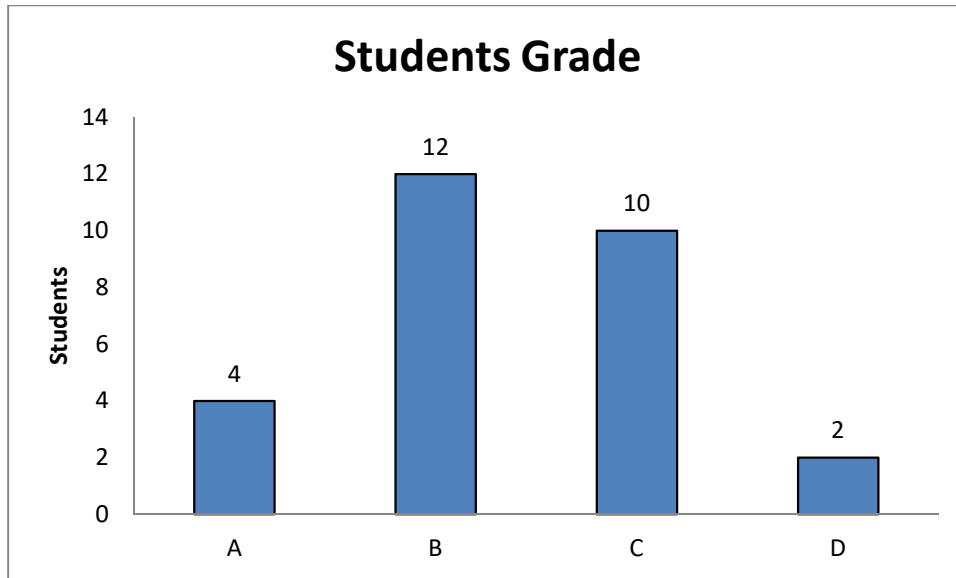| Fruit	Value
Apple	35
Orange	30
Banana	10
Kiwifruit	25
Blueberry	40
Grapes	5

That group of people think Blueberries are the nicest.

Example: Student Grades

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:

Students Grade

MULTIPLE BAR DIAGRAM

 In a multiple bars diagram two or more sets of inter-related data are. The technique of making a simple bar chart is used to draw this diagram but the difference is that we use different shades, colours, or dots to distinguish between different phenomena. Multiple bar chart (also known as grouped or clustered bar charts) are used to present and compare data of sub-categories within the main category. In other words, unlike singe series charts, in this chart type, each category has two or more than two data series.

The main categories as well as sub-categories are plotted on the X-axis with their corresponding values on Y-axis. However, only the main category labels are shown on X-axis and the sub-category labels are usually shown using a legend. The sub-categories are grouped together by their main category and placed side-by-side. They are separated using different bar colours. Multiple bar charts can be plotted vertically or horizontally.

 Example:

Draw a multiple bar chart to represent the imports and exports of Canada (values in $) for the years 1991 to 1995.

Years	Imports	Exports
1991	7930	4260
1992	8850	5225
1993	9780	6150
1994	11720	7340
1995	12150	8145

Simple bar chart showing the imports and exports of Canada from 1991 – 1995.
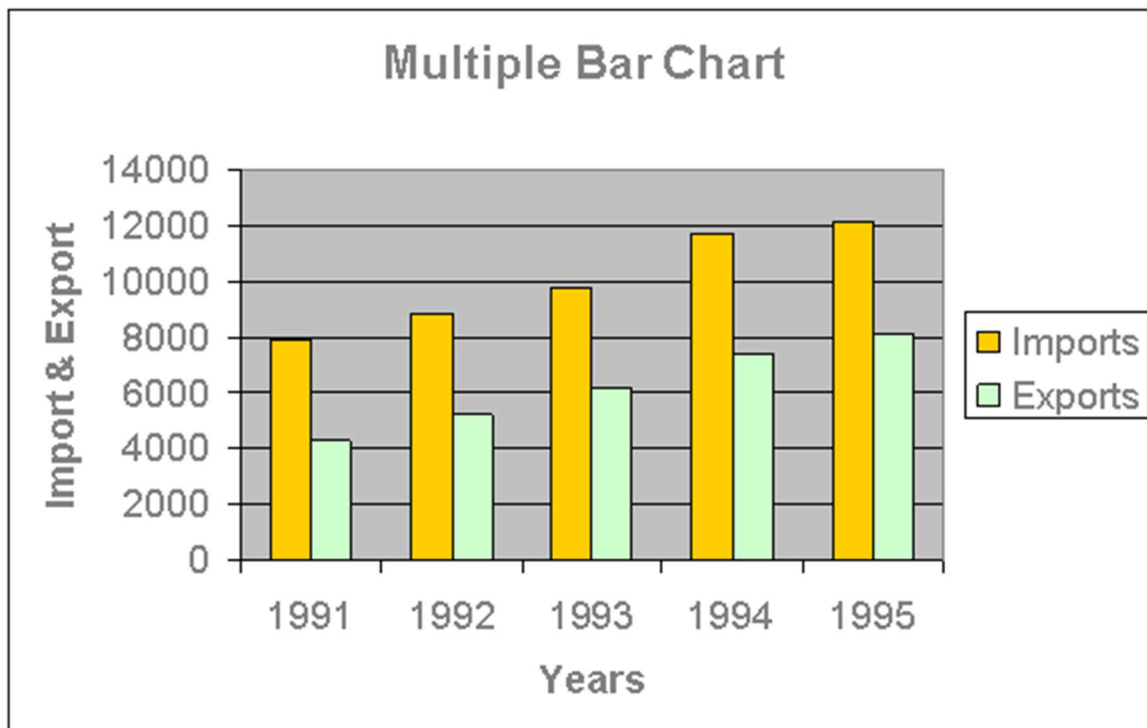
PIE DIAGRAM

A pie chart (or a circle chart) is a circular statistical graphic, which is divided into slices to illustrate numerical proportion. In a pie chart, the arc length of each slice is proportional to

the quantity it represents. While it is named for its resemblance to a [pie](pie) which has been sliced,

Example

Imagine you survey your friends to find the kind of movie they like best:

Table: Favorite Type of Movie

Comedy	Action	Romance	Drama	SciFi
4	5	6	1	4

You can show the data by this Pie Chart:

First, put your data into a table (like above), then add up all the values to get a total:

Table: Favourite Type of Movie					
Comedy	**Action**	**Romance**	**Drama**	**SciFi**	**TOTAL**
4	5	6	1	4	**20**

Next, divide each value by the total and multiply by 100 to get a percent:

Comedy	Action	Romance	Drama	SciFi	TOTAL
4	5	6	1	4	**20**
4/20 = 20%	5/20 = 25%	6/20 = 30%	1/20 = 5%	4/20 = 20%	**100%**

Now to figure out how many degrees for each "pie slice" (correctly called a sector).

A Full Circle has **360 degrees**, so we do this calculation:

Comedy	Action	Romance	Drama	SciFi	TOTAL
4	5	6	1	4	**20**

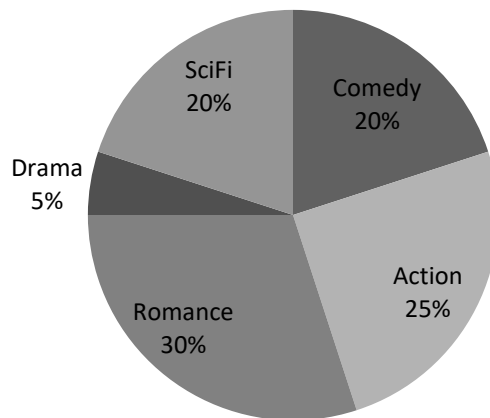| 20%	25%	30%	5%	20%	100%
4/20 × 360° = 72°	5/20 × 360° = 90°	6/20 × 360° = 108°	1/20 × 360° = 18°	4/20 × 360° = 72°	360°
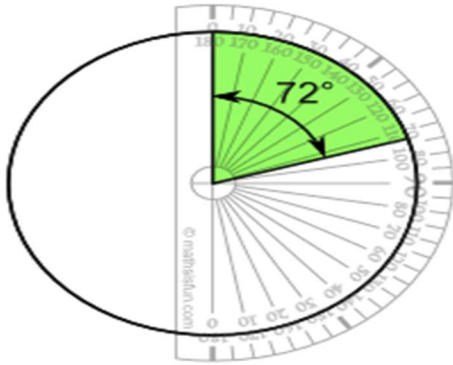
Now you are ready to start drawing!

Draw a circle.

Then use your protractor to measure the degrees of each sector.Here I show the first sector ...

Finish up by colouring each sector and giving it a label like "**Comedy: 4 (20%)**", etc.

It is a really good way to show relative sizes: it is easy to see which movie types are most liked, and which are least liked, at a glance.

∗∗∗∗∗∗∗∗∗∗∗∗∗∗∗∗∗∗∗∗∗