3

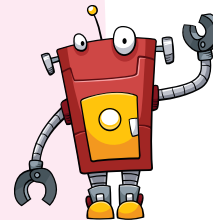# Creating Charts in MS Excel

Learning in this chapter

- Charts and their significance
- Components of a chart
- Types of chart
- Creating a chart
- Modifying the chart
- Layout tab commands
- Formatting the chart
- Goal seek

CHARTS AND THEIR SIGNIFICANCE

A chart is a graphical representation of data. Charts make it a lot more easier for us to analyze and interpret data. Comparisons and trends can also be shown at a glance with the help of charts.

Observe the following figures to have a glimpse of the usefulness of charts.
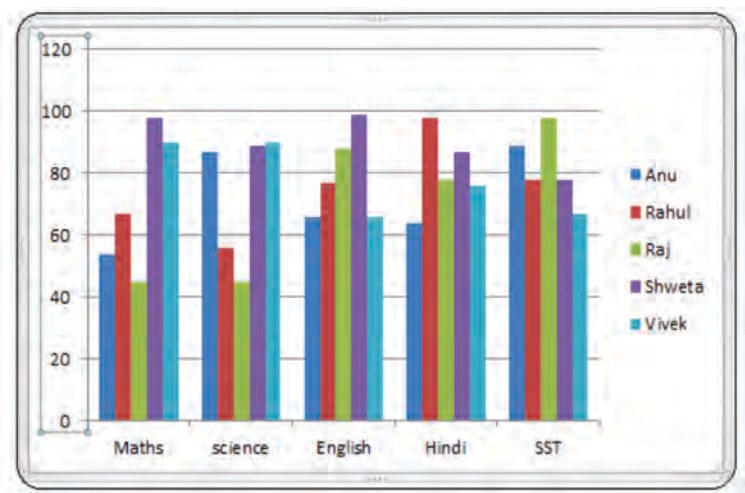

Data performance of some students

Chart showing performance data graphically

In first Fig, you, have to go through the entire data to compare the performance of students and find out who has done the best and worst of them all.

In second, just by looking at the chart, you can compare the performance of the students and instantly know who put up the best performance.

There are many advantages of charts. Some of the advantages are :

- Charts present data and information in an attractive manner.
- Charts present data and information in a compact manner.
- Charts are easier to understand and compare.
- Charts have a long lasting effect on the mind than a simple data statement.

COMPONENTS OF A CHART

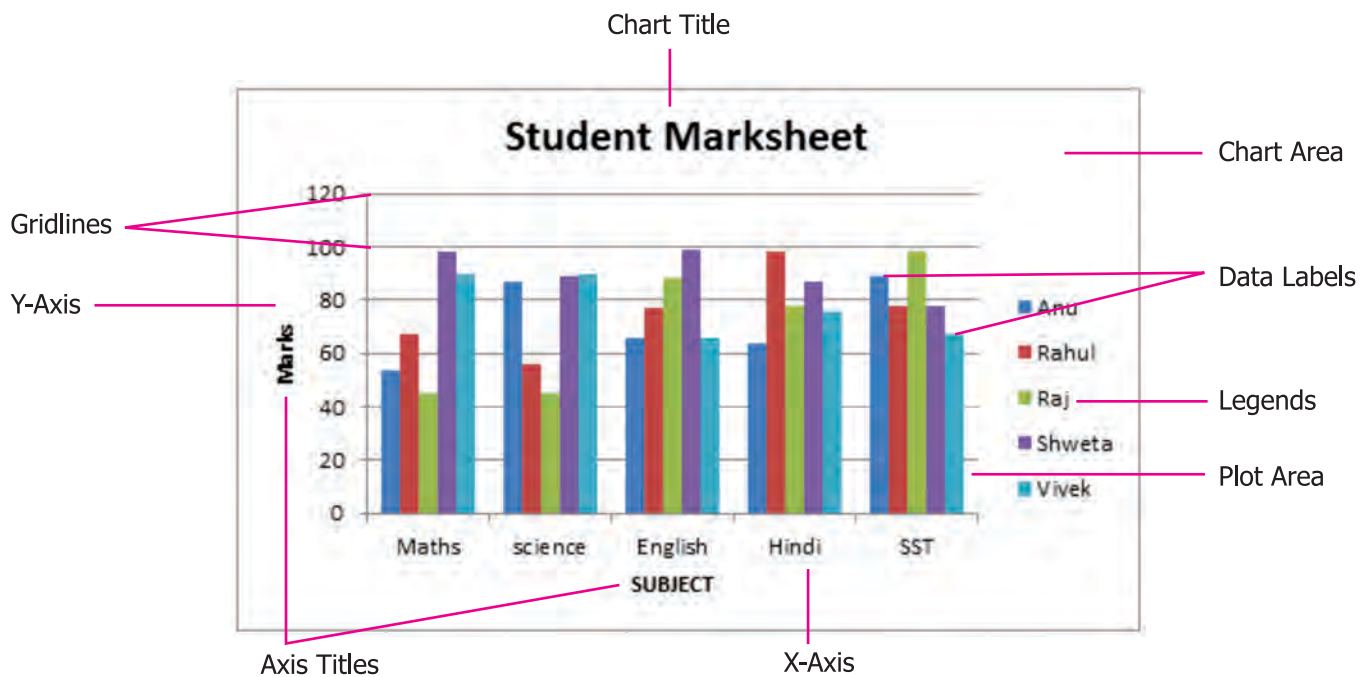The various components of a chart are shown in the given figure :

Chart Title : Chart title is generally placed at the top of a chart. It helps a user to know the purpose of a chart.

Chart Area : The chart area includes all objects and elements in a chart.

Plot Area : The plot area is the part of the chart area where your data is actually plotted. The plot are of a chart is bounded by two axis (x-axis and y-axis) in a 2-D chart. In a 3-D chart the plot area is bounded by walls (vertical areas) and floor (base area).

X-Axis: The x-axis is the horizontal axis that bounds the plot area of a chart. It is generally used to display data categories and therefore also known as the category axis.

Y-Axis: The y-axis is the vertical axis that bounds the plot area of a chart. The y-axis is generally used for showing data values and therefore also known as the value axis.

Axis Titles : The axis titles are the titles given to the x and y axis of a 2-D chart and the x, y and z axis of a 3-D chart.

Data Series : A data series is a set of values on the worksheet that you want to plot in the form of a chart. Each data series is given a unique colour or pattern in the chart that makes it easier to distinguish between them visually.

Legends: A legend is a key that identifies a data series. It describes a data series represented in a particular colour on the chart.

Data Labels : The data label is a text or label that provides additional information about a data marker (part of a chart that shows a particular data item of a data series).

Gridlines : The gridlines are the horizontal and vertical lines drawn on the plot area. The gridlines make it easy for a person to read the chart. You can, however, hide the gridlines, if you so desire.

DIFFERENT TYPES OF CHARTS

Excel provides us with a large variety of charts to represent data in a number of ways. Let us learn about some common types of charts that are frequently created in MS Excel.
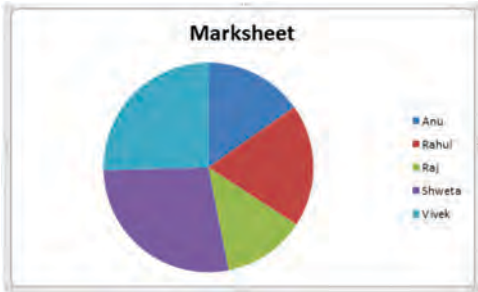
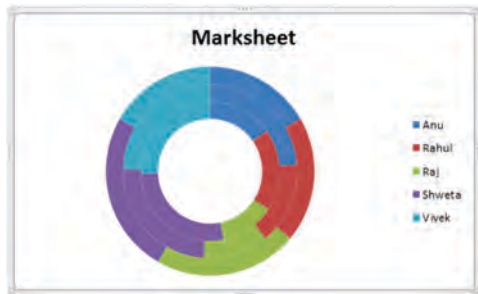| Chart Type	Its Description
COLUMN	A Column chart is a commonly used chart type to display in the form of vertical bars. A column chart shows data changes over a period of time. It is ideal when you want to compare data items from a single category of data. Categories are shown along the x-axis and values along the y-axis.
BAR	Like a column chart, a Bar chart also shows comparisons among individual items. However, in a bar chart, categories are shown along the y-axis and values along the x-axis.
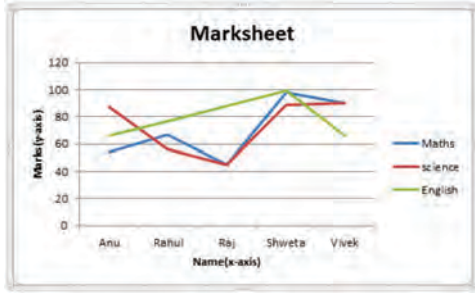
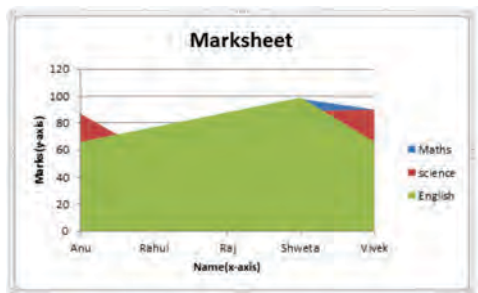|		
LINE		A Line chart shows how data changes over a period of time. In a line chart, each data item is represented by a dot called a data marker.
PIE		A Pie chart represents the distribution or proportion of each data item over a total value (represented by the whole circle or pie). This chart is used for showing data from one data series only.
DOUGHNUT		A Doughnut chart shows the relationship of parts to a whole. It is like a pie chart but can plot more than one data series.
AREA		An Area chart shows the magnitude of change in data over a period of time. It is similar to the line chart except that the area below the plotted line is filled to indicate magnitude.

Activity

**State whether these statements are 'True' or 'False':**

1. The horizontal axis is also called the x-axis or the category axis. _____

2. Legends are data values that you want to plot in the form of a graph. _____

3. The chart area is a part of the plot area of a chart. _____

4. The Area chart shows the magnitude of change in data over a period of time. _____

CREATING A CHART

Creating a chart is very easy in MS Excel. The Insert tab contains all the options that help us to create and modify charts. The steps to create a chart are as follows:

1. Select the data that you want to plot in chart including the headings.
2. Click on the Insert tab. In the Charts group, click on a desired chart category button (Column, Line, Pie, Bar and so on).
3. From the drop down list that appears select the desired chart type.
    .... The chart will appear in the worksheet.
4. As the chart gets inserted, the Chart Tools category will appear showing three contextual tabs- Design tab, Layout tab and format tab.
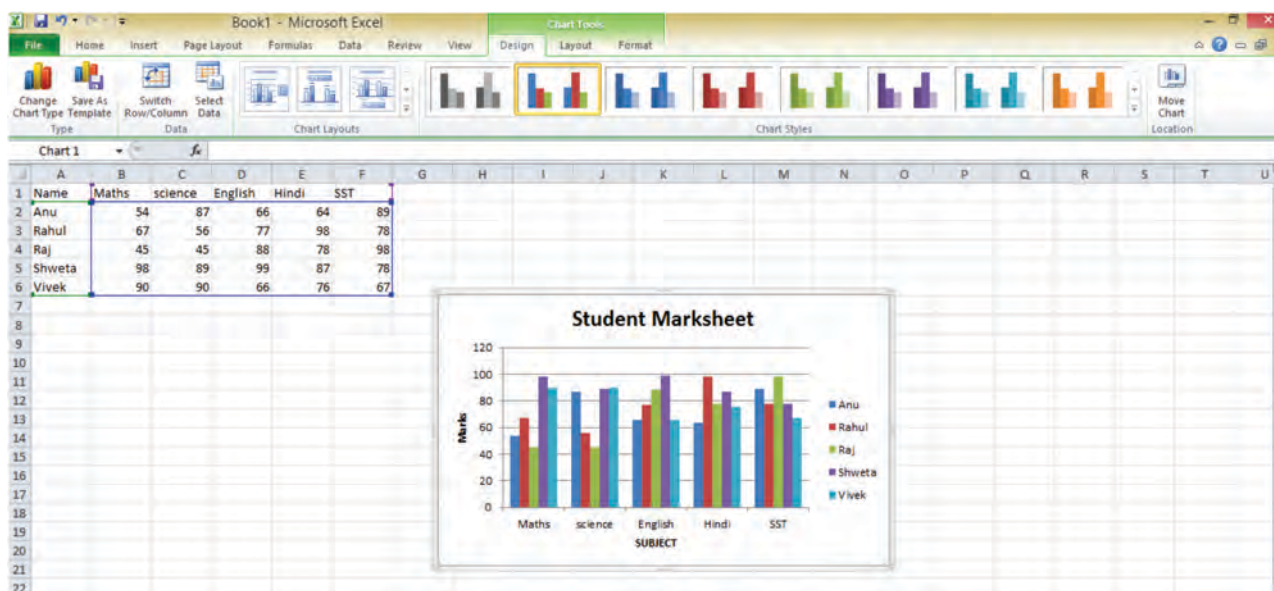

Column Chart inserted in the worksheet

5. Click on the Design tab.
6. From the Chart Layout group. Select a layout for your chart. (We have selected Layout I from the group.
7. From the Chart Style group select a style for the chart.
8. Move the chart manually anywhere in the worksheet by dragging it with the mouse.
9. Resize the chart manually by dragging if from any of the eight resizing handles. (Dragging from corner handles will resize the chart proportionally).
10. To move the chart to another worksheet or to put it on a separate chart sheet, click the Move Chart button in the Location group. The Move Chart dialog box opens.
     a. To create a new chart sheet select the New Sheet option button and enter a name for the chart sheet.
     b. To move the chart to another worksheet, select the Object in option button and then select the worksheet from the drop down menu.

11. Click anywhere outside the chart to finish.
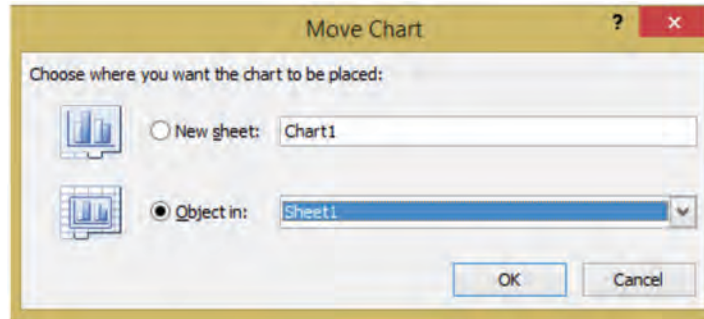
Move Chart Dialog Box

MODIFYING THE CHART

After inserting the chart we can edit and format its various elements as per our requirement. The options given in the Design, Layout and Format tabs (under the Chart Tools category) help us to modify the chart and its elements.

Changing the Chart Type

We can easily change the chart from one type to another, like from a line chart to a Column chart. Follow these steps to change the chart type :

1. Click anywhere in the chart to select it.
2. Click on Design tab under Chart Tools.
3. Click on the Change Chart Type button.
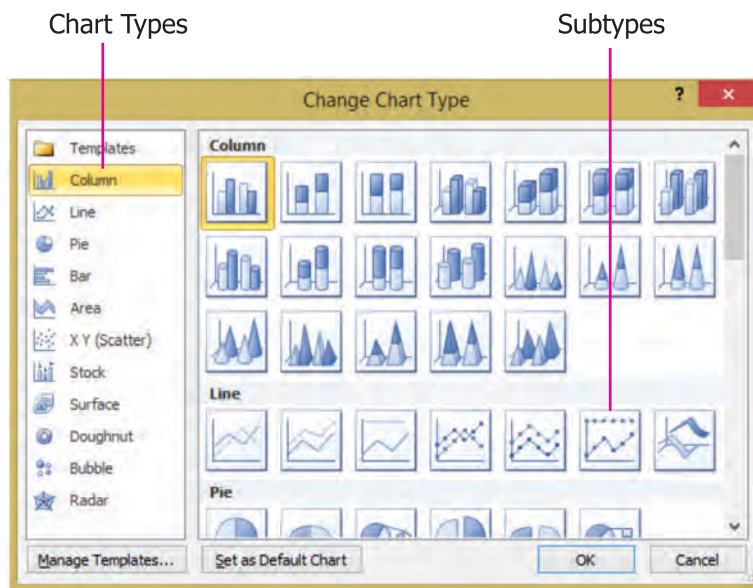
Change Chart Type Dialog Box

... The Change Chart Type dialog box opens.

4. In the left pane, select the Chart type and in the right pane, select the Chart subtype.
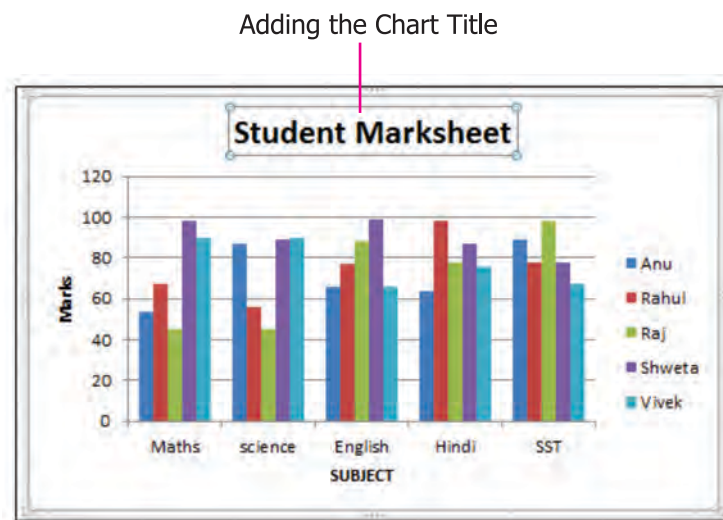5. Click on the OK button.

... The chart type will change.

Adding the Chart Title

A chart title gives an idea about the topic of the chart. We can add a title to our Excel chart to make it more meaningful.

1. Select the chart to which you want to add the chart title.
2. Under the Chart Tools click on the Layout tab.
3. Click on the Chart Title button.

Adding the Chart Title

.... A drop-down menu appears displaying options that specify how the chart title will be displayed on the chart.

4. Select an option (Above Chart in this case).

... A text box containing the text "Chart Title" Will be added to the chart.

5. Type to replace the text in the text box with the text of the chart title.

Adding the Axis Title

Adding an Axis title to the chart helps the user to know what each axis represent. The axis title can be added to both the horizontal axis (X-axis) and the vertical axis (Y-axis) of the chart. Follow these steps to add the axis title in chart.

1. Click on an empty area of the chart to select it.
2. Click on the Layout tab under Chart Tools category.
3. Click on the Axis Titles button.

Adding Title to X-axis

.... A drop-down menu shows two options.

   a. Primary Horizontal Axis Title for adding a horizontal axis title.

   b. Primary Vertical Axis Title for adding a vertical axis title.

4. Point to the required option and select the Title Below Axis option from the submenu.

   ... A text box containing the text "Axis Title" will be added below the axis.

5. Replace the text in the text box with the text of the axis.

Remember

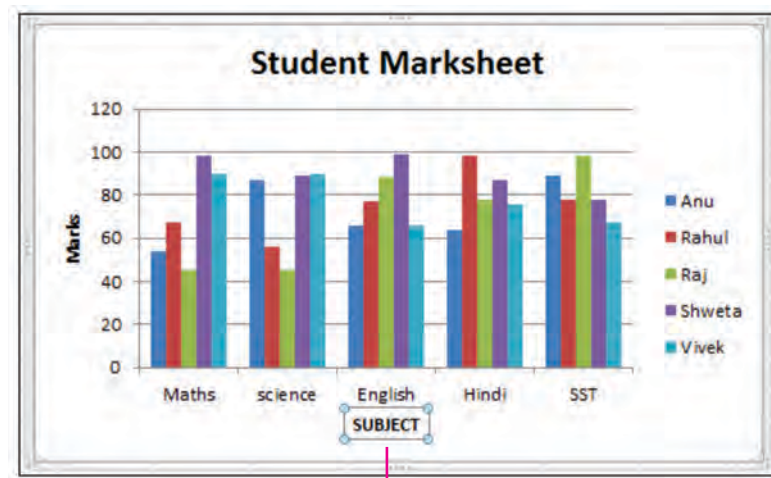■ Using the Layout tab, the position of the Legends can be changed. The data table and data labels can be added to existing charts.

LAYOUT TAB COMMANDS

Following table lists some more command buttons of the Layout tab and what they help us to do.

| Command button	Its Function
Chart Elements	Helps you to select a particular chart element. Click on the drop down arrow and select an element from the list.
Format Selection	Produces a dialog box to allow you to format a selected chart element.
Picture	Allows you to insert a picture on the chart.
Shapes	Allows you to insert a shape on the chart.
Text Box	Allows you to insert a text box on the chart.
Chart Title	Allows you to add or remove a chart title or charges its position.

Axis Titles	Gives you options to add, remove or position the axes titles.
Legend	Gives you options to add, remove, or position the chart legends.
Data Labels	Gives options to show actual data values with the data series.
Data Table	Adds a data table to the chart.
Axes	Gives options to change the formatting and layout of the axis.
Gridlines	Helps to show/hide gridlines on the chart.

TIP! You can also select individual chart elements manually by clicking on them in the chart. The name of the selected element will automatically appear in the chart elements box.

FORMATTING THE CHART

We can change the formatting of the individual chart elements like Chart Area, Chart Title, Plot area, Legends, Data series, Axis titles and Data labels and so on using the commands/options given in the Chart Tools Format tab. The general steps to format a chart element are as follows :
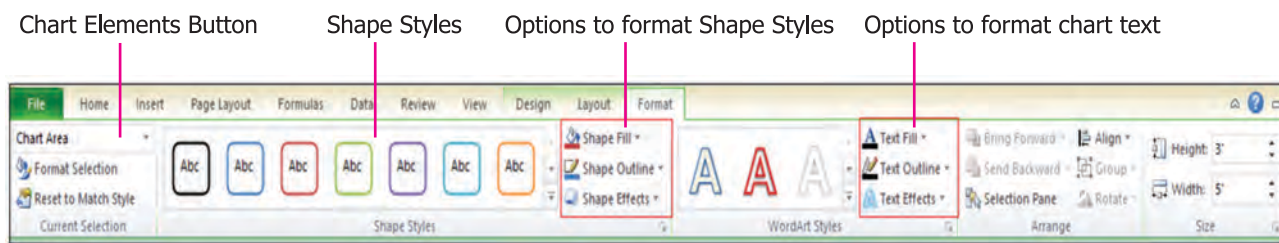
Command buttons in the Chart Tools Format Tab

1. Click on the chart element that you want to format. (You can also select it from the chart elements box in the Current Selection group).

2. To apply a shape style to the selected elements, go to the Shape Styles group, scroll through the styles list and then click to select a desired style.

3. To fill a background colour in the selected elements click on the Shape Fill button and from the drop down menu, select a desired colour.

    OR

    You can also use options given in the Shape Fill button drop down menu to fill a picture or texture in the element.

4. Similarly, you can use the Shape Outline and the Shape Effects buttons to apply a border and effect to the selected chart element respectively.

5. To apply a WordArt style to the text inside the selected chart elements, go to the WordArt Sytle group and click on the More button. Select the WordArt Style that you like from the list displayed.

6. You can use the Text Fill button to fill text in the selected chart elements with a colour, picture, gradient or texture. The Text Outline and Text Effects buttons can be used to apply an outline style and effect to the text of the selected chart elements, respectively.

USING GOAL SEEK

Goal seek is a wonderful feature for fixing a specific result for one cell by adjusting a value in another cell. Follow the given steps :

- Enter data in a worksheet Calculate total and percentage as shown in figure.
- Select the Data tab and click on the What-if-Analysis button in Data tools group. The select Goal seek option. The Goal seek dialog box will appear on the screen.
- In Set cell : text box, define the cell address E6. on which the goal seek is a to be applied. In this box, always refer the call that contains formula.
- Type the new value 350 as a result in To Value : text box. Press the Tab key.

Using Goal Seek

Goal Seek Dialog Box

- Click on the cell D6 in a worksheet. The address will appear in the By Changing Cell : Text box Click on OK button.
- The Goal seek status dialog box appears on the screen displaying the target value 150 and Current value 150. Click OK.

- Observe the change in cell D5. The number will change according to percentage you have defined.

Activity

Write answer of the following questions in the blanks :

1. Which tab contains the options to create charts in MS Excel? _____

2. After creating chart, can you change it into another type of chart? _____

3. Which Tab category is displayed when you select a chart? _____

4. Using which tab can you change the title of a chart? _____

POINTS to Recall

- Chart is a powerful tool in MS Excel for presenting data in an easy to understand manner.

- Various types of charts can be used to represent selected data from a worksheet but any type of chart has a specific purpose for which it can be used.

- It is very easy to create any type of chart using the command buttons given in the Charts group of the Insert tab.

- After creating a chart you can move it or change its size by dragging with the mouse.

- You can select different components of a chart by clicking on them with the mouse.

- When a chart or chart component is selected, three new tabs- Design, Layout and Format appear under the Chart Tools. These tabs contain commands to allow you to work with a chart and its different components.

- Goal Seek is a wonderful feature for fixing a specific result for one cell, by adjusting a value in another cell.

TERMS to Learn

- **Category axis** : The axis in an Excel chart along which data categories are plotted.
- **Value axis** : The axis in an Excel chart along which data values are plotted.
- **Legend** : A legend contains a list of data series appearing in the chart and the colour of their appearance.
- **Chart** : Graphical representation of data where data is represented by graphic symbols.
- **Column chart** : A chart where data items are shown as equidistant columns of varying heights.
- **Line chart** : A type of chart used for showing variation in data over a period of time.

Multiple Choice Questions

A.   Tick (✓) the correct answer.

1.   Which of these is not a type of chart in MS Excel?

(a) Pie chart   ◯   (b) Bar chart   ◯   (c) Data chart   ◯

2.   The plot area of a chart lies in the :

(a) Chart area   ◯   (b) Chart title   ◯   (c) Legends   ◯

3.   The vertical and horizontal lines in the plot area are called:

(a) Chart lines   ◯   (b) Gridlines   ◯   (c) Plot lines   ◯

4.   What is used to represent a Data series?

(a) X-axis   ◯   (b) Y-axis   ◯   (c) Legends   ◯

5.   What informs us about the topic of a chart?

(a) Data series   ◯   (b) Axis title   ◯   (c) Chart title   ◯

6.   Which tab contains options to format a chart?

(a) Data tab   ◯   (b) Format tab   ◯   (c) Home tab   ◯

B.   Fill in the blanks with the help of given hints.

1.   _____ is an effective way to display data in pictorial form.

2.   The x-axis is also known as the _____ axis.

3.   The vertical axis in a chart is also known as the _____ .

4.   The _____ of the chart gives you an idea of its topic.

5.   The _____ charts are useful to show data changes over a period of time or for comparison.

6.   You can resize a chart by _____ it from its resizing handles.

HINTS : Y-axis, Chart, Dragging, Category, Line chart, Title

C.   Write 'T' for true statements and 'F' for false statements in the [ ] .

1.   In a bar chart, categories are organized along the vertical axis.

2.   The pie charts are used to represent data from two or more data series.

3.   Legends in a chart represent the actual data values.

4.   Each data series is given a unique colour or pattern in a chart.

5.   The chart area is always a part of the plot area.

6.   Chart styles group is present in Design tab of the Ribbon.

D. Very Short Answer Questions.

1. Which tab in Excel 2010 contains the Charts group?

   _____

2. How many contextual tabs appear on the ribbon when a chart is selected?

   _____

3. Name any two types of column chats present in Excel.

   _____

4. Define Goal seek.

   _____

E. Short Answer Questions.

1. When do you use a pie chart?

   _____

2. Why is the horizontal axis called the category axis?

   _____

3. What is meant by a data series?

   _____

F. Long Answer Questions.

1. What is the significance of representing data through charts?

   _____

   _____

2. Distinguish between a column chart and a bar chart.

   _____

   _____

3. What do you understand by legends and data series?

   _____

   _____

4. How is the chart area different from the plot area?

   _____

   _____

5. Write in brief, the steps to add a title to a chart.

   _____

   _____

6. What is the use of the Chart Elements button in the Layout tab?

   _____

   _____

Practical 1: Creating a Column chart from the given data to compare the runs scored by all batsman in each match.

1. Select the data A1:D4.

2. Click on the Insert tab.

	A	B	C	D
1		Match 1	Match 2	Match 3
2	Virat Kohli	52	42	102
3	MS Dhoni	84	26	62
4	V Sehwag	55	82	62

3. Click on the Column arrowhead button and select the 3-D column subtype.

4. From the Chart Layout, select the desired layout for the chart.

..... The required column chart will be created.

Practical 2 : Creating a chart to represent data pictorially.

1. Prepare a worksheet as shown alongside. Save it by any name as you like.

	A	B	C	D	E
1	Food Grains Prices (in Rs./Kg) 2013-2015				
2	Price in Rs. Per Kg				
3	Food grains	Year 2013	Year 2014	Year 2015	
4	Bajra	10	12	15	
5	Rice	30	34	42	
6	Wheat	9	12	18	
7	Moong	60	68	76	
8	Masoor	56	62	70	

2. Create a 3-D stacked column chart showing a comparison of how the rates of food grains have risen over the previous three years.

3. Create a line chart to show the fluctuation in the food grain price over period of three years.

Icon-X-7