37

GRAPHS AND CHARTS

In the previous lesson, you have learnt about the basic features of spreadsheet and use of spreadsheet in accounting. Quite often, we have to present the data for communication of the accounting information. If mass of data is presented in the raw form, it may not be easily understandable. It can be said, .A picture is worth more than thousand words. In this lesson, we are discussing the methods of preparing graphs, charts and diagrams showing the data through the use of Excel as a tool.

OBJECTIVES

After Studying this lesson, you will be able to:

● State the meaning of Graphs and Charts.

● Create a Chart on excel sheet.

● Modify a chart on Excel sheet.

● Understand the Chart Tools and their uses on Excel Sheet.

● Explain the advantages of using Charts and Graphs.

37.1 GRAPHS AND CHARTS

Graphs and Charts are pictorial representation of data, which has at least two dimensional relationship. Graphs, has two axes X and Y. X axis is usually horizontal while Y axis is vertical. Graphs/ Charts allow you to present information contained in the worksheet in a graphic format. Excel offers many types of charts including: Column, Line, Pie, Bar, Area, Scatter and more. To view the charts available click the Insert Tab on the Ribbon.
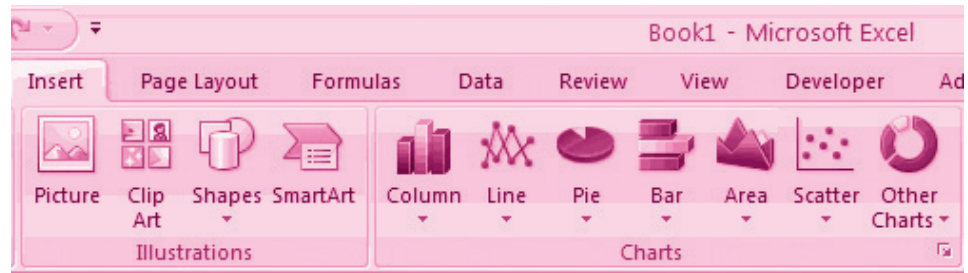
MODULE - 7

*Application of
Computers in Financial
Accounting*

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Graphs and Charts

37.1.1 Using Charts/Graphs tools in Excel

Create a Chart

To create a chart:

● Select the **cells** that contain the data you want to use in the chart

● Click the **Insert** tab on the Ribbon
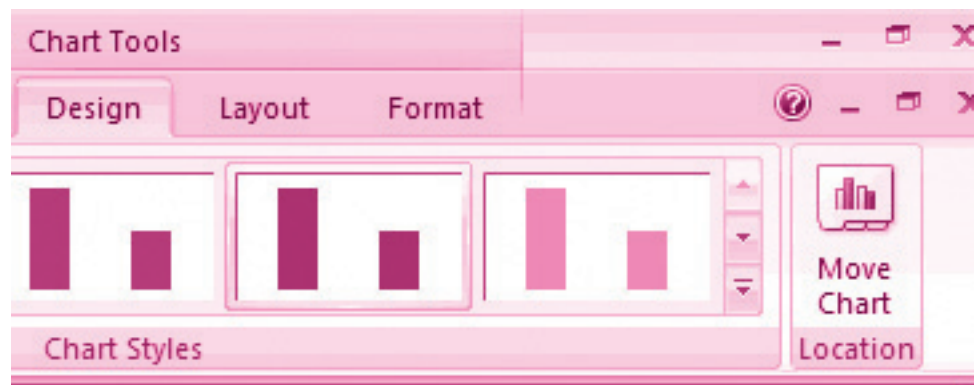
● Click the type of **Chart** you want to create

37.1.2 Modify a Chart

Once you have created a chart you can do several things to modify the chart.

To move the chart:

● Click the **Chart** and **Drag** it to another location on the same worksheet, or

● Click the **Move Chart** button on the **Design** tab

● Choose the desired location (either a new sheet or a current sheet in the workbook)
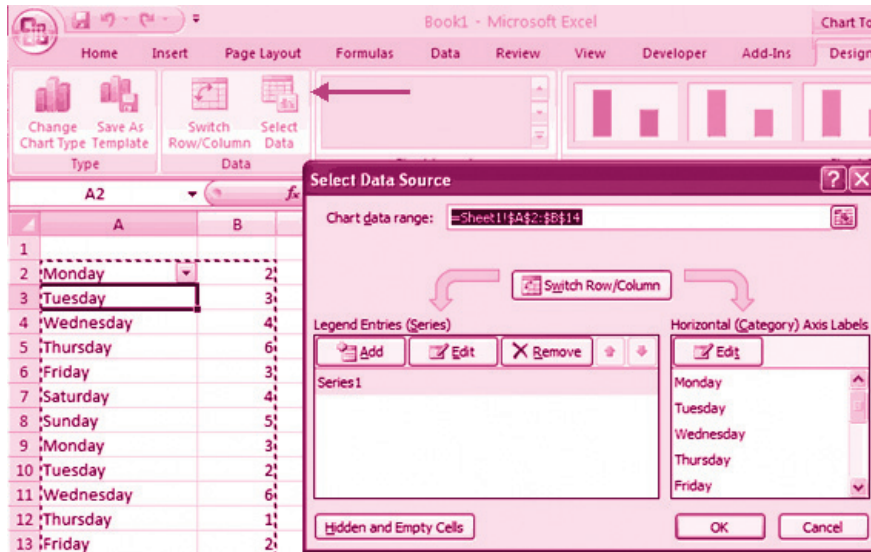

To change the data included in the chart:

● Click the **Chart**

● Click the **Select Data** button on the **Design** tab
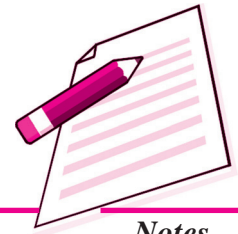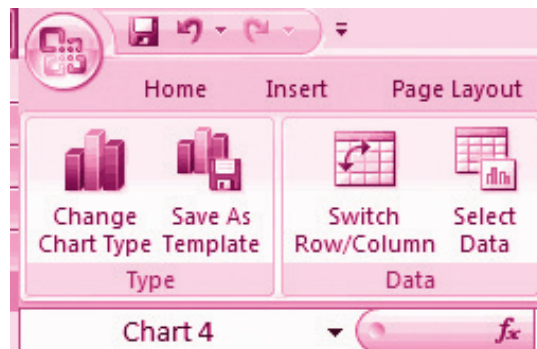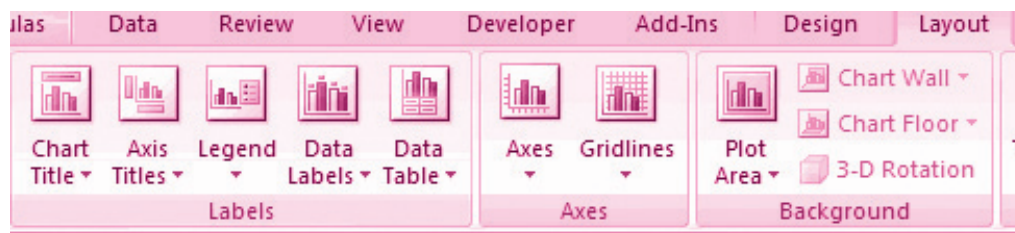
Notes

To reverse which data are displayed in the rows and columns

● Click the **Chart**

● Click the **Switch Row/Column** button on the **Design** tab

To modify the labels and titles:

● Click the **Chart**

● On the **Layout** tab, click the **Chart Title** or the **Data Labels** button

● Change the **Title** and click **Enter**

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37.1.3 Chart Tools

The Chart Tools appear on the Ribbon when you click on the chart. The tools are located on three tabs: Design, Layout, and Format.

Within the **Design** tab you can control the chart type, layout, styles, and location.

Within the **Layout** tab you can control inserting pictures, shapes and text boxes, labels, axes, background, and analysis.

Within the **Format** tab you can modify shape styles, word styles and size of the chart.

37.1.4 Copy a Chart to Word

- Select the **chart**

- Click **Copy** on the **Home** tab

- Go to the **Word** document where you want the chart located

- Click **Paste** on the **Home** tab
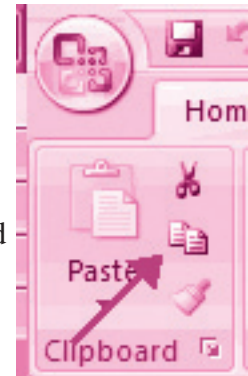
INTEXT QUESTIONS 37.1

Fill in the blanks :

i.   Graphs and Charts are _____ representation of data.

ii.   Graphs and charts have atleast _____ dimensional relationship.

iii. X axis is usually _____ while Y axis is _____.

iv.   To view the charts available, we have to click the _____ tab on the ribbon.

37.2 ELEMENTS OF A CHART/GRAPH

A Chart/graph is a pictorial presentation of data. To understand and explain the chart/graph we will learn all basic elements of the chart.

1. **The chart area :** The entire chart including all elements.

2. **The plot area:** In a 2-D chart, the area is bounded by the X and Y axis. In a 3-D chart, the area is bounded by the three (X, Y and Z) axis.

3. **The data points:** Individual values plotted in a chart and represented by bars, columns, lines, pie or various other shapes are called **data markers**. Data markers of the same colour constitute a **data series**. The data series are related **data points** that are plotted in the chart/ graph. Each data series in a chart is shown in a unique colour or pattern or both. Its identification is given by the legend. There may be more than one data series in a chart/graph.

4. **The horizontal (category) and vertical (value) axis :** The x-axis is usually the horizontal line which contains categories (independent values or categories) and y-axis is usually the verticals which contains data (dependent values).

5. **The legend :** It is an identifier of a piece of information shown in the chart/graph. The legends are assigned to the data series or different categories in a chart

6. **A chart and axes titles :** Descriptive text for chart title and axis title.

7. **A data label :** This provides additional information about a data marker to identify the details of data point in a data series. Some of the elements are displayed by default when we prepare the chart/graph; others can be added as needed. It is also possible to change the format or display of the chart/graph as desired.

37.3 FORMATTING OF CHART

Formatting the Chart (using design option)

Now, we will learn how the elements of a chart such as plot area, X-axis, Y-axis, data, titles, labels, legends and gridline can be formatted and edited as per the requirement. Click anywhere in the chart. This will display the **Chart Tools**, adding the **Design**, **Layout**, and **Format** tabs.Using **Design** option we can change the look of a chart. In the **Design** dialog box, we can click to change chart type, chart layouts and chart styles. One of the options provide for 2-d chart to swap the column data to row data and row data to column data.

The steps are as follows:

In a chart click the chart element to change, or do the following to select the chart element from a list of chart elements:
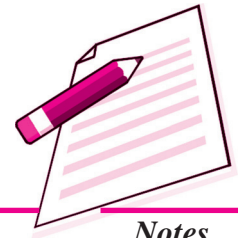
1. Click anywhere in the chart. This will display the **Chart Tools**, adding the **Design**, **Layout**, and **Format** tabs.

2. On the **Design** tab, in the **Data** group, click the arrow the **Switch Row/Column** box.

37.4 CHANGING THE FORMAT OF A SELECTED CHART ELEMENT

In the same chart, click the chart element to change, or do the following to select the chart element from a list of chart elements:

1. Click anywhere in the chart. This will display the **Chart Tools**, adding the **Design**, **Layout**, and **Format** tabs

2. On the **Format** tab, in the **Current Selection** group, click the arrow next to the **Chart Elements** box, and then select the chart element which requires to format.

3. On the **Format** tab, in the **Current Selecti1on** group, click the **Format Selection.**

e **Format <Chart Element>** dialog box, click a category, and then select the formatting options.

37.4.1 Changing the Shape Style

On the **Format** tab, in the **Shape Styles** group, do one of the following:

● To see all available shape styles, click the **More** button.

● To apply a pre- defined shape style, in the shape style box, click the style that we want.

● To apply a different shape fill, click **Shape Fill**, and then do one of the following:

▶▶ To use a different fill Colour, under **Theme Colours** or **Standard Colours**, left click the select Colour.

▶▶ To remove the Colour from the selected chart element, click **No Fill**.

▶▶ To use a fill Colour that is not available under **Theme Colours** or **Standard colours** click **More Fill Colours**. In the **Colours** dialog box, specify the Colour that we want to use on the **Standard** or **Custom** tab, and then click **OK**. Custom fill Colours are added under **Recent Colours** can also be used.

⏩ To fill the shape with a picture, click **Picture**. In the **Insert Picture** dialog box, click the picture to use, and then click **Insert**.

⏩ To use a gradient effect for the selected fill Colour, click **Gradient**, and then under **Variations**, click the gradient style to be used. For additional gradient styles, click **More Gradients**, and then in the **Fill** category, click the gradient options that to use.

⏩ To use a texture fill, click **Texture**, and then click the texture to use.

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37.4.2 Changing the Shape Outline

To apply a different shape outline, click **Shape Outline**, and then do one of the following :

● To use a different outline Colour, under **Theme Colours** or **Standard Colours**, click the Colour to use.

● To remove the outline Colour from the selected chart element, click **No Outline**. If the selected element is a line, the line will no longer be visible on the chart.

● To use an outline Colour that is not available under **Theme Colours** or **Standard Colours** click **More Outline Colours**. In the **Colours** dialog box, specify the Colour that to use on the **Standard** or **Custom** tab, and then click **OK**. Custom outline colours are added under **Recent Colours** can be used again.

● To change the **weight** (thickness) of a line or border, click **Weight** option, and then select the line that we wish to use. For additional line style or border style options, click on **More Lines**, and then click the line style or border style options.

● To use broken line (dash. dash) or border, click **Dashes**, and then click the dash type to use. For additional dash-type options, click on **More Lines**, and then click the selected dash.

● To add arrows to lines, click **Arrows**, and then click the arrow style for borders cannot be used. For additional arrow style or border style options, click **More Arrows**, and then click the arrow setting.

● To apply a different shape effect, click **Shape Effects**, click a chosen effect, and then select the type of effect. The **shape effects** depend on the chart element that we select such as **Pre-set, reflection, and level.** The **shape effects** are not available for all chart elements.
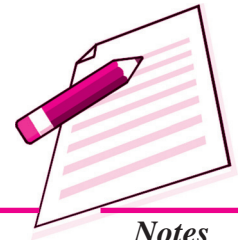
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37.4.3 Changing the Text Format

To format the text in chart elements, we can use regular text formatting options, or we can apply a **WordArt format**.

1. Click the chart element that contains the text to format.

2. Right-click the text or select the text to format, and then do one of the following:

   ● Click the formatting options that we want on the **Mini toolbar**.

   ● On the **Home** tab, in the **Font** group, click the formatting buttons that we want to use.

To use **WordArt styles** to **format text** use chart elements in the following steps:

1. In a chart, click the chart element that contains the text to be changed, or do the following to select the chart element from a list of chart elements:

2. Click anywhere in the chart.

3. This displays the **Chart Tools**, adding the **Design, Layout**, and **Format** tabs.

4. On the **Format** tab, in the **Current Selection** group, click the arrow next to the **Chart Elements** box, and then select the chart element that is to be formated.

5. On the **Format** tab, in the **WordArt Styles** group, do one of the following:

To see all available WordArt styles, click the **More** button. We get options for Text related formatting

● Text Fill   ● Text Outline

● Shadow   ● 3-D Format

● 3-D Rotation   ● Text Box

37.4.4 Changing the Layout of the Chart Element

In the same chart, click the chart element to change, or do the following to select the chart element from a list of chart elements:

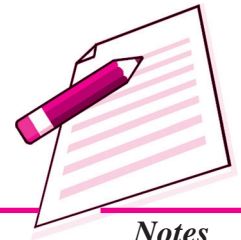1. On the **Layout** tab, we can insert different Clip Arts, Picture, data labels, grids etc.

2. In the **Format <Chart Element>** dialog box, click a category, and then select the formatting options.

37.4.5 Change the Chart Type

A chart can be changed to another type of chart to get different look and purpose.

This is the easiest method to change from column chart or bar chart to Pie chart because

:

Only one data series is used to plot.:

● The plotted data values are positive.

● The data values are not equal to zero also.

Note that in Excel software Pie chart cannot plot more than seven catgories. The categories represent the parts of whole Pie.

Steps for creating a Pie Chart

1. Enter the data in a worksheet.

2. Select the data from two (consecutive) columns only.

3. Select the chart type Pie from the ribbon.

4. Under Pie types select 3-D Pie option

5. Click the plot of Pie chart. This displays the **Chart Tools**, adding the **Design, Layout**, and **Format** tabs.

6. On the **Design** tab, in the **Chart Layouts** group, select the layout to use.

7. On the **Design** tab, in the **Chart Styles** group, click the chart style.

8. On the **Format** tab, in the **Shape Styles** group, click **Shape Effects**, and then click **Bevel**.

9. Click **3-D Options**, and then under **Bevel**, click the **Top** and **Bottom** bevel options.

10. In the **Width** and **Height** boxes for **Top** and **Bottom** bevel options, type the point size.

11. Under **Surface**, click **Material**, and then click the material option.

12. Click **Close**.

13. On the **Format** tab, in the **Shape Styles** group, click **Shape Effects**, and then click **Shadow**.

14. Under **Outer**, **Inner**, or **Perspective**, click the shadow option.

15. To rotate the chart for a better perspective, select the plot area, and then on the **Format** tab in the **Current Selection** group, click **Format Selection**.

16. Under **Angle of first slice**, drag the slider to the degree of rotation that you want, or type a value between 0 (zero) and 360 to specify the angle of the first slice to

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appear, and then click **Close**.

17. Click the chart area of the chart.

18. On the **Format** tab, in the **Shape Styles** group, click **Shape Effects**, and then click **Bevel**.

19. Under **Bevel**, select the bevel option.

20. To use theme colors that are different from the default theme that is applied the workbook, do the following:

    a.   On the **Page Layout** tab, in the **Themes** group, **click Themes.**

    b.   Under **Built-in**, click the theme to use.

37.4.6 Resizing of Chart/Graph

Resizing of the chart means changing size of the chart as desired. This option can be used independently for the **fonts, title, legends** easily. The first step is to select the chart by clicking the left button of the mouse. Move the cursor on the corners or middle of the borders of the chart/graph which will provide the figure (the cursor will take the shape of a two headed arrow). By pressing the left button, and drag/ pull as desired to resize the chart.

37.5 ADVANTAGES IN USING GRAPHs/CHARTs

1. **Help to Explore :** Many times we would like to see if there is a relationship between variables. Suppose that we wanted to determine if there is a relationship between: a country's GNP and the infant mortality rate, between age and between genders. It may be quicker and easier to create a chart immediately to see the possible relationship of variables to one another, rather than paging through raw data.

2. **Help to Present :** We want to provide information in as little time as possible. Graphing plays a key role. It seems that there is no longer any time to sit and read a newspaper in order to find out what is going on. However, newspapers, such as The Economics Times and India Today magazines (which were early users of charting techniques), seem to understand this phenomena and provide graphs to convey and sum up ideas that they are making in their articles.

3. **Help to Convince :** The same way that a graph can be used to present and explore different characteristics of data, it can also be used to convince. Graphs have the ability to take large amounts of information and make them into exhibitions that are easily used to persuade.

INTEXT QUESTIONS 37.2

Fill in the blanks with suitable word/words:

i. Plot area, X-axis, Y-axis, data, titles, labels, legends and gridlines are known as _____ of a chart.

ii. To use a texture fill, we have to click _____.

iii. A chart can be changed to another type of chart to get different look and _____.

iv. In Excel software, Pie chart cannot plot more than _____ categories.
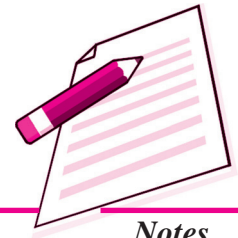
Notes

WHAT YOU HAVE LEARNT

● A **graph** is a pictorial representation of data. Graphs are usually 2-dimensional. Sometimes 3-dimensional graphs are also used.

● A graph may be either a **singleline graph or a multi-line graph**. Multi-line in a graph are distinguished either by using different shapes of line or different shapes and colors.

● Other popular pictorial representations include **Pie Chart** and **Bar Chart**. Pie charts depict relative share of different elements. Bar charts are used to depict the comparison of absolute values of data (e.g. sales, production, etc.) at discrete points (e.g. time intervals, products, etc.).

● MS-Excel 2007 (or simply Excel) provides a convenient facility to draw graphs and charts. The nomenclature used in Excel for charts (charts include graphs) is as follows:

    a. The Chart Area,

    b. The Plot Area covering the plot of values in the selected type of chart,

    c. The Data Points,

    d. The Horizontal (Base Values, e.g. category) and Vertical (Derived Values) Axes,

    e. The Legend to specify distinguishing criteria in case of multiple lines, pies, bars, etc.

    f. Chart and Axis Titles

    g. Data Labels

● Every element of a chart such as plot area, X-axis, Y-axis, **data**, **titles**, **labels**,

legends, and **gridlines** can be formatted using the Design, Layout and Format dialog box in Excel.

● Charts size can also be changed as per requirements.

● For multiple visualisations of the same data through different types of charts, we can change the chart type (say, from line graph to bar chart, or bar chart to pie chart, etc) wherever required for better presentation as per the nature of data.

● Graphs and charts help in easy visualisation of any trends present in data In highly random data such as stock prices, textual description may not be easily possible to explain the price or other fluctuations, but graphs and charts overcome this constraint as they can be comprehended more easily by human beings.
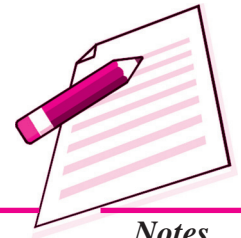
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TERMINAL EXERCISE

1. Define charts, graphs and how they are useful in business decisions?

2. Write down the usage and purpose of column chart, pie chart and line chart.

3. Describe about data series, legend, and data labels??

4. Describe use of Excel for preparation of chart.

5. Differentiate between pie charts, line charts and column charts respectively?

6. Described the steps to move, resizing and reposition a chart.

7. What does percentage in chart represent and how it being calculated by the software?

8. What are the differences between

   a. Area, XY chart and doughnut

   b. 2-D Charts and 3-D Charts

9. What is pie chart and what are percentage values means in pie chart?

10. Explain different types of charts which can be prepared using Excel?

Multiple Choice Questions

1. To change the location of a chart, right-click the chart and select:

   a) Chart Type   b) Source Data

   c) Chart Options   d) Move here

2. The Ribbon allows us to:

   a) Create either an embedded chart or a chart sheet chart

b) Create only an embedded chart

c) Create only a chart sheet chart

d) Change the data values used to create the chart

3. Once we have created a chart we may change _____:

a) the formatting for text like titles and data labels

b) only by going back through the ribbon

c) everything about the chart

d) the data series patterns only

4. In Excel the chart tools provides three different options _____, _____ and _____ for formatting:

a) Layout, Format, Data Marker

b) Design, Layout, Format

c) Chart Layouts, Chart Style, Label

d) Format, Layout, Label

5. Pie chart don't have more than _____ categories:

a) Ten   b) Twenty Five

c) Seven   d) Three

6. Column charts are useful for _____:

a) Showing data changes over a period of time

b) Illustrating comparisons among items

c) Both a and b

d) None of the above

7. The 2D graph using _____ , _____ axes and in 3D graph _____ axis is also used.

a) Category, value, vertical   b) Horizontal, vertical, depth

c) Category, value, series   d) b and c both

8. Excel automatically redraws the chart _____:

a) If any change is made in data   b) If any change is made in the range data

c) a and b both   d) None of the above

9. Legend can be repositioned on the chart:

   a) anywhere   b) on right side only

   c) on the bottom of X-axis   d) on the corner only

10. Which chart element details the data values and categories below the chart?

   a) Data point   b) Data labels

   c) Data marker   d) Data table

11. From what command tab is the font size for an axis in a chart changed?

   a) Home   b) Insert   c) Format   d) Design

12. Which of these purposes does not pertain to charts?

   a) Identifying trends   b) Selecting values

   c) Recognising patterns   d) Making comparisons

13. What do you see if you move over the mouse over a chart object?

   a) KeyTip   b) ScreenTip   c) ChartTip   d) ChartKey

14. Which group on the Chart Tools Format tab shows the name of the selected element?

   a) Arrange Objects   b) Chart Objects

   c) Choose Selection   d) Current Selection

Skill Review

A. Create a trend chart after filling data in to the worksheet.

(Population of India/State in Millions to be enter)

Year	Male(1)		Female (2)		Total(3)	
	Literate	*Illiterate*	*Literate*	*Illiterate*	*Literate*	*Illiterate*
2001						
2002						
2003						
2004						
2005						
2006						
2007						
2008						

Note: *Total Literate = Values of Male Literate + Values of Female Literate*

Total Illiterate = Values of Male Illiterate + Values of Female Illiterate

B. Create a Pie chart to compare data from above table for Total (column number 3).

C. Draw a Trend charts for each male, female and totals separately.

D. Draw a Column Chart for the above data for each (male, female and total)separately for Literate and Illiterate.

E. Prepare a Pie chart and Column chart for the 10 different plots areas 5, 7, 8, 9, 8, 10, 4, 6, 7 and 3 hectares respectively.

F. Draw a Pie chart for the following data on vehicles registered in the **RTO** department during 2007-08 in your city.

Vehicle Type	Bus	Trucks	Auto Rikshaw	Cars	Two Wheelers	Heavy Vehicles
Number of Vehicles	575	5889	12345	9765	23456	65

G. Draw a Column chart for the following data.

Marks	0-20	21-40	41-60	61-80	81-100	Total
Number of Students	13	180	350	232	125	1000

ANSWERS TO INTEXT QUESTIONS

37.1   i. Pictorial   ii. Two   iii. Horizontal, Vertical iv. Insert

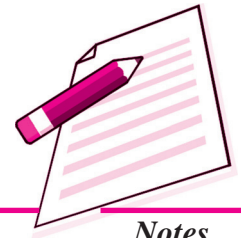**37.2**   i. Elements   ii. Texture   iii. Purpose   iv. Seven

ANSWERS TO MCQ

1. d   2. d   3. a   4. b   5. c

6. c   7. c   8. c   9. a   10. b

11. a   12. b   13. c   14. d