ST. LAWRENCE HIGH SCHOOL
A JESUIT CHRISTIAN MINORITY INSTITUTION

STUDY MATERIAL-2

SUBJECT – STATISTIC

FIRST TERM

Chapter: REPRESENTATION OF DATA	Class: XI
Topic: REPRESENTATION OF DATA	Date: 19.06.2020

REPRESENTATION OF DATA

Graphs ,charts, maps, etc are attractive and effective means of presentation of statistical data. Diagrams are readily capable of revealing some features of the exhibited data. Iot should be noted that the selection of the appropriate diagrams depends mainly on the nature of given data.

The following are important merits and demerits pf the diagrammatic mode of presentation of data.

Merits:

i.   It is simple to understand even by layman
ii.   It is very essential for conveying statistical information to the general public in short time.
iii.   In this approach, one may acquire some idea regarding the significance of the presented data at a glance
iv.   This mode is capable of creating lasting impression
v.   Two or more series of data can easily be compared

Demerits:

i.   Diagrams fail to represent details ; they only show the general nature of data
ii.   Usually the diagram represents the figures in approximate forms and in most of the cases, precision of data has to be sacrificed
iii.   Construction of diagrams require sufficient time
iv.   Only limited information can be presented in a diagram

Line diagram:

This diagram is meant for representing chronological data. In constructing a line diagram, two axes of coordinates are taken, the horizontal one for the variable(generally time) and the vertical one for the observations. The plotted successive points on the graph are joined by straight lines and the chart so obtained is known as line diagram.
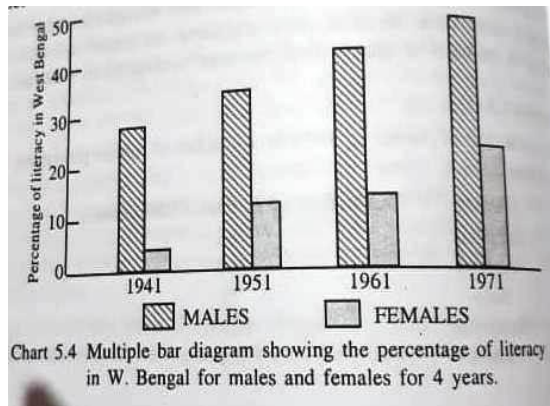
Chart 5.1 Line diagram showing the population of a region during the period from 1961 to 1981.
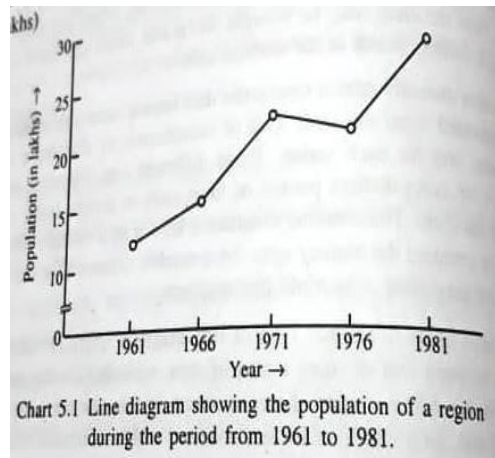
Ratio Chart:

It is basically a line diagram where along Y axis instead of the observations the logarithmic value of the observations are assigned.

Bar diagram:

In Bar diagram number of equidistant rectangles, each of them being meant for some specific category of the available data. Bars of common width are drawn on the base line, the length or the height of the bar representing the value of the corresponding category. The width of the bars must be greater than the gaps between the successive bars. bars may be vertical or horiozontal in nature depending upon whether the data are time dependant or cross sectional. For time dependant data the classes i.e, the different time period should be assigned along X axis and we get vertical bar diagram. Similarly in case of cross sectional data the classes are assigned along Y axis to get the horizontal bar diagrams.

For both vertical and horizontal bar diagrams more than one characters which may be of same or opposite in nature can be represented together in multiple or group bar diagram.

Chart 5.4 Multiple bar diagram showing the percentage of literacy in W. Bengal for males and females for 4 years.
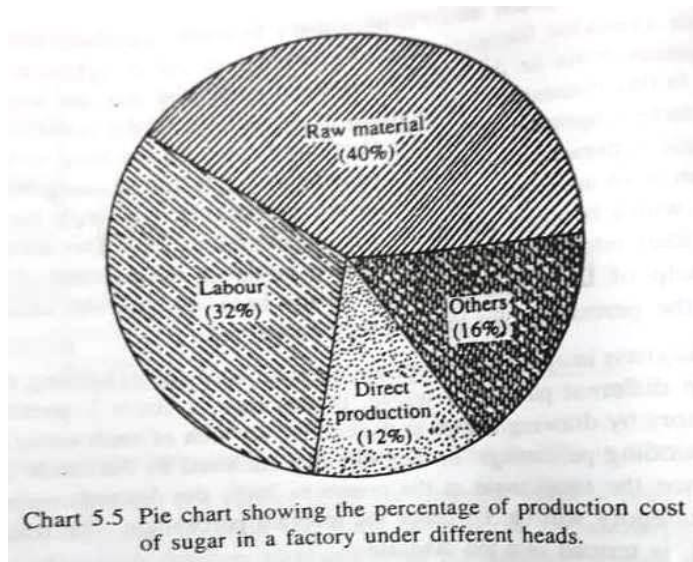
In case of sub divided bar diagram a bar of height 10cm is divided according to the ratio of frequencies of different classes and different shades are being applied in those areas.

Pie Diagram:

In Pie diagram a circle is partitioned into several sectors by drawing the angles at the centres. In fact the total angle at the centre 360^0 is divided according to the same ratio of frequencies of different classes and different shades are being applied in those areas.

A part of Pie diagram can always be magnified since after magnification the value of the angles doesn't change but the no part of subdivided bar diagram can be magnified as it depends upon the length of other classes. Hence we prefer Pie diagram than subdivided bar diagram.

Chart 5.5 Pie chart showing the percentage of production cost of sugar in a factory under different heads.

Histogram:

It is an approximate diagram for representing the frequency distribution of a continuous variable in the sense that it considers the fact that the frequency of a class is dispersed over the interval. Here two coordinates are taken and the class boundaries are shown on the horizontal axis for locating the class intervals. Next a rectangle is drawn over each class width so that its area indicates the corresponding class

frequency. In other words the height of a rectangle becomes equal to the corresponding frequency density. The diagram so formed is called histogram of the frequency distribution. It should be noted that the rectangles in histograms may have different widths.

Fig 6.4. Histogram representing the frequency distribution of marks (TABLE 6.7).
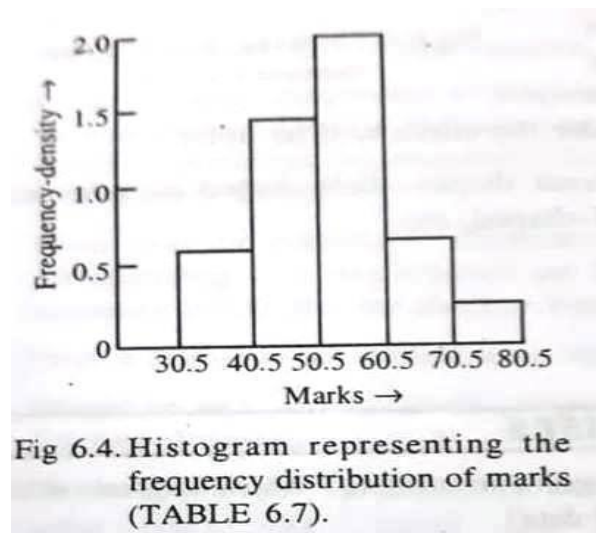
Frequency Polygon:

A Frequency polygon may be drawn to exhibit the frequency distribution of a continuous variable provided classes are of equal width. Along X axis the class mark and along Y axis the frequencies are assigned. The plotted points are joined successively by line segments. To get closed polygon we take two additional classes one at each end, which have zero frequencies.

Ogive:

The diagram is used for exhibiting frequency distribution of a continuous variable in terms of cumulative frequencies (of either type). To drawn an ogive, initially two rectangular axes of coordinates are taken – the horizontal one showing the variable values and the vertical one representing the cumulative frequencies. In case of less than type cumulative frequencies they are plotted against the upper class boundaries as different points which are joined successively to get less than type ogive. Again, for a more than type ogive cumulative

frequencies of more than type correspond to lower class boundaries, the mode of construction being similar to the previous one. Obviously cumulative frequency of the less than type is zero for lower boundary of the lowest class and it is included in drawing the diagram. Similarly cumulative frequency of greater than type is zero for the upper boundary of the highest class which has to be included. Generally the shape of ogive is like an elongated S. from the pint of intersection of two ogives a perpendicular on X axis cuts X axis at the point known as median.

Fig 6.5. Ogives for the frequency distribution of marks (TABLE 6.8).
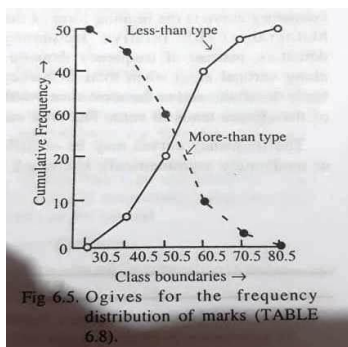
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