

Bar graph or bar diagram. In bar graphs or diagrams the data is represented by bars. Generally these diagrams or pictures are drawn on graph paper. Therefore these bar diagrams are also referred to as bar graphs.

These diagrams or graphs are usually available in two forms, vertical and horizontal. In the construction of both these forms, the lengths of the bars are in proportion to the amount of variables or traits (height, intelligence, number of individuals, cost, and so on) possessed. The width of bars is not governed by any set rules. It is an arbitrary factor. Regarding the space between two bars, it is conventional to have a space about one half of the width of a bar.

The data capable of representation through bar diagrams may be in the form of raw scores, total scores or frequencies, computed statistics and summarized figures like percentages and averages.

Let us now try to illustrate the task of drawing the bar graph.

Example 3.1: The following data was collected about the strength of students of Govt. Boys' Higher Secondary School in different years.

Years	No. of students
1996-1997	1200
1997-1998	1040
1998-1999	960
1999-2000	1000
2000-2001	1400

Represent the above data through a bar graph.

Solution. Bar graph of the data given in a Example 3.1

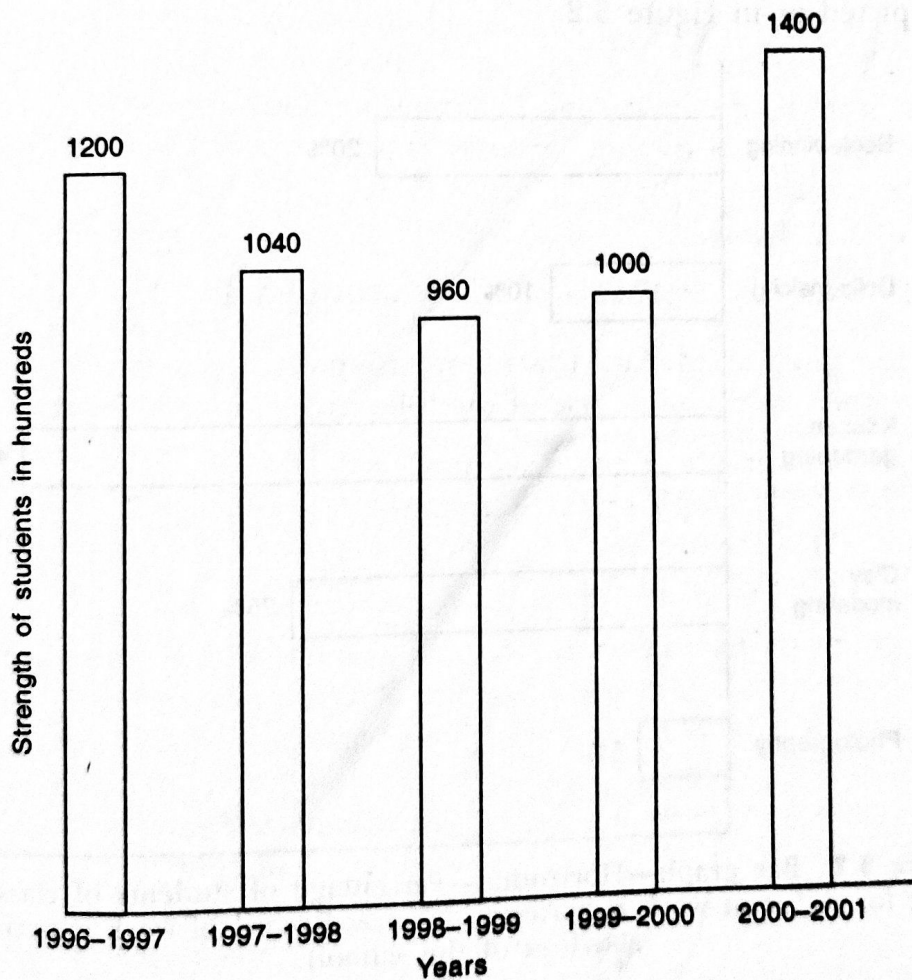


Figure 3.1 Bar graph—Vertical—Strength of students in different years at the Govt. Boys' Higher Secondary School, City A.
(Source: Official record of school)

The task of drawing the bar graph may be further illustrated as in the following example:

Example 3.2: 120 class X students of a school were asked to opt for different work experiences. The details of these options are given in Table 3.1:

Table 3.1

<i>Area of work experience</i>	<i>No. of students</i>	<i>Per cent</i>
Photography	6	5
Clay modelling	30	25
Kitchen gardening	48	40
Doll-making	12	10
Book-binding	24	20

Represent the above data through a bar graph.

Solution. The bar graph of the data given in Example 3.2 can be depicted as in Figure 3.2.

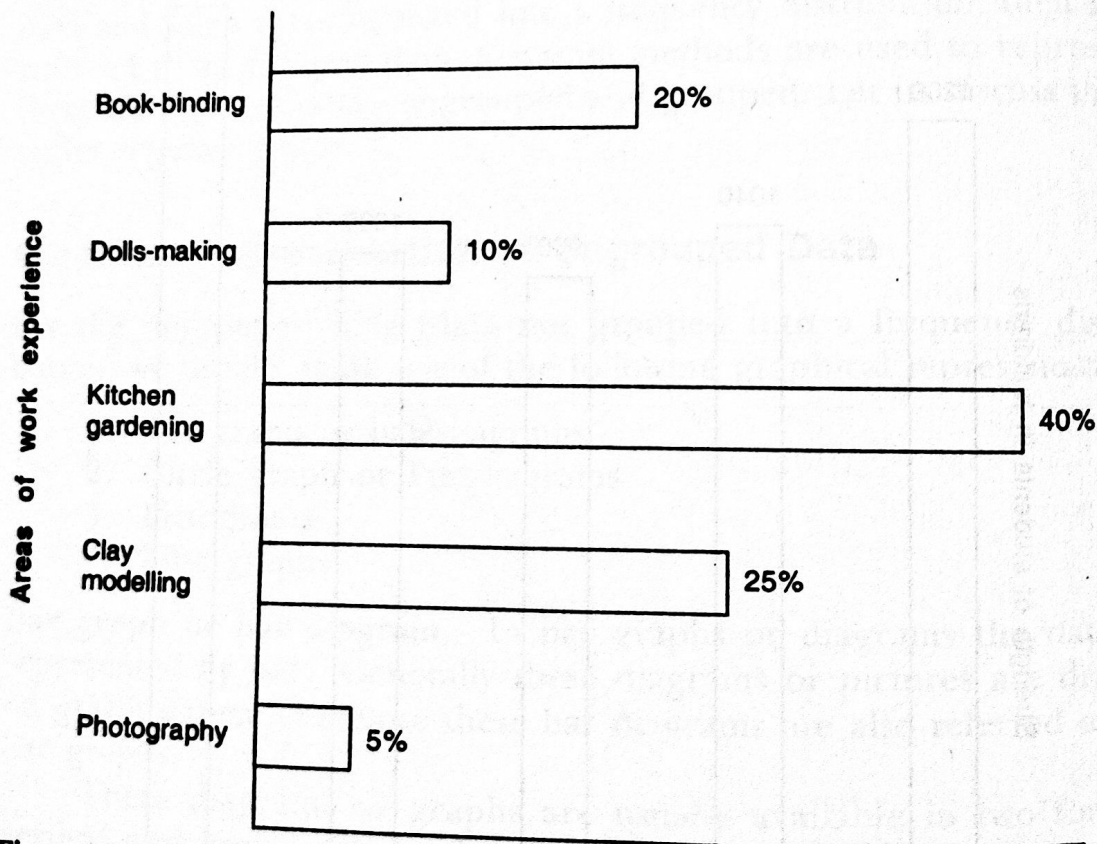


Figure 3.2 Bar graph—Horizontal—Percentage of students of class X opting for different work experience. (Source: Record of work experience activities of the school)

Circle graph or pie diagram. In this form of graphical representation, the data is represented through the sections or portions of a circle. The name pie diagram is given to a circle diagram because in determining the circumference of a circle we have to take into consideration a quantity known as 'pie' (written as π).

Method of construction. The surface area of a circle is known to cover 2π or 360° . The data to be represented through a circle diagram may therefore be presented through 360° , parts or sections of a circle. The total frequencies or value is equated to 360° and then the angles corresponding to component parts are calculated (or the component parts are expressed as percentages of the total and then multiplied by $360/100$ or 3.6). After determining these angles, the required sectors in the circle are drawn.

For illustration let us take the data given in Example 3.2 (see Table 3.2) concerning bar diagram.

Table 3.2

<i>Area of work experience</i>	<i>No. of students</i>	<i>Angle of the circle</i>
Photography	6	$\frac{6}{120} \times 360 = 18^\circ$
Clay modelling	30	$\frac{30}{120} \times 360 = 90^\circ$
Kitchen gardening	48	$\frac{48}{120} \times 360 = 144^\circ$
Doll-making	12	$\frac{12}{120} \times 360 = 36^\circ$
Book-binding	24	$\frac{24}{120} \times 360 = 72^\circ$
Total	120	360°

The numerical data may be converted into angles of a circle, as given in Figure 3.3):

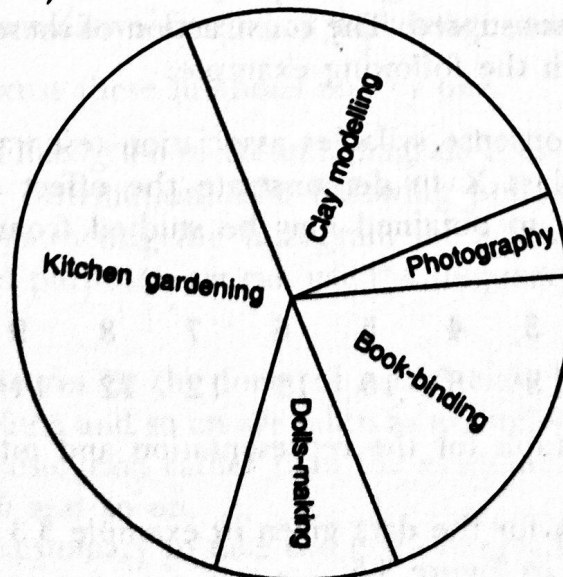


Figure 3.3 Representation of data through the Pie diagram—areas of work experience opted for by students of class X.