

Frequency Distribution and Graphic representation of data:

Frequency distribution in [statistics](#) provides the information of the [number](#) of occurrences (frequency) of distinct values distributed within a given period of time or interval, in a list, table, or [graphical representation](#). Grouped and Ungrouped are two types of Frequency Distribution.

Frequency

The frequency of any value is the number of times that value appears in a data set. For example of colours, we can say two children like the colour blue, so its frequency is two. So to make meaning of the raw data, we must organize. And finding out the frequency of the data values is how this organization is done.

Frequency Distribution

Many times it is not easy or feasible to find the frequency of data from a very large dataset. So to make sense of the data we make a frequency table and graphs. Let us take the example of the heights of ten students in cms.

Frequency Distribution Table

139, 145, 150, 145, 136, 150, 152, 144, 138, 138

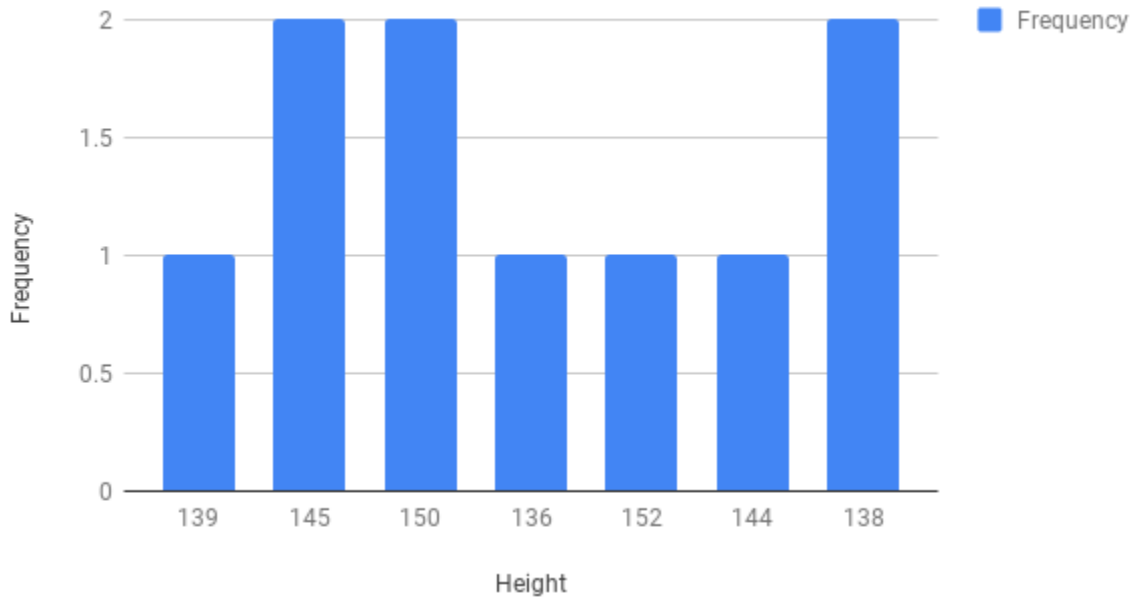
Height	Frequency
139	1
145	2
150	2
136	1
152	1
144	1
138	2

This frequency table will help us make better sense of the data given.

Frequency Distribution Graph

Using the same above example we can make the following graph:

Frequency vs. Height



An attractive representation of a frequency distribution is graphical representation. Most common graphic representation of data are histogram and polygone

Histogram

A histogram is a graph of a grouped frequency distribution. In a histogram, we plot the class intervals on the X-axis and their respective frequencies on the Y-axis. In histogram, the bars are placed continuously side by side with no gap between adjacent bars.

Example 1 :

Draw a histogram for the following table which represent the marks obtained by 100 students in an examination :

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Number of students	5	10	15	20	25	12	8	5

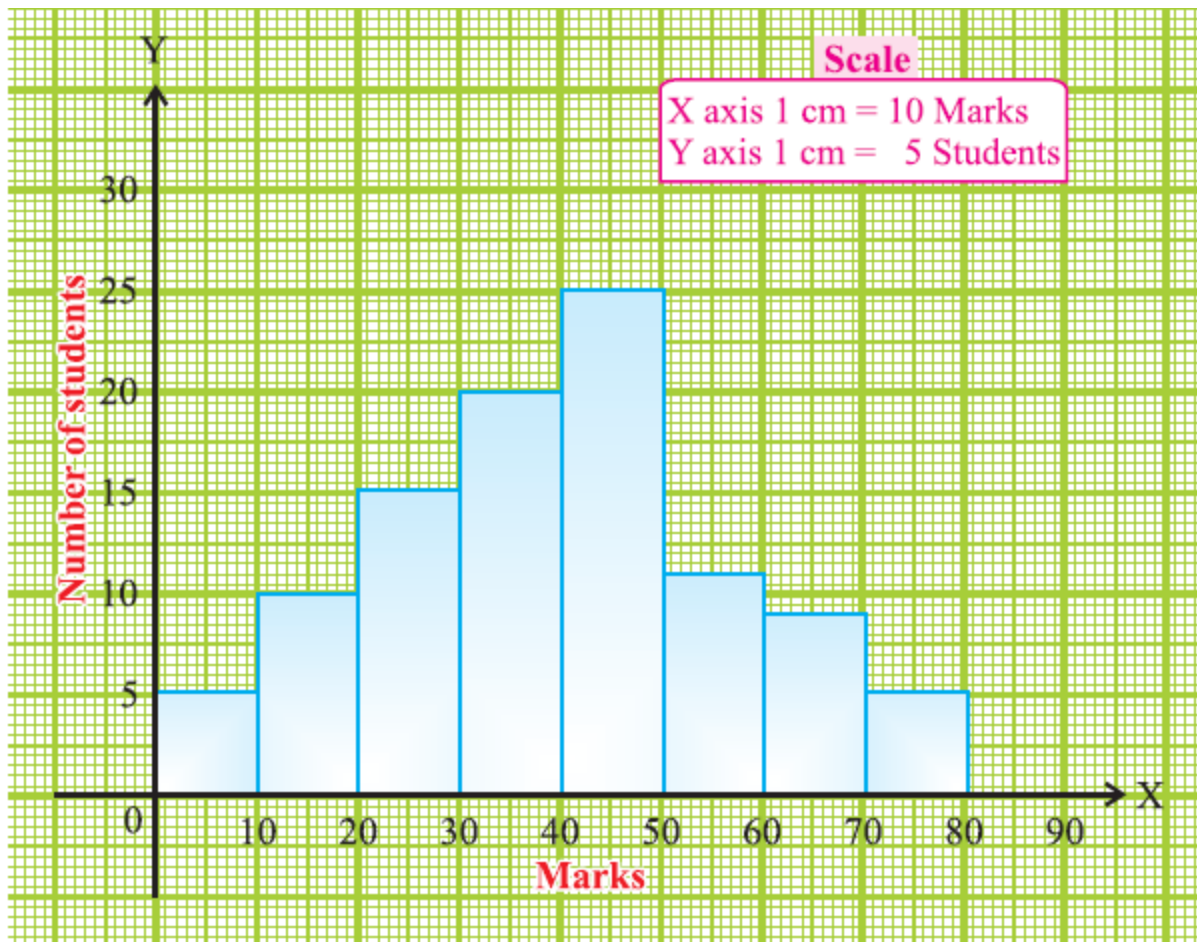
Solution :

The class intervals are all equal with length of 10 marks.

Let us denote these class intervals along the X-axis.

Denote the number of students along the Y-axis, with appropriate scale.

The histogram is given below.



Frequency polygon

A frequency polygon or a Histogram is another way of representing a frequency distribution on a graph. You draw a frequency polygon by joining the midpoints of the upper widths of the adjacent rectangles of the histogram with straight lines.

Example :

Draw a frequency polygon for the following data without using histogram.

Class interval	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90
Frequency	4	6	8	10	12	14	7	5

Solution :

Mark the class intervals along the X-axis and the frequency along the Y-axis.

We take the imagined classes 0-10 at the beginning and 90-100 at the end, each with frequency zero.

We have tabulated which is given below.

Class interval	Midpoints	Frequency
0-10	5	0
10-20	15	4
20-30	25	6
30-40	35	8
40-50	45	10
50-60	55	12
60-70	65	14
70-80	75	7
80-90	85	5
90-100	95	0

Using the adjacent table, plot the points A (5, 0), B (15, 4), C (25, 6), D (35, 8), E (45, 10), F (55, 12), G (65, 14), H (75, 7), I (85, 5) and J (95, 0).

We draw the line segments AB, BC, CD, DE, EF, FG, GH, HI, IJ to obtain the required frequency polygon ABCDEFGHIJ, which is given below.

