

CHAPTER 14

Statistics

Histogram:

A histogram is a graphical representation of grouped data using rectangular bars of different heights placed adjacent to one another. The bases of the rectangles represent the class intervals and the heights represent the frequencies. There is no gap between the bars in a histogram.

Note:

The classes are inclusive type i.e. not continuous. To make a histogram, classes must be made continuous. So we subtract 0.5 from lower limit of all classes and add 0.5 to upper limits of all classes.

Example:

Draw histogram to represent the following data.

Marks	0 - 40	40 - 50	50 - 60	60 - 80	80 - 100
No. of students (Frequency)	8	16	42	78	36

Sol.

By observation the given class – intervals are unequal. Now we have to modify the data by using following procedure.

Step – 1:

Find width of all class.

i.e. Upper limit – Lower width

Step – 2:

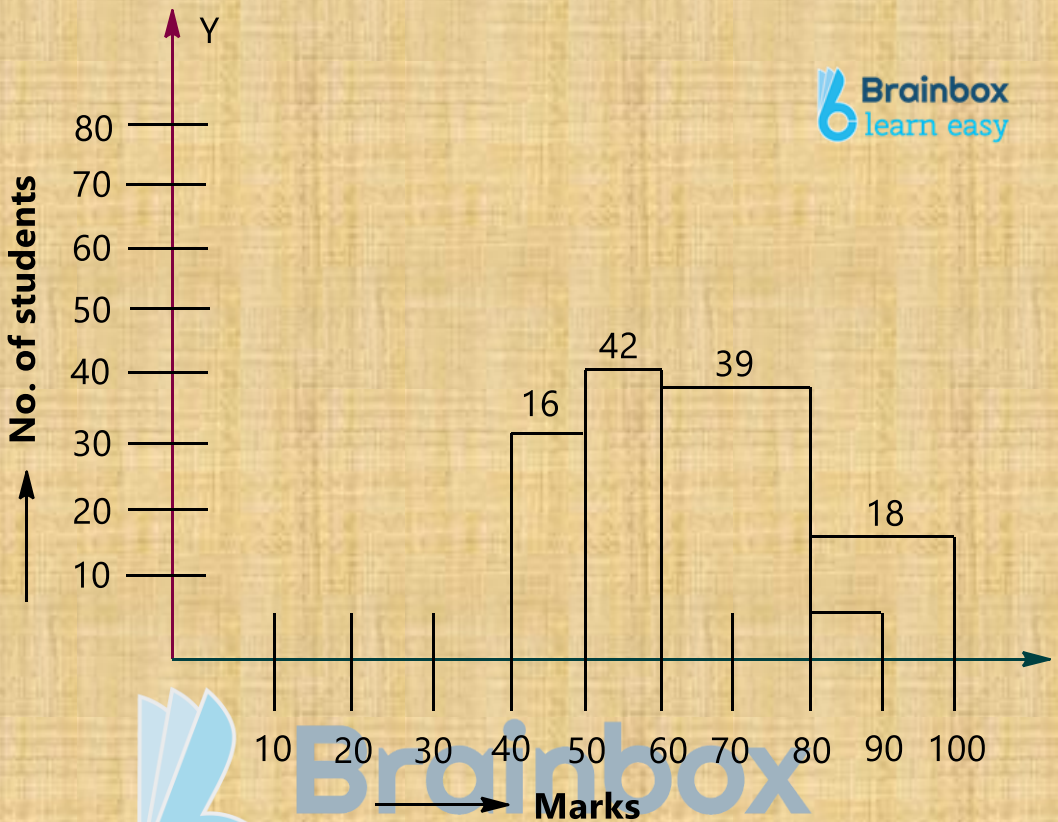
Find minimum width.

Step – 3:

Find the length of rectangle for each class.

Marks	No. of students	Class width	Frequency
0 – 40	8	40	$\frac{8}{40} \times 10 = 2$
40 – 50	16	10	$\frac{16}{10} \times 10 = 16$
50 – 60	42	10	$\frac{42}{10} \times 10 = 42$
60 – 80	78	20	$\frac{78}{20} \times 10 = 39$
80 – 100	36	20	$\frac{36}{20} \times 10 = 18$

∴ Histogram will be as follows:



Note:

Since, classes are not of equal width so bars of histograms are not of equal width but are made proportional in area to adjusted frequencies.