

CHAPTER 14

Statistics

Frequency Polygon:

Frequency polygon is another method of representing frequency distributions graphically; Frequency polygon of a given frequency distribution can be drawn in two ways.

- By using histogram
- Without using histogram

In order to draw a frequency polygon by using histogram, we follow the following steps:

Step – I:

Obtain the frequency distribution and draw a histogram representing it.

Step – II:

Obtain the mid-points of the upper horizontal side of each rectangle.

Step – III:

Join these mid-points of the adjacent rectangles of the histogram by dotted line segments.

Step – IV:

Obtain the mid-points of two class-intervals of zero frequency.
i.e. on x-axis, one adjacent to the first, on its left and one

adjacent to the last, on its right. These class-intervals are known as imagined class-intervals.

Step – V:

Complete the polygon by joining the mid-points of first and last class intervals to the mid-points of imagined class-intervals adjacent to them.

Note:

Polygon is a closed figure.

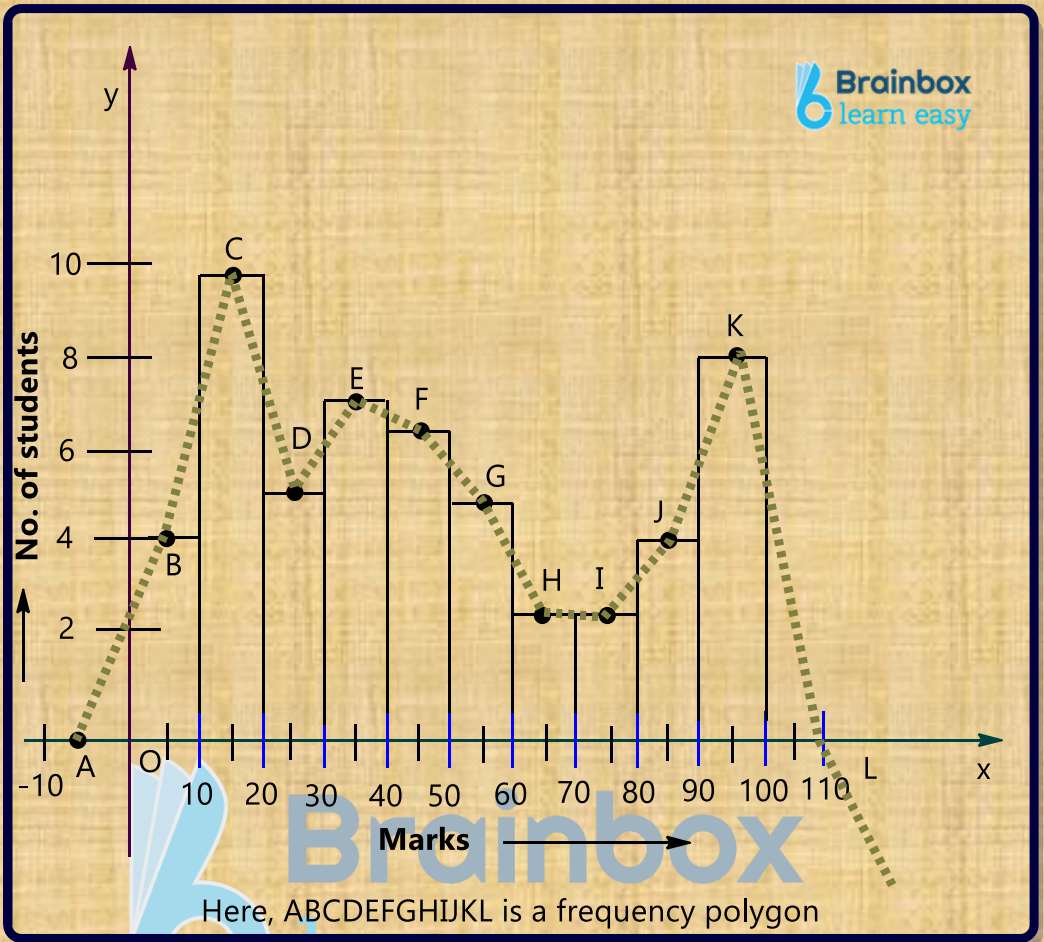
Example:

Consider the marks out of 100, obtained by 50 students of a class given in the table.

Marks	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70	70 - 80	80 - 90	90 - 100
No. of Students	4	9	5	7	6	4	2	2	3	8
Total = 50										

Draw a frequency polygon corresponding to this frequency distribution table.

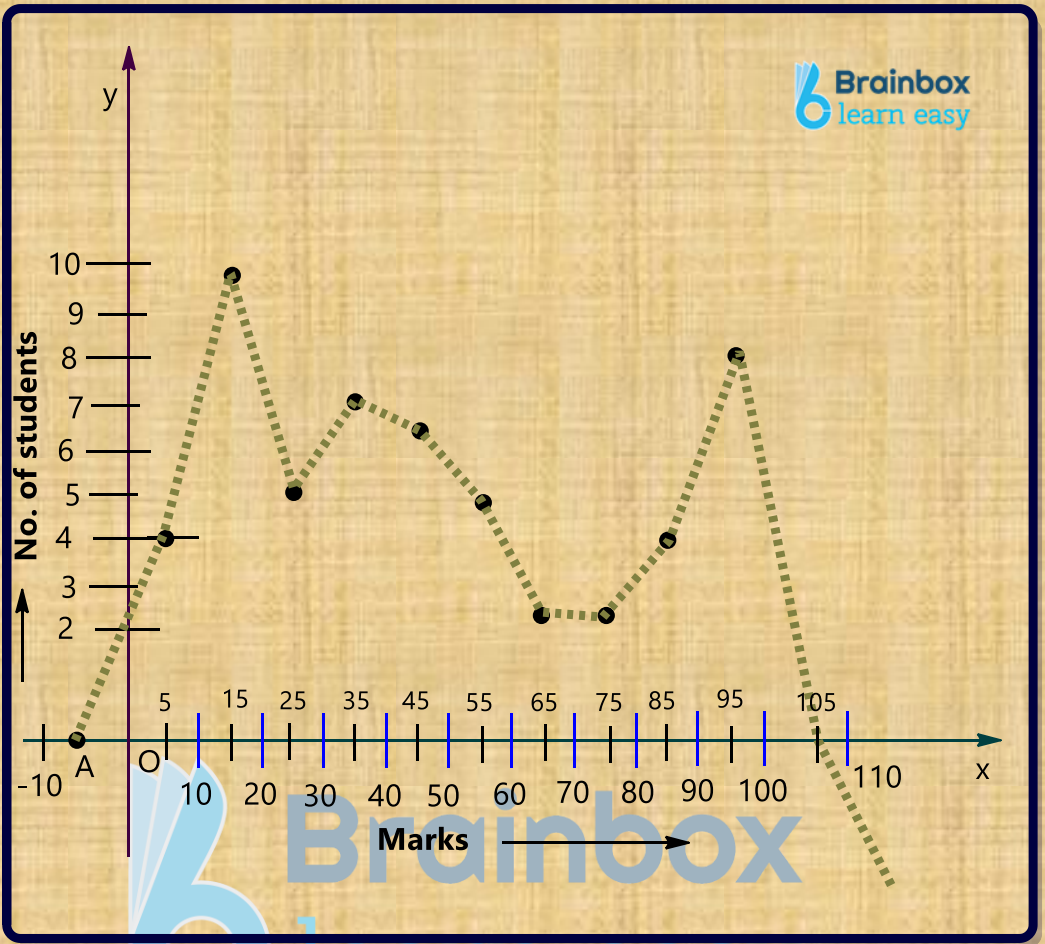
Marks	Class Mark	No. of students (Frequency)
(-10) – 0	-5	0
0 – 10	5	4
10 – 20	15	9
20 – 30	25	5
30 – 40	35	7
40 – 50	45	6
50 – 60	55	4
60 – 70	65	2
70 – 80	75	2
80 – 90	85	3
90 – 100	95	8
100 – 110	105	0



Frequency polygon without drawing histogram:

We take two imagined classes, one at the beginning, namely $(-10) - 0$ and the other at the end namely $100 - 110$, each with frequency zero.

$$\text{Class Mark} = \frac{\text{Upper limit} + \text{Lower limit}}{2}$$

**Note:**

- Frequency polygon without drawing by straight lines.
- Frequency curves are drawn by free hand sketches.