

Graphical Representation of Statistical Data

POINTS TO REMEMBER

1. **Graphical Representation of Statistical Data.** Through pictures, diagrams etc., we can represent the statistical data. There are various types of graphs :

- (1) Bar graph
- (2) Histogram
- (3) Frequency polygon.

- (1) **Bar graph or Bar chart.** In bar graph, bars of uniform width are drawn with heights according to the data given. The gap between the two bars should be kept the same.
- (2) **Histogram.** A histogram is a graphical representation of a frequency distribution in an exclusive form in form of rectangles with class intervals as bases *i.e.* on x -axis and corresponding frequencies as heights *i.e.* on y -axis. There is no gap between any two successive rectangles.

Note.

- (1) If the given frequency distribution is in inclusive form, convert it into exclusive form.
- (2) The scale chosen for both the axes need not be the same.
- (3) **Frequency polygon.** The mid-points of the adjacent tops of the rectangles of a histogram are joined by the line segments. The mid-point at each end are joined to the immediately lower or higher mid-points at x -axis. Thus, we obtain a polygon which is called frequency polygon.

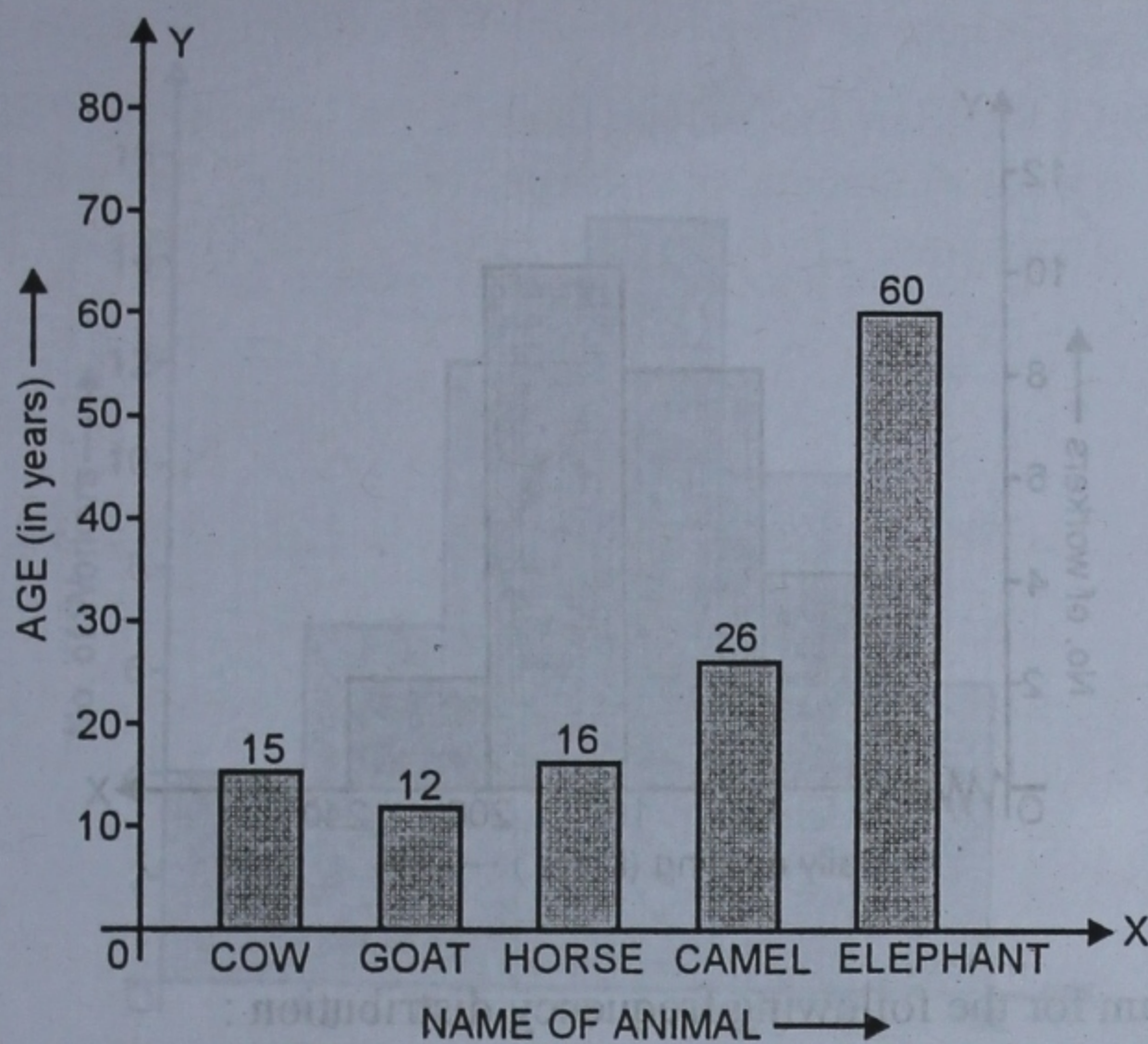
EXERCISE 18

Q. 1. Given below is the maximum age of some of the animals.

Name of the animal	Cow	Goat	Horse	Camel	Elephant
Age (in years)	15	12	16	26	60

Draw a bar chart to represent the above data.

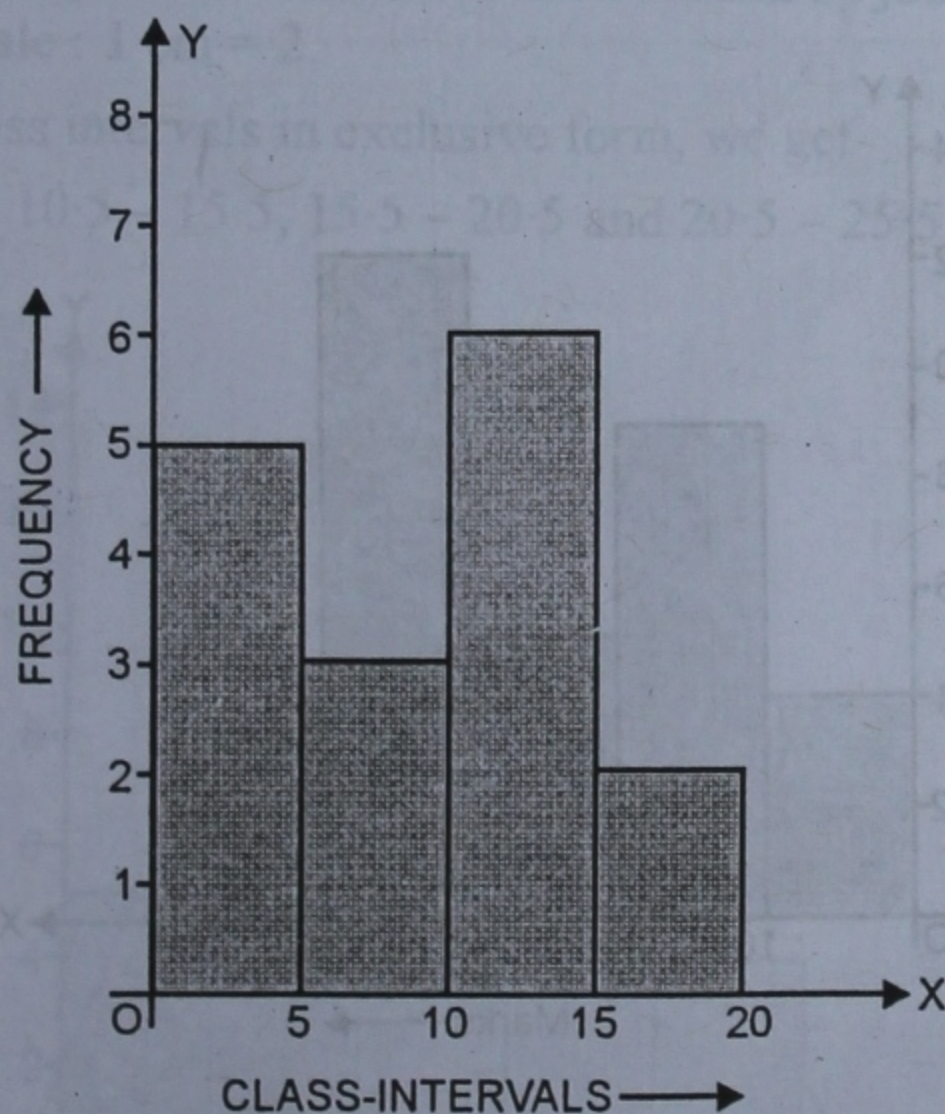
Sol. We will take name of animals along x -axis and age (in year) along y -axis. Take 1 cm = 10 years.



Q. 2. Construct a histogram for the following frequency distribution :

Class-interval	0 – 5	5 – 10	10 – 15	15 – 20
Frequency	5	3	6	2

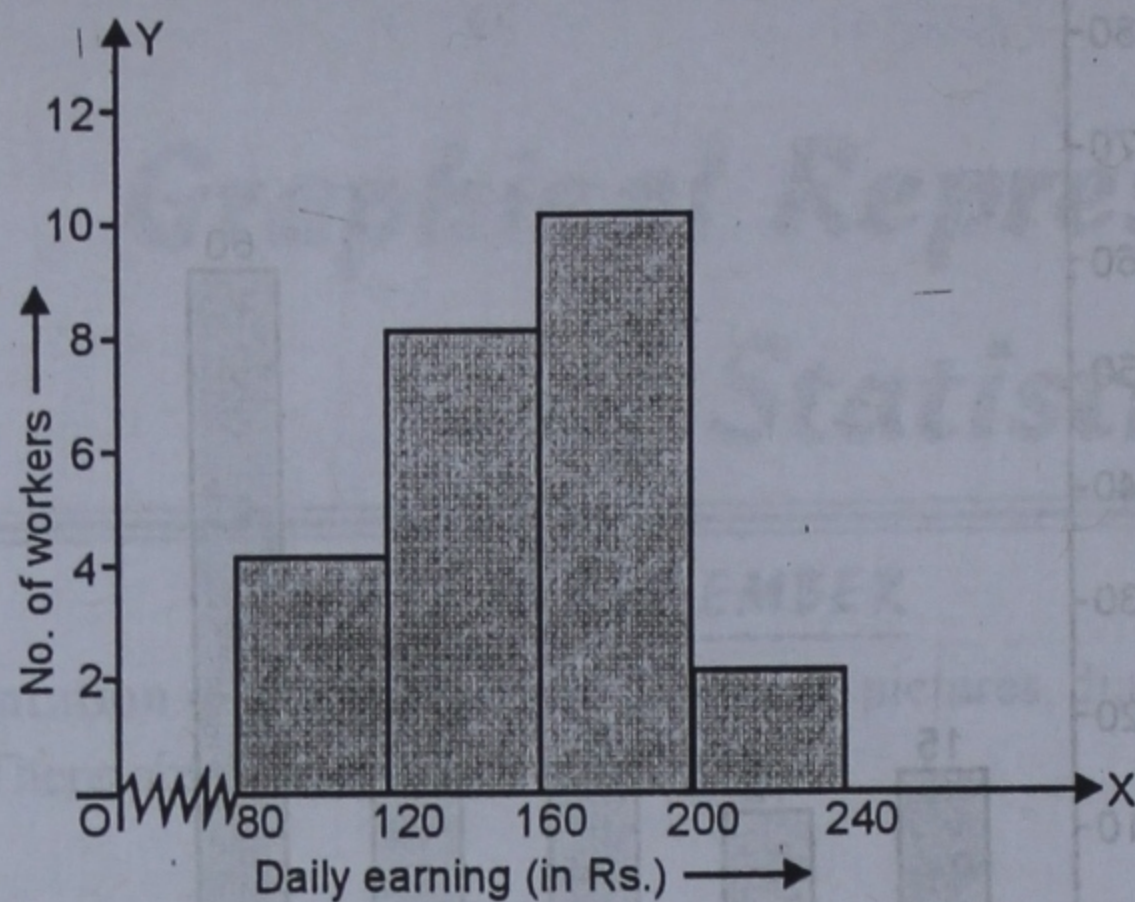
Sol. We will take class intervals along x -axis and frequency along y -axis. Below is given histogram of the given data. Take 1 cm = 1 frequency.



Q. 3. Construct a histogram for the following frequency distribution :

Daily earning (in Rs.)	80 – 120	120 – 160	160 – 200	200 – 240
No. of workers	4	8	10	2

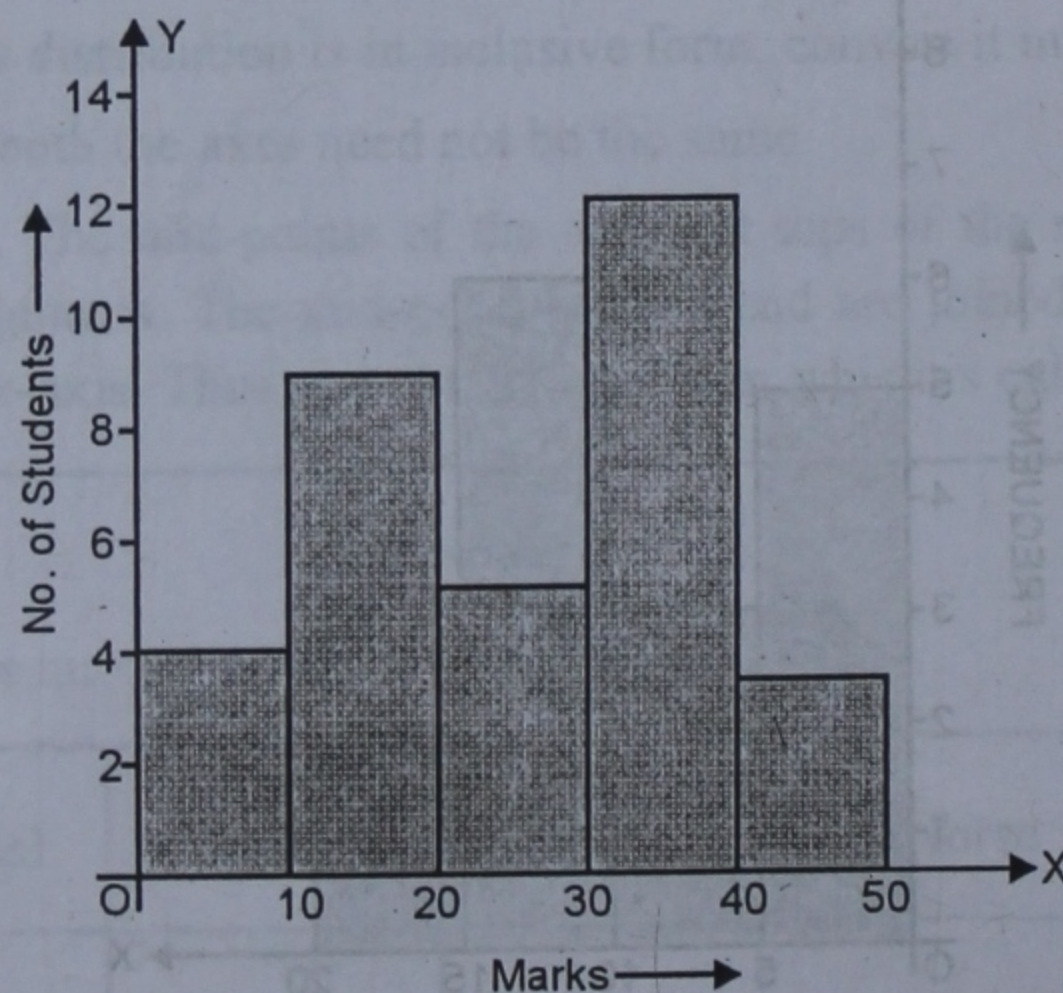
Sol. We will take daily earnings (in Rs.) along x -axis and no. of workers along y -axis. Below is given a histogram of the given data. Scale : 1 cm = 2 workers.



Q. 4. Draw a histogram for the following frequency distribution :

Marks	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50
No. of students	4	9	5	12	3

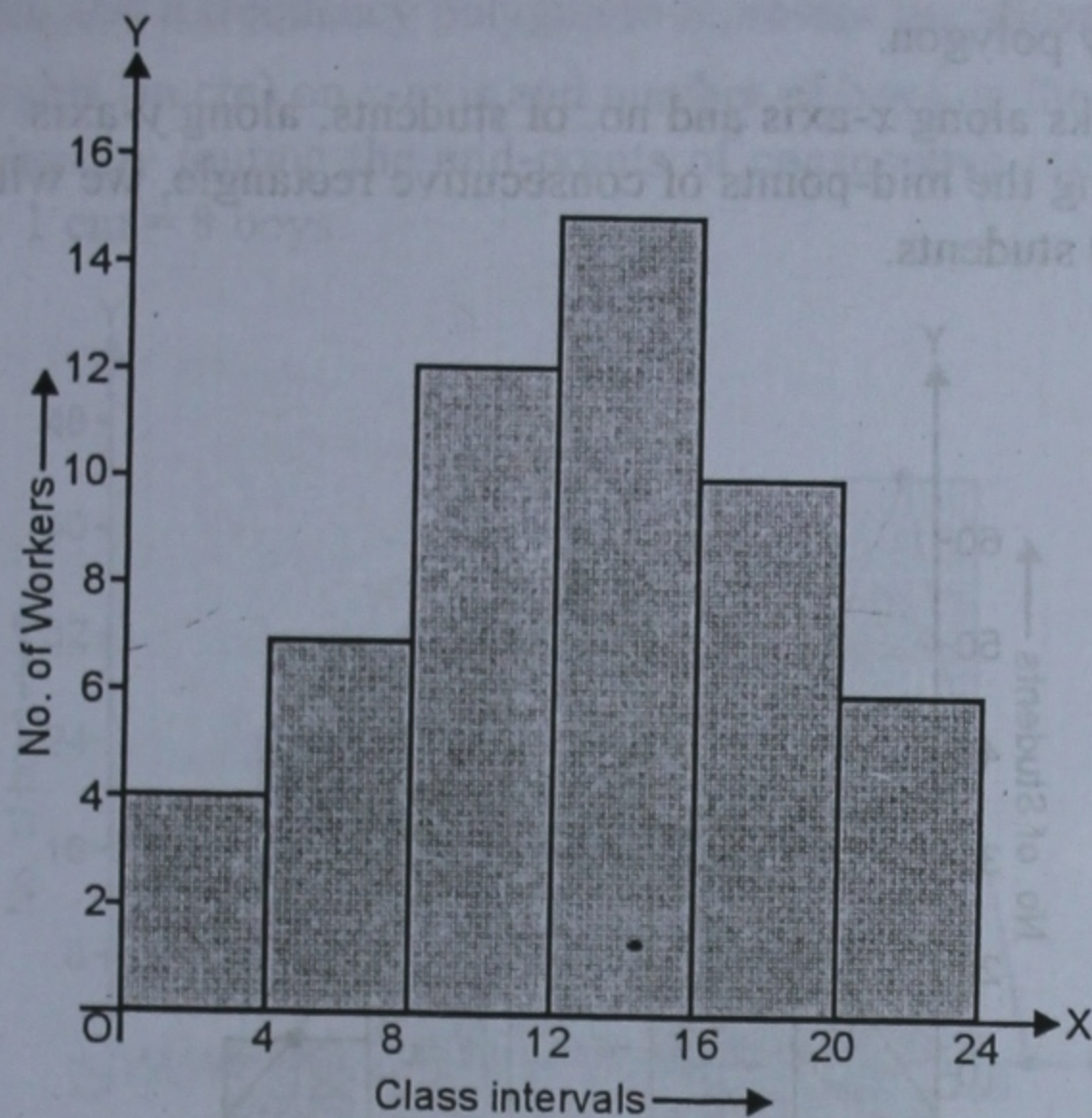
Sol. We will take marks along x -axis and no. of students along y -axis. Below is given the histogram of the given data. Scale : 1 cm = 2 students.



Q. 5. Construct a histogram for the following frequency distribution :

Class-interval	0 - 4	4 - 8	8 - 12	12 - 16	16 - 20	20 - 24
No. of workers	4	7	12	15	10	6

Sol. We will take class intervals along x -axis and no. of workers along y -axis. Below is given the histogram of the given data. Scale : 1 cm = 2 workers.

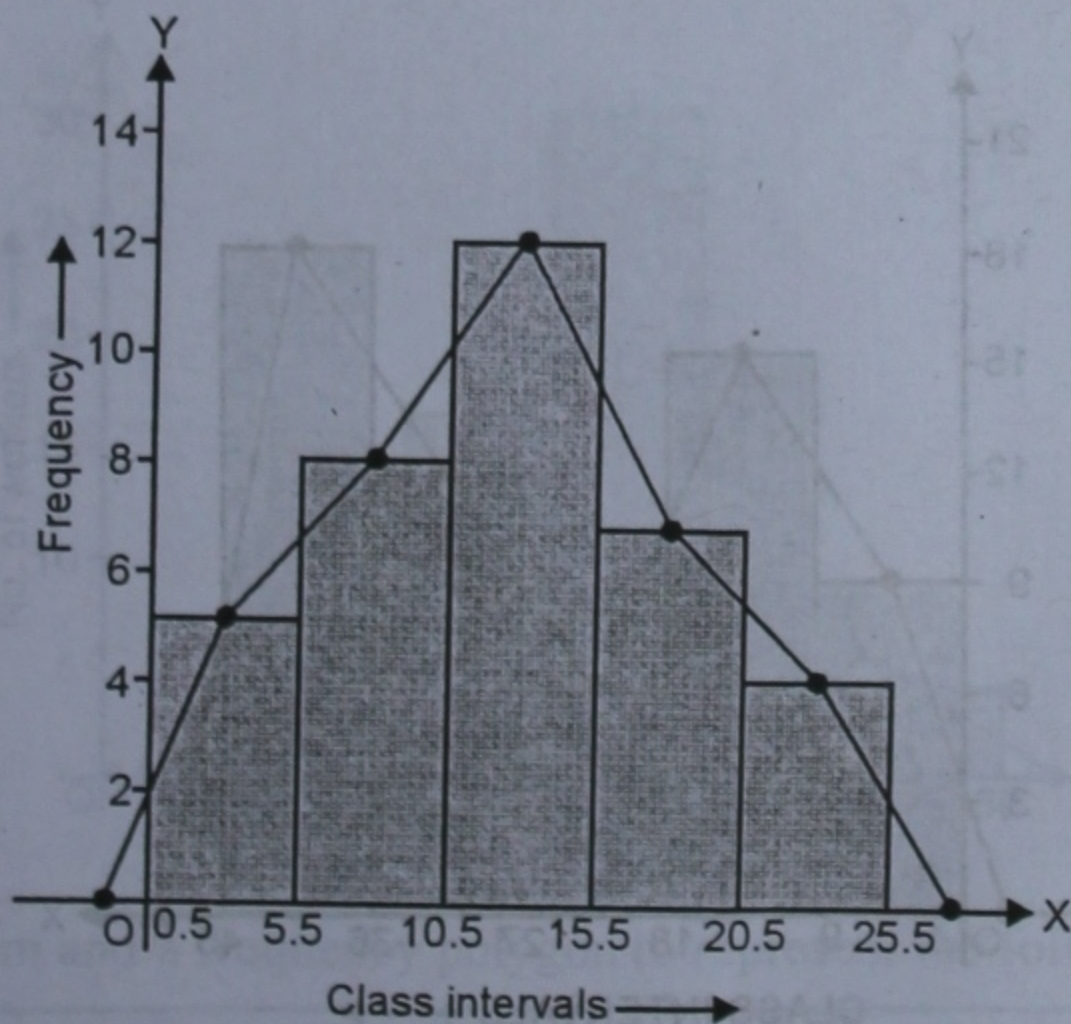


Q. 6. Construct a frequency polygon from the following data :

Class-interval	1 - 5	6 - 10	11 - 15	16 - 20	21 - 25
Frequency	5	8	12	7	4

Sol. We will take class intervals along x-axis and frequency along y-axis. Then, we will draw a histogram and take mid-points of each class-interval and by joining them, we get the frequency polygon as given. Scale : 1 cm = 2.

By converting the class intervals in exclusive form, we get
 $0.5 - 5.5$, $5.5 - 10.5$, $10.5 - 15.5$, $15.5 - 20.5$ and $20.5 - 25.5$.

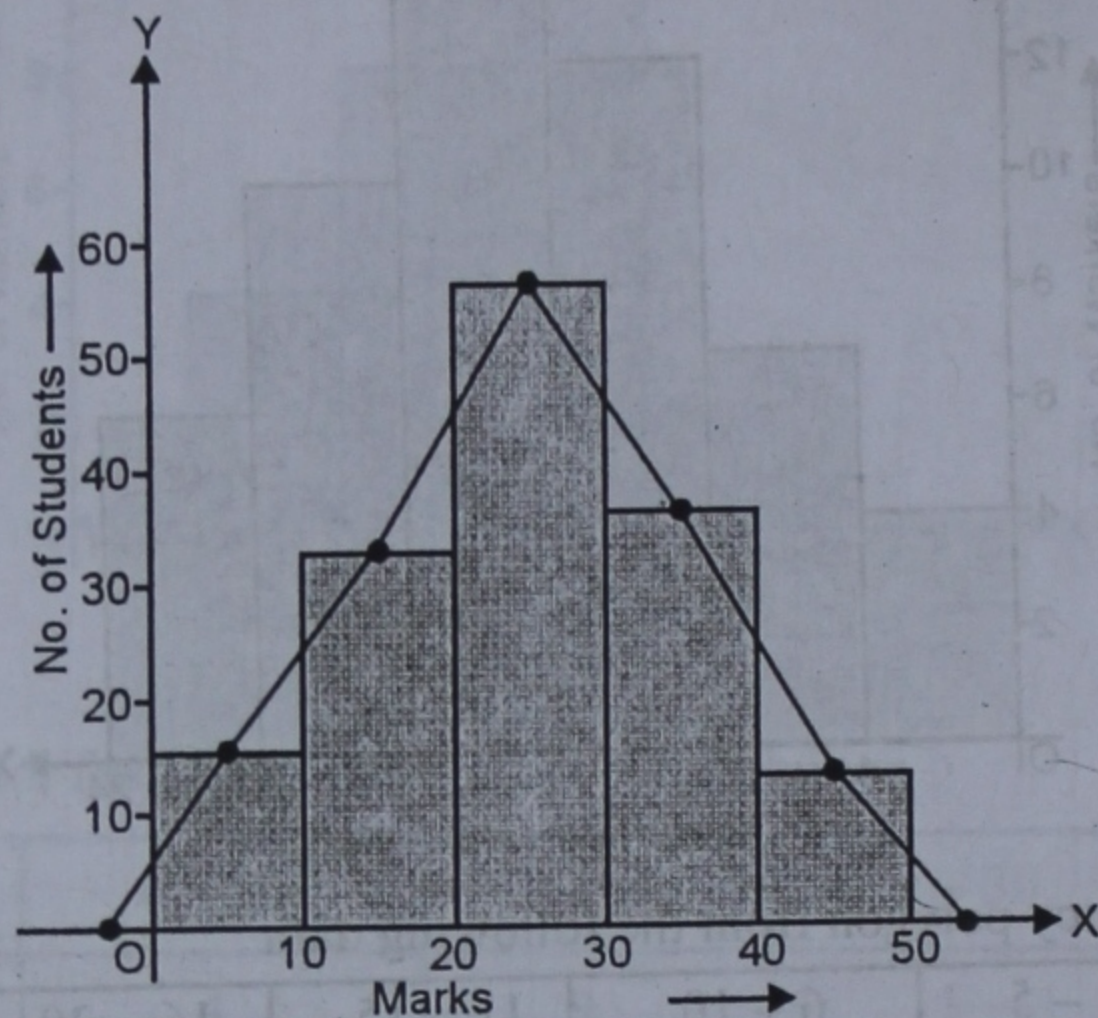


Q. 7. The following table shows the marks obtained by the students of a class in an examination.

Marks	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50
No. of students	15	32	55	35	13

Draw a frequency polygon.

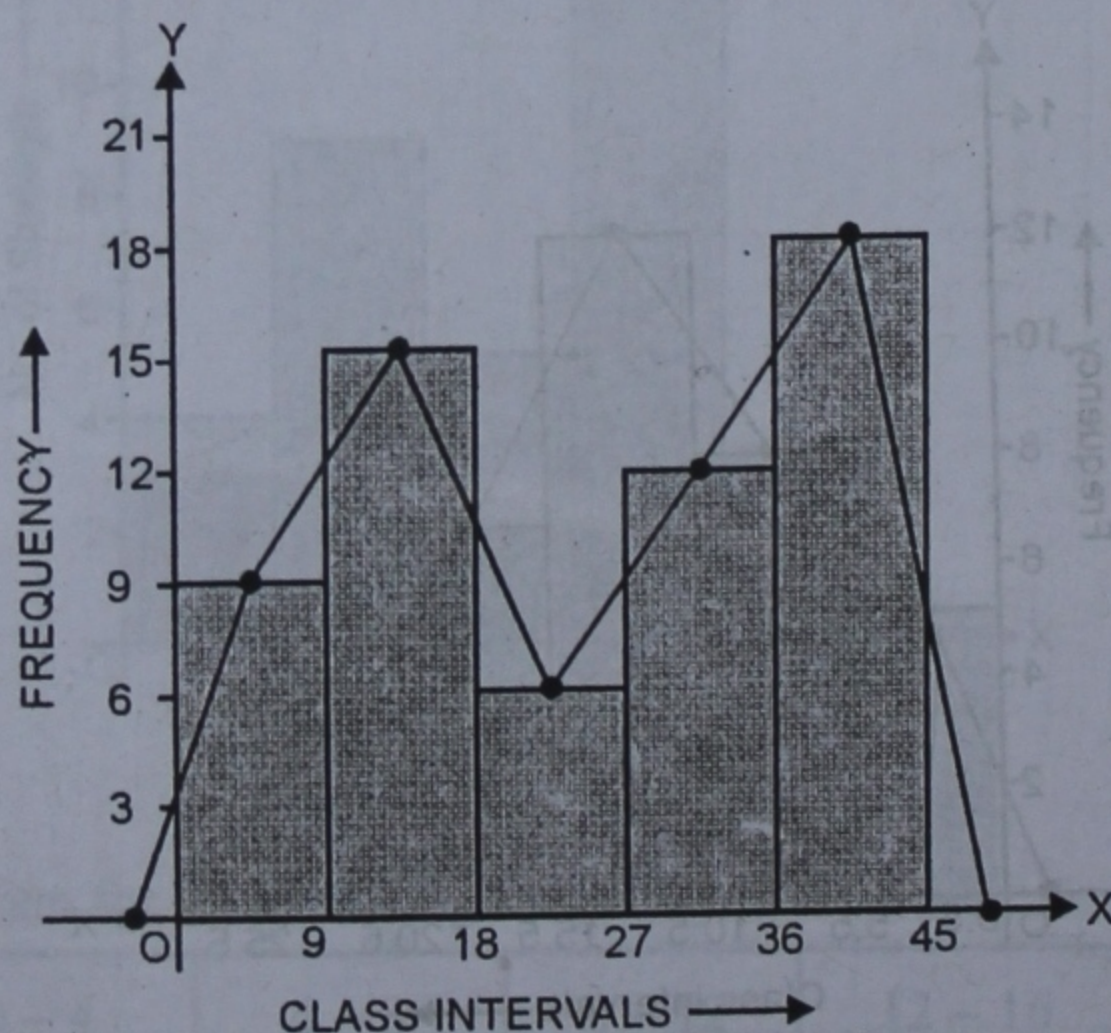
Sol. We will take marks along x -axis and no. of students, along y -axis. First we draw a histogram and then by joining the mid-points of consecutive rectangle, we will get a frequency polygon.
Scale : 1 cm = 10 students.



Q. 8. Draw a histogram and a frequency polygon to represent the following data :

Class-interval	0 - 9	9 - 18	18 - 27	27 - 36	36 - 45
Frequency	9	15	6	12	18

Sol. We will take class-intervals along x -axis and frequency along y -axis. We will draw a histogram first and then by joining its mid-points of consecutive rectangles, we will get a frequency polygon.
Scale : 1 cm = 3.

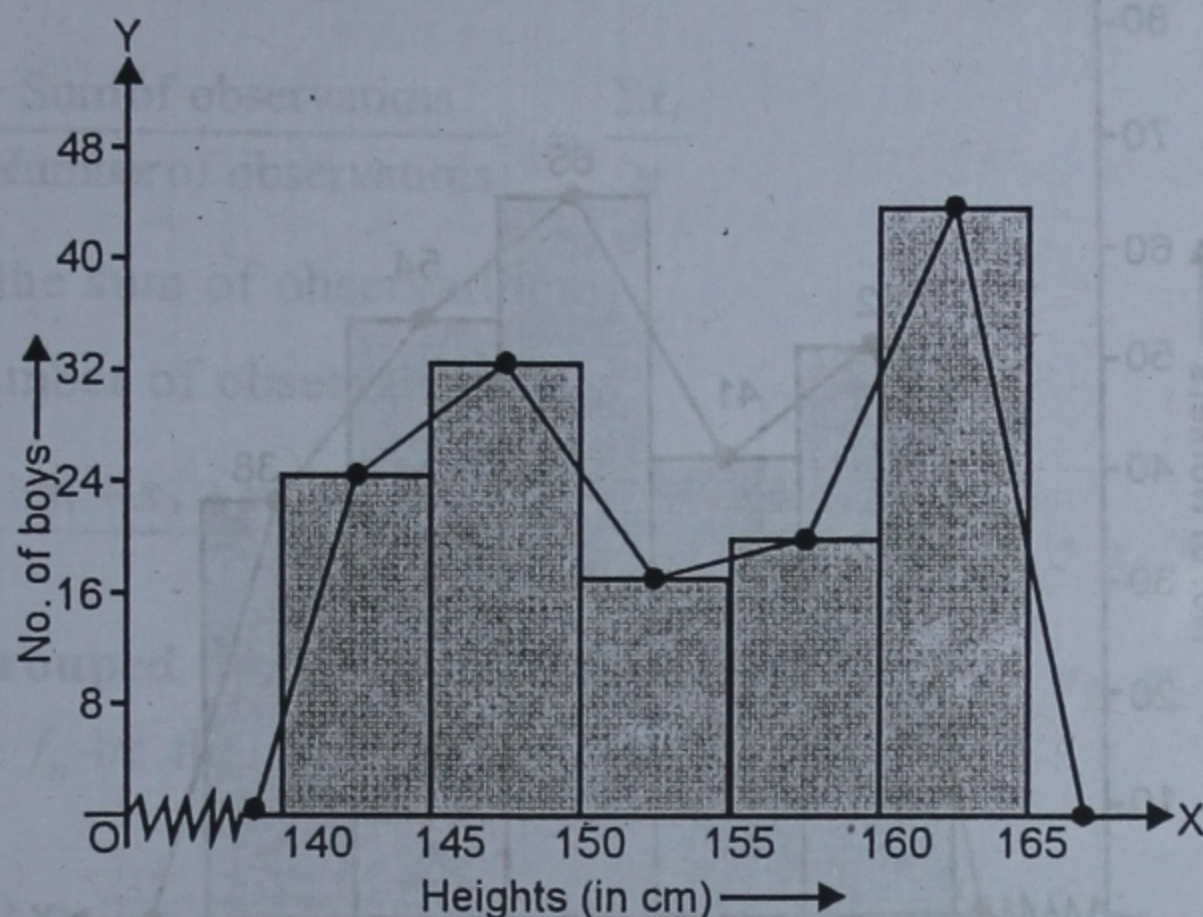


Q. 9. The heights of boys in a school are given below :

Height (in cm)	140 - 145	145 - 150	150 - 155	155 - 160	160 - 165
Number of boys	24	32	16	20	44

Draw a histogram and a frequency polygon to represent the above data.

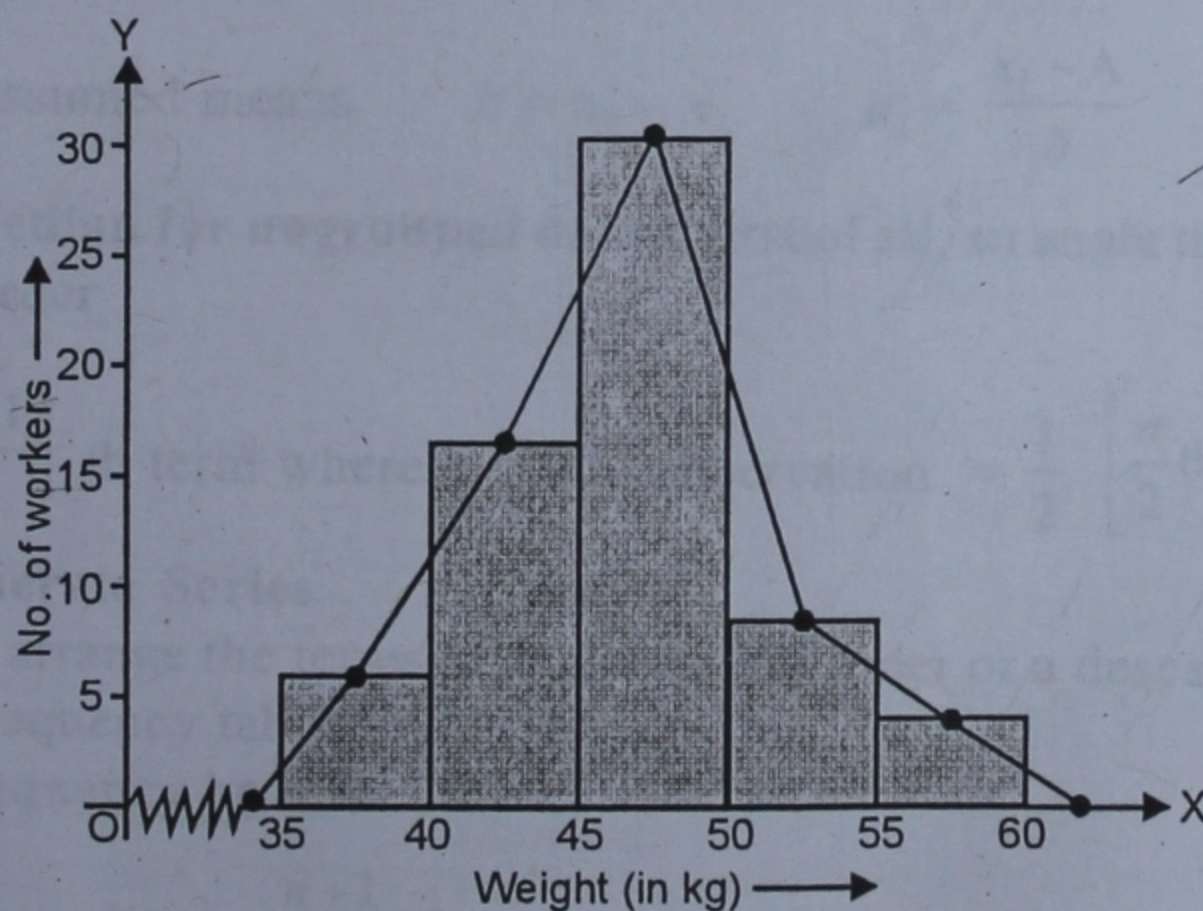
Sol. We will take heights (in cm) on x -axis and number of boys on the y -axis. First we will draw a histogram and then by joining the mid-points of consecutive rectangles, we get a frequency polygon. Scale : 1 cm = 8 boys.



Q. 10. Draw a histogram and a frequency polygon to represent the following data :

Weight (in kg)	35 – 40	40 – 45	45 – 50	50 – 55	55 – 60
No. of workers	6	17	30	8	3

Sol. We will take weights (in kg) on x -axis and no. of workers on the y -axis. First we draw a histogram and then by joining the mid-points of consecutive rectangles, we get a frequency polygon. Scale : 1 cm = 5 workers.



Q. 11. Draw a histogram and a frequency polygon to represent the following data :

Weekly wages (in Rs.)	750 – 850	850 – 950	950 – 1050	1050 – 1150	1150 – 1250
No. of workers	52	41	65	54	38

Sol. We will take weekly wages (in Rs.) along x-axis and no. of workers along y-axis. We will draw a histogram and then by joining the mid-points of consecutive rectangles, we will get a frequency polygon. Scale : 1 cm = 10 workers.

