TEXT BOOK EXERCISE 4.2

**Draw Histogram of the Following :**

Q. 1.

Marks	0-10	10-20	20-30	30-40	40-50	50-60
No. of students	6	9	12	8	10	5

Solution. (*i*) We represent the marks (Class intervals) along *x*-axis with a suitable scale and the number of students (Frequency) along *y*-axis on a suitable scale.

(*ii*) Draw the rectangular bars according to their values. Taking class intervals as bases and the coresponding frequencies as heights. We construct rectangles to obtain the histogram.
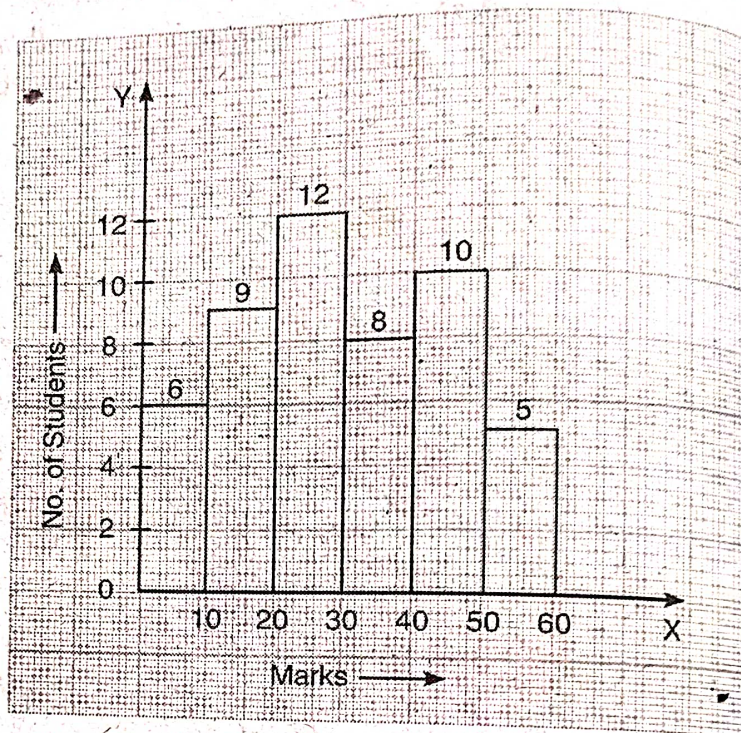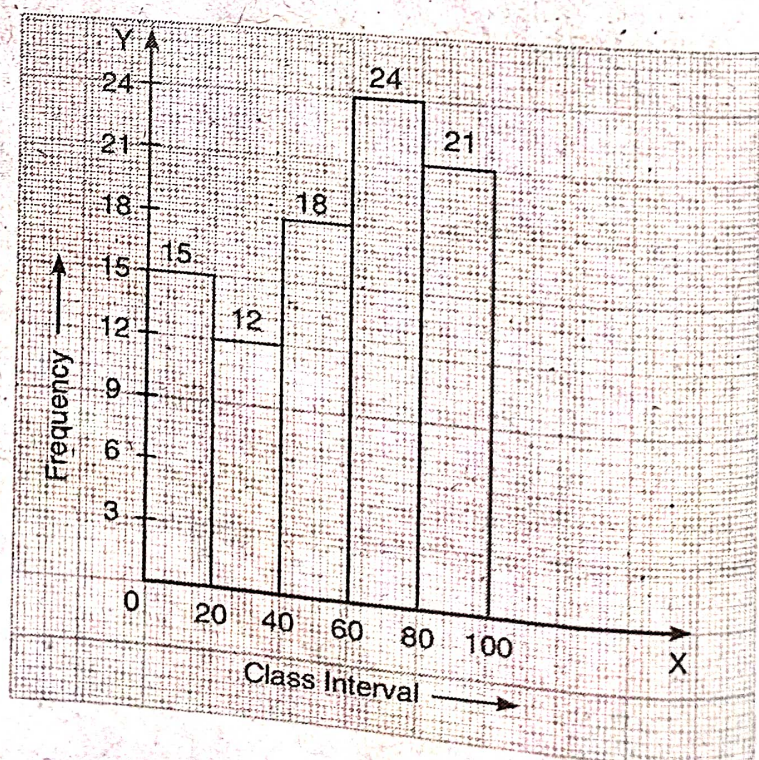

Q. 2.

Class Interval	0-20	20-40	40-60	60-80	80-100
Frequency	15	12	18	24	21

Solution. (*i*) We represent the class intervals along *x*-axis with a suitable scale and the frequency along *y*-axis on a suitable scale.

(*ii*) Draw the rectangular bars according to their values. Taking class intervals as bases and the coresponding frequencies as heights. We construct rectangles to obtain the histogram.

Q. 3.

Weight (in kg)	25-30	30-35	35-40	40-45	45-50	50-55
No. of persons	4	8	13	15	10	12

Solution. (i) We represent weight (class intervals) along x-axis with a suitable scale and number of persons (frequency) along y-axis on a suitable scale.

(ii) Since the scale on x-axis starts at 25, so a kink (break) (∿) is indicated near the origin to signify that the graph is drawn to scale beginning at 25 and not at origin.

(iii) Draw the rectangular bars according to their values. Taking class intervals as bases and the corresponding frequencies as their height we construct rectangles to obtain the histogram.
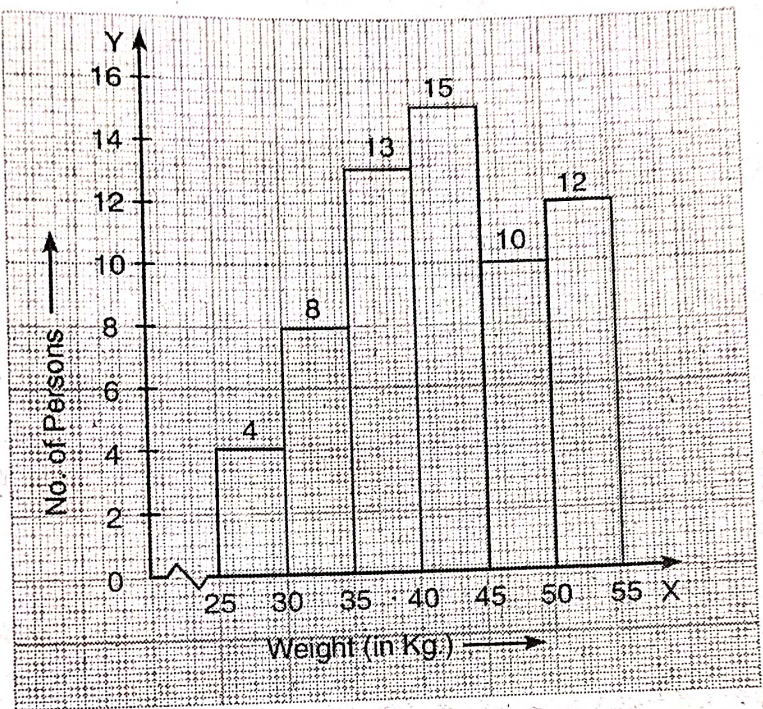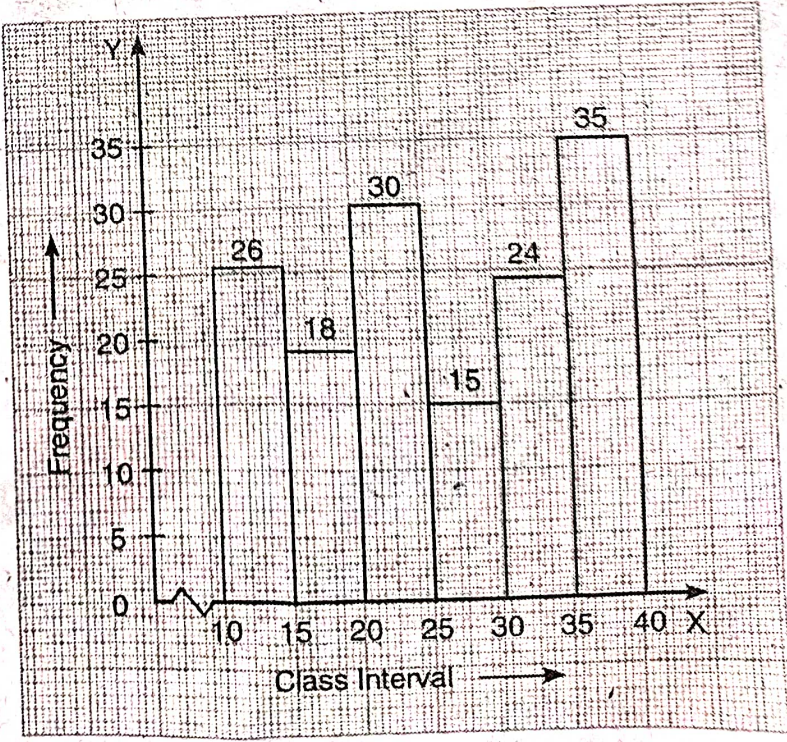

Q. 4.

Class Intervals	10-15	15-20	20-25	25-30	30-35	35-40
Frequency	26	18	30	15	24	35

Solution. (i) We represent class intervals along x-axis with a suitable scale and frequency along y-axis on a suitable scale.

(ii) Since the scale on x-axis starts at 10, so a kink (break) (∿) is indicated near the origin to signify that the graph is drawn to scale beginning at 10 and not at origin.

(iii) Draw the rectangular bars according to their values. Taking class intervals as bases and the corresponding frequencies as their class intervals we construct rectangles to obtain the histogram.

Q. 5.

Daily earnings (in ₹)	450-500	500-550	550-600	600-650	650-700	700-750
Number of persons	16	10	12	20	25	12

Solution.

(i) We represent daily earning (class intervals) along x-axis with a suitable scale and number of persons (frequency) along y-axis on a suitable scale.

(ii) Since the scale on x-axis starts at 450, so a kink (break) (⋏) is indicated near the origin to signify that the graph is drawn to scale beginning at 450 and not at origin.

(iii) Draw the rectangular bars according to their values. Taking class intervals as bases and the corresponding frequencies as their daily earnings we construct rectangles to obtain the histogram.
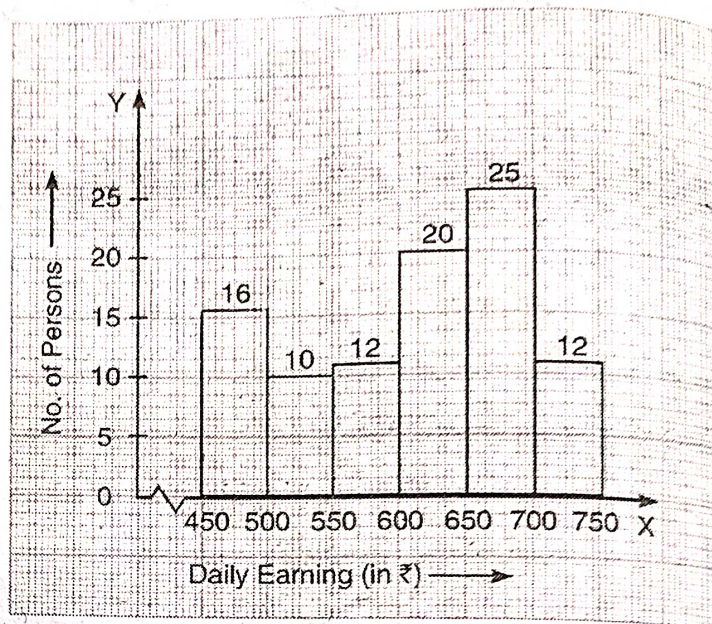
Q. 6. In a survey of 20 people, the amount of money with them is found to be as follows :

104, 98, 98, 88, 91, 99, 107, 109, 116, 121, 121, 133, 146, 159, 172, 185, 197, 209, 225, 108.

Draw a histogram of the frequency distribution of above data (taking one of class intervals 50-100)

Solution. The minimum and maximum amount of money in given data are 88 and 225 respectively. So, the classes of above data are 50–100, 100–150 and so on.
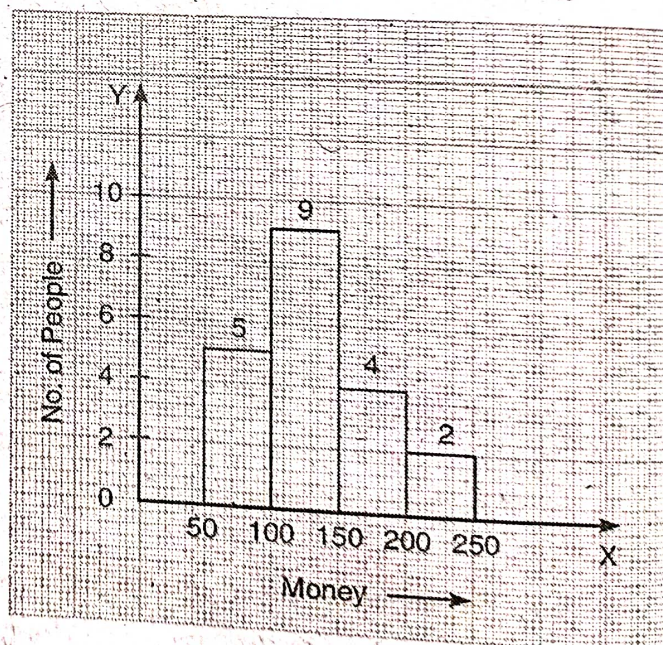
Thus, the frequency distribution is as given below :

Frequency Distribution Table

Money	Tally Marks	No. of People
50–100	⅀	5
100–150	⅀ IIII	9
150–200	IIII	4
200–250	II	2
	Total	20

Now, we shall draw histogram for the above table. For this we represent money along x-axis and number of people along y-axis on a suitable scale. Since the scale on x-axis starts at 50. So a kink is indicated near the origin. Now draw the rectangular bars according to their values.

Q. 7. The marks obtained by 40 students of class VIII in an examination are given below :

18, 8, 12, 6, 8, 16, 12, 5, 23, 16, 2, 23, 7, 12, 20, 16, 9, 7, 5, 6, 5, 3, 13, 21, 13, 20, 15, 7, 1, 21, 20, 18, 13, 23, 15, 18, 7, 17, 16, 3.

Prepare a frequency distribution using one of the class as 15-20. Draw histogram also.

Solution. The minimum and maximum marks in the given data are 1 and 23 respectively. So, the classes of above data are 0 – 5, 5 – 10, 10 – 15 and so on. Thus the frequency distribution is as given below :

Frequency Distribution Table

| Marks	Tally Marks	Students
0 – 5	IIII	4
5 – 10	IIII IIII II	12
10 – 15	IIII I	6
15 – 20	IIII IIII	10
20 – 25	IIII III	8
	Total	40

Now, we shall draw histogram for the above table. We represent the marks along x-axis and the number of students along y-axis with a suitable scale. Draw the rectangular bars according to their values.
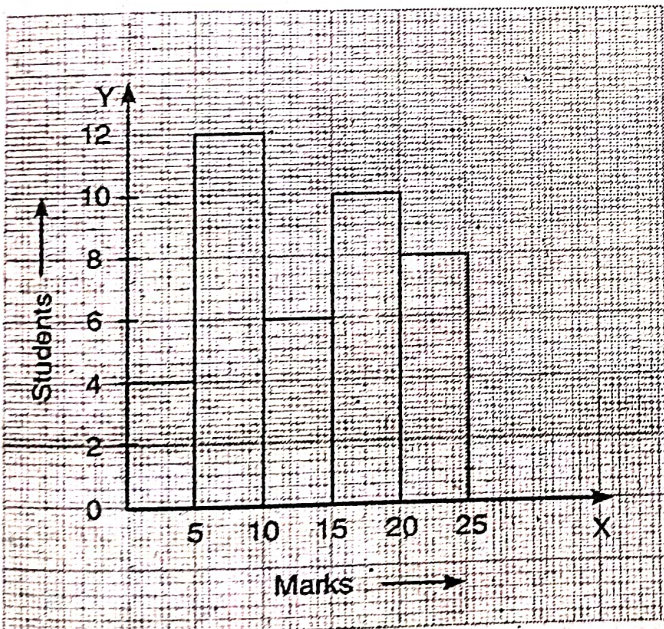
Q. 8. The following histogram depicts the marks obtained by 46 students of a class.

Observe the histogram and answer the following :

(i) What is the class size ?
(ii) How many students obtained less than 20 marks ?
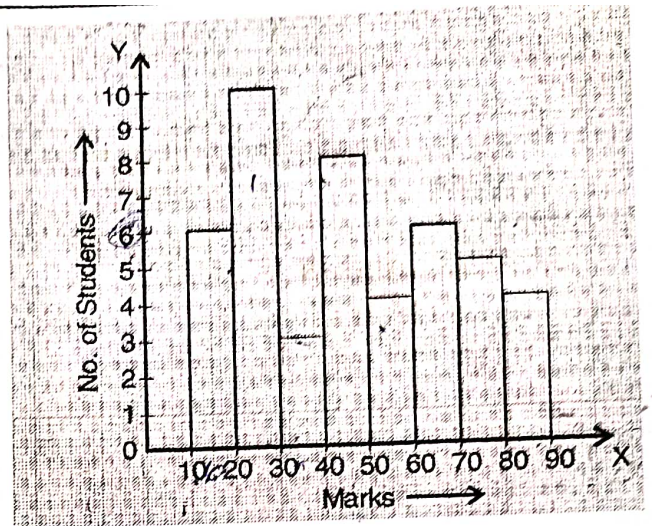
(iii) How many students obtained 30 or more marks but less than 60 ?
(iv) If passing marks are 30. What is the number of failures ?

**Solution.** (i) Class size of all class intervals is 10.

(ii) 6 students obtained less than 20 marks.

(iii) 15 students obtained 30 or more marks but less than 60.

(iv) The number of failures are 16.

Q. 9. Observe the following histogram and answer the questions given below :

(i) What information is given by the graph ?
(ii) Which group has maximum girls ?
(iii) How many girls have a height of 145 cm and more ?
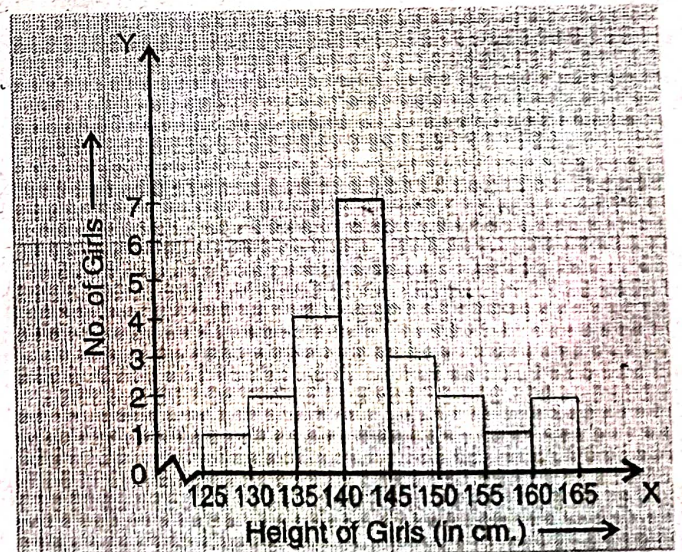
**Solution.** (i) Number of girls with different heights.

(ii) Group 140–145 has maximum girls.

(iii) 8 girls have a height of 145 cm and more.

**Q. 10. The following histogram shows the frequency distribution of the ages of teachers in a school :**

(i) What is the number of eldest and youngest teachers in the school ?

(ii) Which age group teachers are more in the school and which least ?

(iii) What is the class size ?
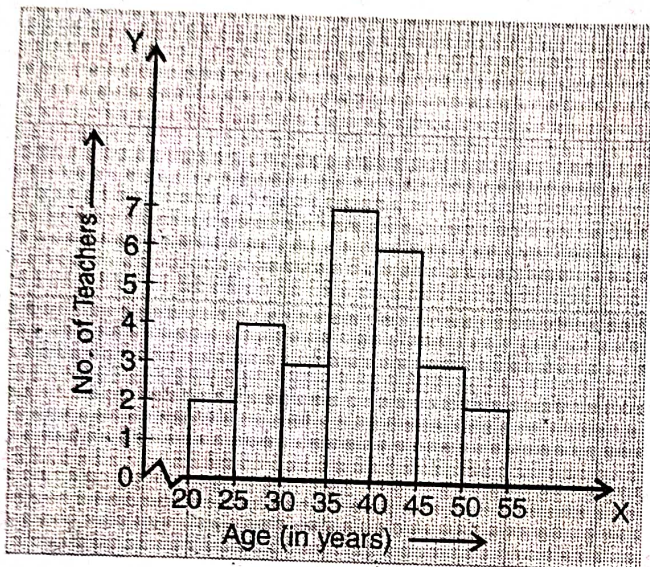
Solution. (i) The number of eldest teachers = 2
The number of youngest teachers = 2

(ii) More age group is 35–40
Least age groups are 20 –25 and 50 – 55

(iii) The class sizes of all classes is 5.

Q. 11. Multiple Choice Questions :

(A) Below is the histogram depicting marks obtained by 44 students of a class ?
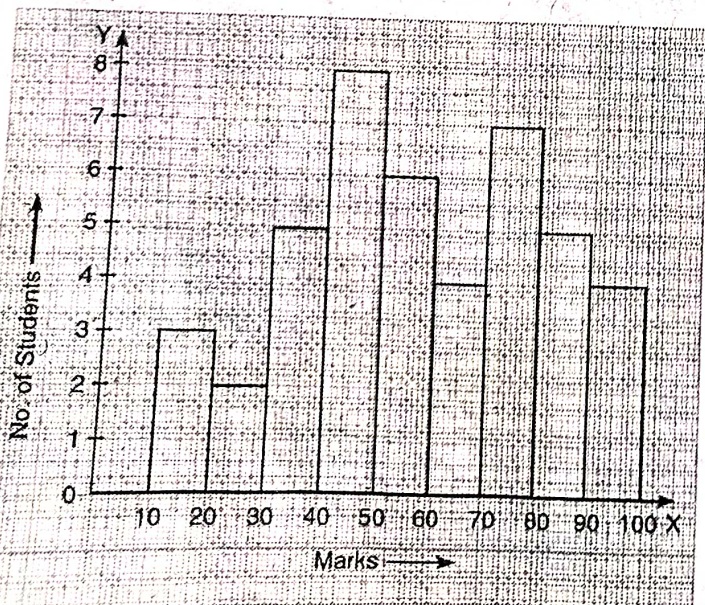
Choose the correct answer of the following :

(i) What is the class size ?

(a) 5   (b) 10
(c) 20   (d) 43.

(ii) Write the number of students getting highest marks ?

(a) 1   (b) 2
(c) 3   (d) 4.

(iii) How many students get more than 60 marks ?

(a) 20   (b) 21
(c) 22   (d) 24.

(iv) How many students get less than 40 marks ?

(a) 13   (b) 18
(c) 8   (d) 10.

(v) In which class interval number of students are maximum ?

(a) 20-30   (b) 30-40
(c) 40-50   (d) 90-100.

(B) In a histogram, if all the intervals are of same size, then area of each bar is equal to :

(a) Frequency

(b) Height of bar

(c) Class Size

(d) Class Size × Frequency

Ans. (A) (i) (b) 10, (ii) (d) 4, (iii) (a) 20, (iv) (d) 10, (v) (c) 40 – 50.

(B) (d) Class Size × Frequency

Q. 12. State whether the following statements are True or False :

(i) There is no difference between bar graphs and histograms.   (T/F)

(ii) Histogram is a bar graph with gap between two adjacent rectangles.   (T/F)

(iii) In histogram the height of rectangle is meaningless.   (T/F)

Ans. (i) False (ii) False (iii) False.