

NCERT Solutions for Class 9 Maths Chapter 12 Statistics Ex 12.2

Question 1.

A survey conducted by an organisation for the cause of illness and death among the women between the ages 15 - 44 (in years) worldwide, found the following figures (in %):

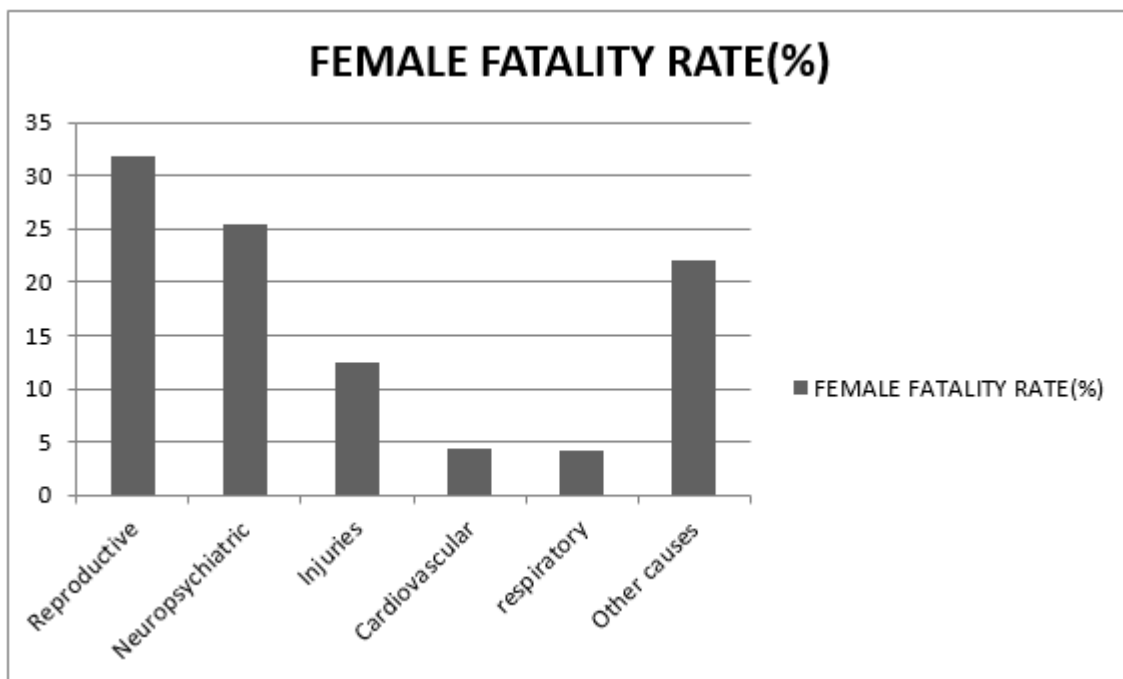
S. No.	Causes	Female fatality rate (%)
1.	Reproductive health conditions	31.8
2.	Neuropsychiatric conditions	25.4
3.	Injuries	12.4
4.	Cardiovascular conditions	4.3
5.	Respiratory conditions	4.1
6.	Other causes	22.0

- Represent the information given above graphically.
- Which condition is the major cause of women's ill health and death worldwide?
- Try to find out, with the help of your teacher, any two factors which play a major role in the cause in (ii) above being the major cause.

Solution.

The parts of the questions are solved below:

- The data is represented below graphically:



(ii) From the above graphical data, we observe that reproductive health condition is the major cause of women's ill health and death worldwide.

(iii) The two factors that are responsible for the ill health and death of women worldwide due to reproductive health conditions are mentioned below:

The lack of proper care and understanding.

Lack of medical facilities in the various regions of the world.

Question 2.

The following data on the number of girls (to the nearest ten) per thousand boys indifferent sections of Indian society is given below.

Section	Number of girls per thousand boys
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Scheduled Caste (SC)	940
Scheduled Tribe (ST)	970
Non SC/ST	920
Backward districts	950
Non-Backward districts	920
Rural	930
Urban	910

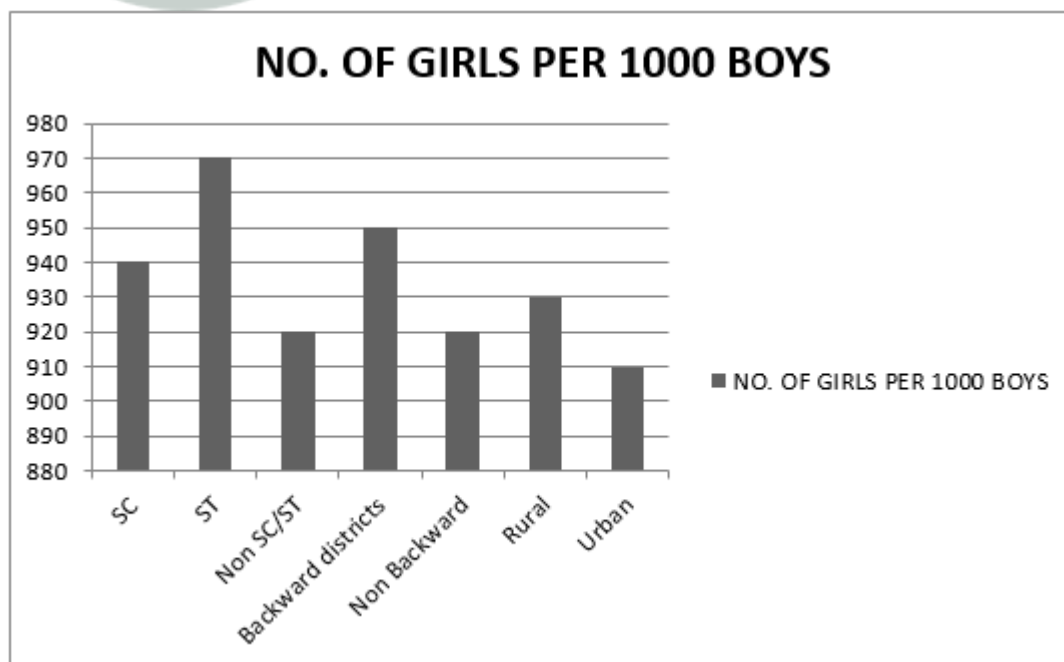
(i) Represent the information above by a bar graph.

(ii) In the classroom discuss what conclusions can be arrived at from the graph.

Solution.

The parts of the questions are solved below:

(i) The bar graph of the above information is represented below:



(ii) It can be observed from the above bar graph that the maximum number of girls per thousand boys is in Scheduled Tribe that is 970.

Also,

The Backward Districts and Rural Areas have more number of girls per thousand boys than Non-Backward Districts and Urban Areas.

Question 3.

Given below are the seats won by different political parties in the polling outcome of a state assembly elections:

Political Party	A	B	C	D	E	F
Seats Won	75	55	37	29	10	37

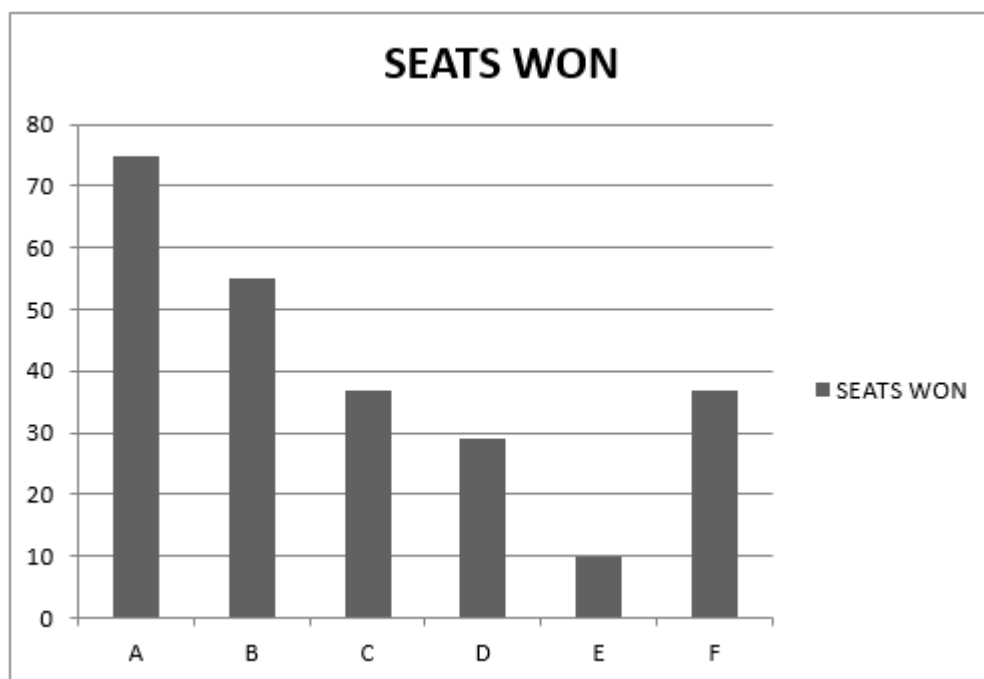
(i) Draw a bar graph to represent the polling results.

(ii) Which political party won the maximum number of seats?

Solution.

The parts of the questions are solved below:

(i) The given polling results are represented by the bar graph below:



(ii) The party named A has won the maximum number of seats.

Question 4.

The length of 40 leaves of a plant are measured correct to one millimetre, and the obtained data is represented in the following table:

Length (in mm)	Number of leaves
118 - 126	3
127 - 135	5
136 - 144	9
145 - 153	12
154 - 162	5
163 - 171	4
172 - 180	2

- (i) Draw a histogram to represent the given data.
- (ii) Is there any other suitable graphical representation for the same data?
- (iii) Is it correct to conclude that the maximum number of leaves are 153 mm long? Why?

Solution.

The parts of the questions are solved below:

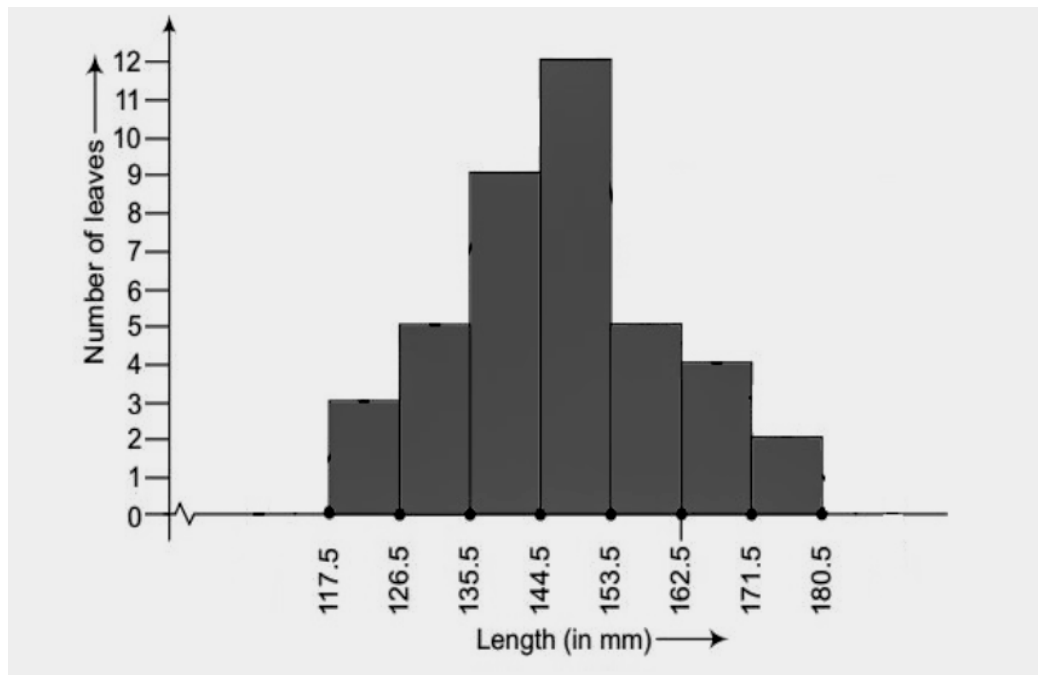
- (i) The data is represented in a discontinuous class interval. So, at first we will make it continuous.

The difference is 1.

So, we subtract $\frac{1}{2} = 0.5$ from the lower limit and add 0.5 to the upper limit.

S.No.	Length (in mm)	Number of Leaves
1.	117.5-126.5	3
2.	126.5-135.5	5
3.	135.5-144.5	9
4.	144.5-153.5	12
5.	153.5-162.5	5
6.	162.5-171.5	4
7.	171.5-180.5	2

Now, the above information is represented by the histogram below:



(ii) Yes, the above given data can also be represented by the frequency polygon.

(iii) No, it is incorrect to conclude that the maximum number of leaves are lying between length of 144.5 – 153.5

Question 5.

The following table gives the life times of 400 neon lamps:

Life time (in hours)	Number of lamps
300 - 400	14
400 - 500	56
500 - 600	60
600 - 700	86

700 – 800	74
800 – 900	62
900 - 1000	48

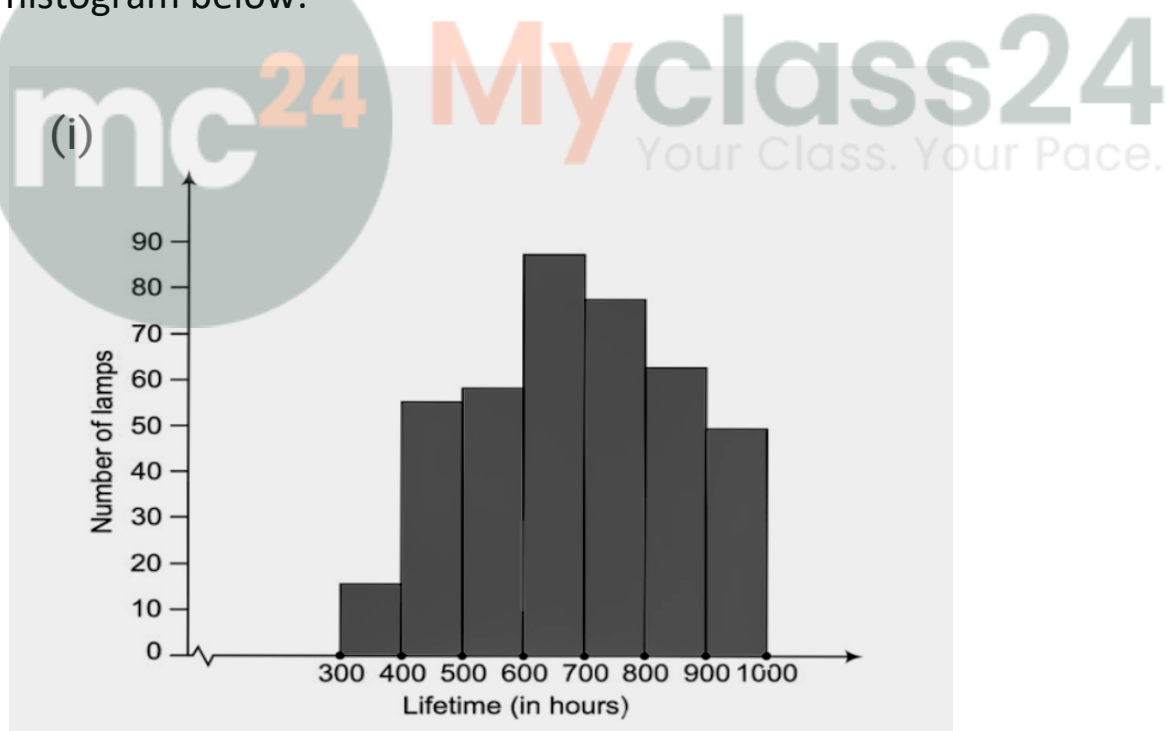
(i) Represent the given information with the help of a histogram.

(ii) How many lamps have a life time of more than 700 hours?

Solution.

The parts of the questions are solved below:

(i) The above given information is represented with the help of histogram below:



(ii) $74 + 62 + 48 = 184$

Hence, 184 lamps have a life time of more than 700 hours.

Question 6.

The following table gives the distribution of students of two sections according to the marks obtained by them:

Section A		Section B	
Marks	Frequency	Marks	Frequency
0 - 10	3	0 – 10	5
10 -	9	10 20	19
20	17	20 -	15
20 -	12	30	10
30	9	30 -	1
30 -		40	
40		40 -	
40 -		50	
50			

Represent the marks of the students of both the sections on the same graph by two frequency polygons. From the two polygons compare the performance of the two sections.

Solution.

The class marks can be found by

$$= \frac{(\text{Lower limit} + \text{Upper limit})}{2}$$

Now,

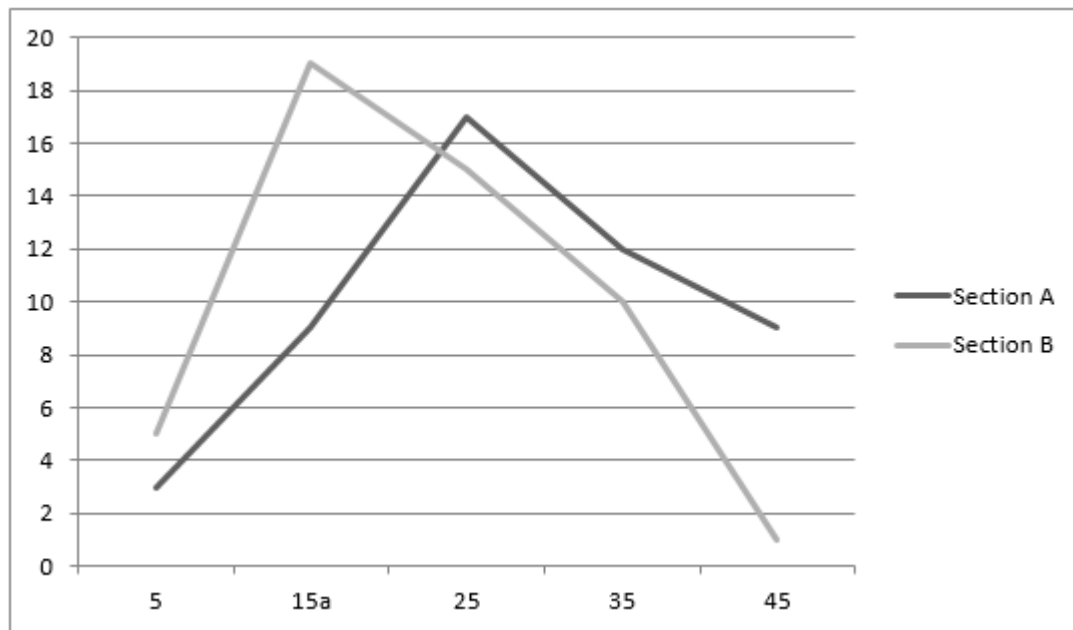
For section A,

MARKS	CLSS MARKS	FREQUENCY
0-10	5	3
10-20	15	9
20-30	25	17
30-40	35	12
40-50	45	9

For section B,

MARKS	CLSS MARKS	FREQUENCY
0-10	5	5
10-20	15	19
20-30	25	15
30-40	35	10
40-50	45	1

Now, the frequency polygon for the given data:



Question 7.

The runs scored by two teams A and B on the first 60 balls in a cricket match are given below:

Number of balls	Team A	Team B
1 – 6	2	5
7 - 12	1	6
13 - 18	8	2
19 - 24	9	10
25 - 30	4	5
31 - 36	5	6
37 - 42	6	3
43 - 48	10	4
49 - 54	6	8
55 - 60	2	10

Represent the data of both the teams on the same graph by frequency polygons.

[**Hint:** First make the class intervals continuous.]

Solution.

The data is represented in a discontinuous class interval. So, at first, we will make it continuous.

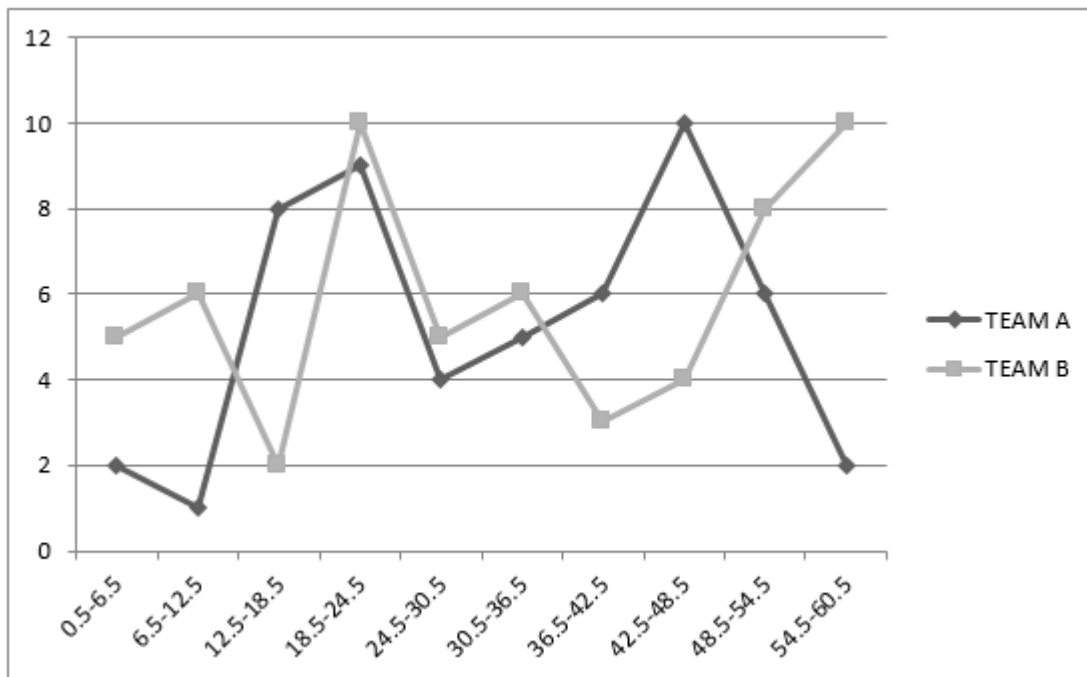
The difference is 1.

Hence, we subtract $\frac{1}{2} = 0.5$ from the lower limit and add 0.5 to the upper limit.

NUMBER OF BALLS	TEAM A	TEAM B
0.5-6.5	2	5
6.5-12.5	1	6
12.5-18.5	8	2
18.5-24.5	9	10
24.5-30.5	4	5
30.5-36.5	5	6
36.5-42.5	6	3
42.5-48.5	10	4
48.5-54.5	6	8
54.5-60.5	2	10

Now,

We will draw frequency polygon for the given data:



Question 8.

A random survey of the number of children of various age groups playing in a park was found as follows:

Age (in years)	Number of children
1 - 2	5
2 - 3	3
3 - 5	6
5 - 7	12
7 - 10	9
10 - 15	10
15 - 17	4

Draw a histogram to represent the data above.

Solution.

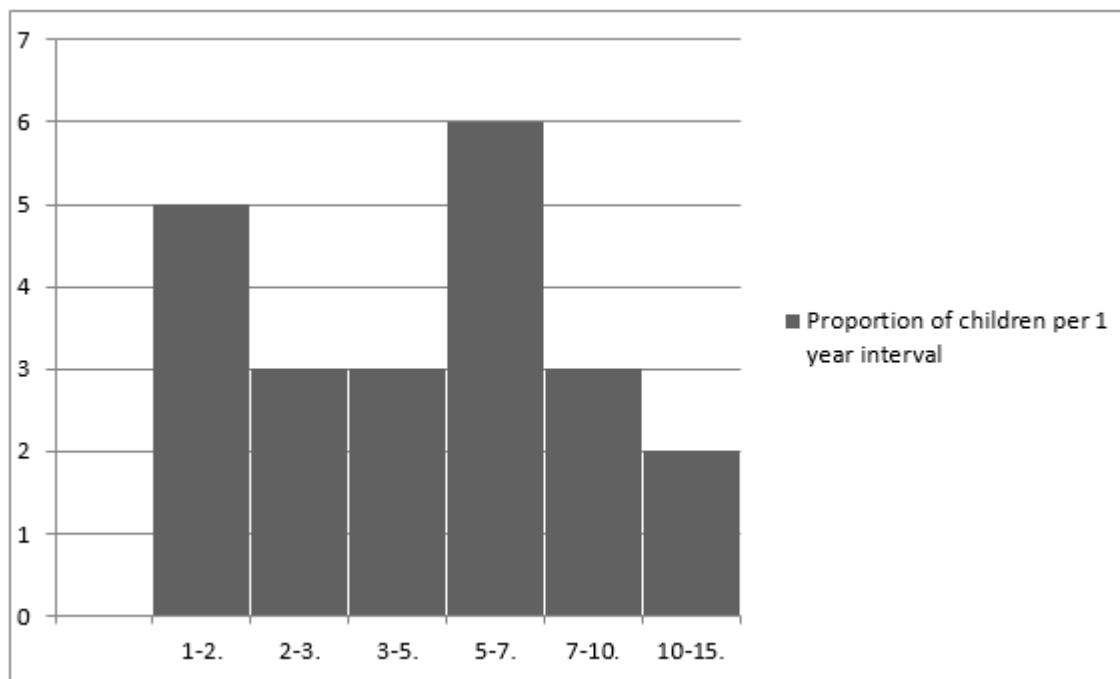
The class interval in the data is having varying width.

We know that the area of the rectangle is proportional to the frequencies in the histogram.

The class interval with minimum class size 1 is selected and the length of the rectangle is proportional to it.

Age (in years)	No. of children (Frequency)	Width of class	Length of rectangle
1-2	5	1	$\frac{5}{1} \times 1 = 5$
2-3	3	1	$\frac{3}{1} \times 1 = 3$
3-5	6	2	$\frac{6}{2} \times 1 = 3$
5-7	12	2	$\frac{12}{2} \times 1 = 6$
7-10	9	3	$\frac{9}{3} \times 1 = 3$
10-15	10	5	$\frac{10}{5} \times 1 = 2$
15-17	4	2	$\frac{4}{2} \times 1 = 2$

Taking the age of the children on x-axis and proportion of children per 1 year interval on y-axis, the following histogram can be drawn:



Question 9.

100 surnames were randomly picked up from a local telephone directory and a frequency distribution of the number of letters in the English alphabet in the surnames was found as follows:

10. Number of letters	11. Number of surnames
12. 1 – 4	17. 6
13. 4 - 6	18. 30
14. 6 - 8	19. 44
15. 8 - 12	20. 16
16. 12 - 20	21. 4

(i) Draw a histogram to depict the given information.

(ii) Write the class interval in which the maximum number of surname lie

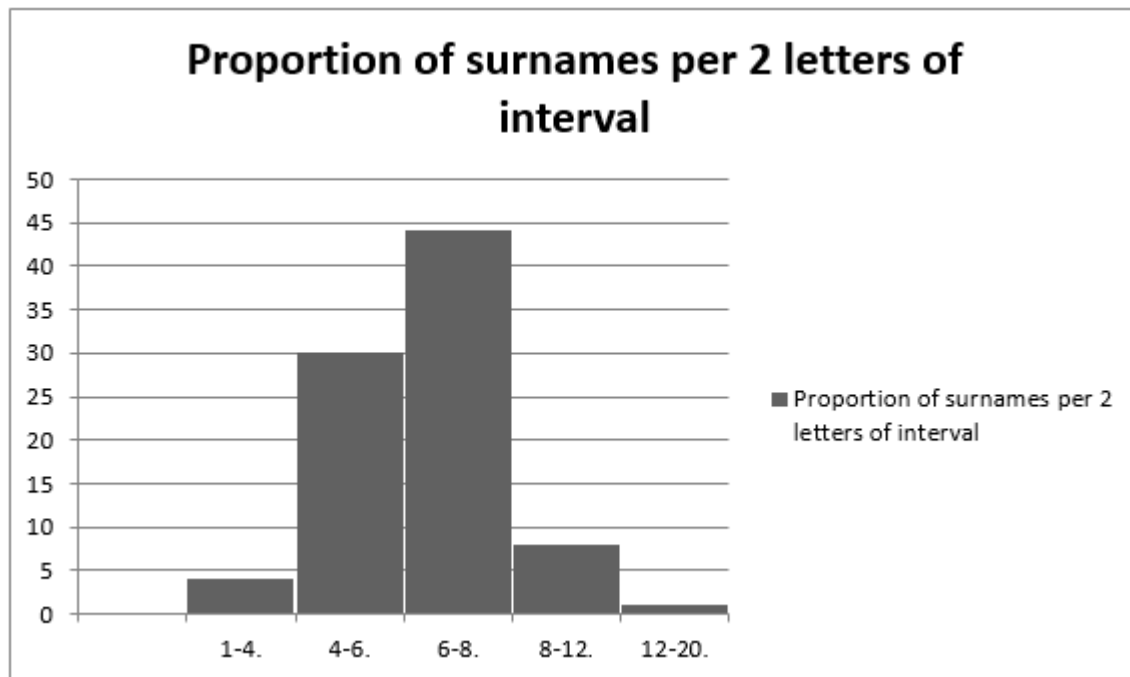
Solution.

The class interval in the data is having varying width.

(i) We know that the area of the rectangle is proportional to the frequencies in the histogram.

The class interval with minimum class size 2 is selected and the length of the rectangle is proportional to it. The proportion of the surnames per 2 letters interval can be calculated as:

Number of letters	No. of surnames (Frequency)	Width of class	Length of rectangle
1-4	6	3	$\frac{6}{3} \times 2 = 4$
4-6	30	2	$\frac{30}{2} \times 2 = 30$
6-8	44	2	$\frac{44}{2} \times 2 = 44$
8-12	16	4	$\frac{16}{4} \times 2 = 8$
12-20	4	8	$\frac{4}{8} \times 2 = 1$



(ii) The class interval in which the maximum number of surname lie is 6-8