



Statistics Ex 14.3

(ii) Out of all won seats, 75 is the maximum. So party A has won maximum number of seats.

**Q4.** The length of 40 leaves of a plant are measured correct to one millimeter and the obtained data is represented in the following table:

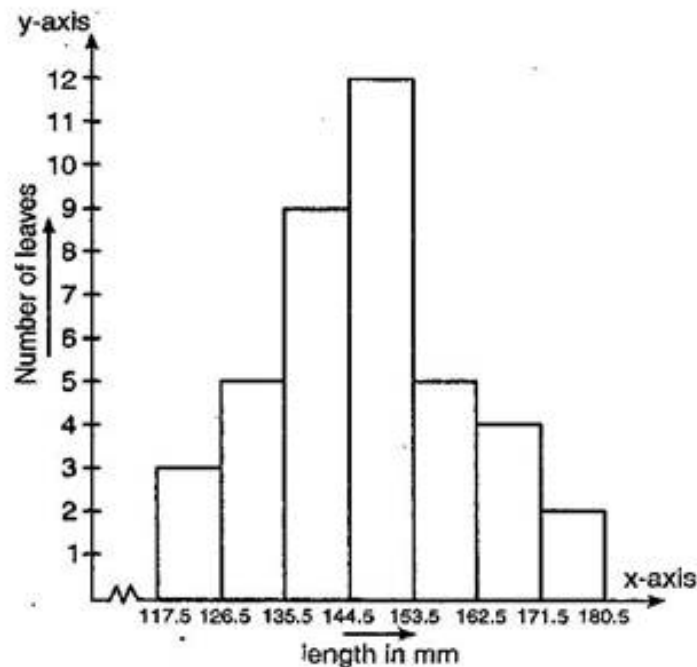
Length (in mm)	Number of leaves
118 – 126	3
127 – 135	5
136 – 144	9
145 – 153	12
154 – 162	5
163 – 171	4
172 – 180	2

- (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?

**Ans: (i)** Let us find half the difference between lower limit of a class and upper limit of its proceeding class to make the continuous distribution.

Length in mm	Number of leaves
117.5 – 126.5	3
126.5 – 135.5	5
135.5 – 144.5	9
144.5 – 153.5	12
153.5 – 162.5	5
162.5 – 171.5	4
171.5 – 180.5	2

Representation of given data in the form of a histogram is as follows:

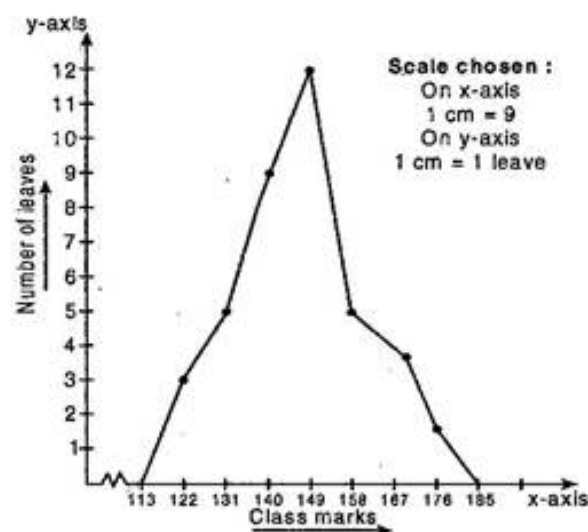


Length of 40 leaves of a plant measured correct to one millimeter.

Scale chosen: On y-axis – 1 large division, i.e. 1 cm = 1 leaf

(ii) Yes, we can represent the given data by other graphical representation named as **Frequency Polygon** which is as follows:

Length in mm	Class Mark	Number of leaves
117.5 - 126.5	122	3
126.5 - 135.5	131	5
135.5 - 144.5	140	9
144.5 - 153.5	149	12
153.5 - 162.5	158	5
162.5 - 171.5	167	4
171.5 - 180.5	176	2



(iii) No, because the maximum number 12 is corresponding to the class interval 145 - 153 which implies that the leaves whose length are

which implies that the leaves whose length are 145 mm or less than 153 mm are maximum in number.

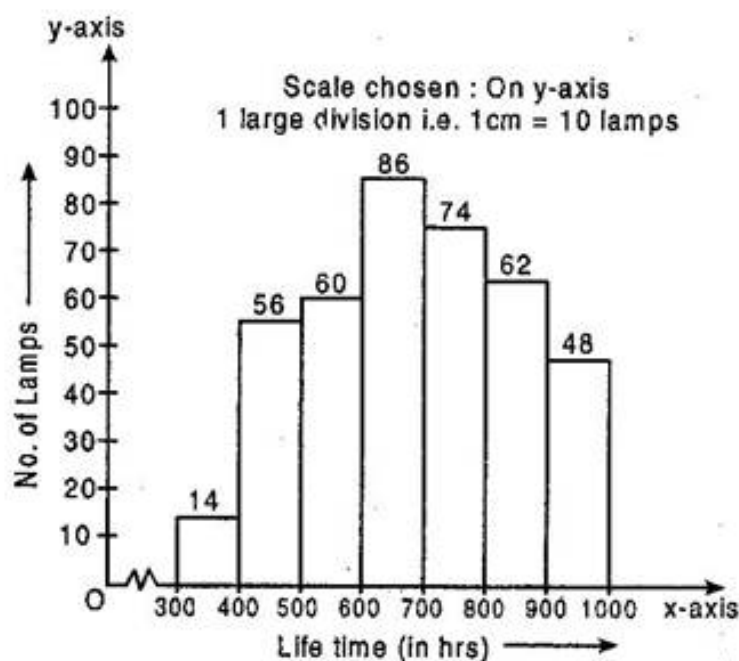
**Q5.** The following table gives the life times of 400 neon lamps:

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?

**Ans: (i)** Representation of the given in the form of histogram is as follows:



**(ii)** Number of lamps having lifetime of more than 700 hours =  $74 + 62 + 48 = 184$

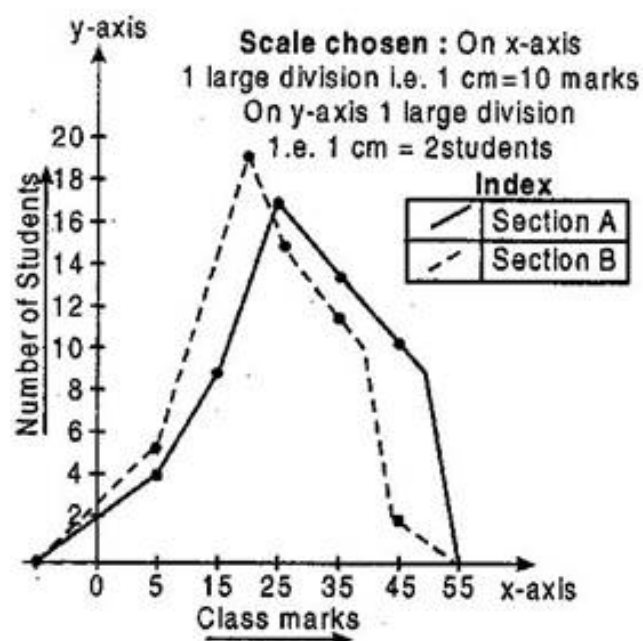
**Q6.** The following table gives the distribution of students of two sections according to the marks obtained by him:

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

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.

**Ans:** We plot the class-mark on x-axis and number of students on y-axis.

Marks obtained	Class - marks	No. of students in Section A	No. of students in Section B
0 – 10	5	3	5
10 – 20	15	9	19
20 – 30	25	17	15
30 – 40	35	12	10
40 – 50	45	9	1



From the above graph, we observed that students of section A performed better because as we move right on x-axis the number of students are spread widely over greater marks as compared to the students of section A.

**Q7.** The runs scored by the two teams A and B in the first 60 balls in a cricket match are given below:

Number of balls	Team A	Team B
0 – 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

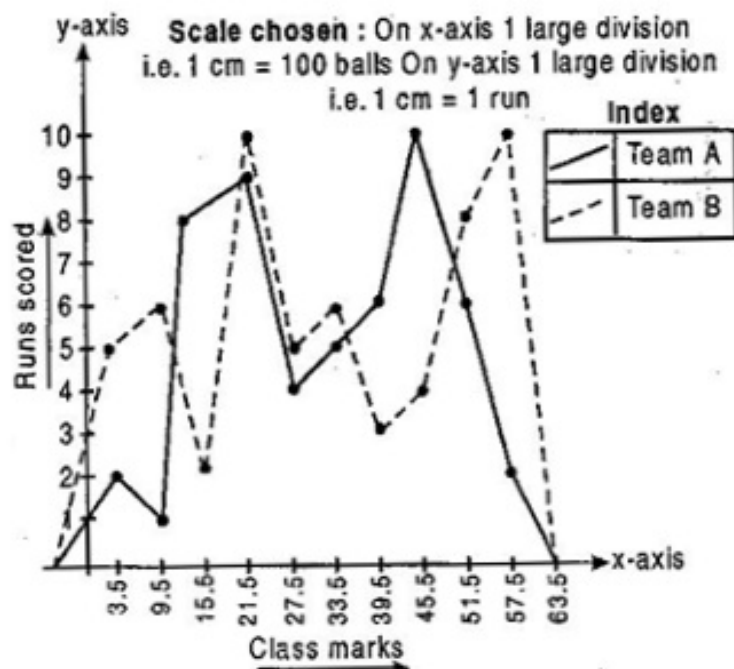
Represent the data of both the teams on the same graph by frequency polygons.

**Ans:** New series of given data for plotting the frequency polygon:

Lower limit d	Upper limit d	Class boundaries
$1 - 0.5 = 0.5$	$6 + 0.5 = 6.5$	$0.5 - 6.5$
$7 - 0.5 = 6.5$	$12 + 0.5 = 12.5$	$6.5 - 12.5$
$13 - 0.5 = 12.5$	$18 + 0.5 = 18.5$	$12.5 - 18.5$
$19 - 0.5 = 18.5$	$24 + 0.5 = 24.5$	$18.5 - 24.5$
$25 - 0.5 = 24.5$	$30 + 0.5 = 30.5$	$24.5 - 30.5$
$31 - 0.5 = 30.5$	$36 + 0.5 = 36.5$	$30.5 - 36.5$
$37 - 0.5 = 36.5$	$42 + 0.5 = 42.5$	$36.5 - 42.5$
$43 - 0.5 = 42.5$	$48 + 0.5 = 48.5$	$42.5 - 48.5$
$49 - 0.5 = 48.5$	$54 + 0.5 = 54.5$	$48.5 - 54.5$
$55 - 0.5 = 54.5$	$60 + 0.5 = 60.5$	$54.5 - 60.5$

Number of balls	Class - marks	Runs scored by team A	Runs scored by team B
0 - 10	5	3	5
10 - 20	15	9	19
20 - 30	25	17	15
30 - 40	35	12	10
40 - 50	45	9	1

Frequency polygon of team A and team B



**Q8.** 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

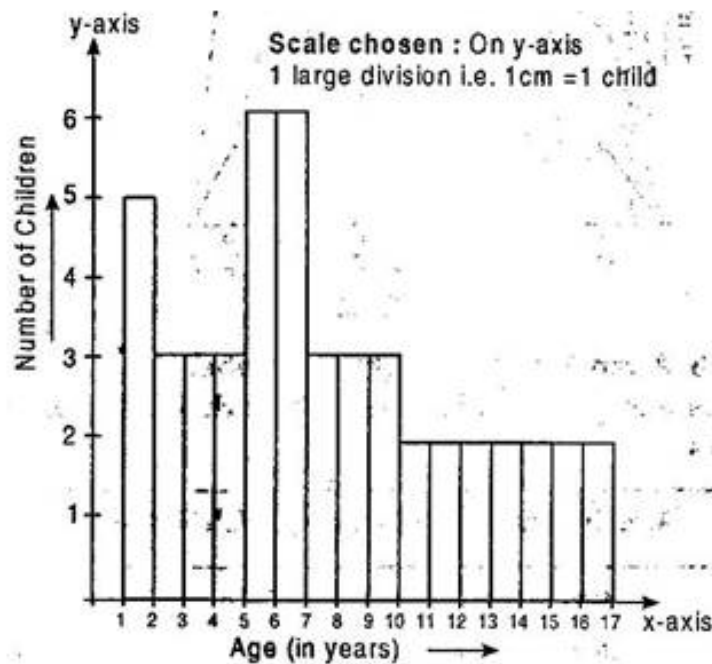
Draw a histogram to represent the data above.

**Ans:** Here the classes are not of equal size. Here minimum class is 1, therefore

Age in years	Frequency	Width	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	$\frac{4}{2} \times 1 = 2$



The histogram using these lengths



**Q9.** 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:

Number of letters	Number of surnames
1 – 4	6
4 – 6	30
6 – 8	44
8 – 12	16
12 – 20	4

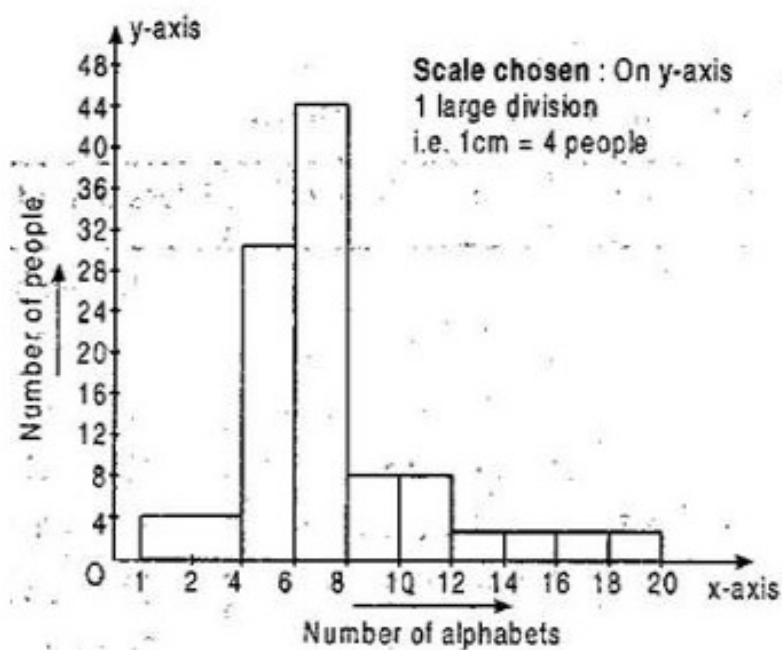
(i) Draw a histogram to depict the given information.

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

**Ans:** Here the classes are not of equal size. Here minimum class is 1, therefore

No. of alphabets	Frequency	Width	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	$\frac{4}{8} \times 2 = 1$

The histogram using these lengths



\*\*\*\*\* END \*\*\*\*\*