ASSIGNMENT 3 : CBSE STATISTICS CLASS-9

AI21BTECH11016

EXERCISE 14.3

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:

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

TABLE I

1) Draw a histogram to depict the given information.

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

Solution:

1) As the widths of class intervals are not equal, we need to make certain modifications in the lengths of the rectangles of class intervals in the Histogram so that the areas are proportional to the frequencies.

Here, **The minimum class-size = 2**

Let l_i denote the length of rectangle of class interval i in the Histogram.

$$l_1 = \frac{6}{3} \times 2 = 4 \tag{1}$$

$$l_2 = \frac{30}{2} \times 2 = 30 \tag{2}$$

$$l_3 = \frac{44}{2} \times 2 = 44 \tag{3}$$

$$l_4 = \frac{16}{4} \times 2 = 8 \tag{4}$$

$$l_5 = \frac{4}{8} \times 2 = 1 \tag{5}$$

We may call these lengths as ”proportion of surnames per 2 letters interval”.

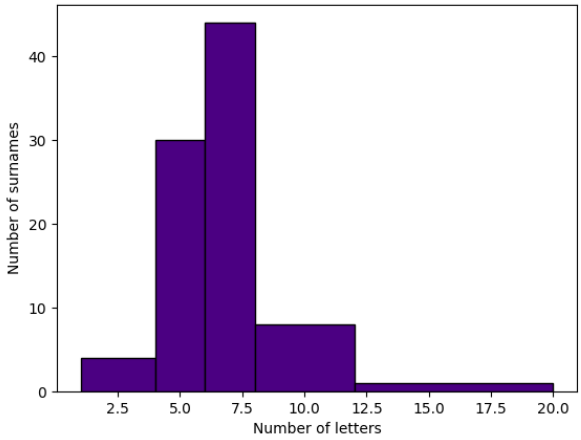

Fig. 1. Histogram of given data

2) The class interval with highest frequency is the one which has the maximum number of surnames.
$\Rightarrow$ From TABLE I,

The maximum number of surnames lie in the class interval:

6 - 8