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 rectangles are not equal, we need to make certain modifications in the lengths of the rectangles 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.

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

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

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

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

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

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

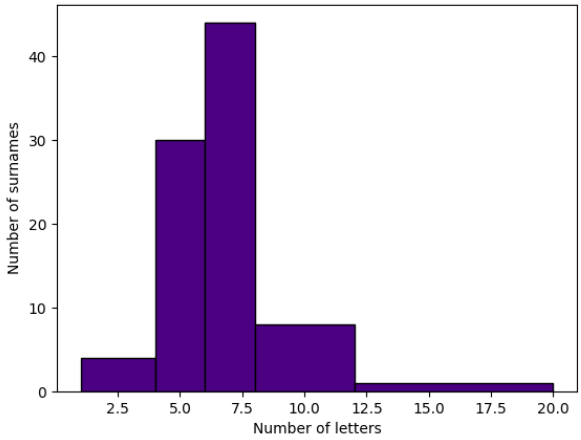

Fig. 1. Histogram of given data

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