successively to form six classes and the given figures are considered one by one and recorded in the respective classes with the help of tally marks (/). In order to facilitate counting, tally marks are kept in groups of five. After every four marks, the fifth one is drawn across the preceding four.

Table 2.3

TALLY MARKS FOR THE GIVEN VALUES

| Family size | Tally marks |
|---|---|
| 2 | 𝍸 \|\|\|\| |
| 3 | 𝍸 𝍸 𝍸 𝍸 |
| 4 | 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 |
| 5 | 𝍸 𝍸 𝍸 \|\| |
| 6 | 𝍸 𝍸 |
| 7 | \|\|\|\| |

The table of tally marks enables us to obtain the frequency distribution of the variable concerned

Table 2.4

FREQUENCY DISTRIBUTION ~~FOR THE GIVEN VALUES~~ OF FAMILY SIZE

| Family size | frequency |
|---|---|
| 2 | 9 |
| 3 | 20 |
| 4 | 30 |
| 5 | 17 |
| 6 | 10 |
| 7 | 4 |
| Total | 90 |

The same frequency distribution may be presented with relative frequency in place of frequencies. The relative frequency of the value 2 will give the proportion of families having size 2 and similarly for other values. Thus for instance, the relative frequency of the value 3 is $20/90$ (or 0.222). Again, to respond to such queries as 'How many families are there with 4 members or less?' or 'How many families are there with 5 members or more', we are to find cumulative frequencies of the 'less than type and greater than type'. For the former we are to give the totals of the frequencies proceeding from the lowest class upwards, and for the latter proceeding from the highest class downwards.

One can also show cumulative relative frequencies, by adding successively the relative frequencies starting from the top of the table and then from the bottom of the table for the less-than type and greater-than type respectively.

It may be noted that we take one class for each different value of a discrete variable when the range of variation is small. But when the range is large we are forced to take a group of values for each class

In the next page we write Table 2.4 as follows:

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Table 2.5

RELATIVE FREQUENCIES AND CUMULATIVE FREQUENCIES FOR THE FREQUENCY DISTRIBUTION OF FAMILY SIZE

| Family Size | Relative frequency | Cumulative frequency | |
|---|---|---|---|
| | | less-than type | greater-than type |
| 2 | 0.100 | 9 | 90 |
| 3 | 0.222 | 29 | 81 |
| 4 | 0.333 | 59 | 61 |
| 5 | 0.189 | 76 | 31 |
| 6 | 0.111 | 86 | 14 |
| 7 | 0.044 | 90 | 4 |
| Total | $0.999 \simeq 1$ | – | – |

2.2(b) Case of a continuous variable

A continuous variable make take an infinite number of values within its range of variation and, as such, it is natural that individual class can not be considered for each distinct value of the variable. To explain this fact, let us consider a continuous variable, namely height of persons and record the data (in cm) as 165.5, 166.4, 165.2 etc.. Here each figure is correct to one decimal place and in the real sense the reading 165.5, for example means any value between 165.45 and 165.55. In fact, some suitable technique of classifications should be necessary for presenting this kind of data in some classes, their number ~~not~~ being not very large. However, during the construction of the frequency distribution of such a character, we come across the following useful terms:

1. Class-interval : The whole range of variable values is classified in some groups in the form of intervals. Each interval is called a class-interval.

2. Class frequency : The number of observations included in a class is termed as absolute frequency (or, simply, frequency) of the class.

3. Class limits : These are two ends-points of a class interval used for tally marking the given values. However, these limits do not show the real boundaries of the class

4. Class boundaries : In case of a continuous variable, its values are rounded off ; for instance, any value from 21.5 to below 22.5 is taken as 22. In other words, the number 22 stands for any value from 21.5 to below 22.5 . The two real end-points of a class interval are called class boundaries. Clearly, the upper boundary of a class coincides with lower boundary of the next class. The class boundaries are used for forming the frequency distribution of a continuous variable.

5. Class mark : The mid-value of a class interval that lies half-way between its two end points (i.e. class limits or class boundaries) is termed as class-mark.