14.3 FREQUENCY DISTRIBUTION

The marks scored by 30 students of IX class, of a school in the first test of Mathematics our of 50 marks are as follows :

6	32	10	17	22	28	0	48	6	22
32	6	36	26	48	10	32	48	28	22
22	22	28	26	17	36	10	22	28	0

The number of times a mark is repeated is called its **frequency.** It is denoted by f.

Marks obtained	Taly mark	Frequency	Marks obtained	Tally mark	Frequency
0	II	2	26	II	2
6	III	3	28	IIII	4
10	III	3	32	III	3
17	II	2	36	II	2
22	IIII I	6	48	III	3

Above type of frequency distribution is called **ungrouped frequency distribution.** Although this representation of data is shorter than representation of raw data, but from the angle of comparison and analysis it is quite bit. So to reduce the frequency distribution, it can be classified into groups is following ways and it is called **grouped frequency distribution.**

Class	Frequency
0-10	8
11-20	2
21-30	12
31-40	5
41-50	3

(a) Kinds of Frequency Distribution :

Statistical methods like comparison, decision taken etc. depends of frequency distribution. Frequency distribution are of three types.

(i) Individual frequency distribution : Here each item or original price of unit is written separately. In n this category, frequency of each variable is one.

Ex.2 Total marks obtained by 10 students in a class.

S.No.	1	2	3	4	5	6	7	8	9	10
Marks obtained	46	18	79	12	97	80	5	27	67	54

(ii) Discrete frequency distribution : When number of terms is large and variable are discrete, i.e., variate can accept some particular values only under finite limits and is repeated then its called discrete frequency distribution. For example the wages of employees and their numbers is shown in following table.

Monthly wages	No. Of employees
4000	10
6000	8
8000	5
11000	7
20000	2
25000	1

The above table shows ungrouped frequency distribution the same facts can be written in grouped frequency as follows :

Monthly wages	No. of employees
0-10,000	23
11,000-20,000	9
21,000-30,000	1

NOTE :
If variable is repeated in individual distribution then it can be converted into discrete frequency distribution.

(iii) Continuous frequency distribution : When number of terms is large and variate is continuous. i.e., variate can accept all values under finite limits and they are repeated then it is called continuous frequency distribution. For example age of students in a school is shown in the following table :

Age (in year)	Class	No. of students
Less than 5 year	0-5	72
Between 5 and 10 y ear	5-10	103
Between 10 and 15 year	10-15	50
Between 15 and 20 year	15-20	25

NOTE :
Continuous frequency distribution is generally represented in form of grouped frequency distribution and variate is continuous in i, so 0 - 5, 6 - 10, 11 - 15, 16 - 20 types of classes can not be made here. If such classes are made in the table then students of age 5 to 6 year or 10 to 11 year or 15 to 16 years can not be classified. if such type of classes are given then they should be made continuous by following methods. Half of the difference between classes should be added to the upper limit of lower class and subtracted from lower limit o upper class. Thus the classes 0 - 5.5, 5.5 - 10.5, 10.5 - 15.5, 15.5 - 19.5 are obtained which are continuous.

Classes can be made mainly by two methods :

(i) Exclusive series : In this method upper limit of the previous class and lower limit of the next class is same. In this method the term of upper limit in a class is not considered in the same class, it is considered in the next class.

(ii) Inclusive series : In this method value of upper and lower limit are both contained in same class. In this method the upper limit of class and lower limit of other class are not same. Some time the value is not a whole number, it is a fraction or in decimals and lies in between the two intervals then in such situation the class interval can be constructed as follows

A		B	
Class	**Frequency**	**Or Class**	**Frequency**
0-9	4	0-9.99	4
10-19	7	10-19.99	7
20-29	6	20-29.99	6
30-39	3	30-39.99	3
40-49	3	40-49.99	3