

Tender Heart High School, Sec.-338 chd.

class : VIII

Teacher :

Subject : Mathematics

Ms. Deepthi

Topic : Chapter - 25: Mathematics
(Statistics)

In this chapter we will cover the following topics :

- (i) Range,
- (ii) Class limits (upper and lower limit)
- (iii) frequency distribution table.

this chapter.

- Data : Information/given facts in numerical figures.



Primary data

(Data that is collected by researchers directly from main sources)

Secondary data

(Data that is collected by someone other than the primary user)

- Variable : A quantity which is being measured in a survey and can take different values.
For example: Height, age, income, number of members in a family

Types of Variable



Continuous variable

[Variable which can take any value between two given values (range)]

For example: Height of students of class IX-A

Discontinuous variable

[Variable which cannot take all possible values between two given values]

Number of students of class IX-A

- Range : The difference between the maximum and minimum values of a variable.

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- Variate: A particular value of a variable.
 - Frequency: The number of times an observation (Variate) occurs in a given data.
 - Frequency distribution table: A tabular representation of given numerical data showing the frequency of different variates.
- Let us understand all these terms by taking a question from

Question: Number of children in 40 families:

1, 2, 6, 5, 1, 3, 2, 6, 2, 3, 4, 2, 0, 4, 4, 3, 2, 2, 0, 0, 1, 2, 2, 4, 4, 3, 2, 1, 0, 5, 1, 2, 4, 3, 4, 1, 1, 6, 2, 2

a) Find the range of the data

b) Represent it in the form of a frequency distribution

Solution: a) Range = Maximum value - minimum value
= 6 - 0
= 6

b) Frequency distribution table

Members	Tally mark	frequency
0		4
1		7
2		12
3		5
4		7
5		2
6		3

Here, 0, 1, 2, 3, 4, 5, 6 → Variates

4, 7, 12, 5, 7, 2, 3 → frequency (Number of times an observation is repeating)

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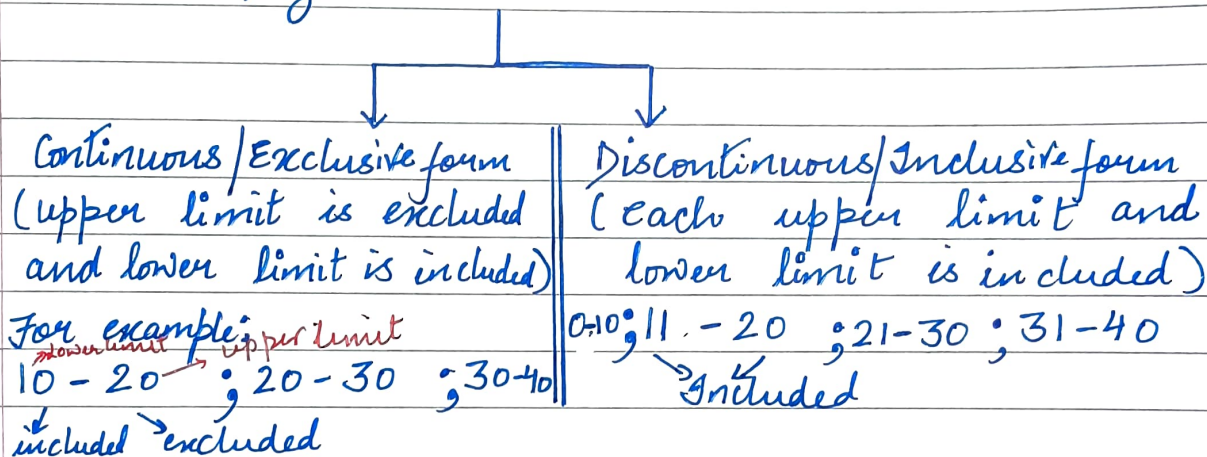
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The (Previous) above table is called simple (or ungrouped) frequency distribution table.

Grouped Data / Classified data

In grouped data, we make groups of suitable size.



Question- : Construct a frequency table, using equal class-intervals, one of them being 9-12, where 12 is not included: 18, 12, 7, 6, 11, 15, 21, 9, 8, 13, 15, 17, 22, 19, 14, 21, 23, 8, 12, 17, 15, 6, 18, 23, 22, 16, 9, 21, 11, 16

Class-interval	Tally marks	Frequency	
6-9		5	Here 6-9
9-12		4	Class-interval
12-15		4	where,
15-18	II	7	6 $\rightarrow$ lower limit
18-21		3	9 $\rightarrow$ upper limit
21-24	II	7	

* The above table is in continuous/exclusive form in which the upper limit is not included.

Now, children I am giving you 3 minutes break and revise the following terms (i) Variable (ii) Range (iii) frequency.

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Important terms related to Grouped data

1. Class Boundaries:

- In the continuous/exclusive form, the upper and lower limits of a class are known as the true upper limit and true lower limit

For example: In $10 - 20$; $20 - 30$; $30 - 40$

True lower limit True upper limit

- In the discontinuous/inclusive form:

$1 - 10$; $11 - 20$; $21 - 30$

True upper limit True lower limit
 $= \frac{10 + 11}{2} = 10.5$

$\Rightarrow 0.5 - 10.5$; $10.5 - 20.5$; $20.5 - 30.5$

2. Class Size: The difference between the true upper limit and the true lower limit of a class is its class size

3. Class mark: The value midway between its actual lower and upper limit

Rule to convert discontinuous to continuous form

- Find the adjustment factor = $\frac{\text{lower limit of a class} - \text{upper limit of previous class}}{2}$

- Then subtract adjustment factor from each lower limit, while add the factor to each of the upper limit.

By using these two steps our discontinuous form will convert in continuous / Exclusive form