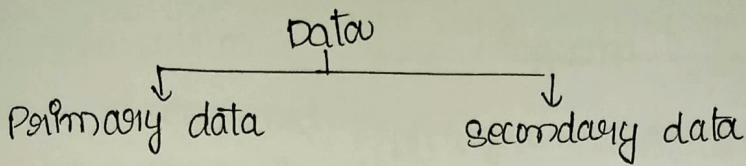


8. Statistical Description of Data - II



Investigation - who collects the data (Enumerators)

Respondant - who give information (Informant)

Classification of data :-

There are 4 types of classification of data

1. Qualitative classification (or) ordinal classification
2. Quantitative classification (or) cardinal classification
3. Chronological classification (or) Temporal classification
(or) Time series.
4. Geographical classification (or) spatial classification.

Presentation of Data :-

The following are the different methods for presenting data.

1. Textual presentation
2. Terminal presentation
2. Tabular presentation
3. Diagrammatic presentation

Parts of Table :-

The following are the important parts of a statistical table

1. Table Number

2. Title of the table

3. Stubs

4. Captions

5. Box head

6. Body

7. Source Note

8. Foot note

EX:

Table No: 3-1.4

Title: The cost of living Index of Janta City
during 2018-2022

Commodity	P_0	P_{01}	P_1	Q_1
A	5	21	26	25
B	8	23	20	26
C	9	49	17	17
D	11	19	12	23

Annotations:
- Box Head: P_0, P_{01}, P_1, Q_1
- Captions: A, B, C, D
- Body: The numerical data cells
- Stubs: A, B, C, D

Source Note:- central statistical organisation.

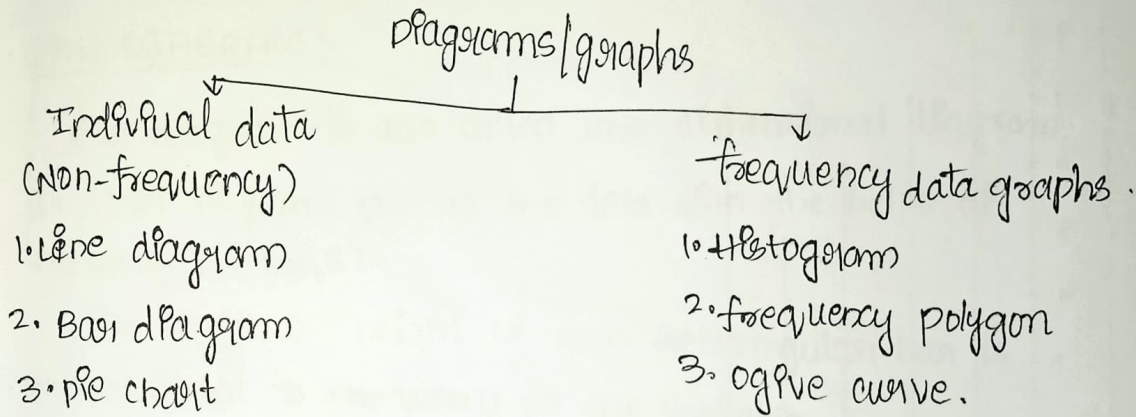
Abstract during 2015-2022.

Foot Note:- P_0 → price in base year.

Diagrammatic presentation of data:-

Diagram/chart and graph.

Dimension	Diagram
1. Non dimensional (or) zero dimensional	Pictogram, Ideographs.
2. one dimensional	Line diagram and bar diagram
3. Two dimensional	Pie chart, Histogram, ogive curve, rectangle, square diagram.
4. Three dimensional	Cube, cuboid, Sphere, cylinders.



Pictograms:- This are called as zero dimensional diagrams.

- ⇒ In pictograms we present the data with the help of pictures.
- ⇒ Pictograms are least accurate and are suitable for countable numbers only.
- ⇒ Pictograms are not suitable for fraction (or) and intervals.
- ⇒ Pictograms are also referred as ideal graphs.

one dimensional diagrams:-

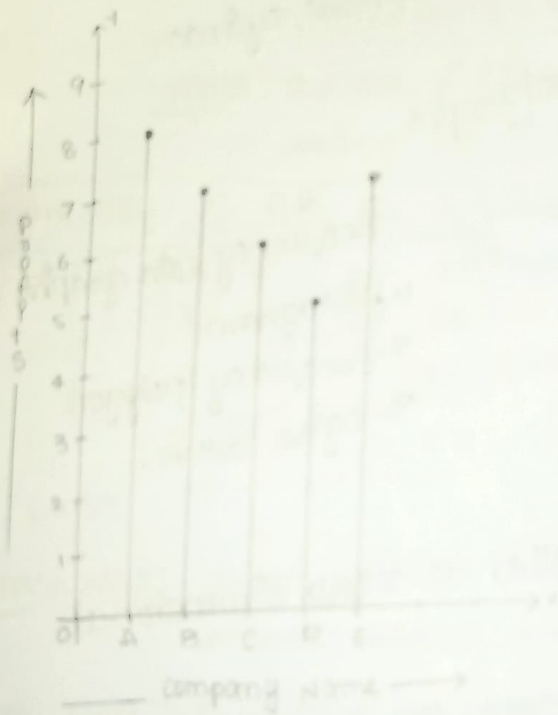
Line diagram:-

To present relationship between two variables, we use line diagrams.

In line diagrams the data will be presented with the help of vertical lines. The length/height of each vertical line is proportional to frequency of the variable.

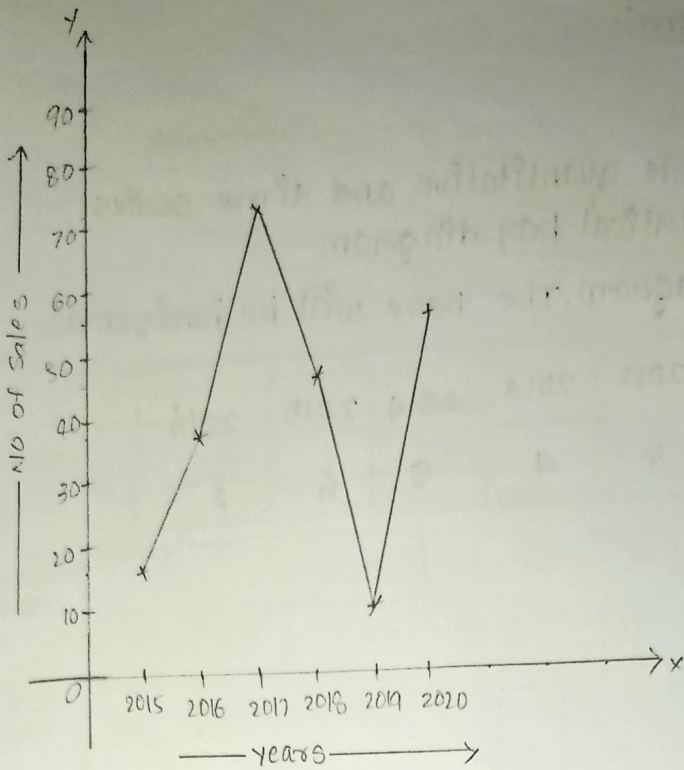
EX:-

Company Name	A	B	C	D	E
profits	8	7	6	5	7



Note:- In line diagram if we take time period on horizontal axis i.e. x-axis, then the line diagram is called as "Histogram".

Year	2015	2016	2017	2018	2019	2020
No. of Sales	10	30	70	45	10	55



BAR DIAGRAM :-

Bar diagram is also called one dimensional diagram. In bar diagram present the data with the helps of rectangular bars.

The length or height of each rectangular bar is proportional to frequency of the variable.

TYPES OF BAR DIAGRAMS:-

- 1) simple bar diagram
 - i) vertical
 - ii) horizontal.
- 2) Component bar diagram (or) subdivided bar diagram.
- 3) Multiple bar diagram.
- 4) Slided bar diagram.
- 5) Deviation bar diagram
- 6) Broken bar diagram.

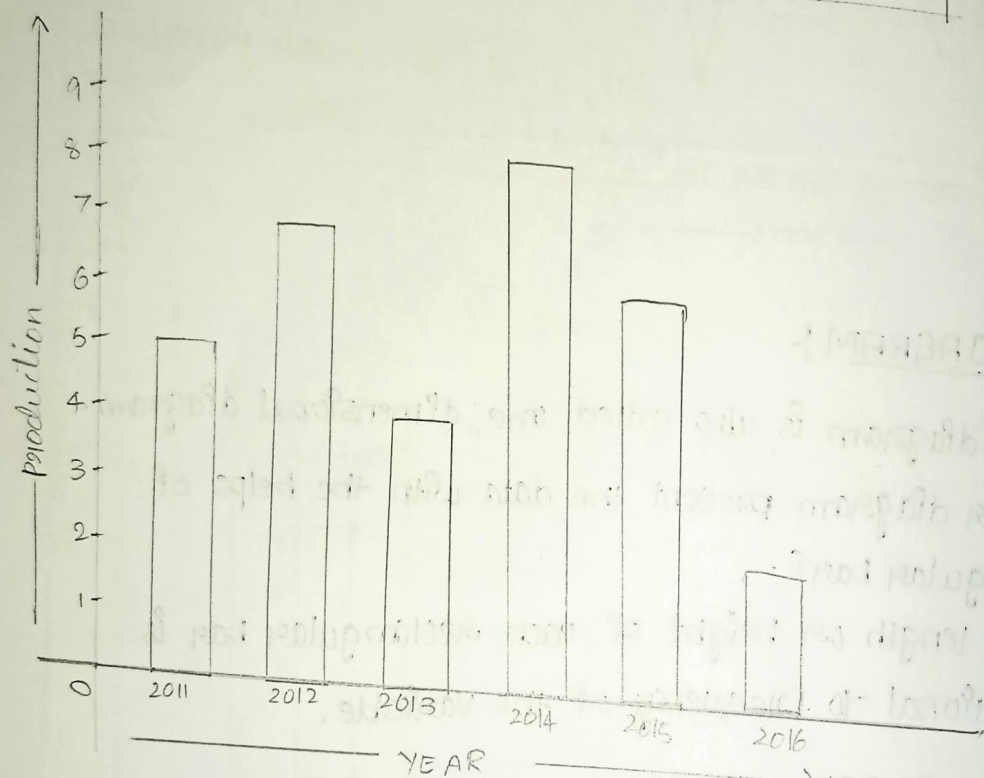
1) Simple Bar diagram:-

(i) Vertical:-

If the given data is quantitative and time series data, then we use vertical bar diagram.

In vertical bar diagram, The base will be horizontal

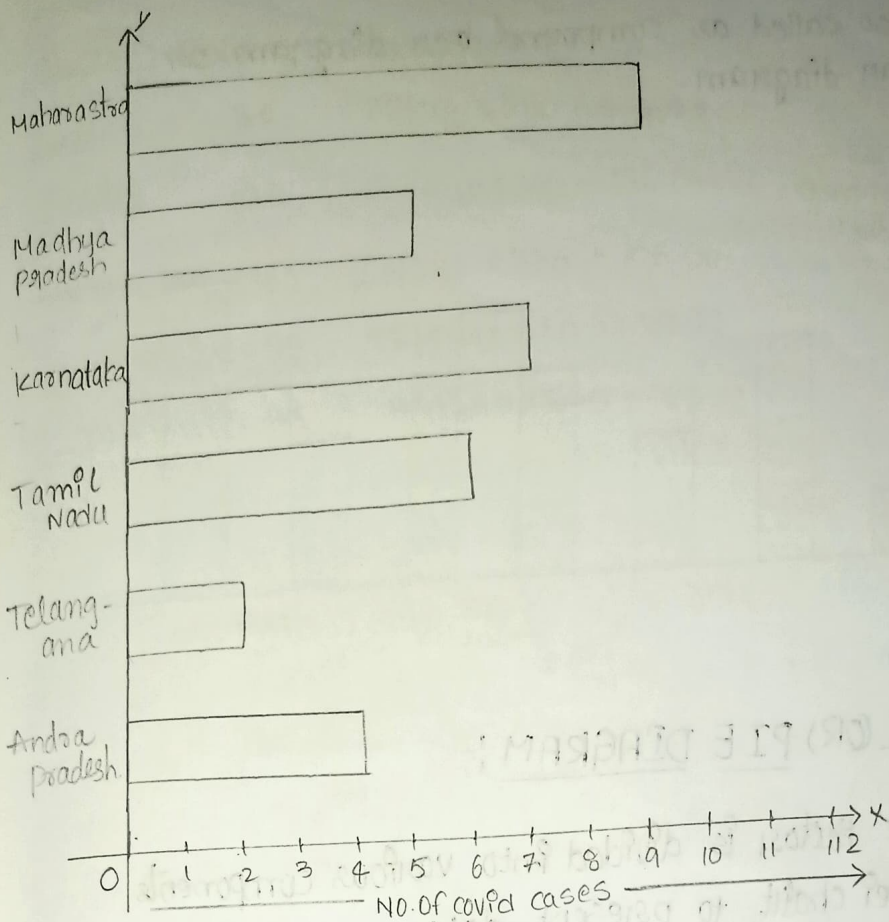
Year	2011	2012	2013	2014	2015	2016
production in tones	5	7	4	8	6	2



(ii) horizontal bar diagram:-

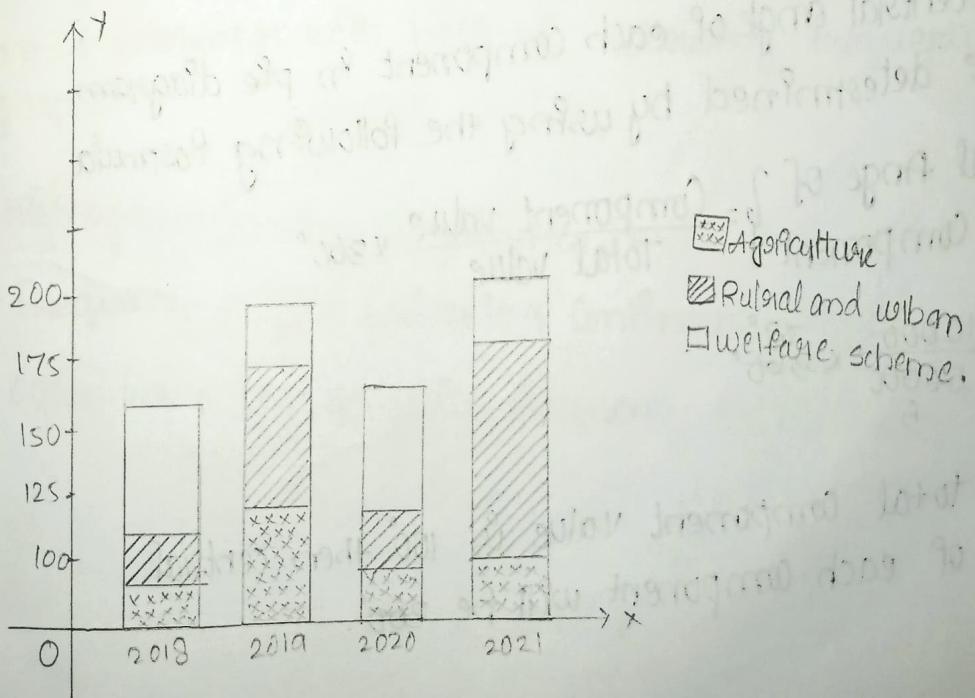
For qualitative data and geography data, we use horizontal bar diagrams.

In horizontal bar diagram the base line will be vertical.



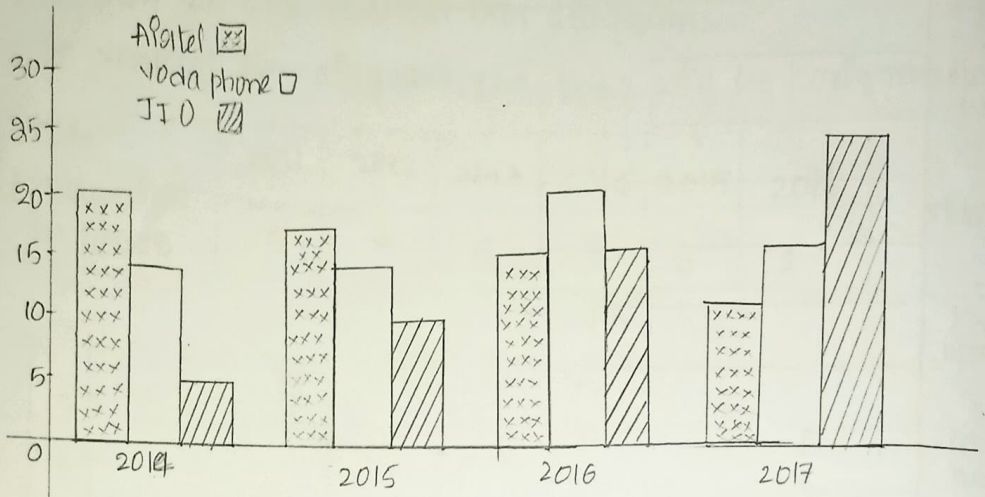
Note:- In a bar diagram the base line will be vertical or horizontal and false base line also.

Component / sub-divided bar diagram:-



Multiple Bar Diagram:-

It is also called as compound bar diagram or grouped bar diagram.



PIE CHART (OR) PIE DIAGRAM:-

⇒ If a single factor is divided into various components then we use pie chart to present data

⇒ Pie chart is two dimensional diagram

⇒ Pie diagram also called as an "Angular Diagram"

⇒ In pie diagram the data will be presented with help of circle and sectors

⇒ The central angle of each component in pie diagram will be determined by using the following formula

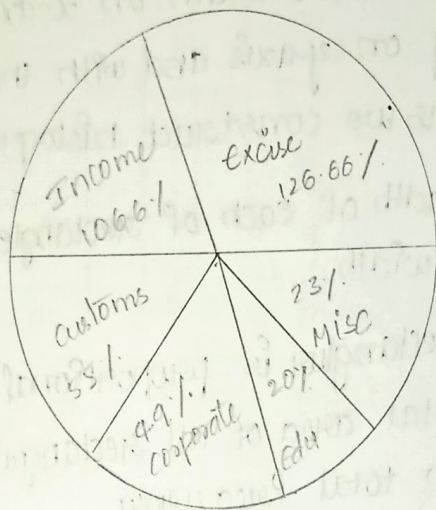
$$\left. \begin{array}{l} \text{Central Angle of} \\ \text{a Component} \end{array} \right\} = \frac{\text{Component value}}{\text{Total value}} \times 360^\circ$$

Eg:- $\frac{10000}{50000} \times 360^\circ = 72^\circ$

⇒ The total component value is 100 then central angle of each component will be 360° .

Example 1:-

Source	Revenue	central angle
Customs	80	$80/540 \times 360 = 53.33^\circ$
Excise	190	$190/540 \times 360 = 126.66^\circ$
Income tax	160	$160/540 \times 360 = 106.66^\circ$
Corporate tax	75	$75/540 \times 360 = 49.99^\circ$
Misc	35	$35/540 \times 360 = 23.33^\circ$



Frequency graph:-

Graphical Representation of frequency distributions:-

"The graphical representation of frequency distribution can be presented with help of following frequency graphs."

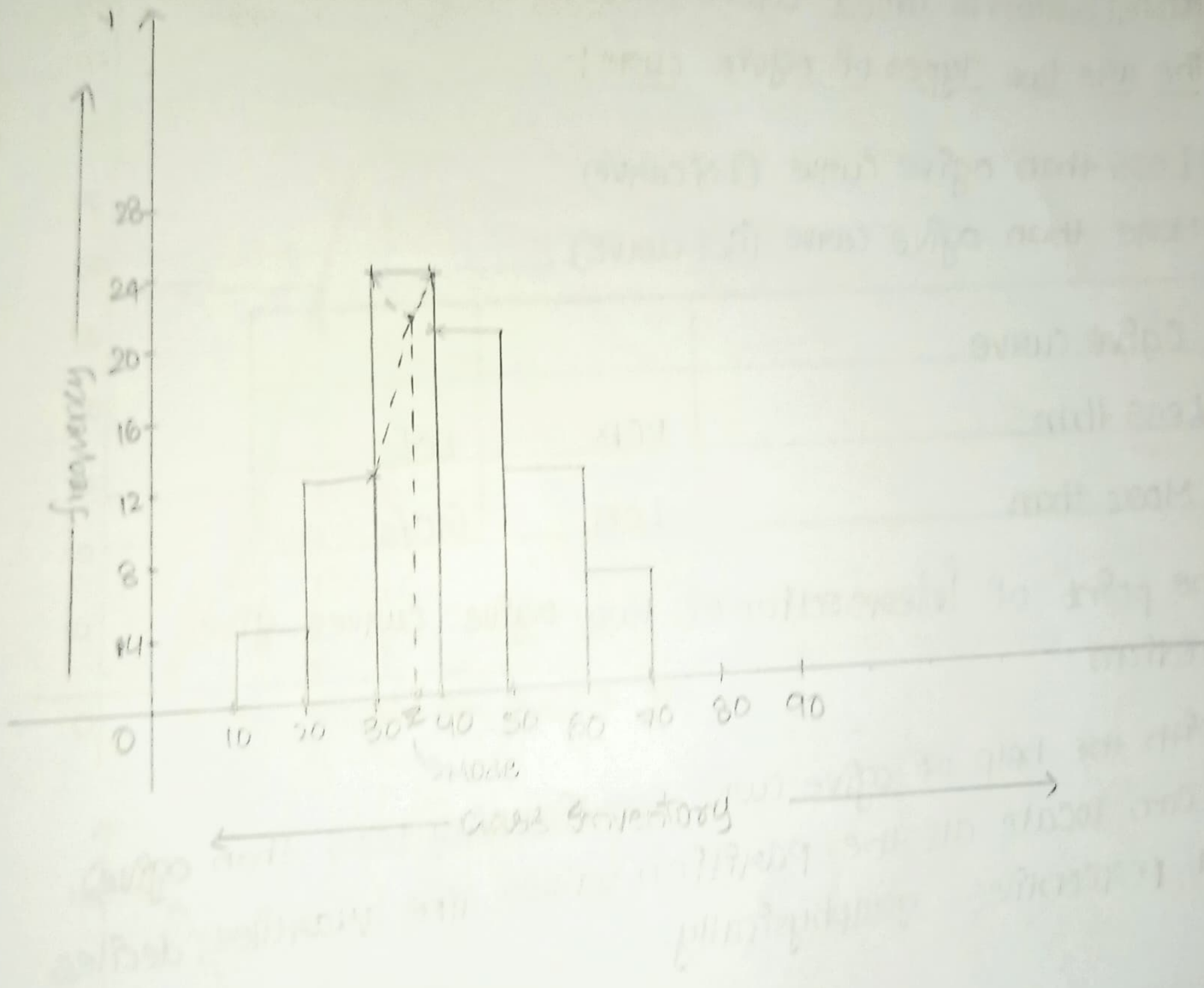
1. Histogram (continuous) (Important)
2. Frequency polygon (discrete & continuous)
3. Ogive curve (cumulative frequency distribution).

1) Histogram :-

- * Histogram is a 2 dimension diagram and it is also called as area diagram.
- * Histogram is graphical representation of continuous frequency distribution
- * In histogram, the classes must be exclusive only i.e, overlapping classes.
- * In histograms, we take class width on x-axis and corresponding frequency on y-axis and with the help of rectangular bars we construct histogram.
- * In histogram, the breadth of each of rectangle is proportional to class width.
- * The length of each rectangle is proportional to frequencies and the total area of all rectangles will be proportional to total frequency.
- * Histogram can be constructed for both equal and unequal classes but mostly used for equal classes.
- * In case of unequal classes, the length each rectangle in histogram is proportional for frequency density where,
$$\text{frequency density} = \frac{\text{class frequency}}{\text{class width}}$$
- * Histogram looks like vertical bar diagram or column chart
- * By using histogram, one of the measure of central tendency mode can be located graphically
- * Histogram is not constructed for open end sales

Ex: CI :-

CI	10-20	20-30	30-40	40-50	50-60	60-70
f	5	12	23	20	11	6



OGIVE CURVE - (Given by Dalton)

The graphical representation of cumulative frequency distribution is called 'OGIVE CURVE'.

The are two types of ogive curve:-

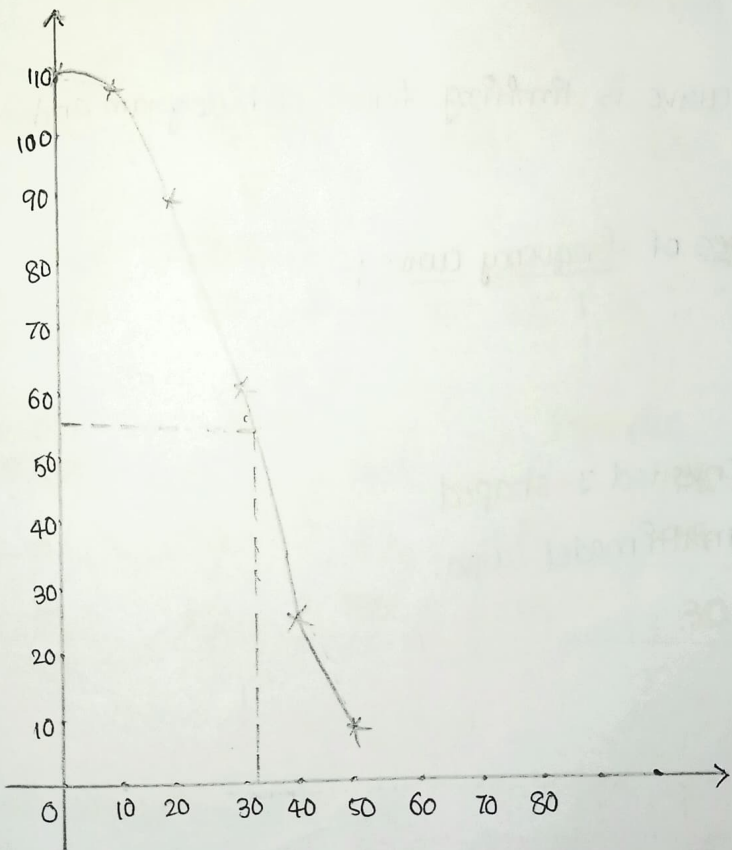
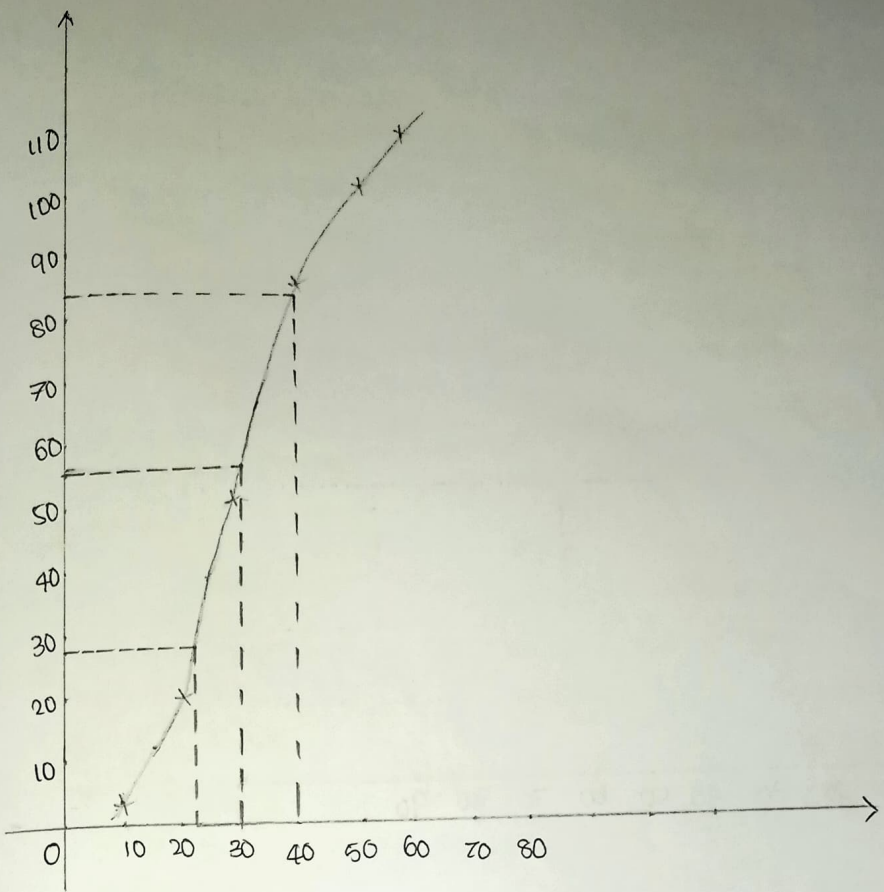
- 1) Less than ogive curve (Lcf curve)
- 2) More than ogive curve (Gcf curve).

Ogive curve		
Less than	UCB	LCfs
More than	LCB	GCfs

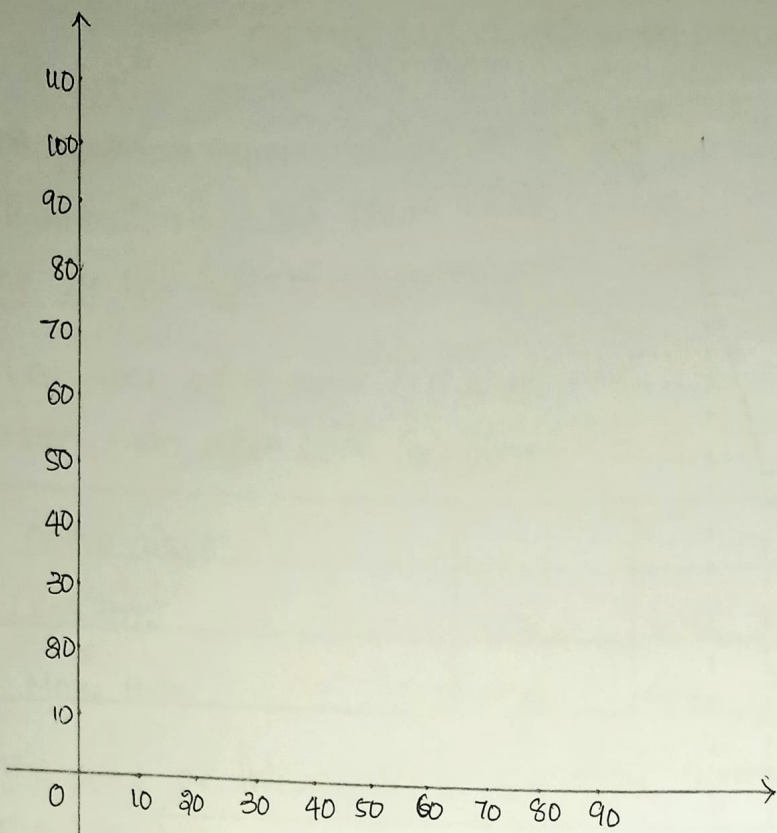
⇒ The point of intersection of two ogive curves gives median.

⇒ With the help of ogive curve (particularly less than ogive) we can locate all the partition values like quartiles, deciles and percentiles graphically.

CI	f	LCf	GCf	(ULB, LCF)	(LCB, GCf)
0-10	3	3	110	(10, 3)	(0, 110)
10-20	18	21	107	(20, 21)	(10, 107)
20-30	29	50	89	(30, 50)	(20, 89)
30-40	35	85	60	(40, 85)	(30, 60)
40-50	16	101	25	(50, 101)	(40, 25)
50-60	9	110	9	(60, 110)	(50, 9)
	N=110				



$$\frac{N}{2} = \frac{110}{2} = 55$$



Frequency curve:-

The frequency curve is limiting form of histogram and frequency polygon.

There are four types of frequency curve:-

- 1) Bell shaped
- 2) U-shaped
- 3) J-shaped and Inverted J-shaped
- 4) Mixed curve or multimodal curve.