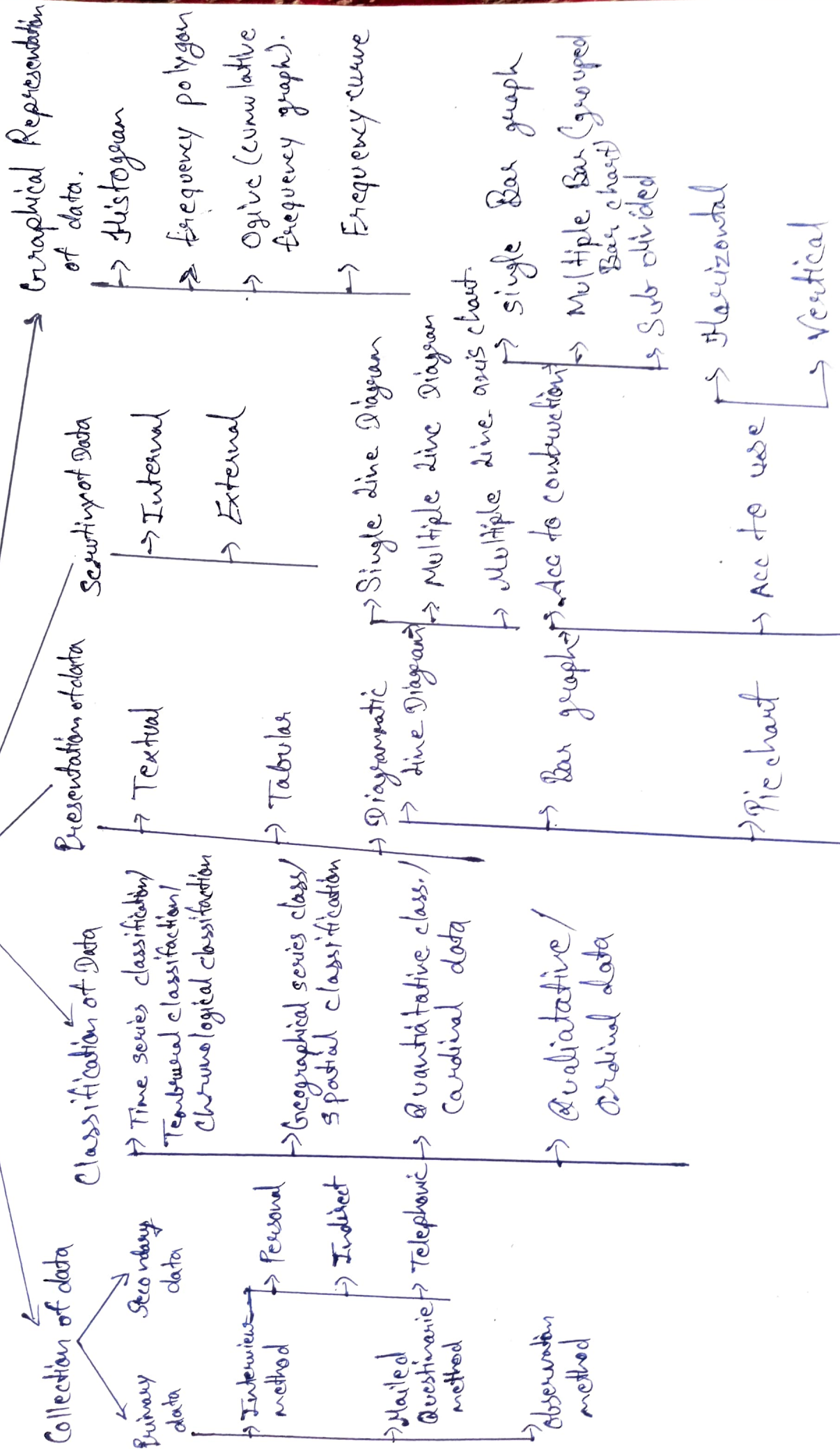


Statistical description of Data

Statistics



(1) Collection of data :->

(i) Primary data :-> When the statistical data is collected first time by any person agency investigator is known as Primary data.

- ex. Unemployment in India
- ex. Height of army soldiers
- ex. Population of Jaipur.

(ii) Secondary data :-> When the statistical data is already collected and it is further used by another person agency is known as secondary data.

- ex. Government sources (RBI)
- ex. International sources (WHO, WTO, UN, ISRO)
- ex. News paper
- ex. Internet
- ex. Published sources.

(2) Classification of data :-> (Data vary over time):

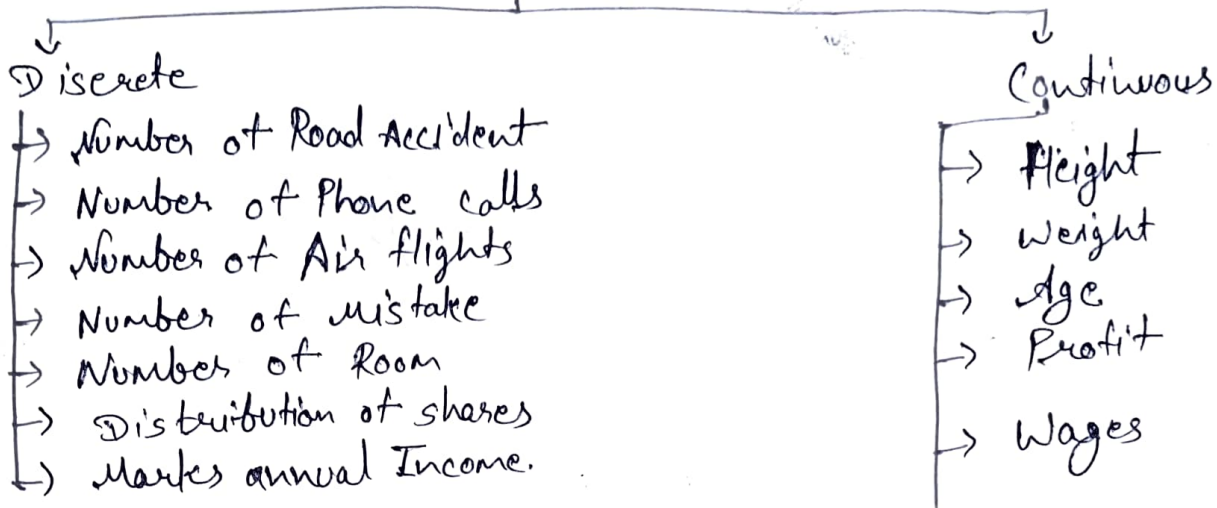
(i) Time series :-> According to this the data is classified according to time year, month, day, season etc.

ex.	year	GDP	ex.	month	Temperature
	2001	8%		Jan	28°C
	2001 2011	7.2%		Dec	30°C
	2010	6.9%		June	42°C
	2016	11.2%		July	44°C

(ii) Geographical series class :-> (When the data vary over space)
Acc. to this data is classified according to area, place, space, region, country, state, district etc.

ex.	State	Rain fall	ex.	Region	NRI
	Rajasthan	11.2		North	25
	Assam	16.4		South	10
	U.P	9.4		East	30

3. Quantitative class. \Rightarrow When the data is classified according to variable



4. Qualitative classification \Rightarrow When the data is classified according to a attribute.

ex. Nationality ; Beauty
 Gender ; Inttlegency
 Colour ; Smoking habit
 Rank ; Honesty etc.

Q. Types of classification.

Weight	Student	Weight	frequency $D = \frac{f}{C.L}$	RF = $\frac{f}{T.f}$	PF = $RF \times 100$
44-48	3	43.5-48.5	$\frac{3}{5}$	$\frac{3}{36}$	$\frac{1}{12} \times 100$
49-53	4	48.5-53.5	$\frac{4}{5}$	$\frac{4}{36}$	$\frac{1}{9} \times 100$
54-58	5	53.5-58.5	$\frac{5}{5}$	$\frac{5}{36}$	$\frac{5}{36} \times 100$
59-63	7	58.5-63.5	$\frac{7}{5}$	$\frac{7}{36}$	$\frac{7}{36} \times 100$
64-68	9	63.5-68.5	$\frac{9}{5}$	$\frac{9}{36}$	$\frac{1}{4} \times 100$
69-73	8	68.5-73.5	$\frac{8}{5}$	$\frac{8}{36}$	$\frac{2}{9} \times 100$

LCL \Rightarrow Lower class limit

LCB \Rightarrow Lower class boundary

LCB \Rightarrow $LCL - \frac{D}{2}$

LCB \Rightarrow lower limit to LCL

UCL \Rightarrow Upper class limit

UCB \Rightarrow Upper class boundary

UCB \Rightarrow Upper limit to UCL

Class length = UCB - LCB

Class interval

Mid Point = $\frac{LCB + UCB}{2}$

class mark

Frequency density = $\frac{\text{Frequency}}{\text{class length}}$

Relative frequency

PF = RF $\times 100 = \frac{\text{Frequency}}{\text{Total Frequency}}$

Range = Number of class interval \times class length

Q.

x	f	Q. (i) 40-50 R.f
10-20	3	<u>Sol</u> $\frac{7}{28} = \frac{1}{4}$
20-30	4	(ii) 50-60 P.f
30-40	5	<u>Sol</u> $\frac{9}{28} \times 100 = 32.14$
40-50	7	(iii) 20-30 fD?
50-60	9	<u>Sol</u> $\frac{4}{10} = \frac{2}{5} = 0.4$
	<u>28</u>	

(iv) 30-50 students

Sol $5 + 7 = 12$

(v) 40-60 students

Sol $\frac{16}{28} \times 100 = 57.14$



Bar graph \Rightarrow

Vertical \Rightarrow When the data vary over time
 (Time series class. and Quantitative class.)

Horizontal \Rightarrow When the data vary over space
 (Geographical series class. and Quantitative class.)

Bar graph is a rectangle diagram. There is a gap between the rectangles. So it is applicable for inclusive types of classification.

Bar graph is used for discrete variable while constructing the Bar graph only the height of rectangle is taken into consideration. So it is one dimensional diagram. In Bar graph height of rectangle is proportional to the frequency of class.

Pie chart \Rightarrow Pie chart is relative frequency distribution. It consists a circle which is divided into various sectors. Area of each sector is proportional to the frequency of class.

$$\text{Central angle} = \frac{F}{T.F} \times 360^\circ$$

House hold Exp.
 5 year outlay plan
 good example.

Tax	Revenue	C.A
Custom	12	$\frac{12}{90} \times 360^\circ = 48^\circ$
Excise	20	$\frac{20}{90} \times 360^\circ = 80^\circ$
TDS	35	$\frac{35}{90} \times 360^\circ = 140^\circ$
GST	23	$\frac{23}{90} \times 360^\circ = 92^\circ$
	<u>90</u>	

crisis component.
 central angle 80°
 largest and smallest central angle difference

$$\frac{140}{140} \quad \frac{140}{48}$$

$$\frac{140}{92^\circ \text{ Ans}}$$

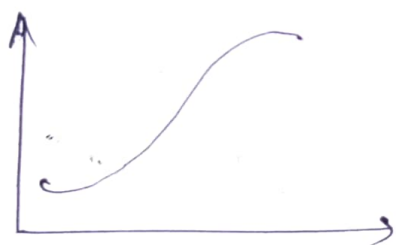
→ Histogram ⇒ It is Area diagram. There is no gap between the rectangles. It is applicable for exclusive classification and used for continuous variable. While constructing the histogram both the height and width are taken into consideration. So it is two dimensional diagram. mode can be determined graphically using

Histogram. When the class width is equal. Height of Rectangle is proportional to the frequency.

When the class width is not equal. Height of rectangle is proportional to frequency density.

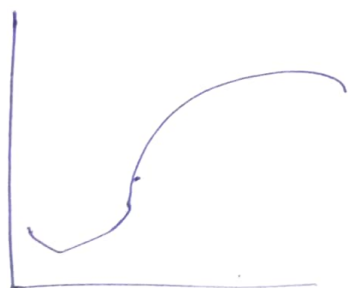
⇒ Frequency Polygon ⇒ It is a curve which is made by ~~using~~ joining the MID points of rectangles of Histogram. It has the same area as Histogram.

★ Ogive



Less than ogive
It is S shaped curve which is made

by taking upper limit as x coordinate (abscissa) and corresponding C.F. as y coordinate (ordinate).



More than ogive
It is S shaped curve which is made by taking lower limit as x coordinate (abscissa) and corresponding C.F. as y coordinate (ordinate).