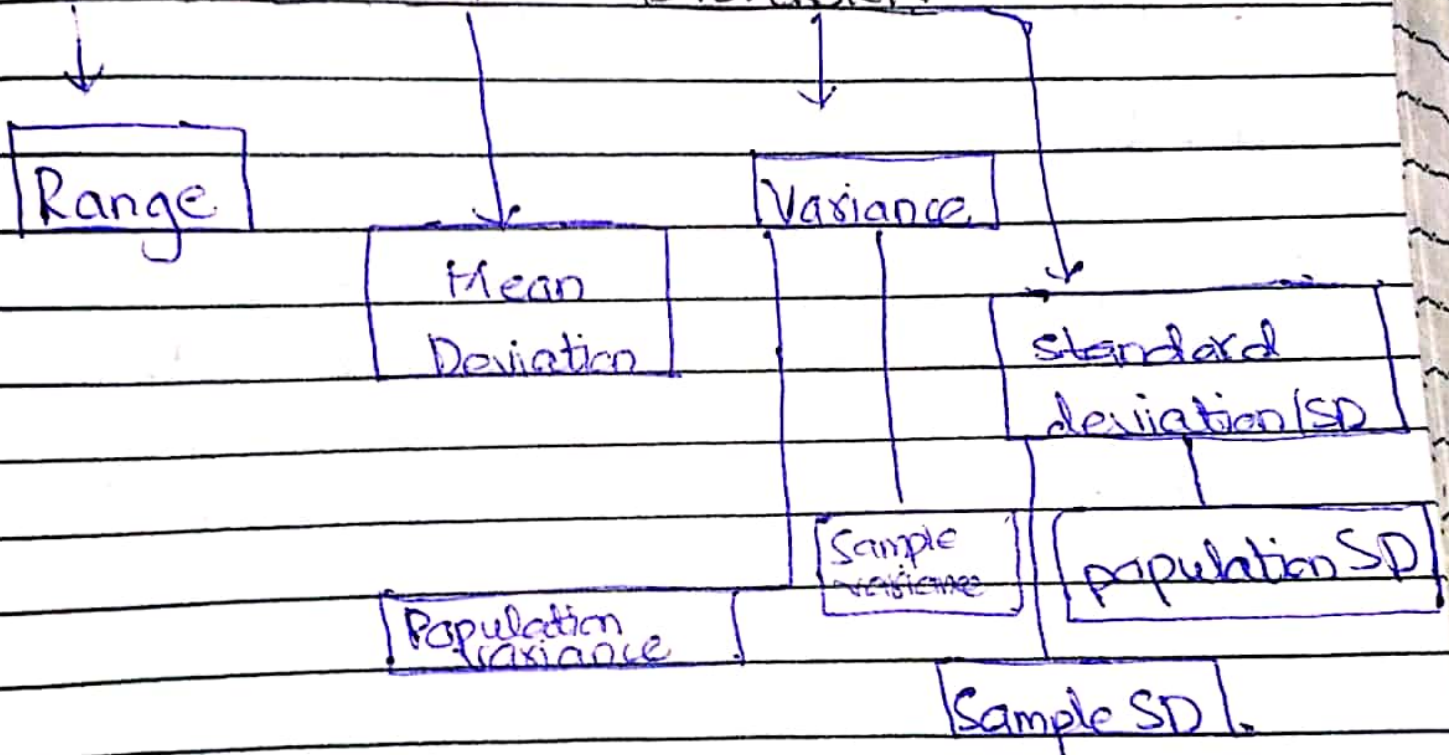


MEASURES OF VARIABILITY

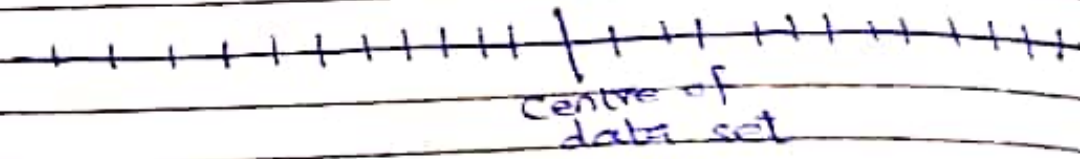
OR

MEASURES OF DISPERSION



Dispersion

spread/dispersion/variability
around the centre of
data set

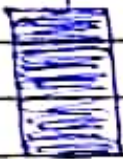


e.g. there are two brands:

Brand I

(pepsi)

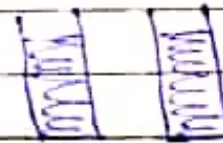
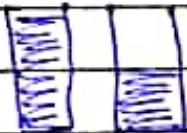
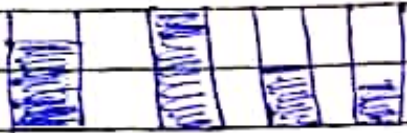
Average quantity = 1.5ltr



Brand-II

(Coca-cola)

Average quantity = 1.5ltr



High dispersion/spread
variability in data
set

low dispersion/spread
variability in
data set

consumer find it
low quality product

consumer buy
this Brand
more

MEASURES OF DISPERSION

A measure of location only describes
the centre of the data. It does

Don't tell the anything about the spread of data, because any two datasets with different variability may have same central tendency i.e.

Dataset I
8, 7, 5, 8, 6

↓

$$\bar{X} = 6.8$$

↓

Less variation
or dispersion

Dataset II

1, 4, 7, 10, 12

↓

$$\bar{X} = 6.8$$

↓

More variation
or dispersion

A numerical quantity that describes the spread of the values in a dataset is called measures of dispersion/variability.

RANGE:-

It is the difference b/w the largest and the smallest values in a dataset.

$$\text{Range} = \text{largest value} - \text{smallest value}$$

Merits of Range;

It is easy to calculate

It is easy to understand

Demerits of Range..

It is not based on all values

It depends only upon extreme values (i.e. largest and smallest)

Example:-

Dataset I:

48, 49, 50, 51, 52

$$\text{Range} = 52 - 48 = 4$$

Date: _____

Day: **ATWTFSS**

Example:

40, 41, 42, 43, 44, 45, 46, 47, 48, 49,
50, 51, 52, 53, 54, 55, 56, 57, 58, 59,

60

$$\text{Range} = 60 - 40 = 20$$

Example:-

The marks obtained by 9 students
are given below:

X

45

32

37

46

39

36

41

48

36

$$R = 48 - 32 = 16$$