



# MEASURES OF DISPERSION

## DISPERSION

- Dispersion refers to the variations of the items among themselves / around an average.
- Greater the variation amongst different items of a series, the more will be the dispersion.
- As per Bowley, “*Dispersion is a measure of the variation of the items*”.



# PROPERTIES OF A GOOD MEASURE OF DISPERSION

- Easy to understand
- Simple to calculate
- Uniquely defined
- Based on all observations
- Not affected by extreme observations
- Capable of further algebraic treatment



# MEASURES OF DISPERSION

## Absolute

Expressed in the same units in which data is expressed

Ex: Rupees, Kgs, Ltr, Km etc.

## Relative

In the form of ratio or percentage, so is independent of units

It is also called **Coefficient of Dispersion**

# METHODS OF MEASURING DISPERSION

**Range**

**Interquartile Range & Quartile Deviation**

**Mean Deviation**

**Standard Deviation**

**Coefficient of Variation**

**Lorenz Curve**



## PRACTICE PROBLEMS – RANGE

Q1: Find the range & Coefficient of Range for the following data: 20, 35, 25, 30, 15

*Ans: 20, 0.4*

Q2: Find the range & Coefficient of Range:

|   |    |    |    |    |    |    |    |
|---|----|----|----|----|----|----|----|
| X | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| F | 15 | 18 | 25 | 30 | 16 | 10 | 9  |

*Ans: 60, 0.75*

Q3: Find the range & Coefficient of Range:

|      |      |       |       |       |       |
|------|------|-------|-------|-------|-------|
| Size | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 |
| F    | 4    | 9     | 15    | 30    | 40    |

*Ans: 25, 5/7*



# RANGE

## MERITS

- Simple to understand
- Easy to calculate
- Widely used in statistical quality control

## DEMERITS

- Can't be calculated in open ended distributions
- Not based on all the observations
- Affected by sampling fluctuations
- Affected by extreme values

