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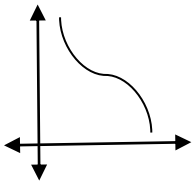
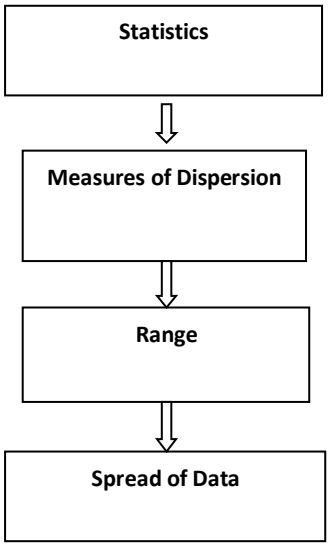
Template: Study Material

<table>
<tr><td colspan="3"><Basic Mathematics>: <22103>: <BMS>: <Statistics>: <UO_ 5.1>: <Study Material></td></tr>
<tr><td><Mrs. M. R. Abhang></td><td><4/7/2020></td><td><Mr.A.D.Wandhekar></td></tr>
<tr><td>Key words
Range, Coefficient of Range</td><td>Learning Objective:
Obtain the range and coefficient of range of the given grouped and ungrouped data.</td><td rowspan="2">Diagram/picture
 
Range= Largest value- Smallest values</td></tr>
<tr><td>Key Questions

Do you know upper class boundary and lower class boundary?</td><td>Concept Map
 
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Explanation of Concept

Range:

Range for Raw data: - The difference between the largest value and the smallest value of a given set of data is called as the Range.

Range = Largest value-Smallest value

$= L - S$

Coefficient of Range = $\frac{L-S}{L+S}$

Example:

1) Find the range and coefficient of range for the following data:

200 , 210 208 , 160 , 250 , 290

Solution: Range = Largest value – Smallest value

= L – S

= 290 – 160

= 130

Co-efficient of range $= \frac{L-S}{L+S}$

$= \frac{290-160}{290+160}$

= 0.289

Range for ungrouped data: - Range for ungrouped data is defined **as** the difference between the smallest value of x_i and the largest value of x_i in the given data.

L = Largest value of x_i, S = Smallest value of x_i

Range = L – S

Co-efficient of range: = $\frac{L-S}{L+S}$

1) Find the range and coefficient of range for the following data.

x_i	5	10	15	20	25	30	35	40
f_i	2	3	7	5	7	8	8	10

Solution: Smallest value of x_i = S = 5

Largest value of x_i = L = 40

Range = Largest value of x_i – Smallest value of x_i

= L - S

= 40 -5

= 35

Co-efficient of range $= \frac{L-S}{L+S}$

$= \frac{40-5}{40+5}$

=0.778

Range for grouped data: - Range for grouped data is defined as the difference between upper boundary of highest class and lower boundary of lowest class in the given grouped data.

U = upper boundary of highest class,

L = lower boundary of lowest first class

Key Definitions/ Formulas For Raw and Ungrouped data:

Range $= L - S$

Coefficient of Range = $\frac{L-S}{L+S}$

For grouped data:

Range$= U - L$

Coefficient of Range= $\frac{U-L}{U+L}$

Solved word Problem

The runs scored by a batsman are given below find its Range: 80, 72, 75, 90, 95, 10, 79

Solution:

Range $= L - S$

$= 95 - 10$

$= 85$

Range = U – L

co-efficient of range = $\frac{U-L}{U+L}$

1) Find the range and coefficient of range for the following data

Marks	10 - 19	20-29	30-39	40-49	50 - 59
No. of students	6	19	34	10	18

U = upper boundary of last class = 59.5

L = lower boundary of first class = 9.5

Range = U – L

$= 59.5 - 9.5$

= 50

co-efficient of range $= \frac{U-L}{U+L}$

$= \frac{59.5-9.5}{59.5+9.5}$

=0.725

Application of Concept/ Examples in real life

Range is the easy measure to calculate how spread out the data set is. It is also used to estimate another measure of spread, the standard deviation.

Link to YouTube/ OER/ video

https://en.m.wikipedia.org

Key Take away from this UO: 1) Range

2) Coefficient of Range.