

# RANGE

# INTERQUATILE RANGE-IQR

Homework same as previous presentation

## THE BIG PICTURE!

- Measurements of Central Tendencies:

- Mode, or modal group

- Mean

- Median

I would like you to think what are the pros and cons of each.

- Measurements of Spread:

- Range

- Interquartile Range (IQR)

- Standard Deviation

Again, what are the pros and cons of each.

# Range: Max. Value-Min. Value

- List: 13, 12, 15, 13, 18, 14, 16, 15, 17

$$\text{Range} = 18 - 12 = 6$$

- Discrete-nongrouped-frequency table

$$\begin{aligned} \text{Range} &= 52 - 47 \\ &= 5 \end{aligned}$$

Number in a box	Frequency
47	5
48	4
49	11
50	6
51	3
52	1
<b>Total</b>	<b>30</b>

- Discrete-grouped

Marks	Frequency
0 - 9	2
10 - 19	31
20 - 29	73
30 - 39	85
40 - 49	28

- Continuous-grouped

Litres (L)	Frequency
$2000 \leq L < 3000$	4
$3000 \leq L < 4000$	4
$4000 \leq L < 5000$	9
$5000 \leq L < 6000$	14
$6000 \leq L < 7000$	23
$7000 \leq L < 8000$	16

you simply cannot find the range when is grouped, unless they give you the minimum and maximum value.

# Interquartile Range - IQR

- Definition: the difference between the upper quartile and the lower quartile or  $\text{IQR} = Q_3 - Q_1$

Obviously, you first need to find  $Q_1$  and  $Q_3$  to find IQR.

And you know that those values depends on How the data is given

- Outliers:

Please note that this is not part of your syllabus any more, however, you still may need this for your IA

Formula:

$$\text{Lower Boundary} = Q_1 - 1.5 \text{ IQR}$$

$$\text{Upper Boundary} = Q_3 + 1.5 \text{ IQR}$$

This means that any value of your data that is less than the lower boundary is considered an **outlier**. Or any value of your data that is greater than the upper Boundary is considered an **outlier**.