

SPREAD OF DATA

5-FIGURE SUMMARY

The 5-figure summary lists the 5 key points in a set of data:

L = Lowest Value

Q_1 = Lower Quartile (median of the bottom half of the data)

Q_2 = Median of the set of data

Q_3 = Upper Quartile (median of the top half of the data)

H = Highest Value

RANGE & INTER-QUARTILE RANGE

The range and inter-quartile range give a measure of the spread of a set of data.

$$\text{Range} = \text{Highest Value} - \text{Lowest Value}$$

$$\text{Inter-Quartile Range} = \text{Upper Quartile} - \text{Lower Quartile}$$

MEAN

The mean is a measure of average for a set of data.

$$\text{Mean} = \bar{x} = \frac{\text{Total}}{\text{Number of values in set}}$$

STANDARD DEVIATION

The standard deviation is a measure of the variation in a set of data.

$$s = \sqrt{\frac{\sum(x - \bar{x})^2}{n-1}} \quad \text{OR} \quad s = \sqrt{\frac{\sum x^2 - \frac{(\sum x)^2}{n}}{n-1}}$$

e.g. Find the mean and standard deviation of the following data: 5 12 14 18 21

$$\bar{x} = \frac{\text{Total}}{\text{Number of values in set}} = \frac{70}{5} = 14$$

x	$x - \bar{x}$	$(x - \bar{x})^2$
5	-9	81
12	-2	4
14	0	0
18	4	16
21	7	49
Total		150

$$s = \sqrt{\frac{\sum(x - \bar{x})^2}{n-1}} = \sqrt{\frac{150}{5-1}} = \sqrt{\frac{150}{4}} = \sqrt{37.5} = 6.12$$

Spread of Data Practice

http://www.cimt.plymouth.ac.uk/projects/mepres/book8/bk8i5/bk8_5i2.htm

Revise Mean and Range.

http://www.bbc.co.uk/bitesize/standard/maths_ii/statistics/mean_mode_median/revision/1/

Revise averages including the Mean and try the TESTBITE.

http://www.bbc.co.uk/bitesize/standard/maths_ii/statistics/standard_deviation/revision/1/

Revise Standard Deviation and try the TESTBITE.

<http://www.mathsisfun.com/data/standard-deviation.html>

Read about standard deviation, answer the question at the bottom of the page..

<http://www.supermathsworld.com/> Ask your teacher for the login details.

Select DATA from the menu. Select AVERAGES. Try on EASY and HARD levels.