Year 9 foundation topic 7

Averages

Averages definitions

Mean: Add up the values and divide by how many values there are. This is what people normally mean when they say the average.

Mode: The most common.

Median: Middle value when in order.

What careers would use these skills?

Medical trials, statistician, scientist.

Range

The range is the largest value in the set of date minus the smallest.

Eg. 2,4,5,5,6,8,9,10

The range would be 10—2 = 8

Bias

Bias can be caused by an un-representative sample. It is not a true reflection of the population.

Averages from a set of data

Find the averages of: 4, 5, 2, 3, 6, 7, 6

Mode = 6

Mean = 33 ÷ 7 = 4.7 (to 1 decimal place)

Ordered data: 2, 3, 4, 5, 6, 6, 7

Median = 5

Advantages and disadvantages of averages

Average	Advantages	Disadvantages
Mean	Every value makes a difference.	Affected by extreme values
Median	Not affected by extreme values.	May not change if the data value
Mode	Easy to find, not affected by extreme values, can be used with non-numerical data.	There may not be a mode.

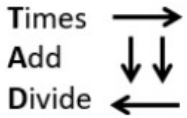
Averages from a table

Modal class: the group with the highest frequency

Median: if the total frequency is n, then the median lies in the class with the

$\frac{n+1}{2}$ th value in it.

Mean:



Data value	Frequency	Frequency x Data Value
2	3	6
3	2	6
4	5	20
	10	32

Mean = 32 ÷ 10 = 3.2

If the table has **grouped data**, use the midpoint of each class to multiply by the frequency. (Then times, add and divide as above)

Range: this can be found as normal by doing the largest value minus the smallest value.

Sampling

A sample if a selection from the whole population.

A census is a survey of the whole population, this is done every 10 years in the UK.

A random sample is when every member of the population has an equal chance of being included.

Comparing data sets

When comparing two sets of data, calculate the mean and the range, this will show you the 'average' and the spread of the data around the mean.

Show numerical values and make concluding statements.

Eg. The mean for the girls was 42.3s, whereas the mean for the boys was 40.1s. This shows that on average the boys were faster around the track than the girls. The range for the girls was 8.2s, whereas the boys was 10.7s. This shows that the girls had more consistent times than the boys.