

# Data Analysis

- Data that has been collected but has not been ordered or grouped in any way is known as *Raw Data*.
- If the data has been measured – time, height, weight, etc then this data is said to be *continuous data*.
- If the data has been counted – eye colour, make of car, political party, number of rooms in houses, etc then this data is said to be *discrete data*.
- When analysing data we look to describe a typical value for the data (an *average*) and how spread out the data is (the *range*).
- There are three measures of average we need to be able to find for a set of raw data, the mode, mean and median.

**MOde** – this is a data value that occurs **MOst** frequently

**Mean** – this is the one that is the most work...so MEAN!

**Mean = (Total of all Data Values) ÷ (Count of Data Values)**

**Median** – this is the middle Data Value in the data list once the raw data has been sorted into size. So for **MEDIA**n think **MEDIA**m. Where a list has an even number of data items and therefore no middle, you need to find the middle of the middle pair.

- In Intermediate Tier Maths, there are two measures of range:

**Range = Largest Data Value – Smallest Data Value**

**Interquartile Range (Cumulative Frequency)**

***The larger the range, the more spread out the data is.***

- For continuous data we can look to find a value for each measure of average and calculate the range. But for discrete data, we can only find the mode.
- You may be asked to decide which measure of average best describes a set of data.

For example (1), consider the following marks scored by 13 students in a maths exam:

20, 21, 21, 22, 23, 23, 25, 27, 27, 27, 29, 98, 98

Example (2) The following are the salaries of 5 employees in a small business:

Mr A £22 500 Mr B £17 900 Mr C £21 400 Mr D £22 500 Mr E £155 300

Find the mean and median salary for the business. Which does NOT give a fair 'average'. Explain why.

Sometimes you may be given a mean value and asked to work out one of the original data values.

For example (3), five different drinks have a mean price of £1.50, when a sixth drink is added the new mean price is £1.60. How much did the new drink cost?

You may be given all the averages and asked to work out the raw data values. For example (4), Write down five numbers so that the mean is 6, the median is 5, the mode is 4 and the range is 6.

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