4a – A Guide to
Measures of Central Tendency

Royal Geographical Society with IBG
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Measures of Central Tendency are ways of working out the most representative or central value within a data set.

For the examples below, the following data set will be used.

8	**12**	**3**	**5**	**23**	**19**	**14**	**8**	**6**	**16**	**10**	**8**	**13**	**9**	**27**	**16**	**2**	**9**	**5**

Distances (in km) that interviewees travelled to access the High Street of Town A.

Mode

The mode for a set of data is that which occurs most frequently within the set.

When the example data set is put in value order, one can see that the mode is **8 km**.

2	**3**	**5**	**5**	**6**	**8**	**8**	**8**	**9**	**9**	**10**	**12**	**13**	**14**	**16**	**16**	**19**	**23**	**27**

It is important to remember when using the mode that it does not always represent the centre of a distribution. Equally, identifying the mode is not always possible for all data sets – continuous data for example may produce a mode that is meaningless as there may be one frequency of every value. In some data sets there may be more than one mode, making the use of this analysis impractical.

Median

The median is the middle value when the data set is placed in value order. If there are an odd number of values in the data set, the middle value is taken as the median. If there are an even number of values in the data set, the mid-point between the two middle values is taken as the median.

When the example data set is put in value order, one can see that the median is **9 km**.

2	**3**	**5**	**5**	**6**	**8**	**8**	**8**	**9**	**9**	**10**	**12**	**13**	**14**	**16**	**16**	**19**	**23**	**27**

Identifying the median is only possible when the data set can be ordered, but using the median can offset the possible problems associated with outliers and anomalous data values.

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Mean

The mean is the sum of all the values in the data set divided by the number of values within the data set.

For the example data set the sum of all the values is **213**.

2 + 3 + 5 + 5 + 6 + 8 + 8 + 8 + 9 + 9 + 10 + 12 + 13 + 14 + 16 + 16 + 19 + 23 + 27 = 213

The total number of values within the data set is **19**.

213 divided by 19 = 11.2

Therefore, the mean is **11.2 km**.

One advantage of using the mean is that it can be used for almost all types of data set. However, it is also true that the mean can be greatly influenced by an anomaly within the data set.