

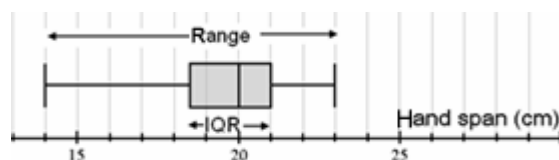
Interquartile range

What you should know

That the range = highest data value – lowest data value.

That the interquartile range (IQR) = upper quartile – lower quartile.

That both of these can be shown on a box and whisker diagram.

**New idea**

Although the interquartile range is ‘better’ than the range in the sense of not being affected too much by one very large (or small) value, it is possible for two sets of data to have different amounts of spread but the same interquartile range.

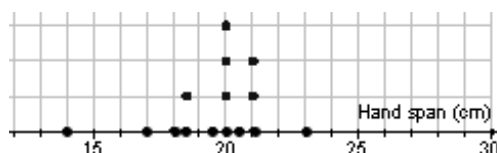
Task: Exploring the interquartile range

The box and whisker diagram above shows the hand spans of 15 students. They are measured to the nearest half centimetre.

If the 15 students were put in a line in order of hand span, the places taken by the student with the lower quartile hand span (L), the median hand span (M) and the upper quartile hand span (U) would be as shown.

___ L ___ M ___ U ___

- How many different sets of hand span data can you find that fit with the box and whisker diagram?
- Plot at least five sets of data on dot plots. This will help you compare the spreads of the possible data sets.

**Take it further**

Standard deviation is a measure of spread which uses each data value.

- Find out how to calculate standard deviation on your calculator or using a spreadsheet. Calculate the standard deviation for each possible data set. Does this give different answers for different amounts of spread?

Where this goes next

At A level interquartile range and standard deviation are studied in Statistics.

Standard deviation can be thought of as ‘an average distance of all data points from the mean’.