

# Representing and Comparing Data

## Five Number Summaries

A five-number summary selects important components of a data set and is used to analyse the data. These components include:

1. The lowest score.
2. Lower Quartile or Quartile 1 – the midpoint of the bottom half of the data set when arranged in ascending order.
3. The Median – the midpoint of the entire data set when arranged in ascending order.
4. Upper Quartile or Quartile 3 – the midpoint of the top half of the data set when arranged in ascending order.
5. The highest score.

## Steps to Finding a Five-Number Summary

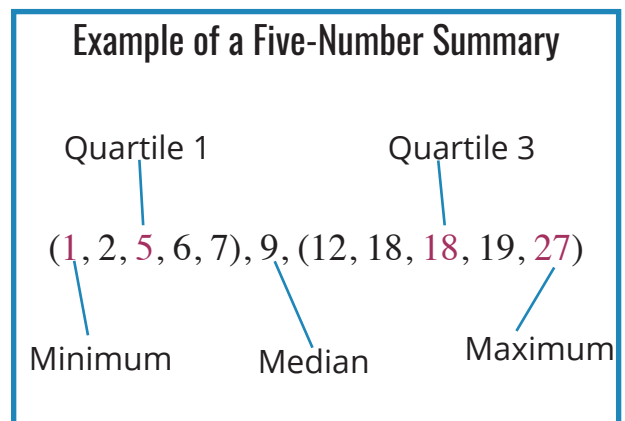
**Step 1.** Place your numbers in ascending order (from smallest to largest).

**Step 2.** Find the minimum and maximum for your data set. Because your numbers are in order, this should be easy to see.

**Step 3.** Find the median. This can be done by dividing the number of items by 2. This will then tell you how many items are above and below.

**Step 4.** Place parentheses around the numbers above the median and again around the numbers below the median. This will make it easier to find Quartile 1 and 3.

**Step 5.** Find Quartile 1 by calculating the median of lower half of the data. Find Quartile 3 by calculating the median for the upper half of the data.



## Interquartile Range and Range

The Interquartile Range and Range are used to measure the spread of a data set.

- To calculate the Interquartile Range, subtract Quartile 3 from Quartile 1
- To calculate the Range, find the difference between the highest score and the lowest score

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## Box and Whisker Plots

Box and whisker plots (also known as box plots) are scaled plots which are useful to compare different data sets. This type of graph shows the shape of the data distribution, the central value (median) and its variability. The shape of the data will determine if it is symmetric or or skewed (lopsided).

Box and whisker plots must be drawn to scale and are developed using the scores from a five-number summary.

The range is shown by the size of the entire chart, whilst the interquartile range is shown by the size of the box.

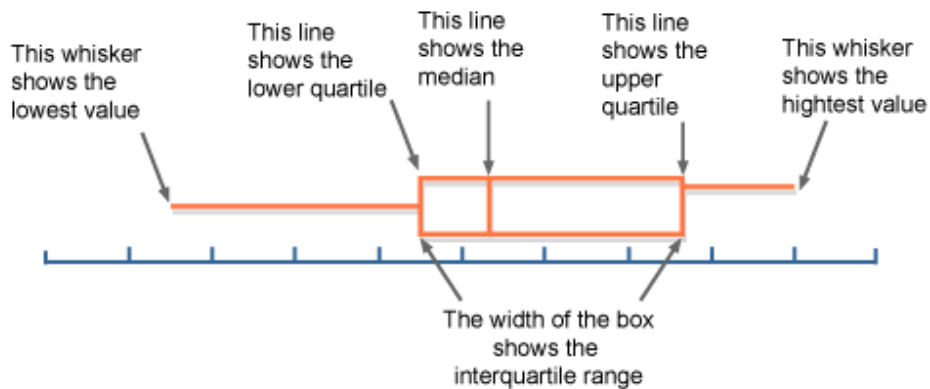


Image Source:

<http://www.bbc.co.uk/schools/gcsebitesize/maths/statistics/representingdata3hirev6.shtml>