<u>Introduction</u>

Frequency is used to describe the number of times results occur. On the other hand, **cumulative frequency** is a 'running total'. It is the sum of frequencies moving through the data.

<u>Example</u> - A survey was done to look at how many TV's there were in a household.

no. of TV's	frequency		cumulative frequency
0	4	4	4
1	15	4+15	19
2	18	4+15+18	37
3	7	4+15+18+7	44
4	2	4+15+18+7+2	46

The definition of the **median** is that particular value <u>half way</u> through the data.

If the cumulative total of frequencies is 46, then the median is the 23 rd. value.
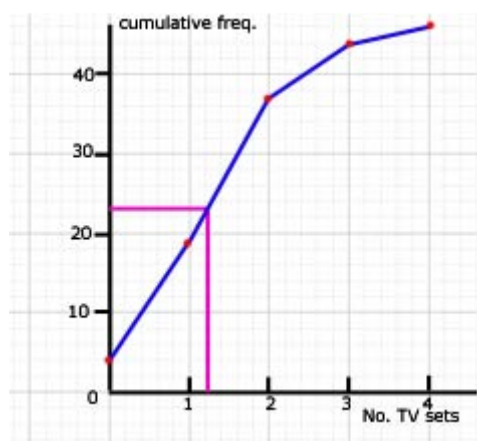
So the median is 1(nearest whole number).

Where there are lots of values, say more than 10, the data is best presented as '**grouped data**'.

<u>Quartiles</u>

The **upper quartile** is the particular **value** 3/4 through the cumulative frequency.

The **lower quartile** is the particular **value** 1/4 through the cumulative frequency.

In the example given above:

upper quartile = 0.75 x 46 = 34.5 (rounded to 36) - this
gives a <u>value</u> close to 2

lower quartile =0.25 x 46 = 11.5 (rounded to 12) - this
gives a <u>value</u> close to zero

note: **values** are the readings along the <u>bottom</u> of a cumulative frequency graph

<u>Ranges</u>

The **interquartile range** is the difference between the lower and upper quartiles.

interquartile range = 34.5 - 11.5 = 23

The interquartile range is a measure of how spread out data is. With reference to products(
eg the shelf-life of foods) a small value for the interquartile range means a more accurate
result.

Box & Whisker Plot (Box Plot)

The plot is derived from a cumulative frequency graph and shows the range of data , the interquartile range, and where the quartiles are in relation to the median.