Quartiles – Interpolation

The quartiles show the lower and upper 25th percentage point of the data.
When data is grouped in a grouped frequency table, we cannot find the value of the quartile, we can only find the group in which each quartile lies.

We can then use ***interpolation*** to estimate the quartiles within their relevant classes which uses a similar method to the cumulative frequency graph to find these estimates.

5 Step process:

1. Find the cumulative frequency and n (total)
2.
    a. Divide n by 4 to find the ***position*** of the lower quartile
    b. Divide n by 4 the times by 3 to find the ***position*** of the upper quartile

    (note here how we don't need to use n+1 as this is only an estimate)
3. Find the class in which the quartile lies
4. Divide the width of the class by its frequency - this will tell you, if evenly spread out, how much taller each person is than the last within the class
5. Use this information to find an estimate for the quartile

Estimation

This method works on the basis that the values within the quartile's class are all the same width apart which is both highly unlikely and often impossible.
This is, therefore, the reason this can only be an ***estimate*** of the quartile.