

Statistics lesson 2 - How to find the 5 number summary.

Magic Monk Tutorials

1 Find the five number summary of the following lists.

1.1 2, 3, 5, 7, 11, 13, 17, 19, 23

From inspection we have: highest = 23, lowest = 2.

Since there are 9 elements, the median will be in the 5th position. So median = 11.

This means our lower quartile is 2, 3, 5, 7, giving us an LQ of $(3 + 5)/2 = 4$.

Our upper quartile is 13, 17, 19, 23, giving us an UQ of $(17 + 19)/2 = 18$.

1.2 0, 0, 0, 2, 3, 4, 4, 4, 7, 7, 7, 8, 10

From inspection we have: highest = 10, lowest = 0.

Since there are 13 elements, the median will be in the 7th position. Median = 4.

So our lower quartile is 0, 0, 0, 2, 3, 4. This has an LQ of $(0 + 2)/2 = 1$.

Our upper quartile is 4, 7, 7, 7, 8, 10 with an UQ of $(7 + 7)/2 = 7$.

1.3 49, 95, 321, 340, 350, 505, 591, 687, 721, 762

Since the above are ordered, we have lowest = 49 and highest = 762.

There are 10 values in total, so our median will be the midpoint of the 5th and 6th values.

median = $(350 + 505)/2 = 427.5$.

Our lower quartile is 49, 95, 321, 340, 350. This has an LQ of 321.

Our upper quartile is 505, 591, 687, 721, 762. This has an UQ of 687.

2 You have the following five number summary: Lowest = 5, LQ = 5, median = x , UQ = 5.5, subsection = 6. Given there are only whole numbers in the data, find x .

Note that the upper quartile must contain atleast one 5. This is because it can only contain the numbers 5 and 6, since those are our lowest and highest values and our median must be 5.5, which is $(5 + 6)/2$. Since our upper quartile contains atleast one 5 and our lowest value is a 5, our lower quartile contains only 5's. Our median must be 5 since if we have an even number of values, the two middle values will be 5 and 5, since the LQ is only 5's and the UQ has a 5. If there are an odd number of values, it must be a 5 for the same reasoning. Therefore $x = 5$.