**Box and whiskers plot**

From basic-mathematics.com

Before studying this lesson, you need to understand the median. Basically a box and whiskers plot looks like this:

Just like the name suggests, the rectangle you see is called a box.

Now the reason we call the two lines extending from the edge of the box whiskers is simply because they look like whiskers or mustache, especially mustache of a cat

The five points or dot that you see represents the followings starting from left to right
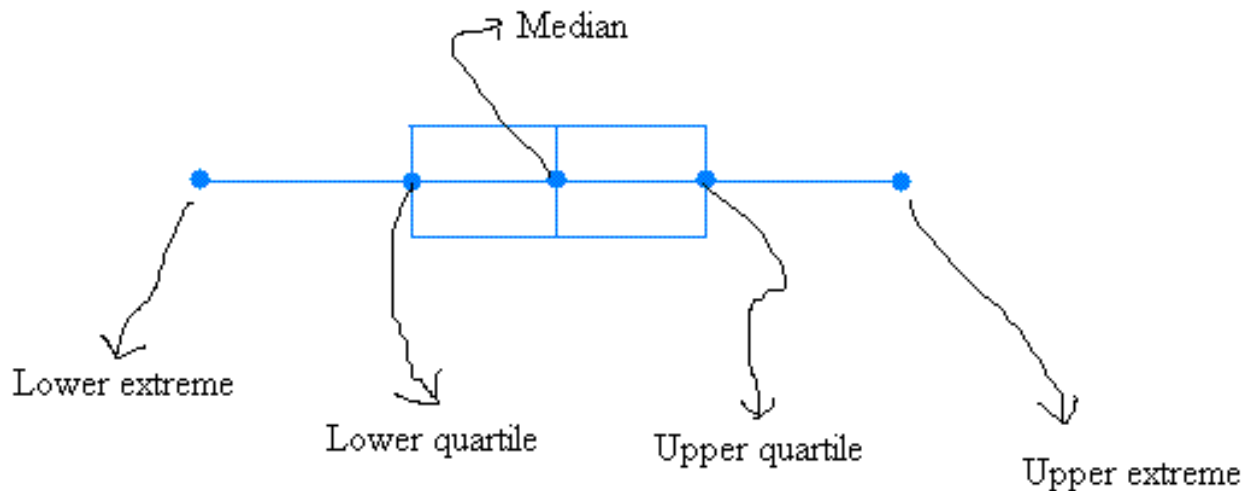
Lower extreme: the lowest or smallest value in a set of data

Lower quartile or first quartile: the median of all data below the median

Median or second quartile: the middle value of the set of data. If there are two values in the middle, the median is the average of the two values

Upper quartile or third quartile: the median of all data above the median

Upper extreme: The biggest value in the set

Example:

Construct a box and whiskers plot for the data set: {5, 2, 16, 9, 13, 7, 10}

First, you have to put the data set in order from greatest to least or from least to greatest

From least to greatest we get : 2   5   7   9   10   13   16

Since the smallest value in the set is 2, the lower extreme is **2**

Since the greatest value in the set is 16, the upper extreme is **16**

Now, look carefully at the set: 2   5   7   **9**   10   13   16

You can see that 9 is located right in the middle of the set of data

Therefore, 9 is the median

Now to get the lower quartile, you need all data before the median or 9

2   5   7   9   10   13   16

In bold right above we show all data before 9, so **2   5   7**

Since the value in the middle for the set   **2   5   7**   is 5, the lower quartile is 5

Finally, to get the upper quartile, you need all data after the median or 9

2   5   7   9   **10   13   16**

In bold right above we show all data after 9, so **10   13   16**

Since the value in the middle for the set   **10   13   16**   is 13, the upper quartile is 13

Now make a number line and graph above the number line 2, 5, 9, 13, and 16 with five dots: one dot will represent the median, one dot will represent each extreme, finally, one dot will represent each quartile.

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Your graph should look like this after you are done
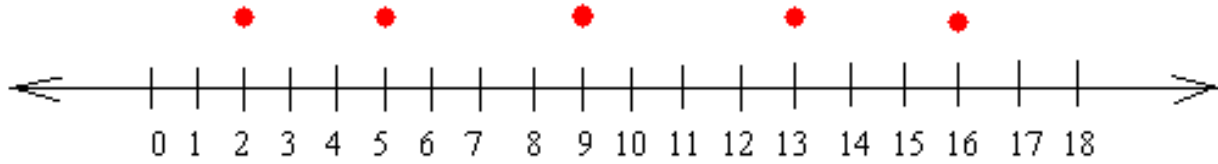
Draw a rectangle or box starting from the lower quartile to the upper quartile. Draw a vertical segment too to represent the median
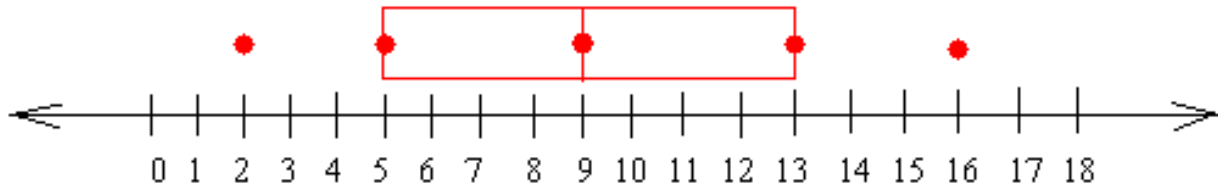
Finally, draw horizontal segments or whiskers that connect all five dots together.

The box and whiskers plot for {5, 2, 16, 9, 13, 7, 10} is :