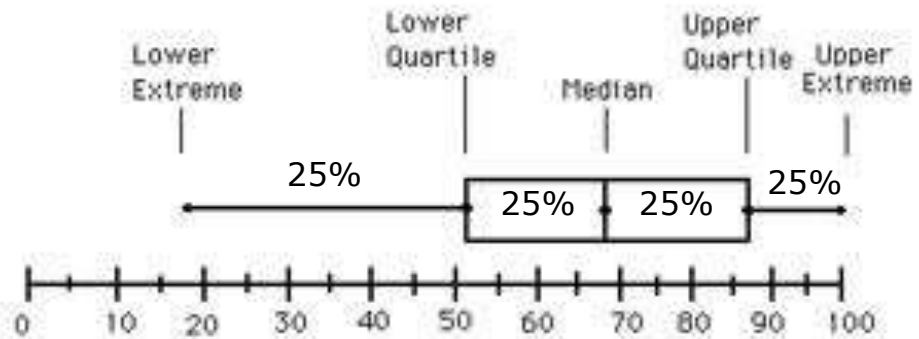


## Box and Whiskers Plots

- Minimum:** the smallest number of a data set
- Lower Quartile ( $Q_1$ ):** first reorder the data set from the smallest to the largest then find the median of the lower half of the data set
- Median ( $Q_2$ ):** first reorder the data set from the smallest to the largest then the number in the middle of the data set, if there are two number in the middle add them together and divide by two
- Upper Quartile ( $Q_3$ ):** first reorder the data set from the smallest to the largest then find the median of the upper half of the data set
- Maximum:** the largest number of a data set
- Reminder:** Each section of the box and whiskers plot is equal to 25 percent of the data or quartile.



**Data Set:** 3, 13, 17, 23, 11, 13, 6, 3, 9, 27, 21, 12

**Step 1:** Reorder the data set from the smallest to the largest.  
3, 3, 6, 9, 11, 12, 13, 13, 17, 21, 23, 27

**Step 2:** Find the median.  
3, 3, 6, 9, 11, 12, | 13, 13, 17, 21, 23, 27  
 $(12 + 13) \div 2 = 25 \div 2 = 12.5 \Rightarrow$  median

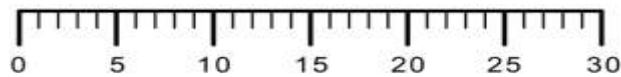
**Step 3:** Find the lower quartile using the lower half of the data.  
3, 3, 6, | 9, 11, 12  
 $(6 + 9) \div 2 = 15 \div 2 = 7.5 \Rightarrow$  lower quartile

**Step 4:** Find the upper quartile using the upper half of the data.  
13, 13, 17, | 21, 23, 27  
 $(17 + 21) \div 2 = 38 \div 2 = 19 \Rightarrow$  upper quartile

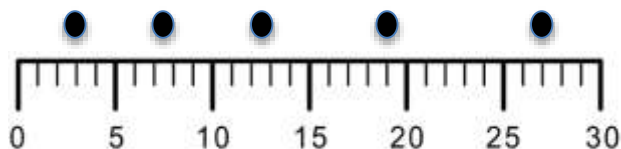
**Step 5:** Find the minimum and maximum.  
minimum  $\Rightarrow$  3 and maximum  $\Rightarrow$  27

**Step 6:** Create a number line that starts before the minimum and ends after the maximum.

Starts  $\Rightarrow$  0 and ends  $\Rightarrow$  30



**Step 7:** Graph the five points on the number line.  
(Minimum, Lower Quartile, Median, Upper Quartile, Maximum)



**Step 8:** Use the three points in the middle to complete the box and connect the minimum and the maximum to the box.

