

# Statistics Overview

## Mean= Average

When you hear the word **mean** think of an 'average'.

To find the mean, you add all the numbers together and divide by the amount of numbers you added.

Example Find the average of 4, 5, and 9       $4 + 5 + 9 = 18$        $18/3 = 6$   
The average of this set of data is 6.

## Median= Middle

When you hear the word **median** think of the word 'middle'. A median is a number that is in the **middle** of the data. To find the median, list the numbers from least to greatest and find the number that is exactly in the middle.

Example Find the median of 3, 8, 5, 1, and 7  
Put the numbers in order from least to greatest      1, 3, 5, 7, 8  
The number in the middle is 5, so the median is 5.

## Mode= Most

When you hear the word **mode**, think of the words 'most often.'

The mode is the number that appears the most in a set of data.

Example Find the mode of 5, 6, 7, 5, 3, 2, 5  
The mode of the data is 5 because there are more 5's than any other numbers.

## Range= Subtract the smallest number from the largest number

The **range** of the data is the difference between the largest number and the smallest number in a set of data. To find the range, subtract the smallest number in the data set from the largest number in the data set and the difference is the range.

Example Find the range of the data 4, 8, 6, and 5  
The largest number is 8 and the smallest number is 4.       $8 - 4 = 4$       The range of this data is 4.

## Interquartile Range (IQR)

The interquartile range describes the middle 50% of values when ordered from lowest to highest. To find the IQR begin by finding the median. Second, find the median of the numbers in the first half of the range. Third, find the median in the second half of the range. The interquartile range formula is the first quartile subtracted from the third quartile:       **$IQR = Q_3 - Q_1$**

Example Order the numbers from least to greatest. 8, 2, 6, 5, 7, 4, 3      =      2, 3, 4, 5, 6, 7, 8  
Median = 5

Find the median of the FIRST half.

First half:      2, 3, 4, 5      Median = 3.5 (average of 3 and 4) =      Q1

Find the median of the SECOND half.

Second half:      5, 6, 7, 8      Median = 6.5 (average of 6 and 7) =      Q3

Find the difference between the Q3 (third quartile) and the Q1 (first quartile)       $6.5 - 3.5 = 3$

## Quartiles

Values that divide a data set into four equal parts.

## Outlier

It is an extreme value with few data points located near it.

A convenient definition of an outlier is a point which falls more than 1.5 times the interquartile range above the third quartile or below the first quartile.

Example                      The numbers                      1, 8, 9, 9, 11, 12, 27                      Outliers=                      1 and 27

## Absolute Deviation

The distance between each data point and the mean

## Mean Absolute Deviation

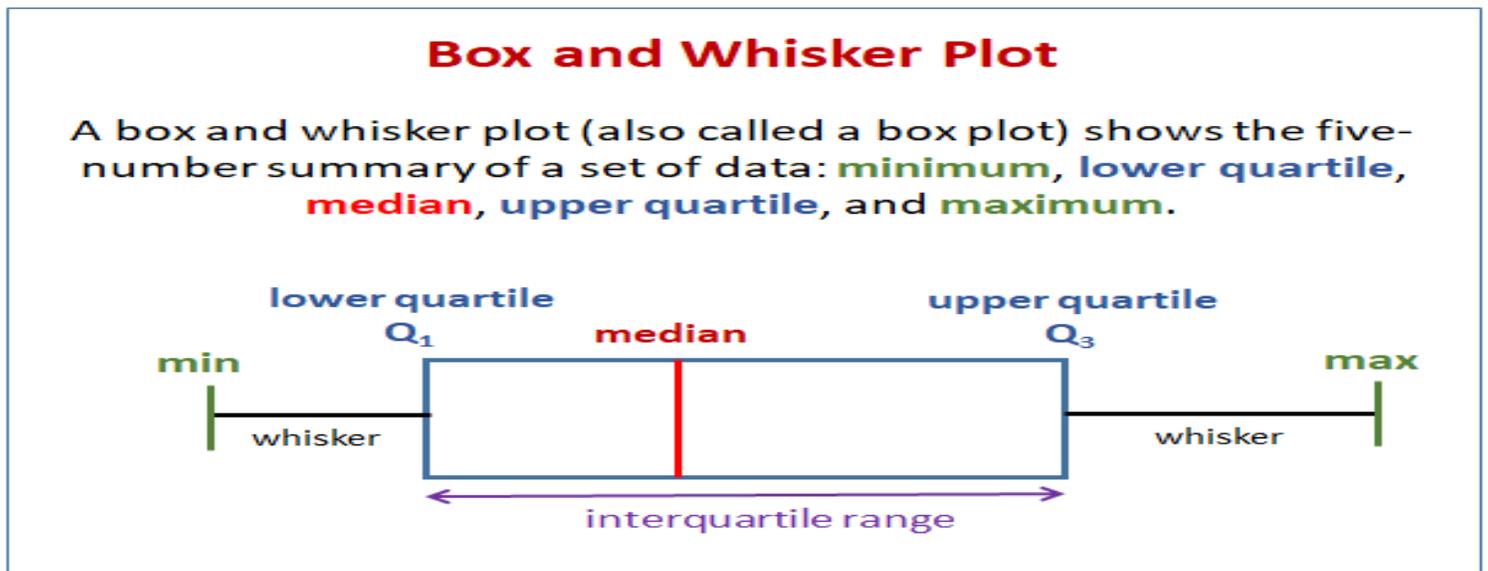
The mean (average) of the absolute deviations of a set of data.

## Box Plot

A diagram that shows the distribution of data values on a number line.

A box plot displays the five-number summary of a set of data. The five-number summary is the minimum (smallest number), first quartile, median, third quartile, and maximum (largest number).

In a box plot, we draw a box from the first quartile to the third quartile. A vertical line goes through the box at the median. The whiskers go from each quartile to the minimum or maximum.



## Histogram

A graph that uses bars to show the frequency of equal ranges or groups of data.

## Frequency Table

A table which shows the number of times a data value or range of values occurs in a data set.