



## The Mean

The mean is commonly referred to as the "average" of a set of data.

The mean is the sum of all the data values divided by the number of data values.

$$\text{mean} = \frac{\text{sum of data}}{\# \text{ of data points}}$$

Here's the same formula written more formally:

$$\text{mean} = \frac{\sum x_i}{n}$$

### Example:

**Find the mean of this set of data: 1, 2, 4, 5**

First, we sum the data:  $1 + 2 + 4 + 5 = 12$

Second, we divide the sum of the data values by the number of data values, which in this case is four.

$$\text{mean} = \frac{12}{4} = 3$$

**The mean of this data set is 3.000**

# The Median

The median is the middle value in a set of data. By definition, half the data values (in a data set) are less than the median, and half the data values are greater than the median.

To find the median: First, arrange the data values from smallest to largest.

If the number of data values is **odd**, the median is the middle data value in the data set. If the number of data values is **even**, the median is the average of the two middle data values in the data set.

## Example 1: Median for a data set with an odd number of data values

**Find the median of this set of data:**

1, 4, 2, 5, 0

First, put the data in order:

0, 1, 2, 4, 5

This data set has an odd number of data values, so the median is the middle data value in this set of data.

0, 1, **2**, 4, 5

**The median of this data set is 2.000**

## Example 2: Median for a data set with an even number of data values

Find the median of this set of data:

10, 40, 20, 50

First, put the data in order:

10, 20, 40, 50

This data set has an even number of data points, so the median is the average of the two middle data values in the data set.

10, 20, 40, 50

$$\text{median} = \frac{20 + 40}{2} = \frac{60}{2} = 30$$

**The median of this data set is 30.000**

# The Mode

The mode is the most frequently occurring data value in a data set.

A data set can have one mode, multiple modes (when two or more values tie for the value that occurs most frequently in a data set), or no mode (when no value occurs more frequently than other values in a data set).

## Example 1: One mode in a data set

Find the mode of this set of data:

0, 0, 1, 1, 1, 1, 1, 1, 2, 2, 2, 3, 5

Look for the value that occurs the most:

0, 0, 1, 1, 1, 1, 1, 1, 2, 2, 2, 3, 5

The mode of this data set is 1

## Example 2: Multiple modes in a data set

Find the mode of this set of data:

0, 0, 0, 1, 1, 1, 1, 2, 2, 2, 2, 4

Look for the value that occurs the most frequently:

0, 0, 0, 1, 1, 1, 1, 2, 2, 2, 2, 4

There is a tie for the value that occurs the most often.

The modes of this data set are 1 and 2

NOTE: This article has been modified.