



Mean, Median, and Mode

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Mean, Median, and Mode

Mean, median and mode are three types of measurements of central tendency used in statistics. These calculations are most often used when you are given a list of numbers to manipulate.

The **Mean** is the 'standard average' and is calculated by adding up all the numbers and dividing by the number of numbers.

The **Median** is the middle number in the list when the numbers are placed in numerical order.

The **Mode** is the number that occurs most often in the list of numbers.

Mean

The **Mean** is the standard average. To calculate the mean, add up all of the numbers in the list and then divide by the number of numbers.

The mean does not have to be one of the numbers in the original list. Do NOT assume that the mean will be one of the original numbers.

The mean also does not have to be a whole number. It can be a fraction or a decimal.

Examples:

Find the mean of the following list of values:

a) 13, 18, 13, 14, 13, 16, 14, 21, 13

First: Add up all of the numbers $13 + 18 + 13 + 14 + 13 + 16 + 14 + 21 + 13 = 135$

Next: Divide the answer by the amount of numbers added together $135/9 = 15$

Answer: Mean = 15

b) 1, 2, 4, 7

First: Add up all of the numbers $1 + 2 + 4 + 7 = 14$

Next: Divide the answer by the amount of numbers added together $14/4 = 3.5$

Answer: Mean = 3.5



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Median

The **Median** is the middle number in the list when an odd amount of numbers is placed in numerical order.

If there is an even number of numbers, the median must be calculated differently. In this case, there would be no middle number in the list. To calculate the median, find the mean of the middle two values.

Examples:

Find the median of the following list of values:

a) 13, 18, 13, 14, 13, 16, 14, 21, 13

First: Rewrite the numbers in numerical order 13, 13, 13, 13, 14, 14, 16, 18, 21

Next: Locate the middle number. Since there are 9 numbers in the list, the 5th number is the middle number.

Answer: Median = 14

b) 1, 2, 4, 7

First: Rewrite the numbers in numerical order. These happen to already be in numerical order. 1, 2, 4, 7

Next: Locate the middle number. Since there are 4 numbers in the list, there is no middle number. Therefore, locate the middle two numbers. 2 and 4

Then: Calculate the mean of the middle two numbers.

First: Add up all of the numbers $2 + 4 = 6$

Next: Divide the answer by the amount of numbers added together $\frac{6}{2} = 3$

Answer: Median = 3



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Mode

The **Mode** is the number that occurs most often in the list of numbers. In other words, it is the number that is repeated most often.

If the list of numbers does not contain any numbers that repeat, then there is no mode.

If the list of numbers contains more than one number that repeats the same amount of times, then there are multiple modes.

Examples:

Find the mode of the following list of values:

a) 13, 18, 13, 14, 13, 16, 14, 21, 13

First: Rewrite the numbers in numerical order 13, 13, 13, 13, 14, 14, 16, 18, 21

Next: Locate the number that is repeated the most often. The number 13 is repeated four times.

Answer: Mode = 13

b) 1, 2, 4, 7

First: Rewrite the numbers in numerical order. These happen to already be in numerical order. 1, 2, 4, 7

Next: Locate the number that is repeated the most often. None of the numbers are repeated in this list. Therefore, there is no mode.

Answer: Mode = None

c) 8, 9, 10, 10, 10, 11, 11, 11, 12, 13

First: Rewrite the numbers in numerical order. These happen to already be in numerical order. 8, 9, 10, 10, 10, 11, 11, 11, 12, 13

Next: Locate the number that is repeated the most often. The numbers 10 and 11 are both repeated the same amount of times. Therefore, there are multiple modes.

Answer: Mode = 10 and 11

<http://www.purplemath.com/modules/meanmode.htm>