CDQ

Pg. #1

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Question: Will the mean or median increase, if the last number in the data set is increased?

Claim:

The mean will increase because it is an average. The Median would not increase because that is just the middle number of a data set.

Data Mean

(For example...)

$\frac{94+96+85+78}{4} = \frac{353}{4} = 88.25$

(when the last number is increased...)

$\frac{94+96+85+90}{4} = \frac{365}{4} = 91.25$ (Look at the last number and answers in both data sets)

(mean affected!)

Median

(For example)

3, 6, 9, 5, 1 (last number increased)

↓

1, 3, 5, 6, 9

↑

median

3, 6 25, 51 (Look at last numbers and look at median)

1, 3, 5, 6, 25

↑

median

(median not affected!)

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Commentary (mean)

1) Firstly, I added all the numbers in the data set to get a sum.

Data set: 94, 96, 85, 78

$$94+96+85+78 = 353$$

2) Secondly, I put a line under the addition equation and the sum. This means that we are going to divide.

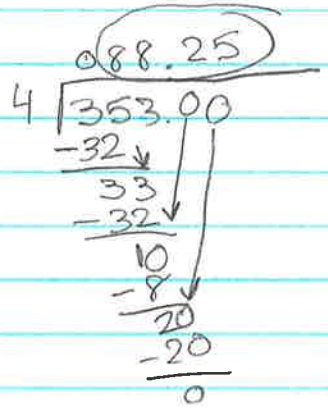
$$\frac{94+96+85+78}{} = 353$$

3) Since there are 4 numbers in the data set, we have to divide 353 by 4 AND also put 4 under the line on the addition equation.

$$\frac{94+96+85+78}{4} = \frac{353}{4}$$

4) Lastly, you will divide 353 by 4 and you will get the answer of 88.25, which is your mean or average.

$$\frac{353}{4} = 88.25$$



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The mean is affected because if you replace the last number with some' number greater, you would use the same steps, but your average will be greater. (as seen in Data for Mean)

Median

1) Firstly, when you see your data set given, you will put those numbers in order from least to greatest or smallest number first and largest number last.

Data Set: 3, 6, 9, 5, 1

Step 1: 1, 3, 5, 6, 9 (1 = least, 9 = greatest)

2) Secondly, you can cross out the first and last number after you organize your data set.

1, 3, 5, 6, 9 → ~~1~~, 3, 5, 6, ~~9~~

3) You keep on doing that until you get to the middle number. The next 2 numbers that would be crossed out are 3 and 6.

~~1~~, 3, 5, 6, ~~9~~ → ~~1~~, ~~3~~, 5, ~~6~~, ~~9~~

4) In this case, we have an odd amount of numbers in our data set. This is why there is only 1 number in the middle, which is 5.

~~1~~, ~~3~~, (5), ~~6~~, ~~9~~ (median = 5)

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5) Now, if we had an even amount of numbers in our data set, (ex. 6), there would be 2 medians. Now, since we cannot have 2 medians, we would have to find the mean (Pg. 2) of the 2 numbers and the mean of those 2 numbers would be your median.

(For example:)

Data Set: 1, 4, 6, 2, 10, 24

↓

1, 2, 4, 6, 10, 24

↑

Put in order!

cross-out

~~1~~, 2, 4, 6, 10, ~~24~~

↓

~~1~~, 2, [4, 6], ~~10~~, ~~24~~

Find the mean

addition equation

sum

division → $\frac{4+6}{2} = \frac{10}{2} = 5$

how many numbers there are.

mean/median

So your median for this problem is 5.

If the last number was increased in any of the 2 problems, your median would not change because your median is not based on value of the numbers, it is based on how many numbers there are in a data set.

Outlier - a number that doesn't "fit in" with numbers around it or "Odd one out."

(Example: 10, 20, 25, 15, 22, (100))

↑

outlier. Doesn't fit in. to large of a number.