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CDC Writing Mrs. Joshi

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

Vocab

Mean- The average of a data set. It is found by adding each number together, then dividing by the amount of added numbers.

Median- The middle number in a data set. It is found by arranging the numbers from greatest to least or (least to greatest), then finding the number in the middle. However, if there is an even amount of numbers, one must find the 2 middle numbers, then get the mean.

Claim: If the last number is increased in a data set, only the mean will increase. The median will remain the same. This is because the average would be brought up, but the middle of the data set will not change.

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2. Data:

Example
Data Set
2, 4, 5, 9

Mean

Before 1. $2+4+5+9=20$

2. 2, 4, 5, 9
   1 2 3 4

3. $20 \div 4 = 5$
   mean = (5)

After 1. $2+4+5+13 = 24$

2. 2, 4, 5, 13
   1 2 3 4

3. $24 \div 4 = 6$
   mean = (6)

Results $5 < 6$

Median

Before 1. 2, 4, 5, 9.

2.
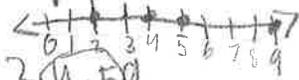
3. 2, (4, 5) 9

4. $4+5 = 9 \div 2 = 4.5$
   Median = (4.5)

After 1. 2, 4, 5, 13

2.
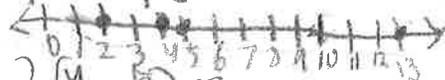
3. 2, (4, 5) 13

4. $4+5 = 9 \div 2 = 4.5$

Median = (4.5)

Results $4.5 = 4.5$

Commentary:

The data set (2, 4, 5, 9) was used to support the claim. To find the original mean, I added them together (2+4+5+9), and found the sum, which was 20. Next, I counted up how many numbers were in the set (4). Finally, I divided the sum* (20) by the numbers in the data set (4), getting a quotient* of five. Therefore, the original mean of the data set was 5.

* Sum is found when two or more numbers are added to eachother.

* quotient is the answer to a division problem.

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3.

Commentary (continued): Then, I increased the last nu in the data set (9→13). I added the numbers together (2+4+5+13) and got 24. Then I divided b the amount of numbers in the data set (24÷4), whic lead to an answer of six. Therefore, the new mean w 6. 5 is less than six, so the mean did increase when the last number was increased. I foun the median in a different way. First, I ordered th data on a number line. Next, I found the middle number. In this case, there were two (4,5). I found t mean of these numbers (4+5=9÷2=4.5). This made a median of 4.5. I then repeated the process, but inc the 9 to 13 this time. Still, the median remained the same. (2, 4, 5, 13 → 4+5=9÷2=4.5). 4.5 is equal to 4.5. Therefore, although the mean increased, the median did not.

Restated Claim: In conclusion, when the last number in a data set is increased, the median will not undergo any change. However, the mean will. I is safe to say that while the middle will remain th same, the data set's average will go up.