

CDC writing

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

Claim: The mean will increase and the median will stay the same. The mean will change if the value of the numbers change and the median will change if the amount of numbers changes.

Data:

Mean
not increased

$$\frac{5+9+12+14+20}{5} =$$

$$\frac{60}{5} = 12$$

increased

$$\frac{5+9+12+14+35}{5} =$$

$$\frac{75}{5} = 15$$

If the value of the numbers is changed, mean is changed

Median
not increased

$$5, 9, 12, 14, 20$$

12

increased

$$5, 9, 12, 14, 35$$

12

If the amount of numbers is changed, median is changed

Commentary:

Mean

mean = average

- 1st you need to add up all the numbers you have

$$5 + 9 + 12 + 14 + 20 = 60$$

- 2nd you count how many numbers you have

$$\frac{5}{1} \quad \frac{9}{2} \quad \frac{12}{3} \quad \frac{14}{4} \quad \frac{20}{5}$$

- 3rd you divide your sum (answer when you added them up) by how many numbers you have

$$60 \div 5 = 12 \leftarrow$$

your answer is your mean

Now if you follow those steps with 35 instead of 20 you will see that it will increase

$$1^{\text{st}} \quad 5 + 9 + 12 + 14 + 35 = 75$$

$$2^{\text{nd}} \quad \frac{5}{1} + \frac{9}{2} + \frac{12}{3} + \frac{14}{4} + \frac{35}{5}$$

$$3^{\text{rd}} \quad 75 \div 5 = \textcircled{15} \leftarrow 15 \text{ is higher than } 12$$

Median

Median = middle

- 1st you put them in order from least to greatest

$$5, 9, 12, 14, 20$$

- 2nd you start to cross them off from both sides

$$\cancel{5}, \cancel{9}, 12, 14, \cancel{20}$$

- 3rd you stop when you have one in the middle

$$5, 9, 12, 14, 20$$

$$\textcircled{12} = \text{median}$$

\leftarrow the one in the middle is your median

now if you change the 20 to 35 and follow the steps it will not change

1st 5, 9, 12, 14, 35

2nd ~~5~~, ~~9~~, 12, 14, ~~35~~

3rd

(12)

you will still get 12

Now you know how to find median and mean. You also know what can effect them.

Lets say you had these numbers and you were finding the median

1st 5, 9, 12, 14, 20, 35

2nd ~~5~~, ~~9~~, 12, 14, 20, ~~35~~

order

take off

there is 2

numbers in

12 & 14

the middle

When there is two numbers in the middle, find the mean of them:

1st $12 + 14 = 26$

add

2nd $\frac{12 + 14}{2}$

count

3rd $26 \div 2 = 13$

divid

So 13 would be your median

Now you know how to find the median if there is an even amount of numbers.