

Statistics Test Review

Range:

1. What is the definition of Range?

Measures the difference between the largest and smallest numbers in a data set.

2. Find the range of each of the following data sets:

| | | | | | | | | | |
|----|----|----|----|---|----|----|---|----|----|
| 12 | 19 | 13 | 26 | 8 | 28 | 26 | 9 | 18 | 20 |
|----|----|----|----|---|----|----|---|----|----|

Range = $28 - 8 = 20$

| | | | | | | |
|----|----|----|----|----|----|----|
| 25 | 67 | 13 | 25 | 42 | 67 | 16 |
| 42 | 37 | 81 | 31 | 46 | 31 | 19 |

Range = $81 - 13 = 68$

| | | | | | | | | |
|----|----|----|----|----|-----|----|----|----|
| 24 | 51 | 64 | 32 | 74 | 113 | 34 | 98 | 52 |
| 68 | 83 | 34 | 18 | 75 | 34 | 27 | 67 | 72 |

Range = $113 - 24 = 89$

Mean:

1. What is the definition of Mean?

Calculates the average value in a data set

$$\frac{\sum_{i=1}^n x_i}{n}$$

2. Find the mean of each of the following data sets:

| | | | | | | | | | |
|----|----|----|----|---|----|----|---|----|----|
| 12 | 19 | 13 | 26 | 8 | 28 | 26 | 9 | 18 | 20 |
|----|----|----|----|---|----|----|---|----|----|

Mean = $\frac{12+19+13+26+8+28+26+9+18+20}{10} = \frac{179}{10} = 17.9$

| | | | | | | |
|----|----|----|----|----|----|----|
| 25 | 67 | 13 | 25 | 42 | 67 | 16 |
| 42 | 37 | 81 | 31 | 46 | 31 | 19 |

Mean = $\frac{542}{14} = 38.7$

| | | | | | | | | |
|----|----|----|----|----|-----|----|----|----|
| 24 | 51 | 64 | 32 | 74 | 113 | 34 | 98 | 52 |
| 68 | 83 | 34 | 18 | 75 | 34 | 27 | 67 | 72 |

Mean = $\frac{1020}{18} = 56.6$

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Median:

What is the definition of median?

When the data is ordered from the smallest to the largest value, the median is the number in the middle.

Look at each of the following data sets and determine what the mean is:

| | | | | | | | | |
|----|----|----|----|----|----|----|----|----|
| 24 | 17 | 31 | 26 | 29 | 19 | 32 | 15 | 27 |
| 15 | 17 | 19 | 24 | 26 | 27 | 29 | 31 | 32 |

Median = 26

| | | | | | | | | | |
|---|---|----|---|----|----|----|----|----|----|
| 6 | 9 | 12 | 8 | 16 | 5 | 3 | 12 | 18 | 10 |
| 3 | 5 | 6 | 8 | 9 | 10 | 12 | 12 | 16 | 18 |

$\frac{9+10}{2} = 9.5$

Median = 9.5

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 125 | 160 | 135 | 100 | 129 | 192 | 245 | 197 | 146 |
| 274 | 134 | 324 | 125 | 251 | 164 | 264 | 372 | 198 |

100, 125, 125, 129, 134, 135, 146, 160, 164, 192, 197, 198, 245, 251, 264, 274, 324, 372

Median = 178

$$\frac{164+192}{2} = 178$$

Mode:

What is the definition of mode?

Mode is the value that occurs the most within a data set. It is possible to have more than 1 mode, but if the frequency of all numbers is one, there is no mode.

Look at each of the following data sets and determine what the mode(s) are:

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 125 | 125 | 152 | 251 | 125 | 215 | 152 | 215 | 512 |
| 215 | 215 | 125 | 152 | 152 | 125 | 521 | 125 | 215 |

Mode = 125

| | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|
| 41 | 14 | 14 | 14 | 41 | 41 | 14 | 44 | 11 | 14 |
| 41 | 44 | 14 | 11 | 14 | 44 | 41 | 14 | 14 | 41 |

Mode = 14

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Outliers:

What is an outlier? A value that is significantly above or below the average data value. Outliers can be removed if the reason is logical.

There are many times that we exclude outliers from our data, and sometimes we keep them when they are important. We always need a good reason if we are going to do either. Read each situation and explain why you should keep or discard the outlier.

1. A movie theatre generally sells 500 tickets a day. One Tuesday a month, there is a half price special and there are usually 1100 tickets sold. When calculating the average number of tickets sold over the month, should you keep the 1100 value? Why or why not?

Yes, this is a reoccurring event and should be included in the average. The high ticket sales can be explained by the low price.

2. The track and field team has been practicing their 100m sprint. The average amount of time it took members of the team last week was 10.35 seconds. This week, it took one member 18 seconds to complete, changing the average to 13.55 seconds. Should you keep the 18 second value? Why or why not?

No, this is a significant change from the previous month. More data is needed to get an accurate picture of the situation.

3. A factory worker has been checking how well his machine is cutting disks. The measurements are usually all cut within 0.01mm of what they should be. He finds 128 that are within 0.01mm, one that is 0.25mm off and one that is 0.32mm off. Should he keep the two larger values when calculating the average? Why or why not?

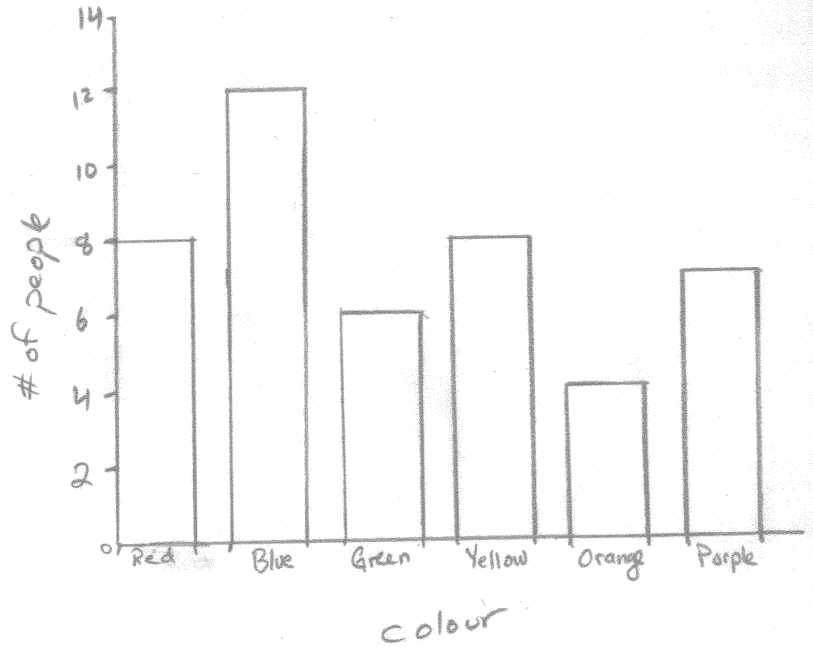
Depends. The majority of the cuts are correct and there is grounds to discount the two bad measurements. On the other hand, if there is consistently bad measurements every day, the error should not be ignored.

Statistics Test Review

Bar Graphs:

Using each of the following sets of data, create a bar graph that will accurately represent the information. Use a Ruler! and colour in the graphs!

| Favorite Colour | Number of People |
|-----------------|------------------|
| Red | 8 |
| Blue | 12 |
| Green | 6 |
| Yellow | 8 |
| Orange | 4 |
| Purple | 7 |



| Favorite Pet Animal | Number of People |
|---------------------|------------------|
| Cat | 12 |
| Dog | 20 |
| Fish | 10 |
| Hamster | 3 |
| Lizard | 5 |
| Bird | 8 |
| Snake | 2 |

