Statistical Reasoning Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
Unit 2 – Standard Deviation

**Activity: Who is better at texting, boys or girls?**

State your prediction to the above questions. Who is better at texting, boys or girls? Why? (Better = quicker and more accurate.

Directions:

Partner 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Partner 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Partner 1 will text first while partner 2 times. Then switch.

MISSION: Text the following phrase including punctuation in the fastest time with ZERO mistakes. If you make a mistake you must start again. You will complete a total of 3 trials. Each trial must be done perfectly without any mistakes to count.

Phrase: **Standard deviation is a measure of spread. It shows us the average distance each data point is from the mean. It is so awesome that my teacher, Ms. Shaffer, taught us about this!**

Record your time in seconds in the chart below. **Round to the nearest whole second –** no decimals!

|  |  |  |
| --- | --- | --- |
| **Partner 1** |  | **Partner 2** |
| **Trial Number** | **Time (sec)** |  | **Trial Number** | **Time (sec)** |
| 1 |  |  | 1 |  |
| 2 |  |  | 2 |  |
| 3 |  |  | 3 |  |

Record the class data in the following table.

|  |  |
| --- | --- |
| BOYS | GIRLS |
| Trial 1 | Trial 2 | Trial 3 | Trial 1 | Trial 2 | Trial 3 |
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Create 3 box plots for each gender based on the time of each trial – don’t worry about calculating outliers right now. Answer questions below based on the box plot.

**Times for Boys**

Trial 1: Min: \_\_\_\_\_ Q1: \_\_\_\_\_ Med: \_\_\_\_\_ Q3: \_\_\_\_\_ Max: \_\_\_\_\_ Mean: \_\_\_\_\_ Sx: \_\_\_\_\_

Trial 2: Min: \_\_\_\_\_ Q1: \_\_\_\_\_ Med: \_\_\_\_\_ Q3: \_\_\_\_\_ Max: \_\_\_\_\_ Mean: \_\_\_\_\_ Sx: \_\_\_\_\_

Trial 3: Min: \_\_\_\_\_ Q1: \_\_\_\_\_ Med: \_\_\_\_\_ Q3: \_\_\_\_\_ Max: \_\_\_\_\_ Mean: \_\_\_\_\_ Sx: \_\_\_\_\_



**Times for Girls**

Trial 1: Min: \_\_\_\_\_ Q1: \_\_\_\_\_ Med: \_\_\_\_\_ Q3: \_\_\_\_\_ Max: \_\_\_\_\_ Mean: \_\_\_\_\_ Sx: \_\_\_\_\_

Trial 2: Min: \_\_\_\_\_ Q1: \_\_\_\_\_ Med: \_\_\_\_\_ Q3: \_\_\_\_\_ Max: \_\_\_\_\_ Mean: \_\_\_\_\_ Sx: \_\_\_\_\_

Trial 3: Min: \_\_\_\_\_ Q1: \_\_\_\_\_ Med: \_\_\_\_\_ Q3: \_\_\_\_\_ Max: \_\_\_\_\_ Mean: \_\_\_\_\_ Sx: \_\_\_\_\_



**Interpreting Results:**

1) If you data is skewed by an outlier, the best measure of center to use is the median. If your data is roughly symmetric with no outliers, the best measure of center to use is the mean.

 a) Should you use the BOYS mean or median for time of texts?

 Trial 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Trial 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Trial 3: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 b) Should you use the GIRLS mean or median for time of texts?

 Trial 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Trial 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Trial 3: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2) The smaller the standard deviation, the closer together the data is. Who has the most consistent texting time for each trial, the boys or girls?

 Trial 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Trial 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Trial 3: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3) How do you think the number of trials affects the texting time?

**The winner will have all of the following:**

LOWEST MEASURE OF CETNER FOR TIME FOR THE MOST TRIALS

THE SMALLER STANDARD DEVIATION FOR TIME FOR THE MOST TRIALS

**… AND THE WINNER IS: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**!

Did this match your earlier prediction?