Research Statistics & Graphing Worksheet *by C. Kohn*

Name: Hour Date:

Date Assignment is due: Why late? Score: + ✓ -
 Day of Week Date If your project was late, describe why

**Directions**:

1. You are trying to determine the average shoe size of your grade. Use the shoe sizes listed below to determine the mean shoe size for grade:

11 8 10 7

Mean shoe size (show your work below): (11 + 8 + 10 + 7) = \_\_\_\_\_\_\_\_\_\_\_\_\_ ÷ 4 = \_\_\_\_\_\_\_\_\_\_\_\_\_ 🡸 **Mean**
2. **Calculate the standard deviation for this data set. Standard deviation can be calculated using the following formula:

Standard Deviation Value: (show your work below):

(3)

*=*

*=*

*=*

*=*

*=*

( )2 + ( )2 + ( )2 + ( )2

(3)

(4-1)

( - )2 + ( - )2 + ( - )2 + ( - )2

1. Calculate the standard error for this data set. Standard error can be calculated using the following formula:

Standard Error Value: (show your work below):

Standard deviation = \_\_\_\_\_\_\_\_\_\_\_\_\_\_ ÷ √(4) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 🡸 **Standard Error**

1. If your margin of error is +/- 2 Standard Error values, what is your range for your data? *(HINT: multiple your SE value by 2 and subtract from your mean to find your low range; multiply SE by 2 and add to your mean to find your upper range)*.

Range of Data (+/- 2 SE):

*Show your work here:

Standard error = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2 x Standard Error = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Mean = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Mean + [2 x standard error] = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

 *Mean - [2 x standard error] = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

***Range of data*** *= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 Mean – [2 x SE] Mean + [2 x SE]*

1. You suspect that your grade has a larger shoes size on average than a different grade at the high school. To check, you sample another group at random. Their shoes sizes were:

13 8 12 9

Mean shoe size of Group 2 (show your work below):
2. Calculate the standard deviation for this data set. Standard deviation can be calculated using the following formula:

Standard Deviation Value of Group 2: (show your work below):
3. Calculate the standard error for this data set. Standard error can be calculated using the following formula:

Standard Error Value of Group 2: (show your work below):
4. If your margin of error is +/- 2 Standard Error values, what is your range for your data? *(HINT: multiple your SE value by 2 and subtract from your mean to find your low range; multiply SE by 2 and add to your mean to find your upper range)*.

Range of Data of Group 2 (+/- 2 SE):

*Show your work here:

Standard error = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2 x Standard Error = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Mean = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Mean + [2 x standard error] = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

 *Mean - [2 x standard error] = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

***Range of data*** *= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 Mean – [2 x SE] Mean + [2 x SE]*

1. Summarize your data by filling in the blanks below:

Mean of Group 1: Standard Dev: Standard Error:

Range of Group 1 (+/- 2 SE): to

Mean of Group 2: Standard Dev: Standard Error:

Range of Group 2 (+/- 2 SE): to
2. In the space below, create a bar graph for your two sets of data.
	1. Be sure to label your x-axis as “Group” and your y-axis as “Average Shoe Size”.
	2. After your draw both bars, also draw your error bars (+/- 2 std error values).
3. Are your two groups statistically different or statistically the same? How do you know?

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