Name:_____

Scatter Plots on the Graphing Calculator Notes

Steps to Create a Scatter plot on a TI-nspire:

1) Open a Lists and Spreadsheets page
2) Type in an appropriate title for columns A and B
3) Enter the data in the appropriate columns
4) CTRL → Doc → Data and Statistics → Label the Axis Appropriately

Steps to Get The Equation of a Best Fit Line and the Correlation Coefficient

1) Enter information into a List and Spreadsheet.
2) Move to an open cell to the right of the data
3) Menu → Statistics → Stat Calculations → Linear Regression
4) Slope and y-intercept are listed, correlation coefficient is represented by lowercase r

We have been classifying the relationship between sets of data based purely off of what we observe visually from the scatter plot.

Mathematically there is a way to make a statement on classification with accuracy.

By using the **Correlation Coefficient**, **r**, we can interpret the strength of the relationship.

r – value rating system:

$|r| > 0.7$ _____

$0.3 < |r| < 0.7$ _____

$0.0 < |r| < 0.3$ _____

Data for this problem are based on information from STATS Basketball Scoreboard. It is thought that basketball teams that make too many fouls in a game tend to loose the game even if they otherwise play well. Let x be the number of fouls more than (i.e., over and above) the opposing team. Let y be the percentage of times the team with the larger number of fouls wins the game.

# of Fouls More Than the Opponent, x	0	2	5	6
Winning Percentage, y	50	45	33	26

Equation:_____

Explain the meaning of the slope within the context of the problem.

Correlation Coefficient:_____

State if the correlation is low, moderate or high and explain what that means in the context of the problem.

State whether the correlation is positive or negative and explain what that means in the context of the problem.

Is the magnitude of an earthquake related to the depth below the surface at which the quake occurs? Let x be the magnitude of an earthquake (on the Richter scale), and let y be the depth (in kilometers) of the quake below the surface at the epicenter. The following is based on information taken from National Earthquake Information Service of the U.S. Geological survey. Additional data may be found at web site http://www.scismo.usbr.gov/quake/.

Magnitude, x	2.9	4.2	3.3	4.5	2.6	3.2	3.4
Depth (km), y	5.0	10.0	11.2	10.0	7.9	3.9	5.5

Equation:_____

Explain the meaning of the slope within the context of the problem.

Correlation Coefficient:_____

State if the correlation is low, moderate or high and explain what that means in the context of the problem.

State whether the correlation is positive or negative and explain what that means in the context of the problem.

The following problem is based on information taken from the pediatrics section of The Merck Manual (a commonly used reference in med schools and nursing programs). Let x be the body weight of a child (in kilograms), and let y be the metabolic rate of the child (100 kcal/24h).

Body Weight of a Child, x	3.0	5.0	9.0	11.0	15.0	17.0	19.0	21.0
Metabolic Rate of a Child, y	1.4	2.7	5.0	6.0	7.1	7.8	8.3	8.8

Equation:_____ Correlation Coefficient:_____

State if the correlation is low, moderate or high as well as positive or negative.

Use your equation to predict the metabolic rate of a child if their body weight is 13.1 kg.

If a child has a metabolic rate of 8.1, what would you predict that child's body weight to be?

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Scatter Plots on the Graphing Calculator Homework

For each of the following scenarios, create a scatter plot and answer the questions.

1. Below is a table of data containing students active hours per week and that students BMI.

Student	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
Active Hrs Per Week, x	10	3	6	8	10	8	7	2	19	14
BMI, y	16	25	24	10	16	18	21	28	9	12

Equation:_____

Explain the meaning of the slope within the context of the problem.

Correlation Coefficient:_____

State if the correlation is low, moderate or high and explain what that means in the context of the problem.

State whether the correlation is positive or negative and explain what that means in the context of the problem.

2. Below is a table representing the weight and height of each member of a basketball team.

Height, x	71	68	70	73	74
Weight, y	170	160	175	180	190

Equation:_____

Explain the meaning of the slope within the context of the problem.

Correlation Coefficient:_____

State if the correlation is low, moderate or high and explain what that means in the context of the problem.

State whether the correlation is positive or negative and explain what that means in the context of the problem.

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3. Below is a table of data displaying hours studied and exam grade.

Hours Studied, x	5	9	3	12	1
Exam Grade, y	80	95	75	98	70

Equation:_____

Explain the meaning of the slope within the context of the problem.

Correlation Coefficient:_____

State if the correlation is low, moderate or high and explain what that means in the context of the problem.

State whether the correlation is positive or negative and explain what that means in the context of the problem.

Predict the exam score if the hours studied was 7. Predict the hours studied if the score was 89.

4. Below is a set of data showing hours worked and the amount of tips earned.

Hours, x	4	8	3	2	11
Tips ($), y	12	20	7	7	26

Equation:_____

Explain the meaning of the slope within the context of the problem.

Correlation Coefficient:_____

State if the correlation is low, moderate or high and explain what that means in the context of the problem.

State whether the correlation is positive or negative and explain what that means in the context of the problem.

Predict the amount of tips for 6 hours worked. If you made $19 in tips, how long did you work?