Statistics & Probability:
Scatter Plots

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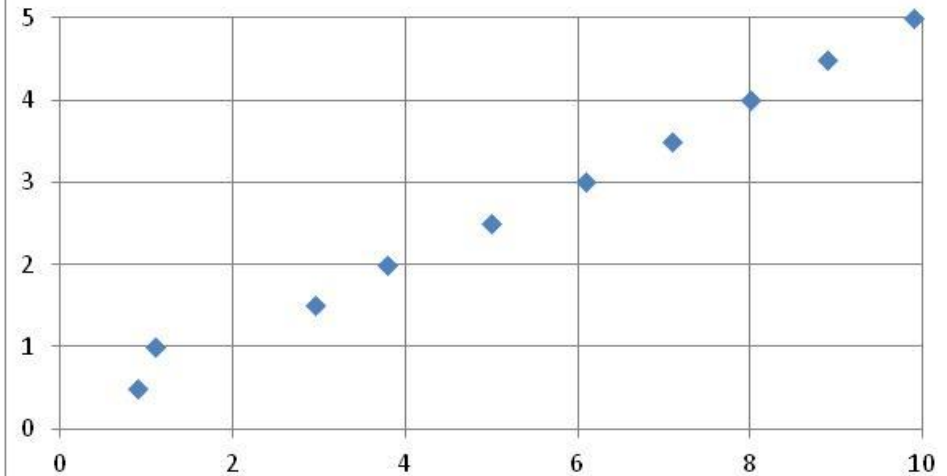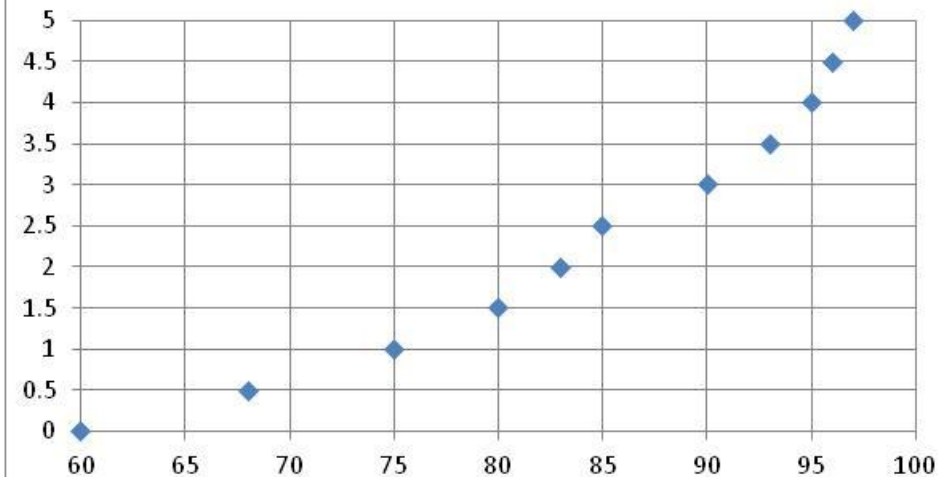Name: _____

Date: _____ Period: _____

Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.

<u>Lesson Plan:</u>

1. **Hook (**source: stats.stackexchange.com**):**

A statistician confidently tried to cross a river that was 1 meter deep on average. She drowned.

2. **Introduction and Vocabulary:**

In order to plot points on an x-y coordinate plane, students must use coordinate points (x, y). Students should already have experience plotting points and graphing linear relationships. They should know the terms association, clusters, and outliers. Now, they will practice plotting points and approximating linear relationships.

A scatter plot is one of these relationships. Students sometimes struggle with how to label axes. Remember, the independent variable (think: cause) goes on the x-axis and the dependent variable (think: effect) goes on the y-axis. When phrasing a comparison, say "y versus x".

3. **Guided Practice:**

As a class, have each student will graph a data point (x, y) on a big graphing sheet in the front of the classroom. This data point will represent the average number of hours they spend playing computer games per night (y) verses the average number of hours of sleep they get per night (x). Have one volunteer sketch an informal straight line of best fit for the points on the scatter plot. Have another volunteer describe how close the data points are to that line. Call on more volunteers until all interesting features are covered.

4. **Independent Practice :**

We are going to look at two different scatter plots to determine which types of relationships they illustrate. Let's go through each one, sketch an informal straight line of best fit, and write a short description of how close the data points are to our line. This is all set up for you on the graphic organizer.

Students may also complete similar problems from the textbook, if time. Review together and correct discrepancies.

5. **Exit Slip:**

What do clusters and outliers reveal about the data in a scatter plot?

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Scatter Plot Graphic Organizer

Scatter Plot - Sketch an Informal Straight Line Fit	Closeness of Data Points
Pages Read vs. Time Spent Reading (hours)	
Score on Test (out of 100) vs. Study Time (hours)	

When interpreting scatter plots, it helps to answer these four questions:

1. Is there an association (or relationship) between points?

2. If there is an association, does it appear to be a linear association?

3. If the association appears to be linear, is it a positive or negative linear association?

4. Are there any outliers or clusters?

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CCSS.Math.Content.8.SP.A.2

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Discussion Questions:

1. Can you use scatter plots to determine if any associations exist?

2. What do clusters and outliers reveal about the data in a scatter plot?

3. What does the slope of the line of best fit reveal about the data in a scatter plot?

4. What sorts of real-world problems can be analyzed with scatter plots? Give one specific example.

5. What is one thing that you learned today? What is one thing that you'd like to continue reviewing?