Algebra 2 (Honors)

Section 1.3: Scatter Plots and Correlation

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Objectives**:

* Students will be able to graph a scatter plot and identify the data correlation.
* Students will use a graphing calculator to find the correlation coefficient and to make predictions using the line of best fit.

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| **Main Idea** | **Notes** |
| **Do Now:** **Vocabulary: Scatter Plots****Vocabulary: Positive Correlation** | Write down as many examples of real world situations that describe a relationship between two variables. What type of trends, if any, might you see?(Example to get you started: Your age and height. There is an increasing trend. As your age increase, your height increases) Examples: Trend:1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_A scatter plot is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Positive Correlation:Example: |
| **Vocabulary: Negative Correlation****Vocabulary: No Correlation** | Negative Correlation:Example:No Correlation:Example: |
| **Example 1: Identifying Linear Relationships** | Which scatterplots below show a linear trend?   |
| **Vocabulary: Outlier** | Outlier:Example: |
| **Vocabulary:** **Line of Best Fit** | The line of best fit is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.It may go through \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.Try to have the same amount of points \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. |
| **Example 2:****Making a Scatter Plot** | **Plot the data on homework time and TV time on the graph**Now draw the line of best fit and describe any trends. |
| **Vocabulary:****Correlation Coefficient** | A correlation coefficient measures \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. It is called \_\_\_\_\_\_\_\_\_\_\_\_\_.It describes how close the points in a scatter plot cluster around the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. |
| **Vocabulary: Range of Values for the Correlation Coefficient****Vocabulary: Range of Values for the Correlation Coefficient (Continued)** | When all the points fit on the line, r = \_\_\_\_\_\_\_\_\_\_\_\_\_ or r = \_\_\_\_\_\_\_\_\_\_\_\_\_.When the points are random and no line can be considered, r = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.The closer this number is to 1 or -1, the closer the points are to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. |
| **Examples of Different r Values** |  |
| **Example 3: Write the Value of the Correlation Coefficient****Vocabulary: Steps for Finding Solutions using Graphing Calculator** |   r = . \_\_\_\_\_ \_\_\_\_\_\_ r = . \_\_\_\_\_ \_\_\_\_\_\_ 1. Enter the data
2. Graph a scatter plot of the data
3. Find the equation of the graph
4. Graph the regression line on a graph with the scatter plot
 |
| **Example 4: Scatter Plots and Graphing Calculators** | For seven random summer days, a person recorded the temperature and their water consumption. That person wants to plan an outdoor party. **Predict** the amount of water a person would drink when the temperature is $95℉$. |
| **Vocabulary: Steps to graphing a Scatter Plot and the Line of Regression on a Graphing Calculator** **Vocabulary: Steps to graphing a Scatter Plot and the Line of Regression on a Graphing Calculator (Continued)****Example 4 (Continued): Scatter Plots and Graphing Calculators** | Steps:1. **Enter the Data into Lists:**

\*Press **STAT**\*Under **EDIT**, Select **1:Edit**\*Enter x-values (input) into L1\*Enter y-values (output) into L2 **2. Set up the Scatter Plot** \*Press **2nd** **Y = (STAT PLOTS)**\*Select **1: Plot 1**  and hit Enter\*Move the curser to **On** and hit Enter\*Move the cursor to **Type** and select the first graph under Type.\*Under **Xlist** Enter **L1**\*Under **Ylist** Enter **L2**\*Under **Mark**: select any of these. **3. To View Scatter Plot**\*To plot the points, press **ZOOM** and select **9: ZoomStat** **4. Finding the regression line:**\*Press **STAT**\*Press **CALC**\*Select **4: LinReg (ax + b)**\*Press **2nd 1** (For List 1)\*Press the **Comma** key\*Press **2nd 2** (For List 2)\*Press **Enter**What is the equation of the regression line?Graph the line of regression in your graphing calculator.Predict the amount of water a person would drink when the temperature is $95℉$ |
| **Example 5: Making Predictions Using a Line of Best Fit** | Predict the number of CDs that was purchased by a person who is 27 years old. |
| **Homework:** |  |