7-2 – **Fitting a Line to Data and Predicting**

Last class period we learned about correlation and scatterplots. Example: Label each graph with its correlation. (positive, negative, no corr.)

  

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When we notice that there is either a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ correlation or a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ correlation we can draw a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ line or \_\_\_\_\_\_\_\_\_\_\_\_\_of \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_. This line allows us to make more accurate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ about the behavior of data. We can decide when a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ model can be used to represent real-life \_\_\_\_\_\_\_\_\_\_\_.

We do this by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a scatter plot of the data.

Example:

|  |  |
| --- | --- |
| X | Y |
| 1 | 4 |
| 3 | 6 |
| 4 | 7 |
| 7 | 10 |
| 9 | 12 |
| 10 | 13 |

On the graph, are the points almost in a straight line?

If the points look like they’re almost in a straight line on the graph, then the data can be modeled with a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

We can do this by drawing a line on a graph. Everyone’s \_\_\_\_\_\_\_\_\_\_\_\_ lines will not be exactly the \_\_\_\_\_\_\_\_\_\_. You make your \_\_\_\_\_\_\_\_\_\_\_ estimate on a \_\_\_\_\_\_\_\_\_\_ that reflects your data. The most important key is your line must \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pass through **at least** \_\_\_\_\_\_\_\_\_\_\_\_ points.

**![[image]]()Example 1**: Kearstyn recorded the time she has spent reading and the number of pages she has read. The data is displayed in the scatterplot below.

1. Draw a trend line

2. Find the slope between the 2 points.

3. Use point-slope form to find the equation of the line.

When the points on a scatter plot can be approximated by a line with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ slope, x and y have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ correlation. When the points can be approximated by a line with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ slope, x and y have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ correlation. When points CANNOT be approximated by a straight line, there is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Predicting Values based on your Best Fit Lines**

Once you have created an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that models your data, you can use the equation to make \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on further occurrences of the event you are modeling. To make a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ you will substitute into your equation. Make sure if you are substituting the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ value you substitute for the \_\_\_\_\_\_\_\_ and if you are substituting the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ value you substitute for the \_\_\_\_\_\_\_\_.

4. From your trend line above predict the amount of time it would take Kearstyn to read 50 pages.

**Example 2**: A pool recorded the maximum temperature during a summer day and the number of people who came to the pool. The data is below:

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 200

 100

70 80 90 100 110

Maximum Daily Temperature (°F)

Number

of

People

1. Draw a trend line

2. Find the slope between the 2 points.

3. Use point-slope form to find the equation of the line.

4. Predict pool use if the temperature reaches 105°.

5. If there are 375 people at the pool, approximately how hot is it outside?