5 with Ferster

Day 2--Quantitative Statistics

The following set of problems is intended to reacquaint you with some of the problems from the pre-test that deal with analysis of 2 quantitative variables, linear regression and correlation. Sounds impressive, doesn't it! ☺ Relax, take a few minutes, by yourself, or with a friend, and see what you can do with these.

**Use the following information for questions 1-4.**

The scatterplot below gives the relationship between the percent scored on the final exam (on the x axis) and the overall course average (on the y axis) for Dr. Johnson's 58 students.



1. The lowest score on the final exam is between which 2 percentages?

A. 30 and 40 B. 40 and 50

C. 50 and 60 D. 60 and 70

2. The lowest overall course average is between which 2 percentages?

A. 30 and 40 B. 40 and 50

B. 50 and 60 D. 60 and 70

**The equation for the line of best fit (the linear regression line) for the data represented in the scatter plot above is **

3. Which statement best interprets the y-intercept of this line?

A. A student who scores a 0 on the final exam has a predicted course average of 59.531.

B. A student who has a course average of 0 has a predicted final exam score of 59.531.

C. For each additional percent a student earns on the final, his course average is predicted to increase by 0.396 percent.

D. For each additional percent a student wants to increase his course average, he needs to score an additional 0.396 percent on the final exam.

4. Which statement best interprets the slope of this line?

A. A student who scores a 0 on the final exam has a predicted course average of 59.531.

B. A student who has a course average of 0 has a predicted final exam score of 59.531.

C. For each additional percent that a student earns on the final, his course average is predicted to increase by 0.396 percent.

D. For each additional percent that a student wants to increase his course average, he needs to score an additional 0.396 percent on the final exam.

5. Let r be the correlation coefficient between a student's grade on the final exam and his course average. Which inequality best describes the value of r?

A.  B. 

C.  D. 

**Ok, but only because you wanted some....BONUS PROBLEMS!!! YEA! ☺**

6. The following equation is the linear regression line that relates a student's quiz average in Math 107 (x) to her final course grade (y).



A. Predict Sally's final course grade if her quiz average is 80.

B. Predict Samantha's quiz average if her final course grade is 95.

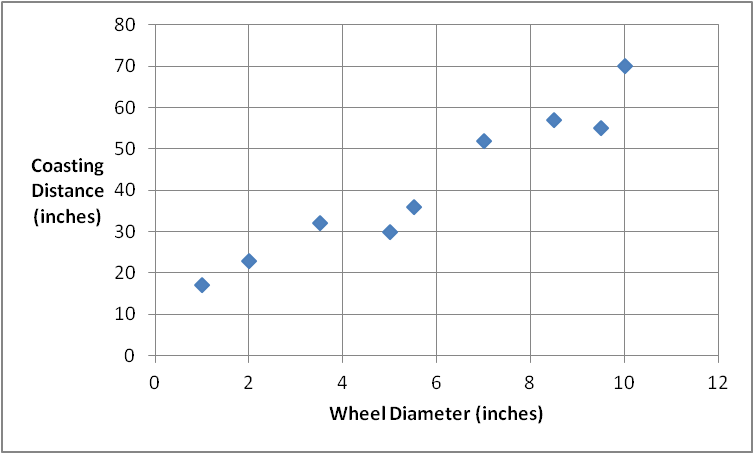
C. Interpret the y-intercept of this line in the context of the problem.

D. Interpret the slope of this line in the context of the problem.

7. The other day, Dr. F. spent some time on his skateboard--yea, you'd never guess it, but he's a real SHREDDER!!. Due to a massive crash, he had to put new wheels on his board. It just so happens that he chose larger wheels, and noticed that his board coasts farther. Ever the inquisitive math guy, Dr. F. decided to test this relationship and gathered the following data.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Wheel Diameter (inches) | 1 | 2 | 3.5 | 5 | 5.5 | 7 | 8.5 | 9.5 | 10 |
| Coasting Distance (inches) | 17 | 23 | 32 | 30 | 36 | 52 | 57 | 55 | 70 |

Here's the scatter plot for Dr. F's skateboard data.



**The equation for the line of best fit (the linear regression line) for Dr. F's skateboard data is:**

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A. Describe the real world meaning of the slope of the line.

B. Describe the real world meaning of the y-intercept of the line.

C. If Sammy's skateboard has 8 inch wheels, how far will it coast?

D. Determine the size of Sally's wheel, if she can coast 100 inches.

E. Skippy claims that the value of the correlation coefficient, r, for the line of best fit is . How do you react to his claim?