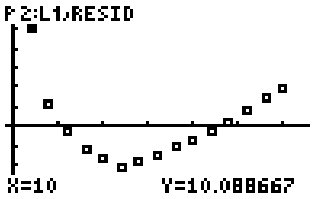
1. In a statistics course, a linear regression equation was computed to predict the final exam score from the score on the first test. The equation was $y = 10 + .9x$ where y is the final exam score and x is the score on the first test. Carla scored 95 on the first test. What is the predicted value of her score on the final exam?
(a) 95
(b) 85.5
(c) 90
(d) 95.5
(e) None of the above

2. Refer to the previous problem. On the final exam Carla scored 98. What is the value of her residual?
(a) 98
(b) 2.5
(c) –2.5
(d) 0
(e) None of the above

3. A study of the fuel economy for various automobiles plotted the fuel consumption (in liters of gasoline used per 100 kilometers traveled) vs. speed (in kilometers per hour). A least squares line was fit to the data. Here is the residual plot from this least squares fit.
What does the pattern of the residuals tell you about the linear model?
(a) The evidence is inconclusive.
(b) The residual plot confirms the linearity of the fuel economy data.
(c) The residual plot does not confirm the linearity of the data.
(d) The residual plot clearly contradicts the linearity of the data.
(e) None of the above



4. All but one of the following statements contains a blunder. Which statement is correct?
(a) There is a correlation of 0.54 between the position a football player plays and their weight.
(b) The correlation between planting rate and yield of corn was found to be r=0.23.
(c) The correlation between the gas mileage of a car and its weight is r=0.71 MPG.
(d) We found a high correlation (r=1.09) between the height and age of children.
(e) We found a correlation of r=–.63 between gender and political party preference.

5. What does the square of the correlation (r^2) measure?
(a) The slope of the least squares regression line
(b) The intercept of the least squares regression line
(c) The extent to which cause and effect is present in the data
(d) The fraction of the variation in the values of *y* that is explained by least-squares regression on the other

6. A copy machine dealer has data on the number x of copy machines at each of 89 customer locations and the number y of service calls in a month at each location. Summary calculations give $\bar{x}$ = 8.4, s_x = 2.1, $\bar{y}$ = 14.2, s_y = 3.8, and r = 0.86. What is the slope of the least squares regression line of number of service calls on number of copiers?
(a) 0.86
(b) 1.56
(c) 0.48
(d) None of these
(e) Can't tell from the information given

7. In the setting of the previous problem, about what percent of the variation in the number of service calls is explained by the linear relation between number of service calls and number of machines?
(a) 86%
(b) 93%
(c) 74%
(d) None of these
(e) Can't tell from the information given

8. If dataset A of (x,y) data has correlation coefficient $r = 0.65$, and a second dataset B has correlation $r = -0.65$, then
(a) The points in A exhibit a stronger linear association than B.
(b) The points in B exhibit a stronger linear association than A.
(c) Neither A nor B has a stronger linear association.
(d) You can't tell which dataset has a stronger linear association without seeing the data or seeing the scatterplots.

9. There is a linear relationship between the number of chirps made by the striped ground cricket and the air temperature. A least squares fit of some data collected by a biologist gives the model $\hat{y} = 25.2 + 3.3x$, $9 < x < 25$, where x is the number of chirps per minute and $\hat{y}$ is the estimated temperature in degrees Fahrenheit. What is the estimated increase in temperature that corresponds to an increase in 5 chirps per minute?

(a) 3.3°F (b) 16.5°F (c) 25.2°F (d) 28.5°F (e) 41.7°F

10. The equation of the least squares regression line for the points on the scatterplot below is $\hat{y} = 1.3 + 0.73x$. What is the residual for the point (4,7)?
(a) 2.78
(b) 3.00
(c) 4.00
(d) 4.22
(e) 7.00

11. Which of the following would *not* be a correct interpretation of a correlation of $r = -.30$?
(a) The variables are inversely related.
(b) The coefficient of determination is 0.09.
(c) 30% of the variation between the variables is linear.
(d) There exists a weak relationship between the variables.
(e) All of the above statements are correct.

12. The following are resistant:
(a) Least squares regression line
(b) Correlation coefficient
(c) Both the least square line and the correlation coefficient
(d) Neither the least square line nor the correlation coefficient
(d) It depends

13. A local community college announces the correlation between college entrance exam grades and scholastic achievement was found to be –1.08. On the basis of this you would tell the college that
(a) The entrance exam is a good predictor of success.
(b) The exam is a poor predictor of success.
(c) Students who do best on this exam will be poor students.
(d) Students at this school are underachieving.
(e) The college should hire a new statistician.

14. A researcher finds that the correlation between the personality traits "greed" and "superciliousness" is –.40. What percentage of the variation in greed can be explained by the relationship with superciliousness?
(a) 0%
(b) 16%
(c) 20%
(d) 40%
(e) 60%

15. Suppose we fit the least squares regression line to a set of data. What is true if a plot of the residuals shows a curved pattern?
(a) A straight line is not a good model for the data.
(b) The correlation must be 0.
(c) The correlation must be positive.
(d) Outliers must be present.
(e) The LSRL might or might not be a good model for the data, depending on the extent of the curve.