**STUDY QUESTIONS**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a measure of the degree of relatedness of two variables.

2. The Pearson product-moment correlation coefficient is denoted by

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

3. The value of *r* varies from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

4. Perfect positive correlation results in an *r* value of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

5. The value of the coefficient of correlation from the following data is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

*x*: 19, 20, 26, 31, 34, 45, 45, 51

*y*: 78, 100, 125, 120, 119, 130, 145, 143

6. The value of *r* from the following data is \_\_\_\_\_\_\_\_\_\_.

*x*: -10, -6, 1, 4, 15

*y*: -26, -44, -36, -39, -43

7. The process of constructing a mathematical model or function that can be used to

predict or determine one variable by another variable is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

8. Bivariate linear regression is often termed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ regression.

9. In regression, the variable being predicted is usually referred to as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ variable.

10. In regression, the predictor is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ variable.

11. The first step in simple regression analysis often is to graph or construct a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

12. In regression analysis, *β*1 represents the population \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

13. In regression analysis, *b*o represents the sample \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

14. A researcher wants to develop a regression model to predict the price of gold by the prime interest rate. The dependent variable is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

15. In an effort to develop a regression model, the following data were gathered:

*x*: 2, 9, 11, 19, 21, 25

*y*: 26, 17, 18, 15, 15, 8

The slope of the regression line determined from these data is \_\_\_\_\_\_\_\_\_\_\_\_.

The *y* intercept is \_\_\_\_\_\_\_\_\_\_\_\_.

16. A researcher wants to develop a regression line from the data given below:

*x*: 12, 11, 5, 6, 9

*y*: 31, 25, 14, 12, 16

The equation of the regression line is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

17. In regression, the value of is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

18. Data points that lie apart from the rest of the points are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

19. The regression assumption of constant error variance is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

If the error variances are not constant, it is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

20. Suppose the following data are used to determine the equation of the regression line given below:

*x*: 2, 5, 11, 24, 31

*y*: 12, 13, 16, 14, 19

 = 12.224 + 0.1764 *x*

The residual for *x* = 11 is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

21. The total of the residuals squared is called the

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

22. A standard deviation of the error of the regression model is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and is denoted by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

23. Suppose a regression model is developed for ten pairs of data resulting in S.S.E. = 1,203. The standard error of the estimate is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

24. A regression analysis results in the following data:

*x* = 276 *x*2 = 12,014 *xy* = 2,438

*y* = 77 *y*2 = 1,183 *n* = 7

The value of SSE is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

25. The value of *S*e is computed from the data of question 24 is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

26. Suppose a regression model results in a value of *s*e = 27.9. 95% of the residuals should fall within \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

27. Coefficient of determination is denoted by \_\_\_\_\_\_\_\_\_\_.

28. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the proportion of variability of the dependent variable accounted for or explained by the independent variable.

29. The value of *r*2 always falls between \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_ inclusive.

30. Suppose a regression analysis results in the following:

*b*1 = .19364 *y* = 1,019

*b*0 = 59.4798 *y*2 = 134,451

*n* = 8 *xy* = 378,932

The value of *r*2 for this regression model is \_\_\_\_\_\_\_\_.

31. Suppose the data below are used to determine the equation of a regression line:

*x*: 18, 14, 9, 6, 2

*y*: 14, 25, 22, 23, 27

The value of *r*2 associated with this model is \_\_\_\_\_\_\_\_\_\_.

32. A researcher has developed a regression model from sixteen pairs of data points. He wants to test to determine if the slope is significantly different from zero. He uses a two-tailed test and *α* = .01. The critical table *t* value is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

33. The following data are used to develop a simple regression model:

*x*: 22, 20, 15, 15, 14, 9

*y*: 31, 20, 12, 9, 10, 6

The observed *t* value used to test the slope of this regression model is

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

34. If *α*  = .05 and a two-tailed test is being conducted, the critical table *t* value to test the slope of the model developed in question 33 is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

35. The decision reached about the slope of the model computed in question 33 is to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the null hypothesis.

36. The equation of the trend line through the following sales data is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_;

and using this trend line, the predicted sales for year 10 is \_\_\_\_\_\_\_\_\_ .

Year Sales

1 230

2 246

3 251

4 254

5 272

6 283

7 299

**ANSWERS TO STUDY QUESTIONS**

1. Correlation 19. Homoscedasticity,

Heteroscadasticity

2. *r*

20. 1.8356

3. –1 to 0 to +1

21. Sum of Squares of Error

4. +1

22. Standard Error of the Estimate,

*se*

5. .876

23. 12.263

6. -.581

24. 20.015

7. Regression

25. 2.00

8. Simple

26. 0 + 55.8

9. Dependent

27. *r*2

10. Independent

28. Coefficient of Determination

11. Scatter Plot

29. 0, 1

12. Slope

30. .900

13. *y* Intercept

31. .578

14. Price of Gold

32. 2.977

15. -0.626, 25.575

33. 4.72

16. -1.253 + 2.425 *x*

34. + 2.776

17. Residual

35. Reject

18. Outliers

36. 219 + 10.7857*x*

326.857