* **Question 1**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | If there is a very weak correlation between two variables, then the coefficient of determination must be |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | d.  closer or equal to zero. | | Answers: | a.  much larger than 1, if the correlation is positive. | |  | b.  much smaller than -1, if the correlation is negative. | |  | c.  equal to one. | |  | d.  closer or equal to zero. | |  |  |  |

* **Question 2**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | In regression analysis, if the independent variable is measured in pounds, the dependent variable |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | d.  can be measured in any units. | | Answers: | a.  cannot be in pounds. | |  | b.  must be in some unit of weight. | |  | c.  must also be in pounds. | |  | d.  can be measured in any units. | |  |  |  |

* **Question 3**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | If the coefficient of correlation is a positive value, then the |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  slope of the regression line must be positive. | | Answers: | a.  regression equation could have either a positive or a negative slope. | |  | b.  slope of the regression line must be positive. | |  | c.  coefficient of determination can be either a negative or a positive value, depending on the slope. | |  | d.  intercept of the regression line must also be positive. | |  |  |  |

* **Question 4**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | In a regression analysis, if SSE = 500 and SSR = 300, then the coefficient of determination is​ |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | a.  .375. | | Answers: | a.  .375. | |  | b.  .600. | |  | c.  ​.625. | |  | d.  .167. | |  |  |  |

* **Question 5**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | If a data set produces SSR = 400 and SSE = 100, then the coefficient of determination is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | c.  .80. | | Answers: | a.  .10. | |  | b.  .25. | |  | c.  .80. | |  | d.  .40. | |  |  |  |

* **Question 6**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | In a regression and correlation analysis, if *r* 2 = 1, then |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | c.  SSE must be equal to zero. | | Answers: | a.  SSE must also be equal to one. | |  | b.  SSE can be any positive value. | |  | c.  SSE must be equal to zero. | |  | d.  SSE must be negative. | |  |  |  |

* **Question 7**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The primary tool for determining whether the assumptions made about the regression model are appropriate is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  ​residual analysis. | | Answers: | a.  ​least squares regression. | |  | b.  ​residual analysis. | |  | c.  ​interval estimation. | |  | d.  ​significance testing. | |  |  |  |

* **Question 8**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | In the following estimated regression equation  = *b* 0 + *b* 1 *x*, |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | a.  *b*1 is the slope. | | Answers: | a.  *b*1 is the slope. | |  | b.  *b*1 is the intercept. | |  | c.  *b*1*x* is the slope. | |  | d.  *b*1*x* is the intercept. | |  |  |  |

* **Question 9**

0 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | If the coefficient of determination is .90, the percentage of variation in the dependent variable explained by the variation in the independent variable is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  .90%. | | Answers: | a.  81%. | |  | b.  .90%. | |  | c.  .81%. | |  | d.  90%. | |  |  |  |

* **Question 10**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The following information regarding a dependent variable *y* and an independent variable *x* is provided:   |  |  | | --- | --- | | Σ*x* = 90 | Σ(*y* - )(*x* - ) = -156 | | Σ*y* = 340 | Σ(*x* - )2 = 234 | | *n* = 4 | Σ(*y* - )2 = 1974 | | SSR = 104 |  |   ​  The mean square error (MSE) is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | a.  935. | | Answers: | a.  935. | |  | b.  13. | |  | c.  1974. | |  | d.  1870. | |  |  |  |

* **Question 11**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The following information regarding a dependent variable *y* and an independent variable *x* is provided:   |  |  | | --- | --- | | Σ*x* = 90 | Σ(*y* - )(*x* - ) = -156 | | Σ*y* = 340 | Σ(*x* - )2 = 234 | | *n* = 4 | Σ(*y* - )2 = 1974 | | SSR = 104 |  |   ​  The total sum of squares (SST) is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  1974. | | Answers: | a.  -156. | |  | b.  1974. | |  | c.  234. | |  | d.  1870. | |  |  |  |

* **Question 12**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The following information regarding a dependent variable *y* and an independent variable *x* is provided:   |  |  | | --- | --- | | Σ*x* = 90 | Σ(*y* - )(*x* - ) = -156 | | Σ*y* = 340 | Σ(*x* - )2 = 234 | | *n* = 4 | Σ(*y* - )2 = 1974 | | SSR = 104 |  |   ​  The coefficient of correlation is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  -.2295. | | Answers: | a.  .2295. | |  | b.  -.2295. | |  | c.  .0572. | |  | d.  -.0572. | |  |  |  |

* **Question 13**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | Regression analysis was applied between sales data ( *y* in $1000s) and advertising data ( *x* in $100s) and the following information was obtained.  ​   = 12 + 1.8*x*  ​  *n* = 17  SSR = 225  SSE = 75  *sb*1 = .2683    The *F* statistic computed from the above data is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  45. | | Answers: | a.  50. | |  | b.  45. | |  | c.  48. | |  | d.  3. | |  |  |  |

* **Question 14**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | For the following data, the value of SSE = 18.   |  |  | | --- | --- | | **Dependent Variable (*y*)** | **Independent Variable (*x*)** | | 15 | 4 | | 17 | 6 | | 23 | 2 | | 17 | 4 |   ​  The total sum of squares (SST) equals |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | c.  36. | | Answers: | a.  18. | |  | b.  2. | |  | c.  36. | |  | d.  9. | |  |  |  |

* **Question 15**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The interval estimate of the mean value of *y* for a given value of *x* is the |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | c.  confidence interval estimate. | | Answers: | a.  *x* versus *y* correlation interval. | |  | b.  average regression interval. | |  | c.  confidence interval estimate. | |  | d.  prediction interval estimate. | |  |  |  |

* **Question 16**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The following information regarding a dependent variable ( *y*) and an independent variable ( *x*) is provided.   |  |  | | --- | --- | | ***y*** | ***x*** | | 4 | 2 | | 3 | 1 | | 4 | 4 | | 6 | 3 | | 8 | 5 |   ​  SSE = 6 SST = 16  ​  The MSE is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  2. | | Answers: | a.  3. | |  | b.  2. | |  | c.  4. | |  | d.  1. | |  |  |  |

* **Question 17**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | In a regression analysis, if SSE = 200 and SSR = 300, then the coefficient of determination is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  .60. | | Answers: | a.  .67. | |  | b.  .60. | |  | c.  .40. | |  | d.  .20. | |  |  |  |

* **Question 18**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | You are given the following information about *y* and *x*.   |  |  | | --- | --- | | **Dependent Variable (*y*)** | **Independent Variable (*x*)** | | 12 | 4 | | 3 | 6 | | 7 | 2 | | 6 | 4 |   ​  The coefficient of determination equals |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  .1905. | | Answers: | a.  -.1905. | |  | b.  .1905. | |  | c.  .4364. | |  | d.  -.4364. | |  |  |  |

* **Question 19**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | A regression and correlation analysis resulted in the following information regarding a dependent variable ( *y*) and an independent variable ( *x*).   |  |  | | --- | --- | | Σ*x* = 90 | Σ(*y* - )(*x* - ) = 466 | | Σ*y* = 170 | Σ(*x* - )2 = 234 | | *n* = 10 | Σ(*y* - )2 = 1434 | | SSE = 505.98 |  |   ​  The least squares estimate of the intercept or *b*0 equals |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | d.  -.923. | | Answers: | a.  -1.991. | |  | b.  .923. | |  | c.  1.991. | |  | d.  -.923. | |  |  |  |

* **Question 20**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | Application of the least squares method results in values of the *y-*intercept and the slope that minimizes the sum of the squared deviations between the​ |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | c.  ​observed values of the dependent variable and the predicted values of the dependent variable. | | Answers: | a.  ​observed values of the dependent variable and the predicted values of the independent variable. | |  | b.  ​observed values of the independent variable and the predicted values of the independent variable. | |  | c.  ​observed values of the dependent variable and the predicted values of the dependent variable. | |  | d.  ​observed values of the independent variable and the predicted values of the dependent variable. | |  |  |  |

* **Question 21**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | Regression analysis was applied between demand for a product ( *y*) and the price of the product ( *x*), and the following estimated regression equation was obtained.  ​   = 120 - 10*x*  ​  Based on the above estimated regression equation, if price is increased by 2 units, then demand is expected to |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  decease by 20 units. | | Answers: | a.  increase by 20 units. | |  | b.  decease by 20 units. | |  | c.  decrease by 100 units. | |  | d.  increase by 120 units. | |  |  |  |

* **Question 22**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | You are given the following information about *y* and *x*.   |  |  | | --- | --- | | **Dependent Variable (*y*)** | **Independent Variable (*x*)** | | 5 | 1 | | 4 | 2 | | 3 | 3 | | 2 | 4 | | 1 | 5 |   ​  The coefficient of determination equals |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | c.  +1. | | Answers: | a.  -.5. | |  | b.  -1. | |  | c.  +1. | |  | d.  0. | |  |  |  |

* **Question 23**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | If the coefficient of correlation is .90, then the coefficient of determination |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | d.  must be .81. | | Answers: | a.  is either .81 or -.81. | |  | b.  will be -.90. | |  | c.  is also .90. | |  | d.  must be .81. | |  |  |  |

* **Question 24**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | You are given the following information about *y* and *x*.   |  |  | | --- | --- | | **Dependent Variable (*y*)** | **Independent Variable (*x*)** | | 5 | 1 | | 4 | 2 | | 3 | 3 | | 2 | 4 | | 1 | 5 |   ​  The least squares estimate of the slope or *b*1 equals |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | c.  -1. | | Answers: | a.  1. | |  | b.  -5. | |  | c.  -1. | |  | d.  6. | |  |  |  |

* **Question 25**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | Correlation analysis is used to determine |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  the strength of the linear relationship between the dependent and the independent variables. | | Answers: | a.  the equation of the regression line. | |  | b.  the strength of the linear relationship between the dependent and the independent variables. | |  | c.  a specific value of the dependent variable for a given value of the independent variable. | |  | d.  a cause-and-effect relationship between the dependent and the independent variables. | |  |  |  |

* **Question 26**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | A descriptive measure of the strength of linear association between two variables is the​ |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  ​correlation coefficient. | | Answers: | a.  ​slope *b*1 of the estimated regression line. | |  | b.  ​correlation coefficient. | |  | c.  ​coefficient of determination. | |  | d.  ​standard error of the estimate. | |  |  |  |

* **Question 27**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The coefficient of correlation |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | a.  is the square root of the *r*-square. | | Answers: | a.  is the square root of the *r*-square. | |  | b.  can never be negative. | |  | c.  is the square of the *r*-square. | |  | d.  can never be equal to *r*-square. | |  |  |  |

* **Question 28**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | Regression analysis was applied between sales ( *y* in $1000) and advertising ( *x* in $100) and the following estimated regression equation was obtained.  ​   = 80 + 6.2*x*  ​  Based on the above estimated regression line, if advertising is $10,000, then the point estimate for sales (in dollars) is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | c.  $700,000. | | Answers: | a.  $142,000. | |  | b.  $700. | |  | c.  $700,000. | |  | d.  $62,080. | |  |  |  |

* **Question 29**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | Regression analysis was applied between sales (in $1000) and advertising (in $100) and the following regression function was obtained.  ​   = 500 + 4*x*  ​  Based on the above estimated regression line, if advertising is $10,000, then the point estimate for sales (in dollars) is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | a.  $900,000. | | Answers: | a.  $900,000. | |  | b.  $505,000. | |  | c.  $900. | |  | d.  $40,500. | |  |  |  |

* **Question 30**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | You are given the following information about *y* and *x*.   |  |  | | --- | --- | | **Dependent Variable (*y*)** | **Independent Variable (*x*)** | | 5 | 1 | | 4 | 2 | | 3 | 3 | | 2 | 4 | | 1 | 5 |   ​  The sample correlation coefficient equals |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | c.  -1. | | Answers: | a.  -.5. | |  | b.  0. | |  | c.  -1. | |  | d.  +1. | |  |  |  |

* **Question 31**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | You are given the following information about *y* and *x*.   |  |  | | --- | --- | | **Dependent Variable (*y*)** | **Independent Variable (*x*)** | | 5 | 1 | | 4 | 2 | | 3 | 3 | | 2 | 4 | | 1 | 5 |   ​  The point estimate of *y* when *x* = 2 is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  4. | | Answers: | a.  10. | |  | b.  4. | |  | c.  -10. | |  | d.  -4. | |  |  |  |

* **Question 32**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | In a regression analysis, the coefficient of correlation is .16. The coefficient of determination in this situation is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | d.  .0256. | | Answers: | a.  .4000. | |  | b.  4.00. | |  | c.  2.56. | |  | d.  .0256. | |  |  |  |

* **Question 33**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | In a regression analysis, if SST = 4500 and SSE = 1575, then the coefficient of determination is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | a.  .65. | | Answers: | a.  .65. | |  | b.  .35. | |  | c.  .85. | |  | d.  .45. | |  |  |  |

* **Question 34**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | It is possible for the coefficient of determination to be |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  less than 1. | | Answers: | a.  larger than 1. | |  | b.  less than 1. | |  | c.  less than -1. | |  | d.  equal to -1. | |  |  |  |

* **Question 35**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | Regression analysis is a statistical procedure for developing a mathematical equation that describes how |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | c.  one dependent and one or more independent variables are related. | | Answers: | a.  one independent and one or more dependent variables are related. | |  | b.  several independent and several dependent variables are related. | |  | c.  one dependent and one or more independent variables are related. | |  | d.  one dependent, one independent, and several error variables are related. | |  |  |  |

* **Question 36**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | You are given the following information about *y* and *x*.   |  |  | | --- | --- | | **Dependent Variable (*y*)** | **Independent Variable (*x*)** | | 12 | 4 | | 3 | 6 | | 7 | 2 | | 6 | 4 |   ​  The least squares estimate of the intercept or *b*0 equals |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | d.  11. | | Answers: | a.  -1. | |  | b.  -11. | |  | c.  1. | |  | d.  11. | |  |  |  |

* **Question 37**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The coefficient of determination |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | a.  cannot be negative. | | Answers: | a.  cannot be negative. | |  | b.  is the same as the coefficient of correlation. | |  | c.  can be negative or positive. | |  | d.  is the square root of the coefficient of correlation. | |  |  |  |

* **Question 38**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | In regression and correlation analysis, if SSE and SST are known, then with this information the |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | a.  coefficient of determination can be computed. | | Answers: | a.  coefficient of determination can be computed. | |  | b.  *x*-intercept can be computed. | |  | c.  *y-*intercept can be computed. | |  | d.  slope of the regression line can be computed. | |  |  |  |

* **Question 39**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The mathematical equation relating the independent variable to the expected value of the dependent variable; that is, *E*( *y*) = *β* 0 + *β* 1 *x*, is known as the |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  regression equation. | | Answers: | a.  regression model. | |  | b.  regression equation. | |  | c.  estimated regression equation. | |  | d.  correlation model. | |  |  |  |

* **Question 40**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | A regression analysis between demand ( *y* in 1000 units) and price ( *x* in dollars) resulted in the following equation:  ​   = 9 - 3*x*  ​  The above equation implies that if the price is increased by $1, the demand is expected to |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | a.  decrease by 3000 units. | | Answers: | a.  decrease by 3000 units. | |  | b.  decrease by 6000 units. | |  | c.  decrease by 3 units. | |  | d.  increase by 6 units. | |  |  |  |

* **Question 41**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | For the following data, the value of SSE = 18.   |  |  | | --- | --- | | **Dependent Variable (*y*)** | **Independent Variable (*x*)** | | 15 | 4 | | 17 | 6 | | 23 | 2 | | 17 | 4 |   ​  The coefficient of determination (*r*2) equals |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | c.  .5. | | Answers: | a.  -.7071. | |  | b.  -.5. | |  | c.  .5. | |  | d.  .7071. | |  |  |  |

* **Question 42**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | In regression analysis, the model in the form *y* =  +  *x* *+* *ε*  is called the |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  regression model | | Answers: | a.  regression equation. | |  | b.  regression model | |  | c.  correlation model. | |  | d.  estimated regression equation. | |  |  |  |

* **Question 43**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | In a simple linear regression analysis (where *y* is a dependent and *x* an independent variable), if the *y-*intercept is positive, then |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | d.  the estimated regression line intercepts the positive *y*-axis. | | Answers: | a.  there is a positive correlation between *x* and *y*. | |  | b.  if *x* is increased, *y* must also increase. | |  | c.  if *y* is increased, *x* must also increase. | |  | d.  the estimated regression line intercepts the positive *y*-axis. | |  |  |  |

* **Question 44**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | In a residual plot against *x* that does not suggest we should challenge the assumptions of our regression model, we would expect to see​ a |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | a.  ​horizontal band of points centered near zero. | | Answers: | a.  ​horizontal band of points centered near zero. | |  | b.  widening band of points around the *x*-axis. | |  | c.  parabolic band of points centered at the origin. | |  | d.  band of points having a slope consistent with that of the regression equation. | |  |  |  |

* **Question 45**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | Regression analysis was applied between sales data ( *y* in $1000s) and advertising data ( *x* in $100s) and the following information was obtained.  ​   = 12 + 1.8*x*  ​  *n* = 17  SSR = 225  SSE = 75  *sb*1 = .2683  ​  Based on the above estimated regression equation, if advertising is $3000, then the point estimate for sales (in dollars) is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | a.  $66,000. | | Answers: | a.  $66,000. | |  | b.  $17,400. | |  | c.  $5412. | |  | d.  $66. | |  |  |  |

* **Question 46**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | Regression analysis was applied between sales data ( *y* in $1000s) and advertising data ( *x* in $100s) and the following information was obtained.  ​   = 12 + 1.8*x*  ​  *n* = 17  SSR = 225  SSE = 75  *sb*1 = .2683  ​  To perform an *F* test, the *p*-value is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | d.  less than .01. | | Answers: | a.  between .01 and .025. | |  | b.  between .025 and .05. | |  | c.  greater than .10. | |  | d.  less than .01. | |  |  |  |

* **Question 47**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | A regression analysis between sales ( *y* in $1000) and advertising ( *x* in dollars) resulted in the following equation:  ​   = 30,000 + 4*x*  ​  The above equation implies that an |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | c.  increase of $1 in advertising is associated with an increase of $4000 in sales. | | Answers: | a.  increase of $4 in advertising is associated with an increase of $4000 in sales. | |  | b.  increase of $1 in advertising is associated with an increase of $34,000 in sales. | |  | c.  increase of $1 in advertising is associated with an increase of $4000 in sales. | |  | d.  increase of $1 in advertising is associated with an increase of $4 in sales. | |  |  |  |

* **Question 48**

0.5 out of 0.5 points

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|  |  | | | |
|  | For the following data, the value of SSE = 18.   |  |  | | --- | --- | | **Dependent Variable (*y*)** | **Independent Variable (*x*)** | | 15 | 4 | | 17 | 6 | | 23 | 2 | | 17 | 4 |   ​  The slope of the regression equation is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  -1.5. | | Answers: | a.  24. | |  | b.  -1.5. | |  | c.  18. | |  | d.  .71. | |  |  |  |

* **Question 49**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | You are given the following information about *y* and *x*.   |  |  | | --- | --- | | **Dependent Variable (*y*)** | **Independent Variable (*x*)** | | 12 | 4 | | 3 | 6 | | 7 | 2 | | 6 | 4 |   ​  The least squares estimate of the slope or *b*1 equals |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | c.  -1. | | Answers: | a.  11. | |  | b.  -11. | |  | c.  -1. | |  | d.  1. | |  |  |  |

* **Question 50**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | In regression analysis, the independent variable is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | c.  used to predict the dependent variable. | | Answers: | a.  used to predict other independent variables. | |  | b.  the variable that is not used for prediction. | |  | c.  used to predict the dependent variable. | |  | d.  the variable that is being predicted. | |  |  |  |

* **Question 51**

0.5 out of 0.5 points

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|  |  | | | |
|  | As the value of the coefficient of determination increases, the |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | a.  goodness of fit for the estimated regression equation increases. | | Answers: | a.  goodness of fit for the estimated regression equation increases. | |  | b.  value of the correlation coefficient decreases. | |  | c.  absolute value of the regression equation’s slope decreases. | |  | d.  total number of degrees of freedom increases. | |  |  |  |

* **Question 52**

0.5 out of 0.5 points

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|  | The equation that describes how the dependent variable ( *y*) is related to the independent variable ( *x*) is called |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  the regression model. | | Answers: | a.  the correlation model. | |  | b.  the regression model. | |  | c.  correlation analysis. | |  | d.  estimation analysis. | |  |  |  |

* **Question 53**

0.5 out of 0.5 points

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|  |  | | | |
|  | In regression analysis, which of the following assumptions is **not** true about the error term *ε*? |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | d.  The expected value of the error term is one. | | Answers: | a.  The error term is normally distributed. | |  | b.  The values of the error term are independent. | |  | c.  The variance of the error term is the same for all values of *x*. | |  | d.  The expected value of the error term is one. | |  |  |  |

* **Question 54**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | A least squares regression line |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | a.  can be used to predict a value of *y* if the corresponding *x* value is given. | | Answers: | a.  can be used to predict a value of *y* if the corresponding *x* value is given. | |  | b.  implies a cause-and-effect relationship between *x* and *y*. | |  | c.  can only be determined if a good linear relationship exists between *x* and *y*. | |  | d.  ensures that the predictions of *y* outside the range of the values of *x* are valid. | |  |  |  |

* **Question 55**

0.5 out of 0.5 points

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|  |  | | | |
|  | In simple linear regression analysis, which of the following is **not** true? |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  The *F* test and the *t* test may or may not yield the same conclusion. | | Answers: | a.  The *F* test and the *t* test yield the same conclusion. | |  | b.  The *F* test and the *t* test may or may not yield the same conclusion. | |  | c.  The relationship between *x* and *y* is represented by a straight line. | |  | d.  The value of *F* = *t*2. | |  |  |  |

* **Question 56**

0.5 out of 0.5 points

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|  |  | | | |
|  | A regression and correlation analysis resulted in the following information regarding a dependent variable ( *y*) and an independent variable ( *x*).   |  |  | | --- | --- | | Σ*x* = 90 | Σ(*y* - )(*x* - ) = 466 | | Σ*y* = 170 | Σ(*x* - )2 = 234 | | *n* = 10 | Σ(*y* - )2 = 1434 | | SSE = 505.98 |  |   ​  The least squares estimate of the slope or *b*1 equals |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | a.  1.991. | | Answers: | a.  1.991. | |  | b.  -.923. | |  | c.  -1.991. | |  | d.  .923. | |  |  |  |

* **Question 57**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The following information regarding a dependent variable *y* and an independent variable *x* is provided:   |  |  | | --- | --- | | Σ*x* = 90 | Σ(*y* - )(*x* - ) = -156 | | Σ*y* = 340 | Σ(*x* - )2 = 234 | | *n* = 4 | Σ(*y* - )2 = 1974 | | SSR = 104 |  |   ​  The slope of the regression equation is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  -.667. | | Answers: | a.  100. | |  | b.  -.667. | |  | c.  -100. | |  | d.  .667. | |  |  |  |

* **Question 58**

0.5 out of 0.5 points

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|  |  | | | |
|  | If the coefficient of correlation is .8, the percentage of variation in the dependent variable explained by the variation in the independent variable is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  64%. | | Answers: | a.  .64%. | |  | b.  64%. | |  | c.  80%. | |  | d.  .80%. | |  |  |  |

* **Question 59**

0.5 out of 0.5 points

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|  |  | | | |
|  | In a regression analysis, the coefficient of determination is .4225. The coefficient of correlation in this situation is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  .65 if *b*1 is positive. | | Answers: | a.  .4225. | |  | b.  .65 if *b*1 is positive. | |  | c.  -.18 if *b*1 is negative. | |  | d.  .1785. | |  |  |  |

* **Question 60**

0.5 out of 0.5 points

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|  |  | | | |
|  | In regression analysis, the variable that is being predicted is the |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  dependent variable. | | Answers: | a.  independent variable. | |  | b.  dependent variable. | |  | c.  intercept variable. | |  | d.  error variable. | |  |  |  |

* **Question 61**

0.5 out of 0.5 points

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|  |  | | | |
|  | The standard error of the estimate is the |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | c.  square root of MSE. | | Answers: | a.  square root of SSE. | |  | b.  square root of SST. | |  | c.  square root of MSE. | |  | d.  standard deviation of *t*. | |  |  |  |

* **Question 62**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The value of the coefficient of correlation ( *r*) |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | c.  can be equal to the value of the coefficient of determination (*r*2). | | Answers: | a.  is always smaller than the value of the coefficient of determination (*r*2). | |  | b.  can never be equal to the value of the coefficient of determination (*r*2). | |  | c.  can be equal to the value of the coefficient of determination (*r*2). | |  | d.  is always larger than the value of the coefficient of determination (*r*2). | |  |  |  |

* **Question 63**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | If the coefficient of correlation is .4, the percentage of variation in the dependent variable explained by the variation in the independent variable is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | d.  16%. | | Answers: | a.  63%. | |  | b.  40%. | |  | c.  4%. | |  | d.  16%. | |  |  |  |

* **Question 64**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | In regression analysis, the error term *ε* is a random variable with a mean or expected value of |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  0. | | Answers: | a.  *μ*. | |  | b.  0. | |  | c.  1. | |  | d.  . | |  |  |  |

* **Question 65**

0.5 out of 0.5 points

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|  |  | | | |
|  | If all the points of a scatter diagram lie on the least squares regression line, then the coefficient of determination for these variables based on these data |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  is 1. | | Answers: | a.  is either 1 or -1, depending upon whether the relationship is positive or negative. | |  | b.  is 1. | |  | c.  is 0. | |  | d.  could be any value between -1 and 1. | |  |  |  |

* **Question 66**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | You are given the following information about *y* and *x*.   |  |  | | --- | --- | | **Dependent Variable (*y*)** | **Independent Variable (*x*)** | | 5 | 4 | | 7 | 6 | | 9 | 2 | | 11 | 4 |   ​  The least squares estimate of the intercept or *b*0 equals |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  10. | | Answers: | a.  -10. | |  | b.  10. | |  | c.  .5. | |  | d.  -.5. | |  |  |  |

* **Question 67**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | If two variables, *x* and *y*, have a strong linear relationship, then |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | a.  there may or may not be any causal relationship between *x* and *y*. | | Answers: | a.  there may or may not be any causal relationship between *x* and *y*. | |  | b.  *x* causes *y* to happen. | |  | c.  *y* causes *x* to happen. | |  | d.  the *F* test is used to conclude there is a causal relationship between *x* and *y*. | |  |  |  |

* **Question 68**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The following information regarding a dependent variable ( *y*) and an independent variable ( *x*) is provided.   |  |  | | --- | --- | | ***y*** | ***x*** | | 4 | 2 | | 3 | 1 | | 4 | 4 | | 6 | 3 | | 8 | 5 |   ​  SSE = 6 SST = 16  ​  The least squares estimate of the *y*-intercept is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | a.  2. | | Answers: | a.  2. | |  | b.  1. | |  | c.  4. | |  | d.  3. | |  |  |  |

* **Question 69**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | Regression analysis was applied between sales (in $10,000) and advertising (in $100) and the following regression function was obtained.  ​   = 50 + 8*x*  ​  Based on the above estimated regression line, if advertising is $1000, then the point estimate for sales (in dollars) is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | b.  $1,300,000. | | Answers: | a.  $130. | |  | b.  $1,300,000. | |  | c.  $130,000. | |  | d.  $8050. | |  |  |  |

* **Question 70**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | If the coefficient of determination is equal to 1, then the coefficient of correlation |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | c.  can be either -1 or +1. | | Answers: | a.  must be -1. | |  | b.  must also be +1. | |  | c.  can be either -1 or +1. | |  | d.  can be any value between -1 to +1. | |  |  |  |

* **Question 71**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The following information regarding a dependent variable ( *y*) and an independent variable ( *x*) is provided.   |  |  | | --- | --- | | ***y*** | ***x*** | | 4 | 2 | | 3 | 1 | | 4 | 4 | | 6 | 3 | | 8 | 5 |   ​  SSE = 6 SST = 16  ​  The coefficient of correlation is |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | a.  .7906. | | Answers: | a.  .7906. | |  | b.  .375. | |  | c.  -.7906. | |  | d.  .625. | |  |  |  |

* **Question 72**

0.5 out of 0.5 points

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| --- | --- | --- | --- | --- |
|  |  | | | |
|  | You are given the following information about *y* and *x*.   |  |  | | --- | --- | | **Dependent Variable (*y*)** | **Independent Variable (*x*)** | | 5 | 4 | | 7 | 6 | | 9 | 2 | | 11 | 4 |   ​  The coefficient of determination equals |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | a.  .10. | | Answers: | a.  .10. | |  | b.  -.3162. | |  | c.  .3162. | |  | d.  -.10. | |  |  |  |

* **Question 73**

0.5 out of 0.5 points

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|  |  | | | |
|  | The model developed from sample data that has the form of  = *b* 0 + *b* 1 *x* is known as the |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | a.  estimated regression equation. | | Answers: | a.  estimated regression equation. | |  | b.  regression model. | |  | c.  correlation model. | |  | d.  regression equation. | |  |  |  |

* **Question 74**

0.5 out of 0.5 points

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|  |  | | | |
|  | In a regression and correlation analysis, if *r* 2 = 1, then |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | d.  SSR = SST. | | Answers: | a.  SSR = SSE. | |  | b.  SSE = SST. | |  | c.  SSE = 1. | |  | d.  SSR = SST. | |  |  |  |

* **Question 75**

0.5 out of 0.5 points

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|  |  | | | |
|  | Larger values of *r* 2 imply that the observations are more closely grouped about the |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | d.  least squares line. | | Answers: | a.  average value of the independent variables. | |  | b.  average value of the dependent variable. | |  | c.  origin. | |  | d.  least squares line. | |  |  |  |

Tuesday, March 10, 2020 3:34:10 PM PDT