Started on	Monday, 18 October 2021, 11:17 PM
State	Finished
Completed on	Monday, 18 October 2021, 11:27 PM
Time taken	10 mins 18 secs
Grade	**12.00** out of 12.00 (**100**%)

Question **1**

Correct

Mark 1.00 out of 1.00

What is minimized in least squares regression?

Select one:

a. The mean of the residuals.

b. The sum of squares of the residuals. ✔

c. The standard deviation of the sums of the residuals.

d. The residuals of the square sums.

The correct answer is: The sum of squares of the residuals.

Question **2**

Correct

Mark 1.00 out of 1.00

Find the equation of the best fit line for the following set of data points:

$$(0,1),(2,7),(4,15),(6,22),(8,30)$$

Select one:

a. $y = 2 + 2.25x$

b. $y = 0.5 + 3.4x$

c. $y = 1.11 + 5.23x$

d. $y = 0.4 + 3.65x$ ✔

The correct answer is:

$$y = 0.4 + 3.65x$$

Question **3**

Correct

Mark 1.00 out of 1.00

Which of the following best describes the purpose of simple linear regression?

Select one:

- a. To estimate the mean of data.
- b. To describe the relationship between two variables. ✔
- c. To analyse the regression form of a Euclidean curve.
- d. To describe how better data can be obtained from independence.

The correct answer is: To describe the relationship between two variables.

Question **4**

Correct

Mark 1.00 out of 1.00

Find the correlation coefficient r of the best fit line for the following data:

$$(0,1),(2,11),(4,5),(6,-1),(8,0)$$

Select one:

- a. 0.93
- b. 0.45 ✔
- c. 0.56
- d. 0.67

The correct answer is: 0.45

Question **5**

Correct

Mark 1.00 out of 1.00

Find the equation of the best fit line for the following set of data points:

$$(1,3),(3,7),(5,18),(7,21),(9,30)$$

Select one:

a. $-1.2+3.4x$ ✔

b. $2-3.6x$

c. $4.7-2.2x$

d. $-1+2.9x$

The correct answer is:

$-1.2+3.4x$

Question **6**

Correct

Mark 1.00 out of 1.00

Find the correlation coefficient r of the best fit line for the following data:

$$(0,1),(2,11),(4,20),(6,15),(8,18)$$

Select one:

a. 0.66

b. 0.91

c. 0.82

d. 0.80 ✔

The correct answer is: 0.80

Question **7**

Correct

Mark 1.00 out of 1.00

What is the equation for unbiased sample standard deviation for a sample of size *n*?

Select one:

a. $\sqrt{\frac{\sum_{i=1}^{n}(x_i-\bar{x})^2}{n+1}}$

b. $\sqrt{\frac{\sum_{i=1}^{n}(x_i-\bar{x})^2}{n-1}}$ ✔

c. $\sqrt{\frac{\sum_{i=1}^{n}(x_i-\bar{x})^2}{n}}$

d. $\frac{\sum_{i=1}^{n}x_i}{n}$

The correct answer is:

$\sqrt{\frac{\sum_{i=1}^{n}(x_i-\bar{x})^2}{n-1}}$

Question **8**

Correct

Mark 1.00 out of 1.00

Which of the following is the equation for the standard error of the estimate in simple linear regression from a sample with *n* data points?

Select one:

a. $\sqrt{\frac{S_t}{n}}$

b. $\sqrt{\frac{S_r}{n-2}}$ ✔

c. $\sqrt{\frac{S_r}{n-1}}$

d. $\sqrt{\frac{S_t}{n-2}}$

The correct answer is:

$\sqrt{\frac{S_r}{n-2}}$

Question **9**

Correct

Mark 1.00 out of 1.00

Which of the following is a measure of how well the calculated regression line fits the data?

Select one:

a. The Standard Deviation

b. The Best Fit Residual

c. The Regression Deviation

d. The Correlation Coefficient ✔

The correct answer is: The Correlation Coefficient

Question **10**

Correct

Mark 1.00 out of 1.00

What is the equation of the regression line in simple linear regression?

Select one:

a. $y = ax$

b. $y = a_0 + a_1 x + a_2 x^2$

c. $y = a_0 + a_1 x$ ✔

d. $y = a_0 + a_1 x_1 + a_2 x_2$

The correct answer is:

$y = a_0 + a_1 x$

Question **11**

Correct

Mark 1.00 out of 1.00

Which of the following formulas can be used to find the coefficient a_1 of *x* in the best fit line from simple linear regression?

Select one:

a. $\frac{n\bar{x}\sum_{i=1}^{n} x_i y_i - \sum_{i=1}^{n} x_i \sum_{i=1}^{n} y_i}{n\sum_{i=1}^{n} y_i^2 - (\sum_{i=1}^{n} y_i)^2}$

b. $\frac{n\sum_{i=1}^{n} x_i y_i - \sum_{i=1}^{n} x_i \sum_{i=1}^{n} y_i}{n\sum_{i=1}^{n} x_i^2 - (\sum_{i=1}^{n} x_i)^2}$ ✔

c. $\frac{n\sum_{i=1}^{n} x_i y_i - \sum_{i=1}^{n} x_i \sum_{i=1}^{n} y_i}{n^2\sum_{i=1}^{n} x_i^2 - (\sum_{i=1}^{n} y_i)^2}$

d. $\frac{\sum_{i=1}^{n} x_i y_i - \sum_{i=1}^{n} x_i \sum_{i=1}^{n} y_i}{\sum_{i=1}^{n} x_i^2 - (\sum_{i=1}^{n} x_i)^2}$

The correct answer is:

$\frac{n\sum_{i=1}^{n} x_i y_i - \sum_{i=1}^{n} x_i \sum_{i=1}^{n} y_i}{n\sum_{i=1}^{n} x_i^2 - (\sum_{i=1}^{n} x_i)^2}$

Question **12**

Correct

Mark 1.00 out of 1.00

Which of the following best describes the residuals of regression?

Select one:

- a. The differences between the observed data values and those predicted by the regression model. ✔
- b. The base point of the regression lines in the data.
- c. The difference between the mean and the standard deviation.
- d. The mean of differences between the observed variables of regression.

The correct answer is: The differences between the observed data values and those predicted by the regression model.

◄ Homework 7

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Homework 10 ►