

Examrace

Statistics MCQs-Numerical Descriptive Statistics and Sampling Part 7

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121. You have been given the following calculated values for a set of data containing x and y values: $\sum x = 45$, $\sum y = 76$, $\sum xy = 473$, $\sum x^2 = 284$, $\sum y^2 = 794$ and $n = 8$. What is the value of the intercept of the regression line between x and y?

- a. -1.115
- b. 1.212
- c. -2.936
- d. -0.821
- e. 1.444

Answer: B

122. You have been given the following calculated values for a set of data containing x and y values: $\sum x = 46$, $\sum y = 75$, $\sum xy = 473$, $\sum x^2 = 284$, $\sum y^2 = 794$ and $n = 8$. What is the value of the intercept of the regression line between x and y?

- a. -1.115
- b. 1.212
- c. -2.936
- d. -0.821
- e. 1.444

Answer: C

123. You have been given the following calculated values for a set of data containing x and y values: $\sum x = 46$, $\sum y = 76$, $\sum xy = 472$, $\sum x^2 = 284$, $\sum y^2 = 794$ and $n = 8$. What is the value of the intercept of the regression line between x and y?

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- b. 1.212
- c. -2.936

* d. -0.821

e. 1.444

124. Which of the following statements is correct?

- a. If X and Y have a correlation coefficient of 0.99, then X and Y are unrelated
- b. If the covariance between X and Y is a large negative number, then X and Y have no linear relationship
- c. The least squares regression line can be used to forecast values of Y for any given value of X
- d. The smaller the sum of squared residuals, the more confidence we will have in our forecasted values of Y
- e. None of the above are correct

Answer: D

125. If the sample correlation coefficient between x and y is -1 (i.e.. $r = -1$) then we can be sure that:

- a. None of the points in the sample will lie on the least squares regression line.
- b. The relationship between x and y is a perfect positive linear relationship.
- c. The true value of the population correlation coefficient is also equal to -1.
- d. All the points in the sample will lie on the least squares regression line.
- e. None of the above

Answer: D

126. If X and Y have a large positive covariance and a coefficient of correlation near 1 then we can say that:

- a. X and Y have a strong positive non-linear relationship
- b. X and Y have a strong negative linear relationship
- c. X and Y have a weak positive linear relationship
- d. X and Y have a strong positive linear relationship
- e. None of the above

Answer: D

127. The correlation coefficient is used to determine:

- * a. The strength of the linear relationship between x and y

- b. The least squares estimates of the regression parameters
- c. The predicted value of y for a given value of x
- d. The coefficient of variation
- e. None of the above

128. In regression analysis, the residuals represent the:

- a. Difference between the actual y values and their predicted values
- b. Difference between the actual x values and their predicted values
- c. Square root of the coefficient of correlation
- d. Change in y per unit change in x
- e. None of the above

Answer: A

129. In simple linear regression, which of the following statements indicate no linear relationship between the variables x and y ?

- a. Coefficient of correlation is 1
- b. The correlation coefficient is 0
- c. Sum of squares for error is 0
- d. Covariance is relatively large
- e. None of the above

Answer: B

130. Which of the following statements about the correlation coefficient is correct?

- a. it is a number that indicates the direction of the relationship between the dependent variable y and the independent variable x
- b. it is a number that indicates the strength of the relationship between the dependent variable y and the independent variable x
- c. both a and b are correct
- d. neither a nor b is correct
- e. None of the above are correct

Answer: C

131. If the correlation coefficient, r , is equal to 0, then:

- a. the slope of the least squares regression line is zero

- b. there is no linear relationship between the dependent variable y and the independent variable x
- c. the covariance will also be 0 or close to 0
- d. all of the above are correct
- e. None of the above are correct

Answer: D

132. If all data points (pairs of x and y observations) lie on a perfectly straight line sloping upwards, the correlation coefficient is equal to:

- a. + 1
- b. -1
- c. 0
- d. + 2
- e. None of the above

Answer: A

133. If all data points (pairs of x and y observations) lie on a perfectly straight line sloping downwards, the correlation coefficient is equal to:

- a. + 1
- b. -1
- c. 0
- d. + 2
- e. None of the above

Answer: B

134. Which of the following errors can be reduced by good randomization techniques and increasing the sample size?

- a. Data acquisition error
- b. Sampling error
- c. Non-response error
- d. Selection bias
- e. None of the above

Answer: B

135. During a particular sampling process great care was taken to eliminate all non-sampling error. However, there will still be a difference between the population mean and the sample mean. This difference is due to

- a. non-response error
- b. selection bias
- c. data acquisition error
- d. sampling error
- e. None of the above

Answer: D

136. Rob, a data-capturer with STATS SA, incorrectly records an age of 52 as 25. Which kind of error is this an example of?

- a. sampling error
- b. selection bias
- c. data acquisition error
- d. non-response error
- e. None of the above

Answer: C

137. When the respondents to a questionnaire have different characteristics from those who did not choose to participate in the survey, the survey will likely suffer from which kind of error?

- a. sampling error
- b. selection bias
- c. data acquisition error
- d. non-response error
- e. None of the above

Answer: D

138. Which of the following statements is/are correct?

- a. a non-sampling error may be caused by the wording of a questionnaire
- b. selection bias occurs when some respondents choose not to answer a questionnaire
- c. data acquisition error occurs when a sample is not representative of the population being studied

- d. all of the above statements are correct
- e. None of the above

Answer: A

139. Which of the following errors is made when data collected in a survey is entered incorrectly by the data capturer?

- a. sampling error
- b. selection bias
- c. data acquisition error
- d. non-response error
- e. None of the above

Answer: C

140. Which of the following exhibits the characteristics of sampling error?

- a. an estimate of the average wages of 10,000 employees using a sample of 400 employees
- b. answers to the question, "Do you abuse your children?"
- c. a person receives a questionnaire via email and deletes it without replying
- d. a data capturer enters the response to a certain question incorrectly
- e. None of the above

Answer: A

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