

STATISTICS WORKSHEET-3

Q1 to Q9 have only one correct answer. Choose the correct option to answer your question.

1. Which of the following is the correct formula for total variation?
 - a) Total Variation = Residual Variation – Regression Variation
 - b) Total Variation = Residual Variation + Regression Variation**
 - c) Total Variation = Residual Variation * Regression Variation
 - d) All of the mentioned
2. Collection of exchangeable binary outcomes for the same covariate data are called _____ outcomes.
 - a) random
 - b) direct
 - c) binomial**
 - d) none of the mentioned
3. How many outcomes are possible with Bernoulli trial?
 - a) 2**
 - b) 3
 - c) 4
 - d) None of the mentioned
4. If H_0 is true and we reject it is called **FLIP ROBO**
 - a) Type-I error**
 - b) Type-II error
 - c) Standard error
 - d) Sampling error
5. Level of significance is also called:
 - a) Power of the test
 - b) Size of the test**
 - c) Level of confidence
 - d) Confidence coefficient
6. The chance of rejecting a true hypothesis decreases when sample size is:
 - a) Decrease
 - b) Increase**
 - c) Both of them
 - d) None
7. Which of the following testing is concerned with making decisions using data?
 - a) Probability
 - b) Hypothesis**
 - c) Causal
 - d) None of the mentioned
8. What is the purpose of multiple testing in statistical inference?
 - a) Minimize errors
 - b) Minimize false positives
 - c) Minimize false negatives
 - d) All of the mentioned**

9. Normalized data are centred at ____ and have units equal to standard deviations of the original data

- a) 0
- b) 5
- c) 1
- d) 10

Q10 and Q15 are subjective answer type questions, Answer them in your own words briefly.

10. What Is Bayes' Theorem?

The Bayes theorem is a mathematical method for calculating conditional probability, named after British mathematician Thomas Bayes who lived in the 18th century. The likelihood of a result happening dependent on the likelihood of an earlier outcome occurring is known as conditional probability. The Bayes theorem offers a mechanism to update probability for current predictions or hypotheses in light of fresh or additional data. The Bayes theorem may be used in finance to assess the risk associated with loaning money to potential borrowers.

11. What is z-score?

A Z-score is a numerical measurement that describes a value's relationship to the mean of a group of values. Z score is measured in terms of standard deviations from the mean. If a Z-score is 0, it indicates that the data point's score is identical to the mean score. A Z-score of 1.0 would indicate a value that is one standard deviation from the mean. Z-scores may be positive or negative, with a positive value indicating the score is above the mean and a negative score indicating it is below the mean.

12. What is t-test?

The t-test is a kind of inferential statistic that is used to assess whether there is a significant difference between the means of two groups that may be connected in some ways. It's typically utilised when data sets, like the one resulting from tossing a coin 100 times, would follow a normal distribution and could have unknowable variances. An assumption that applies to a population may be tested using a t-test, which is used as a hypothesis testing method.

13. What is percentile?

In statistics, a percentile (or centile) is the score below which a certain percentage of scores in its frequency distribution falls (exclusive definition) or the score at or below which a given percentage falls (inclusive definition). For instance, the 50th percentile (also known as the median) is the score at or below which 50% of the distribution's scores can be found.

14. What is ANOVA?

The statistical analysis tool known as analysis of variance (ANOVA) divides the observed aggregate variability present in a data set into two categories: systematic variables and random components. The random factors have no statistical impact on the presented data set, whereas the systematic factors do. The ANOVA test is used by analysts to ascertain how independent factors in a regression analysis affect the dependent variable.

15. How can ANOVA help?

ANOVA, or its non-parametric counterparts, allow you to determine if differences in mean values between three or more groups are by chance or if they are indeed significantly different. ANOVA is particularly useful when analyzing the multi-item scales common in market research.