Statistics Worksheet-3

1. b. Total Variation = Residual Variation + Regression Variation
2. c. binomial
3. a. 2
4. a. Type-I error
5. b. Size of the test
6. b. Increase
7. b. Hypothesis
8. d. All of the mentioned
9. a. 0

10. Bayes' Theorem states that the conditional probability of an event, based on the occurrence of another event, is equal to the likelihood of the second event given the first event multiplied by the probability of the first event.

11. 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.

12. A t-test is an inferential statistic used to determine if there is a significant difference between the means of two groups and how they are related. T-tests are used when the data sets follow a normal distribution and have unknown variances.

13. A percentile is a comparison score between a particular score and the scores of the rest of a group. It shows the percentage of scores that a particular score surpassed. For example, if you score 75 points on a test, and are ranked in the 85th percentile, it means that the score 75 is higher than 85% of the scores.

14. Analysis of variance (ANOVA) is an analysis tool used in statistics that splits an observed aggregate variability found inside a data set into two parts: systematic factors and random factors. The systematic factors have a statistical influence on the given data set, while the random factors do not.

15. Advantages of ANOVA :
    - ANOVA is helpful for testing three or more variables. It is similar to multiple two-sample t-tests. However, it results in fewer type I errors and is appropriate for a range of issues.
    - ANOVA groups differences by comparing the means of each group and includes spreading out the variance into diverse sources.
    - Compared with using multiple t-tests, one-way and two-way ANOVA require fewer measurements to discover significant effects (i.e., the tests are said to have more power).