# Statistics– WORKSHEET 6

## 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?
   1. Total Variation = Residual Variation – Regression Variation
   2. Total Variation = Residual Variation + Regression Variation
   3. Total Variation = Residual Variation \* Regression Variation
   4. All of the mentioned

**Answer:** b) Total Variation= Residual Variation + Regression Variation

1. Collection of exchangeable binary outcomes for the same covariate data are called outcomes.
   1. random
   2. direct
   3. binomial
   4. none of the mentioned

**Answer:** c) binomial

1. How many outcomes are possible with bernoulli trial?
   1. 2
   2. 3
   3. 4
   4. None of the mentioned

**Answer:** (a) 2

1. If Ho is true and we reject it, then it is called:
2. Type-I error



1. Type-II error
2. Standard error
3. Sampling error

**Answer:** (a) Type-I error

1. Level of significance is also called:
2. Power of the test
3. Size of the test
4. Level of confidence
5. Confidence coefficient

**Answer:** (b) Size of the test

1. The chance of rejecting a true hypothesis decreases when sample size:
2. Decreases
3. Increases
4. Both of them
5. None of them

**Answer:** (b) Increases

1. Which of the following testing is concerned with making decisions using data?
2. Probability
3. Hypothesis
4. Causal
5. None of the mentioned

**Answer:** (b) Hypothesis

1. What is the purpose of multiple testing in statistical inference?
2. Minimize errors
3. Minimize false positives
4. Minimize false negatives
5. All of the mentioned

**Answer:** (d) All of the mentioned

1. Normalized data is centered at and has unit equal to standard deviations of the original data.

(a) 0 (b) 5

(c) 1 (d) 10

**Answer:** (a) 0

## Q10and Q15 are subjective answer type questions, Answer them in your own words briefly.

1. What Is Bayes Theorem?

**Answer:** Bayes Theorem is a way of finding a probability when we know certain other probabilities.

P(A|B)= P(A)P(B|A) / P(B)

* how often A happens given that B happens, written P(A|B),
* how often B happens given that A happens, written P(B|A)
* how likely A is on its own, written P(A)
* how likely B is on its own, written P(B)

1. What is z-score?

**Answer:** z-score measures the distance between an observation and the mean, measured in units of standard deviation. In other words, z-score is the number of standard deviations there are between a given value and the mean of the data set. If X is a normally distributed random variable with mean μ and standard deviation σ, then the distribution of:

Z=

* A z-score of less than 0 represents an element less than the mean.
* A z-score greater than 0 represents an element greater than the mean.
* A z-score equal to 0 represents an element equal to the mean.

1. What is t-test?

**Answer:** A t-test is a statistical test that is used to compare the means of two groups. It is often used in hypothesis testing to determine whether a process or treatment actually has an effect on the population of interest, or whether two groups are different from one another.

1. What is a percentile?

**Answer:** 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.

The percentile rank is calculated using the formula:

R =

Where P is the desired percentile and N is the number of data points.

1. What is ANOVA?

**Answer:** ANOVA stands for Analysis of Variance. One-Way Analysis of Variance tells you if there are any statistical differences between the means of three or more independent groups.

1. How can ANOVA help?

**Answer:** The one-way ANOVA can help you know whether or not there are significant differences between the means of your independent variables (such as the first example: age, sex, income). When you understand how each independent variable’s mean is different from the others, you can begin to understand which of them has a connection to your dependent variable (landing page clicks), and begin to learn what is driving that behavior