Statistics– WORKSHEET 6

1]B

2]C

3]A

4]A

5]D

6]B

7]B

8]

9]A

10. What Is Bayes' Theorem?

Ans - Bayes' theorem, named after 18th-century British mathematician Thomas Bayes, is a mathematical formula for determining conditional probability. Conditional probability is the likelihood of an outcome occurring, based on a previous outcome occurring. Bayes' theorem provides a way to revise existing predictions or theories (update probabilities) given new or additional evidence

Formula For Bayes' Theorem

*P*(*A*∣*B*)=*P*(*B*)*P*(*A*⋂*B*)​=*P*(*B*)*P*(*A*)⋅*P*(*B*∣*A*)

where:

P(A)= The probability of A occurring

P(B)= The probability of B occurring

P(A∣B)=The probability of A given B

P(B∣A)= The probability of B given A

P(A⋂B))= The probability of both A and B occurring

11. What is z-score?

Ans -A **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.

The **formula** for calculating a **z**-**score** is is **z** = (x-μ)/σ.

12. What is t-test?

Ans- A t-test is a type of inferential [statistic](https://www.investopedia.com/terms/s/statistics.asp) used to determine if there is a significant difference between the means of two groups, which may be related in certain features. It is mostly used when the data sets, like the data set recorded as the outcome from flipping a coin 100 times, would follow a normal distribution and may have unknown variances. A t-test is used as a hypothesis testing tool, which allows testing of an [assumption](https://www.investopedia.com/ask/answers/073115/what-assumptions-are-made-when-conducting-ttest.asp) applicable to a population.

13. What are percentiles?

Percentile” is in everyday use, but there is no universal definition for it. The most common definition of a percentile is a number where a certain percentage of scores fall below that number. You might know that you scored 67 out of 90 on a test. But that figure has no real meaning unless you know what percentile you fall into. If you know that your score is in the 90th percentile, that means you scored better than 90% of people who took the test.

14.What is ANOVA?

Ans- Analysis of variance (ANOVA) is a collection of [statistical models](https://en.wikipedia.org/wiki/Statistical_model) and their associated estimation procedures (such as the "variation" among and between groups) used to analyze the differences among group means in a [sample](https://en.wikipedia.org/wiki/Sample_(statistics)). ANOVA was developed by the [statistician](https://en.wikipedia.org/wiki/Statistician) [Ronald Fisher](https://en.wikipedia.org/wiki/Ronald_Fisher). The ANOVA is based on the [law of total variance](https://en.wikipedia.org/wiki/Law_of_total_variance), where the observed [variance](https://en.wikipedia.org/wiki/Variance) in a particular variable is partitioned into components attributable to different sources of variation

15. How can ANOVA help?

**ANOVA** checks the impact of one or more factors by comparing the means of different samples. **We can** use **ANOVA to** prove/disprove if all the medication treatments were equally effective or not.

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