

### Statistics Worksheet-3 Answers

1. B
2. D
3. A
4. A
5. D
6. B
7. B
8. D
9. A

10. **Bayes Theorem:** - Bayes' theorem describes the probability of occurrence of an event related to any condition. It is also considered for the case of conditional probability. Bayes theorem is also known as the formula for the probability of "causes". For example: if we have to calculate the probability of taking a blue ball from the second bag out of three different bags of balls, where each bag contains three different colour balls viz. red, blue, black.

Formula:  $P(A|B) = P(B|A) P(A)/P(B)$

11. **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 deviation from the mean. If Z-score is 0, it indicates that the data point's score is identical to the mean.  
Formula:  $(\text{Score} - \text{Mean}) / \text{Standard Deviation}$
12. **t-test :** - A t-test is a statistical test that compare the means of two samples. It is used in hypothesis testing, with a null hypothesis that the difference in group means is zero and an alternate hypothesis that the difference in group means is different from zero. There are three t-tests to compare means: a one-sample t-test, a two-sample t-test and a paired t-test.
13. **Percentile:** - In Statistics, a percentile is a term that describes how a score compares to other from the same set. While there is no universal definition of percentile, it is commonly expressed as the percentage of values in a set of data scores that that fall below a given value. There are 3 types of percentiles: The 25<sup>th</sup> percentile is also known as the first quartile (Q1), the 50<sup>th</sup> percentile is also known as the median or second quartile (Q2) and the 75<sup>th</sup> percentile is also known as the third quartile (Q3) .
14. **ANOVA:** - Anova (Analysis of variance) is a statistical technique that is used to check if the means of two or more groups are significantly different from each other. ANOVA checks the impact of one or more factors by comparing the means of different samples.

15. ANOVA is useful for testing three or more variables. It is similar to multiple two-sample t-tests. However, it results in fewer type 1 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.