

### STATISTICS WORKSHEET 3

1. b)
2. c)
3. a)
4. a)
5. b)
6. b)
7. b)
8. d)
9. a)
10. Bayes' Theorem is named after a British mathematician Thomas Bayes. It is basically a mathematical formula to calculate the conditional probability. This theorem allows you to update the probabilities of any event by adding new information. It is often used in finance for calculating or updating risk evaluation. Formula for Bayes' theorem is-

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

11. Z score is also called a standard score. Z score gives you the idea of how far from the mean a data point is. It is a measure of how many standard deviations above or below the population mean a raw score is. It is simply a numerical measurement that describes a value's relationship to the mean of the group of values and is measured in terms of standard deviations from the mean. If the Z score is 0 it means that the data score is same as the mean score. A Z score can be positive or

negative. Positive one indicating that the score is above the mean and the negative Z score indicates that it is below the mean.

12. 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.
13. Percentile is defined as the value below which a given percentage falls under. For example, in a group of 20 children, Ben is the 4th tallest and 80% of the children are shorter than you. Hence, it means that Ben is at the 80th percentile. It is most commonly used in competitive exams such as SAT, LSAT, etc. The percentile formula is:  
 **$\text{Percentile} = (n/N) \times 100$**
14. An ANOVA test is a type of statistical test used to determine if there is a statistically significant difference between two or more categorical groups by testing for differences of means using variance.
15. You might use Analysis of Variance (ANOVA) as a marketer, when you want to test a particular hypothesis. You would use ANOVA to help you understand how your diverse groups react, with a null hypothesis for the test that the means of the different groups are equal. If there is a statistically significant result, then it means that the two populations are unequal (or different).