1. B
2. C
3. A
4. A
5. C
6. B
7. B
8. D
9. A
10. Bayes, is a mathematical formula for determining conditional probability. Conditional probability is the likelihood of an outcome occurring, based on a previous outcome having occurred in similar circumstances. Bayes' theorem provides a way to revise existing predictions or theories (update probabilities) given new or additional evidence. For example, Bayes' theorem can be used to determine the accuracy of medical test results by taking into consideration how likely any given person is to have a disease and the general accuracy of the test. Bayes' theorem relies on incorporating prior probability distributions in order to generate posterior probabilities. Prior probability, in Bayesian statistical inference, is the probability of an event occurring before new data is collected. In other words, it represents the best rational assessment of the probability of a particular outcome based on current knowledge before an experiment is performed. Posterior probability is the revised probability of an event occurring after taking into consideration the new information. Posterior probability is calculated by updating the prior probability using Bayes' theorem. In statistical terms, the posterior probability is the probability of event A occurring given that event B has occurred.

11. Simply put, a z-score (also called a standard score) gives you an idea of how far from the mean a data point is. But more technically it's a measure of how many standard deviations below or above the population mean a raw score is. A z-score can be placed on a normal distribution curve. Z-scores range from -3 standard deviations (which would fall to the far left of the normal distribution curve) up to +3 standard deviations (which would fall to the far right of the normal distribution curve). In order to use a z-score, you need to know the mean μ and also the population standard deviation σ. Z-scores are a way to compare results to a "normal" population. Results from tests or surveys have thousands of possible results and units; those results can often seem meaningless. For example, knowing that someone's weight is 150 pounds might be good information, but if you want to compare it to the "average" person's weight, looking at a vast table of data can be overwhelming (especially if some weights are

recorded in kilograms). A z-score can tell you where that person's weight is compared to the average population's mean weight.

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. You want to know whether the mean petal length of iris flowers differs according to their species. You find two different species of irises growing in a garden and measure 25 petals of each species. You can test the difference between these two groups using a t-test. A t test can only be used when comparing the means of two groups. The t test is a parametric test of difference, meaning that it makes the same assumptions about your data as other parametric tests. The t test assumes your data:

    - are independent
    - are (approximately) normally distributed
    - have a similar amount of variance within each group being compared (a.k.a. homogeneity of variance)

    When choosing a t test, you will need to consider two things: whether the groups being compared come from a single population or two different populations, and whether you want to test the difference in a specific direction.

    If the groups come from a single population (e.g., measuring before and after an experimental treatment), perform a paired t test.

    If the groups come from two different populations (e.g., two different species, or people from two separate cities), perform a two-sample t test

    If there is one group being compared against a standard value (e.g., comparing the acidity of a liquid to a neutral pH of 7), perform a one-sample t test

    If you only care whether the two populations are different from one another, perform a two-tailed t test.

    f you want to know whether one population mean is greater than or less than the other, perform a one-tailed t test.

    A larger t value shows that the difference between group means is greater than the pooled standard error, indicating a more significant difference between the groups.

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. A quick definition of ANOVA is that it is a statistical analysis technique in which data sets are compared and measured to determine their significance. This test effectively measures how significant the interaction is between variables; they analyze the variance. These tests start by creating a null hypothesis (Ho), which states that there is no significant difference between the variables being measured. If the test yields statistically significant results, then the tester can reject the null hypothesis, and accept the alternative hypothesis (H1), stating that the interaction between variables is significant. The F statistic is the ANOVA coefficient which tells us whether or not the results are significant. An F value around 1 denotes little to no difference in values; meaning there is not a significant variance between the groups.
15. The ANOVA test allows a comparison of more than two groups at the same time to determine whether a relationship exists between them. The result of the ANOVA formula, the F statistic (also called the F-ratio), allows for the analysis of multiple groups of data to determine the variability between samples and within samples. 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. The ANOVA test allows a comparison of more than two groups at the same time to determine whether a relationship exists between them. The result of the ANOVA formula, the F statistic (also called the F-ratio), allows for the analysis of multiple groups of data to determine the variability between samples and within samples.