STATISTICS WORKSHEET- 6

Q1 to Q9 have only one correct answer. Choose the correct option to answer your question.

1. Which of the following can be considered as random variable?
   a) The outcome from the roll of a die
   b) The outcome of flip of a coin
   c) The outcome of exam
   d) All of the mentioned
2. Which of the following random variable that take on only a countable number of possibilities?
   a) Discrete
   b) Non Discrete
   c) Continuous
   d) All of the mentioned
3. Which of the following function is associated with a continuous random variable?
   a) pdf
   b) pmv
   c) pmf
   d) all of the mentioned
4. The expected value or _____ of a random variable is the center of its distribution.
   a) mode
   b) median
   c) mean
   d) bayesian inference
5. Which of the following of a random variable is not a measure of spread?
   a) variance
   b) standard deviation
   c) empirical mean
   d) all of the mentioned
6. The _____ of the Chi-squared distribution is twice the degrees of freedom.
   a) variance
   b) standard deviation
   c) mode
   d) none of the mentioned
7. The beta distribution is the default prior for parameters between _____
   a) 0 and 10
   b) 1 and 2
   c) 0 and 1
   d) None of the mentioned
8. Which of the following tool is used for constructing confidence intervals and calculating standard errors for difficult statistics?
   a) baggyer
   b) bootstrap
   c) jacknife
   d) none of the mentioned

9. Data that summarize all observations in a category are called _____ data.
   a) frequency
   b) summarized
   c) raw
   d) none of the mentioned

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

10. What is the difference between a boxplot and histogram?
11. How to select metrics?
12. How do you assess the statistical significance of an insight?
13. Give examples of data that doesnot have a Gaussian distribution, nor log-normal.
14. Give an example where the median is a better measure than the mean.
15. What is the Likelihood?

ANSWERS

Answer 10. Histograms and box plots are very similar in that they both help to visualize and describe numeric data. Although histograms are better in determining the underlying distribution of the data, box plots allow you to compare multiple data sets better than histograms as they are less detailed and take up less space.

Answer 11. Here's what you should do: prioritize objectives, examine which metric consistently predicts their achievement, and identify which activities influence predictors, in that order. And continuously re-evaluate this process to keep up with the times.

Answer 12. To assess statistical significance, you would use hypothesis testing. The null hypothesis and alternate hypothesis would be stated first. Second, you'd calculate the p-value, which is the likelihood of getting the test's observed findings if the null hypothesis is true. Finally, you would select the threshold of significance (alpha) and reject the null hypothesis if the p-value is smaller than the alpha — in other words, the result is statistically significant.

Answer 13. Any type of categorical data won't have a gaussian distribution or lognormal distribution. Exponential distributions - eg. the amount of time that a car battery lasts or the amount of time until an earthquake occurs.

Answer 14. Income is the classic example of when to use the median instead of the mean because its distribution tends to be skewed. The median indicates that half of all incomes fall below 27581, and half are above it. For these data, the mean overestimates where most household incomes fall.

Answer 15. The likelihood is the probability that a particular outcome is observed when the true value of the parameter is, equivalent to the probability mass on; it is not a probability density over the parameter. The likelihood should not be confused with, which is the posterior probability of given the data.