Quiz 2

Score: 14/14

1. What is the mean of the numbers 2, 4, 6, 8, and 10?

- 4
- 6 ✓
- 8
- 10

Explanation

The mean is calculated by adding up all the numbers and then dividing by the total count. In this case, (2+4+6+8+10)/5 = 6.

2. What is the formula to calculate standard deviation for a population?

- $\sqrt{(\Sigma(xi - \mu)^2 / N)}$ ✓
- $\Sigma(xi - \mu) / (N-1)$
- $\Sigma(xi - \mu)^2 / N$
- $\sqrt{(\Sigma(xi - \mu)^2 / (N-1))}$

Explanation

The formula for population standard deviation is the square root of the sum of the squared differences between each data point and the population mean, divided by the total count of the population data points.

3. In statistics, what does 'p-value' represent?

- The probability of rejecting the null hypothesis when it is true
- The probability of accepting the null hypothesis when it is false
- The probability of obtaining test results at least as extreme as the observed results, assuming the null hypothesis is true ✓
- The probability of obtaining exact test results

Explanation

The p-value is the probability of obtaining test results at least as extreme as the ones observed during the test, assuming that the null hypothesis is true.

4. **Which of the following is a measure of central tendency?**

- Standard deviation
- Mean
- Variance
- Skewness

Explanation

Standard deviation measures the dispersion of the data, while mean, median, and mode are measures of central tendency.

5. **What is the median of the following set of numbers: 3, 4, 5, 7, 8, 9, 11?**

- 5
- 7
- 8
- 9

Explanation

The median is the middle value when the data is arranged in ascending order. In this case, the median is 7.

6. **In statistical hypothesis testing, what does Type I error refer to?**

- Rejecting the null hypothesis when it is true
- Rejecting the alternative hypothesis when it is true
- Accepting the null hypothesis when it is false
- Accepting the alternative hypothesis when it is false

Explanation

A Type I error occurs when the null hypothesis is rejected when it is actually true, indicating that the test results incorrectly lead to the conclusion that a condition is present.

7. **Which probability distribution represents the number of successes in a fixed number of Bernoulli trials with a constant probability of success?**

- Normal distribution
- Poisson distribution

Explanation

The binomial distribution is used to model the number of successful outcomes in a fixed number of independent trials, each with the same probability of success.

Hypergeometric distribution

Binomial distribution

8. In statistical terms, what does 'skewness' refer to?

The spread of the data around the mean

The symmetry of the probability distribution

The kurtosis of the distribution

The asymmetry of the probability distribution about its mean

Explanation

Skewness is a measure of the asymmetry of the probability distribution of a real-valued random variable about its mean.

9. Which measure of central tendency is affected most by extreme values?

Mean

Median

Mode

Variance

Explanation

The mean is greatly affected by extreme values, or outliers, as it takes into account the value of each data point in the dataset.

10. What is the range of the following numbers: 7, 13, 4, 21, 9, 15, 8, 24?

21

20

19

22

Explanation

The range is the difference between the largest and smallest values in a dataset. In this case, the range is 24 - 4 = 20.

11. In statistics, which of the following best describes 'kurtosis'?

The spread of the data around the

Explanation

mean

The symmetry of the distribution

The tailedness or peakedness of the distribution

The asymmetry of the distribution

Kurtosis measures the tailedness or peakedness of a probability distribution compared to the normal distribution.

12. What is the coefficient of variation (CV) used for in statistics?

Measuring the dispersion of the data

Comparing the means of two datasets

Comparing the variability of different datasets with different means

Calculating the range of the data

Explanation

The coefficient of variation is a measure used to compare the variability of different sets of data, especially when the means are different.

13. What does the term 'confidence interval' represent in statistics?

The probability of obtaining a sample statistic

The range of values that describes the data range

An estimated range of values that likely includes an unknown population parameter

The likelihood of observing a particular outcome

Explanation

A confidence interval provides an estimated range of values which is likely to include an unknown population parameter, with a certain degree of confidence.

14. What is the purpose of a Q-Q plot in statistics?

To visualize categorical data distributions

To compare the sample distribution to a theoretical distribution

Explanation

A Q-Q plot is used to compare the distribution of a sample to a theoretical distribution, such as a normal distribution,

To identify outliers in the dataset

To compare multiple sample distributions

enabling visual assessment of the data's distribution.