

Quiz 3 (Version A) Solutions

Version B is a permutation of Version A.

1. Which of the following statement is not always true?
 - A. A point estimator $\hat{\theta}$ is said to be an unbiased estimator of parameter θ if $E(\hat{\theta}) = \theta$ for every possible value of θ .
 - B. If the estimator $\hat{\theta}$ is not unbiased of parameter θ , the difference $E(\hat{\theta}) - \theta$ is called the bias of $\hat{\theta}$.
 - C. A point estimator $\hat{\theta}$ is unbiased if its probability sampling distribution is always “centered” at the true value of the parameter θ , where “centered” here means that the median of the distribution of $\hat{\theta}$ is θ .

ANSWER: C

2. Which of the following statement is not always true?
 - A. It is necessary to know the true value of the parameter θ to determine whether the estimator $\hat{\theta}$ is unbiased.
 - B. When X is a binomial random variable with parameters n and p , the sample proportion $\hat{p} = X/n$ is an unbiased estimator of p .
 - C. When choosing among several different estimators of parameter θ , select one that is unbiased.

ANSWER: A

3. Which of the following statement is true if X_1, X_2, \dots, X_n is a random sample from a distribution with mean μ ? (select only one.)
 - A. The sample mean \bar{X} is always an unbiased estimator of μ .
 - B. The sample mean \bar{X} is an unbiased estimator of μ if the distribution is continuous and symmetric.
 - C. Any trimmed mean is an unbiased estimator of μ if the distribution is continuous and symmetric.
 - D. All of the above statements are true.

ANSWER: D