

DISCUSSION 3

In the following multiple-choice questions, please indicate the correct answer.

1. All possible samples of size n are selected from a population and the mean of each sample is determined. What is the mean of the sample means?

- A) Exactly the same as the population mean
- B) Larger than the population mean
- C) Smaller than the population mean
- D) Cannot be estimated in advance

Answer: A

2. As the size of the sample increases, what happens to the shape of the sampling means?

- A) Cannot be predicted in advance
- B) Approaches a normal distribution
- C) Positively skewed
- D) Negatively skewed

Answer: B

3. An experiment involves selecting a random sample of 256 middle managers at random for study. One item of interest is their mean annual income. The sample mean is computed to be \$35,420 and the sample standard deviation is \$2,050. What is the standard error of the mean?

- A) \$128.125
- B) \$138.36
- C) \$2,050
- D) \$8.01

Answer: A

4. Suppose a research firm conducted a survey to determine the average amount of money steady smokers spend on cigarettes during a week. A sample of 100 steady smokers revealed that the sample mean is \$20 and the sample standard deviation is \$5. What is the probability that a sample of 100 steady smokers spend between \$19 and \$21?

- A) 0.4772
- B) 0.0228
- C) 0.9544
- D) \$20

Answer: C

5. Random samples of size 49 are taken from an infinite population whose mean is 300 and standard deviation is 21. The mean and standard error of the sample mean, respectively, are:

- a. 300 and 21
- b. 300 and 3
- c. 70 and 230
- d. 49 and 21

ANSWER: b

6. A population that consists of 500 observations has a mean of 40 and a standard deviation of 15. A sample of size 100 is taken at random from this population. The standard error of the sample mean equals:
- a. 2.50
 - b. 12.50
 - c. 1.343
 - d. 1.50

ANSWER: d

7. If all possible samples of size n are drawn from an infinite population with a mean of 15 and a standard deviation of 5, then the standard error of the sample mean equals 1.0 only for samples of size
- a. 5
 - b. 15
 - c. 25
 - d. 75

ANSWER: c

8. As a general rule in computing the standard error of the sample mean, the finite population correction factor is used only if the :
- a. sample size is smaller than 10% of the population size
 - b. population size is smaller than 10% of the sample size
 - c. sample size is greater than 5% of the population size
 - d. population size is greater than 5% of the sample size

ANSWER: c

9. Consider an infinite population with a mean of 160 and a standard deviation of 25. A random sample of size 64 is taken from this population. The standard deviation of the sample mean equals:
- a. 12.649
 - b. 25.0
 - c. 2.56
 - d. 3.125

ANSWER: d

Use the following to answer questions 10-12:

An accounting firm is planning for the next tax preparation season. From last year's returns, the firm collects a systematic random sample of 100 filings. The 100 filings showed an average preparation time of 90 minutes with a standard deviation of 140 minutes.

10. What is the standard error of the mean?
- A) 14 minutes
 - B) 140 minutes
 - C) 1.4 minutes
 - D) 90 minutes

Answer: A

11. What is the probability that the mean completion time will be more than 120 minutes?

A) Approximately zero

B) 0.0832

C) 0.4168

D) 0.0162

Answer: D

12. What is the probability that the mean completion time is between 1 and 2 hours, i.e., 60 and 120 minutes?

A) Approximately 1.

B) 0.1664

C) 0.8336

D) 0.9676

Answer: D