

## LEARNING CHECK

1. Random samples, each with 50 scores, are selected from a normal population with a population mean of 85 and a standard deviation of 18. The mean is calculated for each sample. What would be the average of all the sample means? Why?

A: The average for all sample means would be about 85. This is because the mean of the sampling distribution will be equal to the population mean, which in this example is 85.

2. A distribution has  $\mu = 50$  and  $\sigma = 20$ . How does the standard error of the mean ( $\sigma_{\bar{x}}$ ) change as your sample size increases from  $n = 1$  to  $n = 4$ , to  $n = 9$ , to  $n = 16$ , to  $n = 64$ ?

A: The larger the sample size, the smaller the standard error of the mean will be. Larger samples tend to represent the populations from which they were drawn better. This is because as the sample size increases, the denominator of the standard error formula will also increase. When the denominator of any fraction is increased, the quotient is smaller.

3. Which of the following samples would have the largest standard error of the mean?

- a)  $n = 25$  scores from a population with  $\sigma = 10$
- b)  $n = 25$  scores from a population with  $\sigma = 20$
- c)  $n = 100$  scores from a population with  $\sigma = 10$
- d)  $n = 100$  scores from a population with  $\sigma = 20$

A: b