LEARNING CHECK

Use the following information to answer question 1:

A researcher has seven datapoints:

10, 7, 9, 3, 10, 6, 4

The population mean is 5.

1. Is her sample data different from the population?

A:

First, state the hypotheses:

$$H_o: \mu_{sample} = \mu_{population}$$
$$H_i: \mu_{sample} \neq \mu_{population}$$

Second, we need to select an alpha level. Sticking with convention, let's use .05.

Third, we need to compute our test statistic. Here is what we need to do this:

a) The sample mean is 7.

b) The population mean is 5.

c) We need to find the estimated standard error of the mean:

$$S_{x\text{-bar}} = \frac{\text{estimated standard deviation for a population}}{\sqrt{\text{sample size (N)}}}$$
$$= \frac{2.83}{\sqrt{7}}$$
$$= 1.07$$

d)

$$t = \frac{\bar{x} - \mu}{s_{x-bar}}$$

$$t = \frac{7 - 5}{1.07}$$

$$t = 1.87$$

(Continued)