Answer on Question #51424 – Math – Statistics and Probability

Assume that the population proportion is 0.80.

1. Compute the standard error of the sample proportion for a sample size of 1600.

2. Compute the standard error of the sample proportion for a sample size of 10.

Solution

1. In given problem we have the following data, $\hat{p} = 0.80, n = 1600$. In order to determine the standard error of the sample proportion we apply the following formula:

$$SE_p = \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$$

Substitute all values into the above formula:

$$SE_p = \sqrt{\frac{0.8(1-0.8)}{1600}} = \sqrt{\frac{0.8 \cdot 0.2}{1600}} = 0.01$$

Thus, the standard error of the sample proportion for a sample size is equal to 0.01.

2. In given problem we have the following data, $\hat{p} = 0.80, n = 10$. In order to determine the standard error of the sample proportion we apply the same formula for calculation.

$$SE_p = \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$$

Substitute into the formula noted above values.

$$SE_p = \sqrt{\frac{0.8(1-0.8)}{10}} = \sqrt{\frac{0.8 \cdot 0.2}{10}} = 0.1265$$

Thus, the standard error of the sample proportion for a sample size is equal to 0.127.