

## Answer on Question #44385 – Math - Statistics and Probability

### Problem.

In a random sample of 12 residents of Benton the mean waste recycled per person was 1.3 pound with a standard deviation of 0.25 pounds. What is the 80% confidence interval for the mean waste recycled per person?

### Solution.

Assume the population standard deviation is known.

Therefore,  $z^*$ -value for 80% confidence level equals  $z^* = 1.28$ .

If  $n = 12$  is number of residents,  $\bar{x} = 1.3$  is mean and  $\sigma = 0.25$  then the confidence interval for mean waste recycled per person is

$$\left( \bar{x} - z^* \frac{\sigma}{\sqrt{n}}; \bar{x} + z^* \frac{\sigma}{\sqrt{n}} \right).$$

and equals

$$\left( 1.3 - 1.28 \cdot \frac{0.25}{\sqrt{12}}; 1.3 + 1.28 \cdot \frac{0.25}{\sqrt{12}} \right), \text{ i.e. } (1.208; 1.392).$$

**Answer:** (1.208; 1.392).