Answer on Question #46746 – Math – Statistics and Probability

Problem.

Construct a 95% confidence interval for the population mean, μ. Assume the population has a normal distribution. A sample of 25 randomly selected students has a mean test score of 81.5 with a standard deviation of 10.2.

Solution:

For 95% confidence interval $z^* = 1.96$.

The confidence limits for the population mean are equal to $\mu \pm z^* \cdot \frac{\sigma}{\sqrt{n}}$.

Hence for $\mu = 81.5$, $\sigma = 10.2$ and $n = 25$ we will have interval

$$\left(81.5 - \frac{10.2}{\sqrt{25}}, 81.5 + \frac{10.2}{\sqrt{25}}\right) = (79.46, 83.54)$$

Answer: $(79.46, 83.54)$.