



Goal: Use \bar{x} to estimate μ , where μ is a population mean and \bar{x} is a sample mean.

Margin of Error	Confidence Interval
$E = z_{\alpha/2} \cdot \frac{\sigma}{\sqrt{n}}$	$\bar{x} - E < \mu < \bar{x} + E$

To calculate a confidence interval for the true mean of the population, follow Steps 1 to 5.

Step 1: Calculate \bar{x} of the sample.

Step 2: Find the critical value $z_{\alpha/2}$ by using the **invNorm** command.

Step 3: Use the formula to calculate the margin of error.

Step 4: Calculate the confidence interval.

Step 5: Interpret the result in complete sentences.

A SRS of 40 receivers in a football league is given on page 2.1. The standard deviation for longest reception of the population is known to be 20.39. Use this sample to estimate the mean for the longest reception for all receivers with a confidence interval of 95%.

Alternative method: TI-Nspire technology has a built-in feature to calculate the confidence interval using either the statistics.

From *Scratchpad* choose **MENU > Statistics > Confidence intervals > z Interval**. Select **Stats** for Data Input Method. Enter σ , \bar{x} , n , and confidence level.

Homework

Use the data from Problem 2 to answer each problem.

1. Find the Error for the 90% confidence interval for the mean of the receivers' average reception.
2. Find the 90% confidence interval for the mean for the receivers' average reception.
3. Find the 95% confidence interval for the mean for the receivers' average reception.
4. Find the 99% confidence interval for the mean for the receivers' long reception.
5. Find the 95% confidence interval for the mean for the receivers' yards after completion.