

CONFIDENCE INTERVALS USING THE T-DISTRIBUTION

CASIO CFX-9850GB PLUS INSTRUCTIONS

These instructions show how to calculate a confidence interval for the mean of a population from the statistics of a sample.

A random sample of 8 independent observations of a normal random variable was taken. The sum of the observations was found to be 72.8 and the sum of the squares was found to be 837.49.

An unbiased estimate of the population mean and population standard deviation can be calculated as follows:

$$\begin{aligned}\bar{x} &= \frac{\sum x}{n} = \frac{72.8}{8} = 9.1 \\ s_n^2 &= \frac{\sum x^2}{n} - \bar{x}^2 = \frac{837.49}{8} - 9.1^2 = 21.876 \\ s_{n-1}^2 &= \frac{n}{n-1} s_n^2 = \frac{8}{7} \cdot 21.876 = 25.00 \\ s_{n-1} &= 5.00\end{aligned}$$

Once these values are found, a 90% confidence interval for the population mean can be found using the following steps:

Step 1: Choose the **Stat** menu from the main menu.

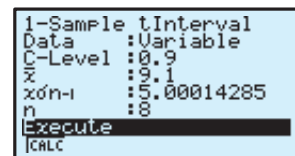
Press **F4** to select the **INTR** menu, then **F2** to select **t**.

Finally, press **F1** to select **1-S**.



Step 2: Set up the screen as shown to calculate the 90% confidence interval.

(You may need to use **F2** to change the data type from **List** to **Variable**.)



Step 3: Press **F1** to calculate the confidence interval.

So, we are 90% confident that the population mean lies between 5.751 and 12.448 grams.

