TI-83 & TI-84: Hypothesis Testing for One-Sample Mean with σ Known

The following pages contain some instructions on the usage of the TI-83/83 Plus graphing calculator.

The example used below is taken out of David Moore’s text titled “The Basic Practice of Statistics, 2nd Edition”.

Example#6.13 Executives’ blood pressures p. 330: The National Center for Health Statistics reports that the mean systolic blood pressure for males 35 to 44 years of age is 128 and the standard deviation in this population is 15. The medical director of a large company looks at the medical records of 72 executives in this age group and finds that the mean systolic blood pressure in this sample is $\bar{x} = 126.07$. Is this evidence that the company’s executives have a different mean blood pressure from the general population? As usual in this setting we make the unrealistic assumption that we know the population standard deviation. Assume that executives have the same population standard deviation $\sigma = 15$ as the general population of middle-aged males.

Press [STAT] and press two times to scroll right to the TESTS menu option. At this point, your screen should look like the screen on the left given below. Press [EDIT] to select 1:Z-Test and go into the STAT TESTS menu screen. At this point, your screen should look like the screen in the middle given below with the cursor blinking over the Data input option. You may possibly have different numbers.

While the cursor blinking over the Data input option, press [>] to move the cursor over to the Stats input option. Press [_] to select that option. At this point, your screen should look like the screen on the right given above with the cursor blinking over the Stats input option. You may possibly have different numbers.

Press [>] to scroll down to $\mu_0$; then type in 128 for the value of $\mu_0$, which is the null hypothesis. Press [>] to scroll down to $\sigma$; then type in 15 for the value of the population standard deviation. Press [>] to scroll down to $\bar{x}$: Type in 126.07 for the value of the sample mean. Press [>] to scroll down to n: Type in 72 for the value of the sample size. Press [>] to move the cursor down to $\mu \neq \mu_0 < \mu_0 > \mu_0$. Since the alternative hypothesis for this example is a two-sided alternative hypothesis, scroll over to the $\neq \mu_0$.
option and press \( \text{ENTER} \) to select that option. Press \( \downarrow \) to move the cursor down to Calculate option.

At this point, your screen should look like the screen on the left given below with the cursor blinking over the Calculate option.

![Z-Test](image)

Press \( \text{ENTER} \) to select the Calculate option. Your calculated result screen should look like the screen on the right given above.

The above computed P-value suggests that the observed \( \bar{x} = 126.07 \) does not give good evidence against \( H_0 \). Therefore we conclude that the mean systolic blood pressure of executives does not differ from the other middle-aged males.

We could also draw the standard normal distribution curve with the observed value of \( z \) and the computed P-value indicated by the shaded regions of the curve.

Press \( \text{STAT} \). Press \( \rightarrow \) two times to scroll right to the TESTS menu option. Press \( \text{ENTER} \) to select \( 1:Z-Test \) and go into the STAT TESTS menu screen. Scroll all the way down to the Calculate Draw option. Press \( \rightarrow \) to move the cursor over the Draw option. Press \( \text{ENTER} \) to select this option. Your screen should look like the screen given below.

![Z-Test and Normal Distribution](image)