Chapter 14 / **Example 7**

The *t*-test

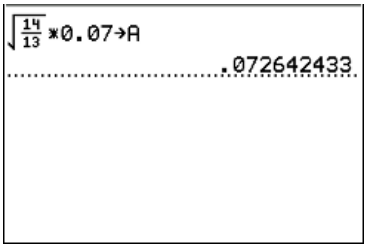
a In order to test the hypotheses H_0: $\mu = 8.2$, H1: $\mu < 8.2$ a sample of 14 is taken and the mean of the sample is found to be 8.15 and the standard deviation 0.07. Test at the 5% significance level whether the sample is from the population given or one with a smaller mean.

b The sample below is thought to have come from a normal population with a mean of 34.5. Test this belief at a 5% significance level.

34.3	30.2	29.7	34.4	33.6	35.7	34.0	33.9	35.1	34.5

Calculate $s_{n-1} = \sqrt{\frac{n}{n-1}}s_n = \sqrt{\frac{14}{13}}, 0.07 = 0.0726$ and store this value as A by pressing STO▶ ALPHA A.

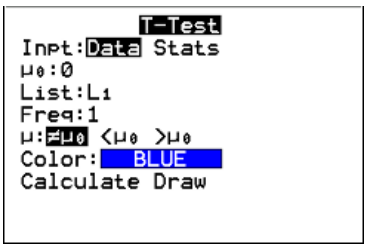
Press ENTER.



H_0: $\mu = 8.2$, H_1: $\mu < 8.2$

To calculate the *p*-value press STAT and ▶ ▶ to access the TESTS menu.

Select 2:T-Test… and press ENTER.



Choose Input: Stats

$\mu_0 = 8.2$

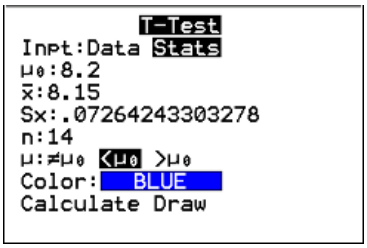
$\bar{x} = 8.15$

Sx = A

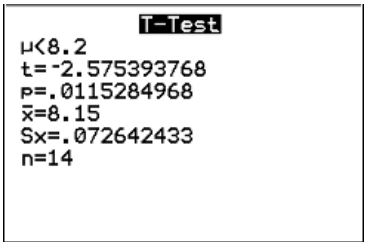
$n = 14$

$\mu < \mu_0$

Navigate down to Calculate and press ENTER.



p-value = 0.0115 < 0.05, significant so reject H_0: $\mu = 8.2$



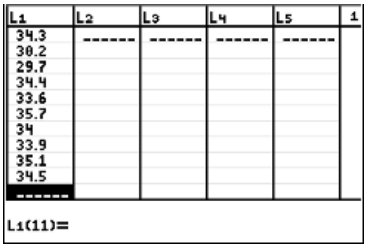
Chapter 14 / **Example 7**

The *t*-test

Press [STAT] 1:Edit and press [ENTER]

Type the values in the first column.

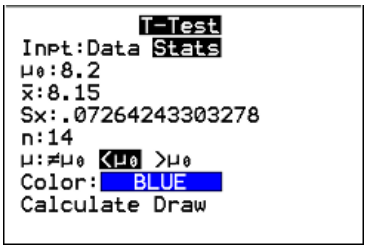
Press [ENTER] or † after each number to move to the next cell.



H_0: $\mu = 34.5$, H_1: $\mu \neq 34.5$

To calculate the *p*-value Press [STAT] and [▶] [▶] to access the TESTS menu.

Select 2:T-Test… and press [ENTER].



Choose Input: Data

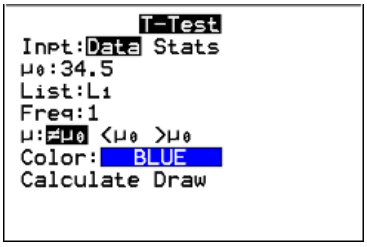
$\mu_0 = 34.5$

List: L_1

Freq: 1

$\mu \neq \mu_0$

Navigate down to Calculate and press [ENTER].



p-value = 0.161 > 0.05, not significant so insufficient evidence to reject H_0