TI-86 Inferential Statistics and Distribution Functions

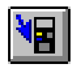
Loading and Installing Inferential Statistics and Distribution Features on Your TI-86

To load the inferential statistics and distribution features onto your TI-86, you need a computer and the TI-86 Graph Link software and cable. You also need to download the statistics program file from the Internet and save it on your computer.

Loading the Inferential Statistics and Distribution Features into TI-86 Memory

*When sending a program from your computer to the TI-86, the calculator must **not** be in Receive mode. The Receive mode is used when sending programs or data from one calculator to another.*

1. Start the TI-86 Graph Link on your computer. — WLink86.exe
2. Turn on your TI-86 and display the home screen. — [ON] [2nd] [QUIT]
3. Click on the Send button on the TI-86 Graph Link toolbar to display the Send dialog box.



4. Specify the statistics program file as the file you want to send. — infstat1.86g
5. Send the program to the TI-86. The program and its associated executable file become items on the PRGM NAMES menu.
6. Exit Graph Link.

*Other files associated with the assembly language program (**exstats**, **exstats2**, **statedit**) appear on the* PRGM NAMES *menu, but you need not do anything with them.*

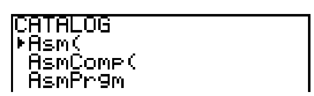
Installing the Inferential Statistics and Distribution Features for Use

Use the assembly language program **Infstats** to install the inferential statistics and distribution features directly into the TI-86's built-in functions and menus. After installation, the inferential statistics and distribution features are available each time you turn on the calculator. You do not need to reinstall them each time. When you run assembly language programs that do not install themselves into the [2nd] [MATH] [MORE] menu, their features are lost when you turn off the calculator.

All examples assume that **Infstats** is the only assembly language program installed on your TI-86. The position of STAT on the MATH menu may vary, depending on how many other assembly language programs are installed.

For assembly language programs that must be installed, up to three can be installed at a time (although the TI-86 can store as many as permitted by memory). To install a fourth, you must first uninstall (page 3) one of the others.

1. Select **Asm(** from the CATALOG to paste it to a blank line on the home screen. — [2nd] [CATLG-VARS] [F1] [▼] (move ▶ to **Asm(**) [ENTER]

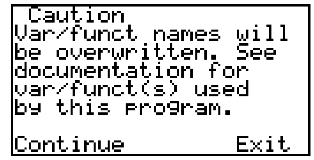


2. Select **Infstat** from the PRGM NAMES menu to paste **Infstats** to the home screen as an argument. — [PRGM] [F1] (select **Infstat** [)]

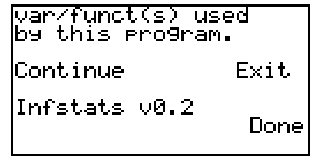
The variables that will be overwritten are listed on page 26.

❸ Run the installation program. [ENTER]

Caution: If you have values stored to variables used by the statistical features, they will be overwritten. To save your values, press [F5] to exit, store them to different variables, and then repeat this installation.



❹ Continue the installation. Your version number may differ from the one shown in the example. [F1]

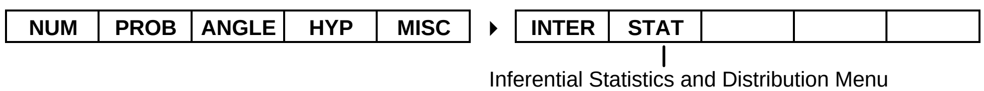


❺ Display the home screen. [CLEAR]

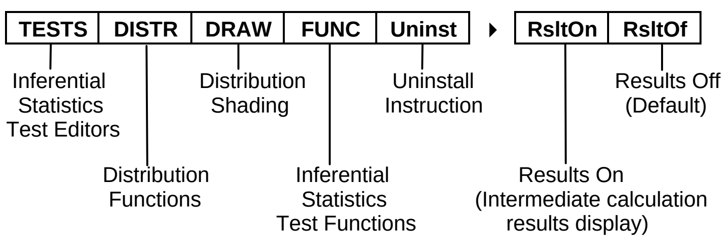
Displaying the STAT (Inferential Statistics and Distribution) Menu [2nd] [MATH] [MORE]

If other assembly language programs are installed, STAT *may be in a menu cell other than* [2nd] [MATH] [MORE] [F2].

When you install the inferential statistics and distribution program on your TI-86 and activate it, **STAT** becomes the last item on the **MATH** menu.



The STAT Menu [2nd] [MATH] [MORE] [F2]

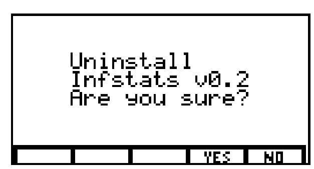


Uninstalling the Inferential Statistics and Distribution Features

*When you uninstall the inferential statistics and distribution features, the statistics assembly language programs (***Infstats, exstats***,* **exstats2***, and* **statedit***) remain in memory, but the* STAT *option is removed from the* MATH *menu.*

❶ Display the STAT menu, and then select **Uninst**. [2nd] [MATH] [MORE] [F2] [F5]

❷ If you are sure you want to uninstall, select **Yes** from the confirmation menu. The STAT menu is removed and the home screen is displayed. Your version number may differ from the one shown in the example. [F4]



Deleting the Inferential Statistics and Distribution Program from TI-86 Memory

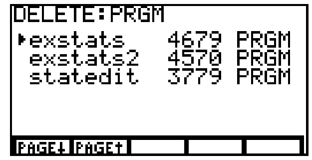
Deleting the program does not delete the variables associated with the program.

❶ Select **DELET** from the MEM menu. — [2nd] [MEM] [F2]

❷ Select **PRGM** from the MEM DELET menu. — [MORE] [F5]

❸ Move the selection cursor to **Infstats**, and then delete it. — [▼] (as needed) [ENTER]

❹ Move the selection cursor to **exstats** and then delete it. Scroll down and delete **exstats2** and **statedit**. — [▼] (as needed) [ENTER]



❺ Display the home screen. — [CLEAR]

Example: Mean Height of a Population

Estimate the mean height of a population of women, given the random sample below. Because heights among a biological population tend to be normally distributed, a *t* distribution confidence interval can be used when estimating the mean. The 10 height values below are the first 10 of 90 values, randomly generated from a normally distributed population with an assumed mean of 65 inches and a standard deviation of 2.5 inches.

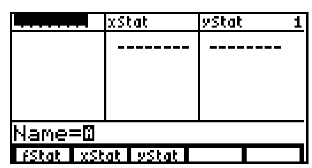
This example uses an inferential statistics editor. An editor prompts you for test information. See page 7 for another example of using an inferential statistics editor. You can also enter test parameters without using an editor. See page 8 for an example of bypassing the inferential statistics editors.

Height (in Inches) of Each of 10 Women

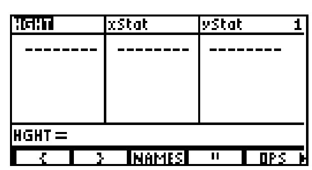
66.7	66.3	62.8	66.9	62.9	71.4	67.4	63.8	65.8	62.8

❶ Create a new list column. The 🅰 cursor indicates that alpha-lock is on. The existing list name columns shift to the right. — [2nd] [STAT] [F2] [▲] [2nd] [INS]

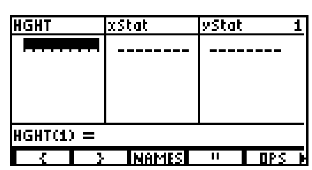
Note: Your statistics editor may not look like the one pictured here, depending on the lists you have already stored.



❷ Enter the list name at the **Name=** prompt. The list to which you will store the women's height data is created. — [H] [G] [H] [T] [ENTER]



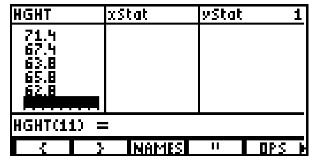
❸ Move the cursor onto the first row of the list. **HGHT(1)=** is displayed on the bottom line. — [▼]



❹ Enter the first height value. As you enter it, it is displayed on the bottom line.

The value is displayed in the first row, and the rectangular cursor moves to the next row. Enter the other nine height values the same way.

66 [.] **7** [ENTER]

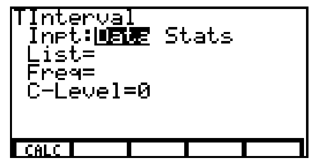


❺ Display the inferential statistics editor for **TIntl** (TInterval) from the STAT TESTS menu.

[EXIT] [2nd] [MATH] [MORE] [F2] [F1] [MORE] [F3]

❻ Select **Data** in the **Inpt** field.

If **Stats** is selected, press [◄] [ENTER]



❼ Enter the test requirements:

- Set alpha-lock and enter the **List** name.

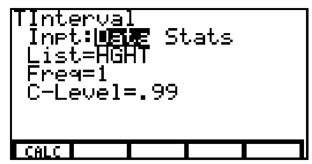
  [▼] [ALPHA] [ALPHA] [H] [G] [H] [T]

- Enter 1 at the **Freq=** prompt.

  [▼] **1**

- Enter a 99 percent confidence level at the **C-Level=** prompt.

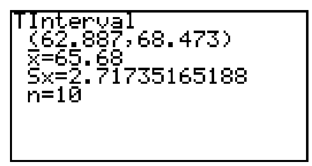
  [▼] [.] **99**



❽ Calculate the test. The results are displayed on the home screen.

Note: Press [EXIT], [CLEAR], or [ENTER] to clear the results from the screen.

[F1]



Interpreting the Results

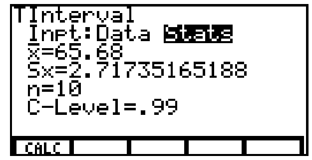
The first line **(62.887,68.473)** shows that the 99 percent confidence interval for the population mean is between about 62.9 inches (5 feet 2.9 inches) and 68.5 inches (5 feet 8.5 inches). This is about a 5.6-inch spread.

The .99 confidence level indicates that in a very large number of samples, we expect 99 percent of the intervals calculated to contain the population mean. The actual mean of the population sampled is 65 inches, which is in the calculated interval.

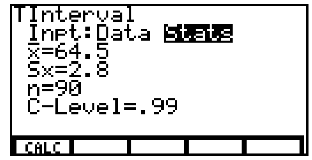
The second line gives the mean height of the sample $\bar{x}$ used to compute this interval. The third line gives the sample standard deviation Sx. The bottom line gives the sample size n.

To obtain a more precise bound on the population mean μ of women's heights, increase the sample size to 90. Use a sample mean $\bar{x}$ of 64.5 and sample standard deviation Sx of 2.8 calculated from the larger random sample. This time, use the **Stats** (summary statistics) input option.

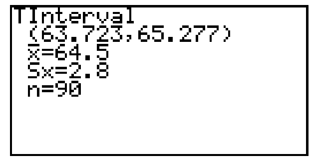
9. Display the inferential statistics and distribution editor for **TIntl** and select **Stats** in the **Inpt** field.
   [CLEAR] [2nd] [MATH] [MORE] [F2] [F1] [MORE] [F3] [▶] [ENTER]



10. Enter the test requirements:
   - Store 64.5 to x̄ — [▼] **64** [.] **5** [ENTER]
   - Store 2.8 to Sx — **2** [.] **8** [ENTER]
   - Store 90 to n — **90** [ENTER]



11. Calculate the test. The results are displayed on the home screen.
   [F1]



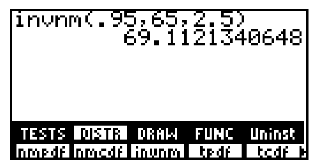
If the height distribution among a population of women is normally distributed with a mean μ of 65 inches and a standard deviation σ of 2.5 inches, what height is exceeded by only 5 percent of the women (the 95th percentile)?

12. Display the STAT DISTR (Distributions) menu.
   [CLEAR] [2nd] [MATH] [MORE] [F2] [F2]

13. Paste **invnm(** to the home screen. (**invnm** stands for Inverse Normal.)
   [F3]

The parameters are **invnm(***area*[, *μ*, *σ*]**)**.

14. Enter .95 as the area, 65 as μ, and 2.5 as σ.
   [.] **95** [,] **65** [,] **2** [.] **5** [)] [ENTER]



The result is displayed on the home screen; it shows that five percent of the women are taller than 69.1 inches (5 feet 9.1 inches).

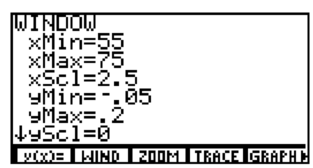
Now graph and shade the top five percent of the population.

15. Set the window variables to these values:
   [GRAPH] [F2]

   xMin=55 **yMin=⁻.05** **xRes=1**

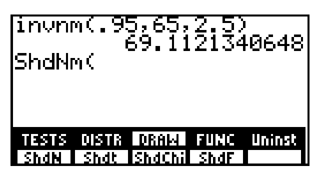
   xMax=75 **yMax=.2**

   xScl=2.5 **yScl=0**



16. Display the STAT DRAW menu.
   [EXIT] [2nd] [MATH] [MORE] [F2] [F3]

17. Paste **ShdNm(** to the home screen. (**ShdNm** stands for Shade Normal.)
   [F1]



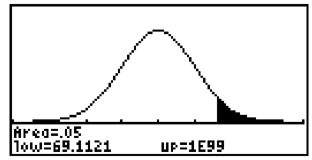
The parameters are **ShdNm(***lowerbound, upperbound* [, *μ*, *σ*]**)**.

⓲ The answer (**Ans** 69.1121340648) from step 14 is the lower bound. 1E99 is the upper bound. The normal curve is defined by a mean μ of 65 and a standard deviation σ of 2.5.

[2nd] [ANS] [,] **1** [EE] **99** [,] **65** [,] **2** [.] **5** [)]

⓳ Plot and shade the normal curve. **Area=** is the area above the 95th percentile. **low=** is the lower bound. **up=** is the upper bound.

[ENTER]



You can remove the menu from the bottom of the screen.

[CLEAR]

Inferential Statistics Editors

Displaying the Inferential Statistics Editors

When you select a hypothesis test or confidence interval instruction from the home screen, the appropriate inferential statistics editor is displayed. The editors vary according to each test or interval's input requirements.

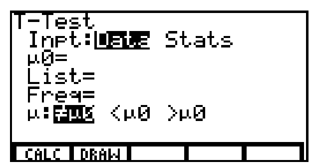
When you select the **ANOVA(** instruction, it is pasted to the home screen. **ANOVA(** does not have an editor screen.

Using an Inferential Statistics Editor

This example uses the inferential statistics editor for **TTest**.

❶ Select a hypothesis test or confidence interval from the STAT TESTS menu. The appropriate editor displays.

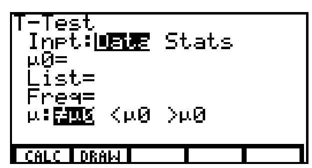
[2nd] [MATH] [MORE] [F2] [F1] [F2] (displays the TTest editor)



Select **Data** *to enter the data lists as input. Select* **Stats** *to enter summary statistics, such as* $\bar{x}$*, Sx, and n as inputs.*

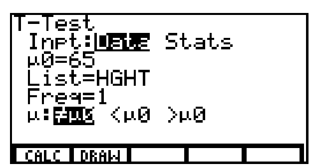
❷ Select **Data** or **Stats** input, if the selection is available.

[▸] or [◂] [ENTER]



❸ Enter real numbers, list names, or expressions for each argument in the editor. See the input descriptions table on page 24.

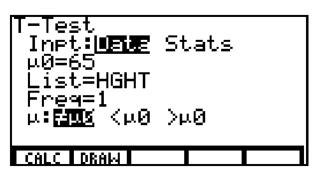
[▾] **65** [▾] [H] [G] [H] [T] [▾] **1** [▾]



Most of the inferential statistics editors for the hypothesis tests prompt you to select one of three alternative hypotheses.

❹ Select the alternative hypothesis against which to test, if the selection is available.

[ENTER]

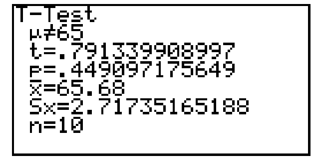


*Select **No** or **Yes** for the Pooled option, if the selection is available. The Pooled option is available for **Tsam2** and **TInt2** only. Press ▶ or ◀ [ENTER] to select an option.*

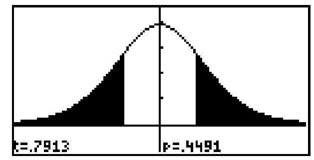
- *Select **No** if you do not want the variances pooled. Population variances can be unequal.*
- *Select **Yes** if you want the variances pooled. Population variances are assumed to be equal.*

5. Select **Calc** or **Draw** (when Draw is available) to execute the instruction. [F1] or [F2]

- When you select **Calc**, the results are displayed on the home screen. [F1]



- When you select **Draw**, the results are displayed in a graph (not available for a confidence interval). [F2]

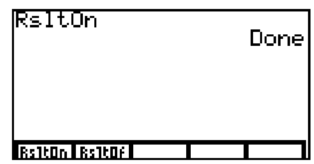


Bypassing the Inferential Statistics Editors

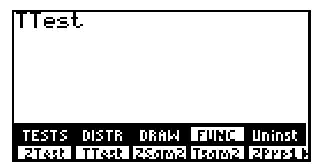
You can paste a hypothesis test or confidence interval instruction to the home screen without displaying the corresponding inferential statistics editor. You can also paste a hypothesis test or confidence interval instruction to a command line in a program.

1. Turn **RsltOn** (Results On). [2nd] [MATH] [MORE] [F2] [MORE] [F1] [ENTER]

   Note: The default is **RsltOf** (Results Off).

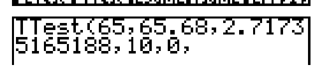


2. Select the instruction from the STAT FUNC menu. [CLEAR] [MORE] [F4] [F2] (for the TTest instruction)

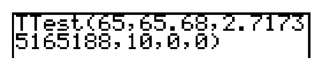


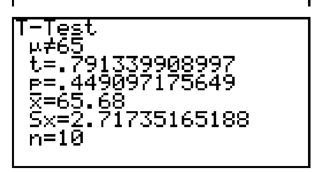
This example uses summary statistics. See pages 35-38 for a list of FUNC *(Function) menu parameters.*

3. Input the syntax for each hypothesis test and confidence interval instruction. Complete the syntax by using one of the options below: [(] **65** [,] **65.68** [,] **2.71735165188** [,] **10** [,] **0** [,]

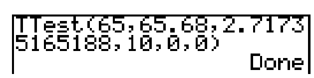


- Enter 0 (zero) as the last parameter to display the results on the home screen. **0** [)] [ENTER]



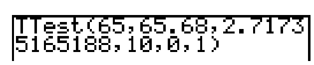


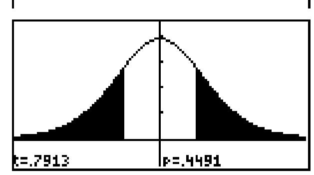
  Note: The home screen does not display the results if you use **RsltOf**.



  – or –

- Enter 1 as the last parameter to display the results in a graph. The graph is drawn whether you use **RsltOn** or **RsltOf**. **1** [)] [ENTER]





  You can remove the menu from the bottom of the screen. [CLEAR]

Inferential Statistics Editors for the STAT TESTS Instructions

STAT TESTS (Inferential Statistics Tests) Menu [2nd] [MATH] [MORE] [F2] [F1]

TESTS	DISTR	DRAW	FUNC	Uninst
ZTest	TTest	Zsam2	Tsam2	ZPrp1

RsltOn	RsltOf			
ZPrp2	ZIntl	TIntl	ZInt2	TInt2
ZPin1	ZPin2	Chitst	FSam2	TLinR
ANOVA				

Test Name	Description	Function
ZTest	One-sample *Z*-test	Test for one μ , known σ
TTest	One-sample *t*-test	Test for one μ, unknown σ
Zsam2	Two-sample *Z*-test	Test comparing two μ's, known σ's
Tsam2	Two-sample *t*-test	Test comparing two μ's, unknown σ's
ZPrp1	One-proportion *Z*-test	Test for one proportion
ZPrp2	Two- proportion *Z*-test	Test comparing two proportions
ZIntl	One-sample *Z* confidence interval	Confidence interval for one μ, known σ
TIntl	One-sample *t* confidence interval	Confidence interval for one μ, unknown σ
ZInt2	Two-sample *Z* confidence interval	Confidence interval for difference of two μ's, known σ's
TInt2	Two-sample *t* confidence interval	Confidence interval for difference of two μ's, unknown σ's
ZPin1	One-proportion *Z* confidence interval	Confidence interval for one proportion
ZPin2	Two-proportion *Z* confidence interval	Confidence interval for difference of two proportions
Chitst	Chi-square test	Chi-square test for two-way tables
FSam2	Two-sample F-test	Test comparing two σ's
TLinR	Linear regression *t*-test	*t*-test for regression slope and ρ
ANOVA	One-way analysis of variance	One-way analysis of variance

This section provides a description of each STAT TESTS instruction and shows the unique inferential statistics editor for that instruction with example arguments.

- Descriptions of instructions that offer the **Data**/**Stats** input choice show both types of input screens.
- Descriptions of instructions that do not offer the **Data/Stats** input choice show only one input screen.

The description then shows the unique output screen for that instruction with the example results.

- Descriptions of instructions that offer the **Calculate**/**Draw** output choice show both types of screens: calculated and drawn results.
- Descriptions of instructions that offer only the **Calculate** output choice show the calculated results on the home screen.

All examples on pages 10 through 23 assume a fixed-decimal mode setting of four. If you set the decimal mode to **Float** or a different fixed-decimal setting, your output may differ from the output in the examples.

Be sure to turn off the y= functions before drawing results.

To remove the menu from a drawing, press [CLEAR].

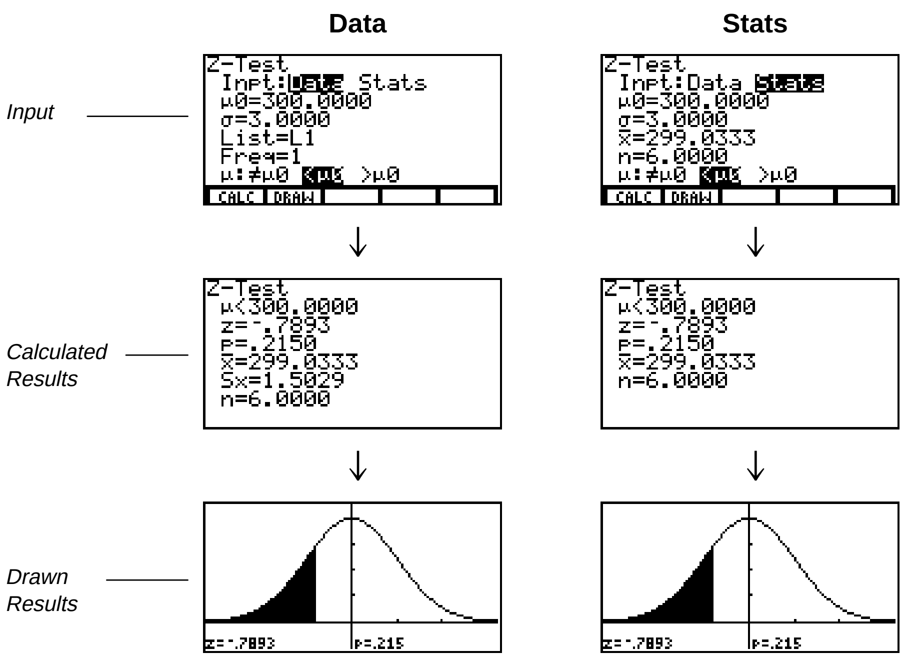
Ztest

This one-sample *Z*-test, shown as Z-Test in the editor, performs a hypothesis test for a single unknown population mean μ when the population standard deviation *σ* is known. It tests the null hypothesis H_0: $\mu=\mu_0$ against one of the alternatives below.

- H_a: $\mu\neq\mu_0$ (μ:≠μ0)
- H_a: $\mu<\mu_0$ (μ:<μ0)
- H_a: $\mu>\mu_0$ (μ:>μ0)

In the example:

L1={299.4 297.7 301 298.9 300.2 297}



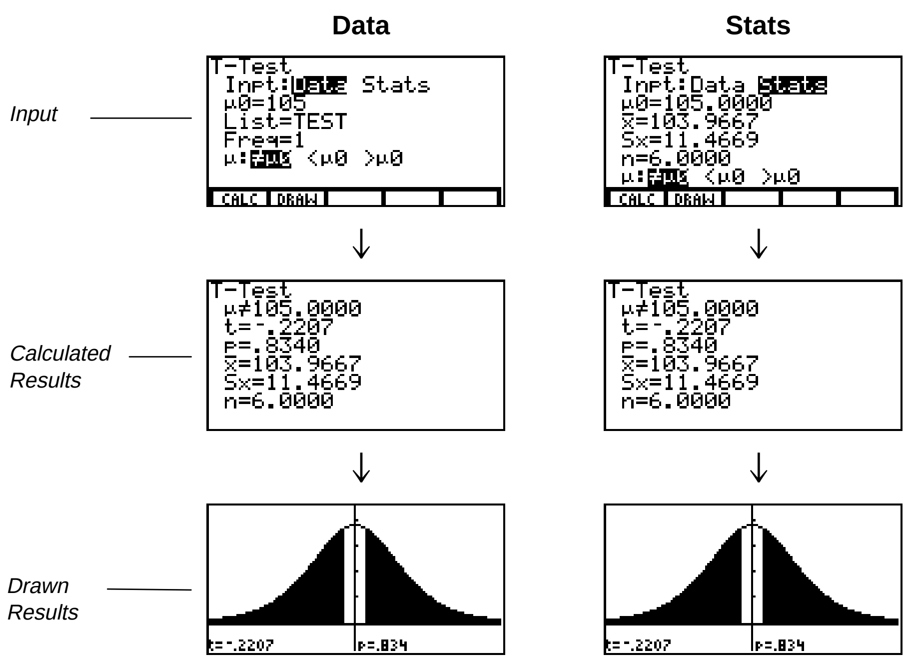
TTest

This one-sample *t*-test, shown as `T-Test` in the editor, performs a hypothesis test for a single unknown population mean μ when the population standard deviation σ is unknown. It tests the null hypothesis H_0: $\mu=\mu_0$ against one of the alternatives below.

- H_a: $\mu\neq\mu_0$ (μ:≠μ0)
- H_a: $\mu<\mu_0$ (μ:<μ0)
- H_a: $\mu>\mu_0$ (μ:>μ0)

In the example:

TEST={91.9 97.8 111.4 122.3 105.4 95}



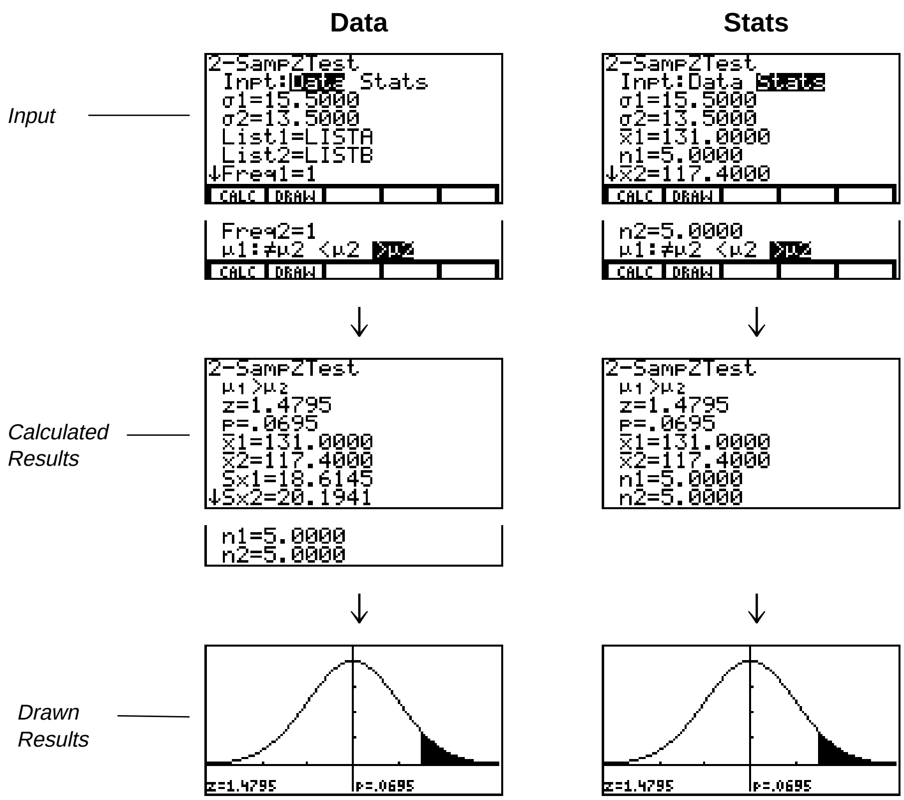
Zsam2

This two-sample Z-test, shown as `2-SampZTest` in the editor, tests the equality of the means of two populations (μ_1 and μ_2) based on independent samples when both population standard deviations (σ_1 and σ_2) are known. The null hypothesis H_0: $\mu_1=\mu_2$ is tested against one of the alternatives below.

- H_a: $\mu_1 \neq \mu_2$ (µ1:≠µ2)
- H_a: $\mu_1 < \mu_2$ (µ1:<µ2)
- H_a: $\mu_1 > \mu_2$ (µ1:>µ2)

In the example:

LISTA={154 109 137 115 140}
LISTB={108 115 126 92 146}



Tsam2

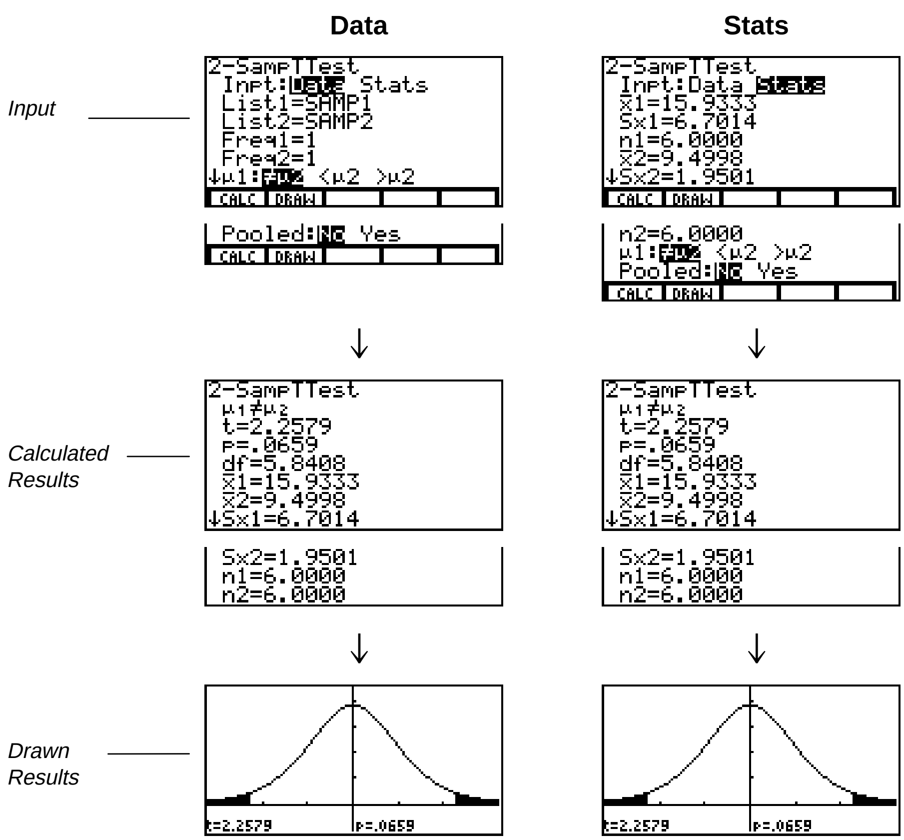
This two-sample t-test, shown as `2-SampTTest` in the editor, tests the equality of the means of two populations (μ_1 and μ_2) based on independent samples when neither population standard deviation (σ_1 or σ_2) is known. The null hypothesis H_0: $\mu_1=\mu_2$ is tested against one of the alternatives below.

- H_a: $\mu_1 \neq \mu_2$ (μ1:≠μ2)
- H_a: $\mu_1 < \mu_2$ (μ1:<μ2)
- H_a: $\mu_1 > \mu_2$ (μ1:>μ2)

In the example:

SAMP1={12.207 16.869 25.05 22.429 8.456 10.589}
SAMP2={11.074 9.686 12.064 9.351 8.182 6.642}

The pooled option is available for **Tsam2** and **TInt2** only. **No** means that population variances can be unequal. **Yes** means that population variances are assumed to be equal.

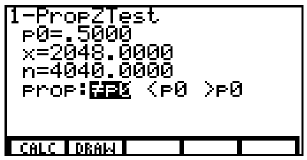


ZPrp1

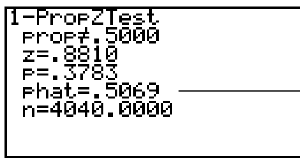
This one-proportion Z-test, shown as `1-PropZTest` in the editor, computes a test for an unknown proportion of successes (prop). It takes as input the count of successes in the sample x and the count of observations in the sample n. **ZPrp1** tests the null hypothesis H_0: prop=p_0 against one of the alternatives below.

- H_a: prop$\neq p_0$ (prop:≠p0)
- H_a: prop$<p_0$ (prop:<p0)
- H_a: prop$>p_0$ (prop:>p0)

Input

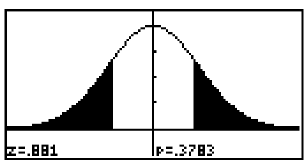


Calculated Results



phat represents $\hat{p}$

Drawn Results



ZPrp2

This two-proportion *Z*-test, shown as 2-PropZTest in the editor, computes a test to compare the proportion of successes (p1 and p2) from two populations. It takes as input the count of successes in each sample (*x*1 and *x*2) and the count of observations in each sample (*n*1 and *n*2). **ZPrp2** tests the null hypothesis H0: p1=p2 (using the pooled sample proportion $\hat{p}$) against one of the alternatives below.

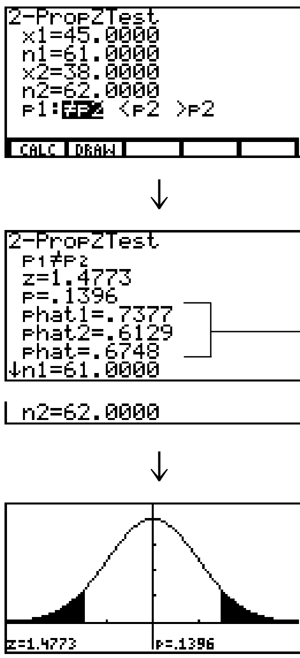
Phat represents $\hat{p}$ in the editor. Phat1 represents $\hat{p}_1$, and phat2 represents $\hat{p}_2$.

- H_a: $p_1 \neq p_2$ (p1:≠p2)
- H_a: $p_1 < p_2$ (p1:<p2)
- H_a: $p_1 > p_2$ (p1:>p2)

Input

Calculated Results

Drawn Results



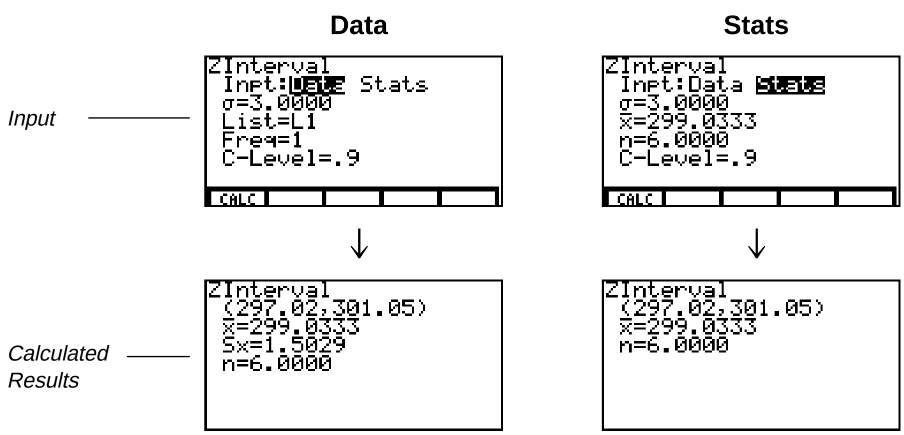
phat1 represents $\hat{p}_1$
phat2 represents $\hat{p}_2$
phat represents $\hat{p}$

ZIntl

This one-sample Z confidence interval, shown as ZInterval in the editor, computes a confidence interval for an unknown population mean µ when the population standard deviation σ is known. The computed confidence interval depends on the user-specified confidence level.

In the example:

L1={299.4 297.7 301 298.9 300.2 297}

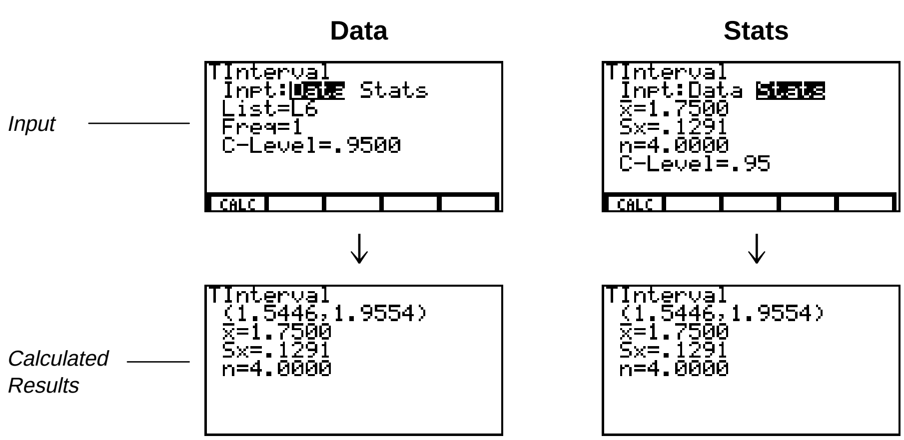


TIntl

This one-sample t confidence interval, shown as TInterval in the editor, computes a confidence interval for an unknown population mean µ when the population standard deviation σ is unknown. The computed confidence interval depends on the user-specified confidence level.

In the example:

L6={1.6 1.7 1.8 1.9}

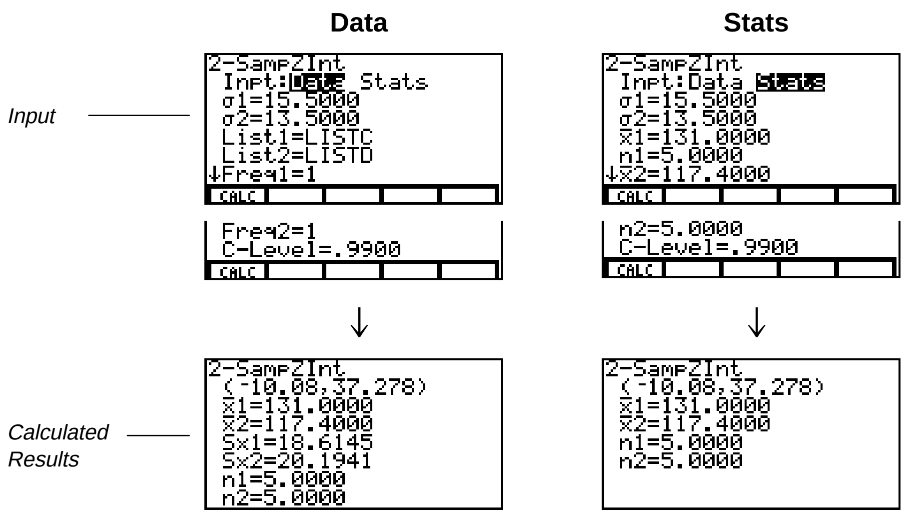


ZInt2

This two-sample Z confidence interval, shown as 2-SampZInt in the editor, computes a confidence interval for the difference between two population means ($\mu_1-\mu_2$) when both population standard deviations (σ_1 and σ_2) are known. The computed confidence interval depends on the user-specified confidence level.

In the example:

LISTC={154 109 137 115 140}
LISTD={108 115 126 92 146}



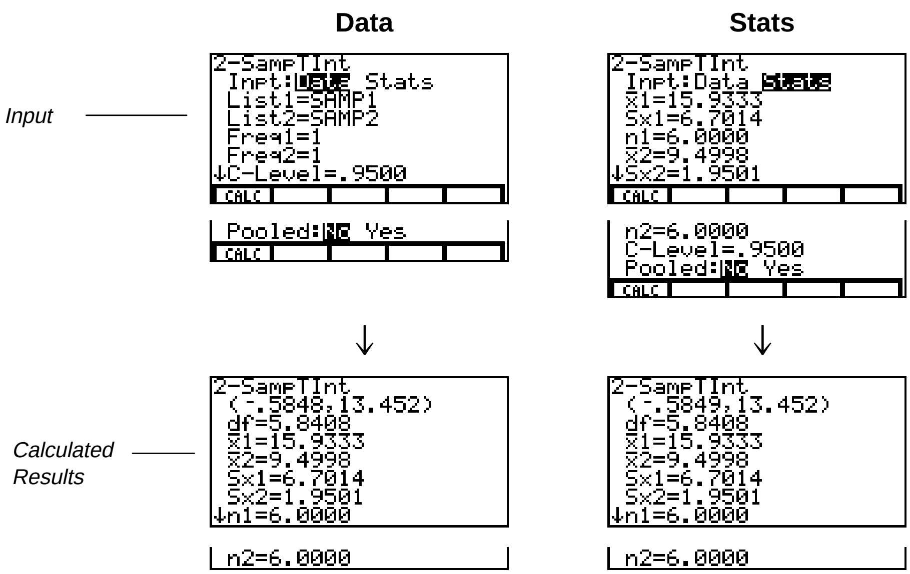
TInt2

This two-sample t confidence interval, shown as 2-SampTInt in the editor, computes a confidence interval for the difference between two population means ($\mu_1 - \mu_2$) when both population standard deviations (σ_1 and σ_2) are unknown. The computed confidence interval depends on the user-specified confidence level.

In the example:

SAMP1={12.207 16.869 25.05 22.429 8.456 10.589}
SAMP2={11.074 9.686 12.064 9.351 8.182 6.642}

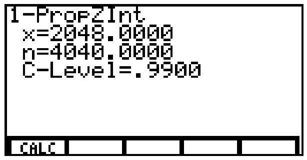
The pooled option is available for **TInt2** and **Tsam2** only. **No** means that population variances can be unequal. **Yes** means that population variances are assumed to be equal.



ZPin1

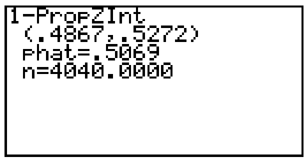
This one-proportion Z confidence interval, shown as 1-PropZInt in the editor, computes a confidence interval for an unknown proportion of successes. It takes as input the count of successes in the sample x and the count of observations in the sample n. The computed confidence interval depends on the user-specified confidence level.

Input



↓

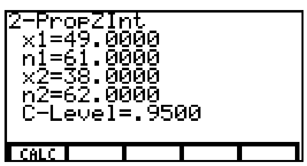
Calculated Results



ZPin2

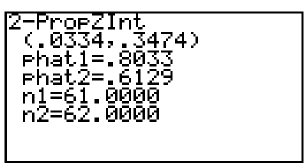
This two-proportion Z confidence interval, shown as 2-PropZInt in the editor, computes a confidence interval for the difference between the proportion of successes in two populations (p_1-p_2). It takes as input the count of successes in each sample (x_1 and x_2) and the count of observations in each sample (n_1 and n_2) . The computed confidence interval depends on the user-specified confidence level.

Input



↓

Calculated Results

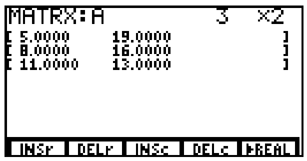


Chitst

This test, shown as Chi²-Test in the editor, computes a chi-square test for association on the two-way table of counts in the matrix you specify at the **Observed** prompt. The null hypothesis H_0 for a two-way table is: no association exists between row variables and column variables. The alternative hypothesis is: the variables are related.

Before computing a **Chitst**, enter the observed counts in a matrix. Enter that matrix variable name at the **Observed** prompt in the editor. At the **Expected** prompt, enter the matrix variable name to which you want the computed expected counts to be stored.

Matrix Editor

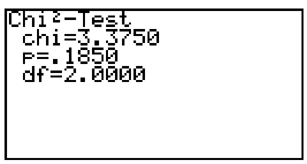


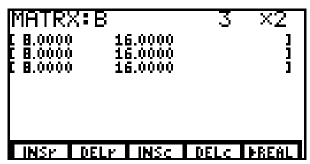
Note: Press [2nd] [MATRX] [F2] [A] [ENTER] to select Matrix A from the MATRX EDIT menu.

Input

↓

Calculated Results

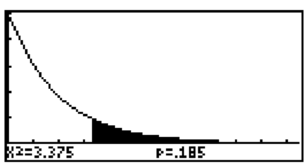




Note: Press [2nd] [MATRX] [F2] [B] [ENTER] to display Matrix B.

↓

Drawn Results



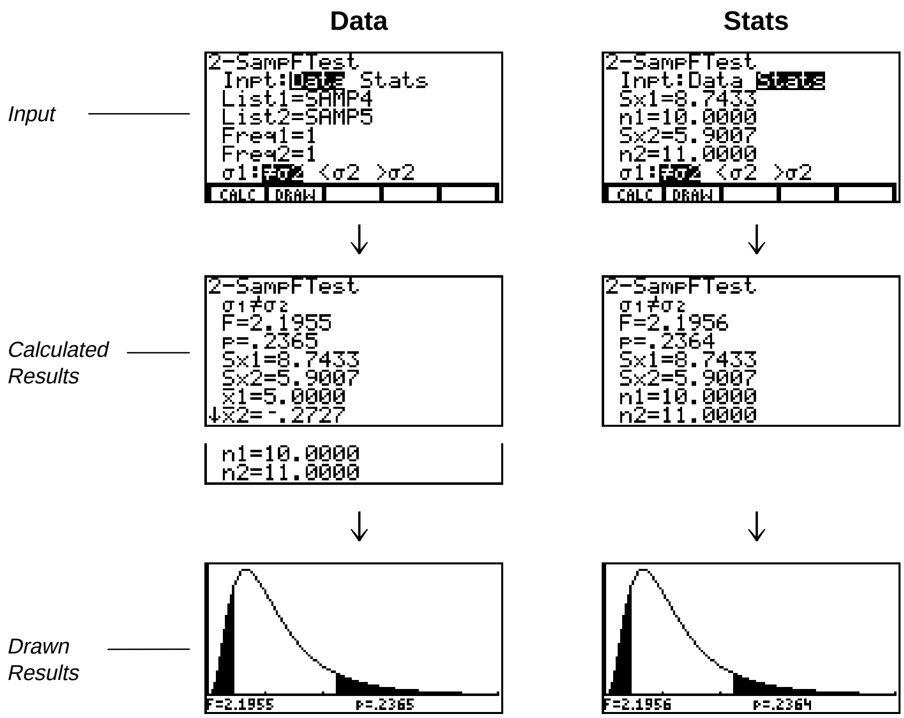
FSam2

This two-sample F-test, shown as 2-SampFTest in the editor, computes an F-test to compare two normal population standard deviations (σ_1 and σ_2). The population means and standard deviations are all unknown. **FSam2**, which uses the ratio of sample variances $Sx1^2/Sx2^2$, tests the null hypothesis H_0: $\sigma_1=\sigma_2$ against one of the alternatives below.

- H_a: $\sigma_1\neq\sigma_2$ (σ1:≠σ2)
- H_a: $\sigma_1<\sigma_2$ (σ1:<σ2)
- H_a: $\sigma_1>\sigma_2$ (σ1:>σ2)

In the example:

SAMP4={7 -4 18 17 -3 -5 1 10 11 -2}
SAMP5={-1 12 -1 -3 3 -5 5 2 -11 -1 -3}



TLinR

This linear regression *t*-test, shown as LinRegTTest in the editor, computes a linear regression on the given data and a *t*-test on the value of slope β and the correlation coefficient ρ for the equation $y=\alpha+\beta x$. It tests the null hypothesis H_0: β=0 (equivalently, $\rho=0$) against one of the alternatives below.

- H_a: β≠0 and ρ≠0 (β & ρ:≠0)
- H_a: β<0 and ρ<0 (β & ρ:<0)
- H_a: β>0 and ρ>0 (β & ρ:>0)

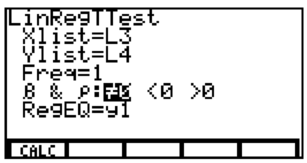
For the regression equation, you can use the fix-decimal mode setting to control the number of digits stored after the decimal point. However, limiting the number of digits to a small number could affect the accuracy of the fit.

The regression equation is automatically stored to **RegEQ** ([2nd] [STAT] [F5] [MORE] [MORE] [F2]). If you enter a y= variable name at the **RegEQ** prompt, the calculated regression equation is automatically stored to the specified y= equation. In the example below, the regression equation is stored to **y1**, which is then selected (turned on).

In the example:

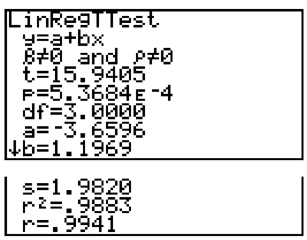
L3={38 56 59 64 74}
L4={41 63 70 72 84}

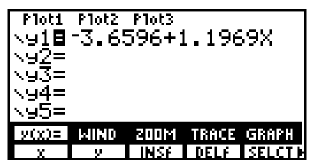
Input



↓

Calculated Results





ANOVA

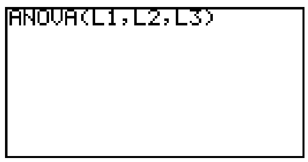
This test computes a one-way analysis of variance for comparing the means of 2 to 20 populations. The ANOVA procedure for comparing these means involves analysis of the variation in the sample data. The null hypothesis H_0: $\mu_1=\mu_2=...=\mu_k$ is tested against the alternative H_a:. Not all $\mu_1...\mu_k$ are equal.

ANOVA(*list1*,*list2*[,...,*list20*]**)**

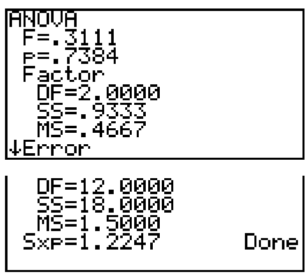
In the example:

L1={7 4 6 6 5}
L2={6 5 5 8 7}
L3={4 7 6 7 6}

Input



Calculated Results



Intermediate calculation results display only when **RsltOn** is selected from the STAT menu.

SS is sum of squares and **MS** is mean square.

Inferential Statistics and Distribution Input Descriptions

This table describes the inferential statistics and distribution inputs. You enter values for these inputs in the inferential statistics editors. The table presents the inputs in the same order as they appear in the editor examples on pages 10-23.

Input	Description
μ_0	Hypothesized value of the population mean that you are testing.
σ	The known population standard deviation; must be a real number > 0.
List	The name of the list containing the data you are testing.
Freq	The name of the list containing the frequency values for the data in **List**. Default=1. All elements must be integers ≥ 0.
Calculate/Draw	Determines the type of output to generate for tests and intervals. **Calculate** displays the output on the home screen. In tests, **Draw** draws a graph of the results.
x̄, Sx, n	Summary statistics (mean, standard deviation, and sample size) for the one-sample tests and intervals.
σ1	The known population standard deviation from the first population for the two-sample tests and intervals. Must be a real number > 0.
σ2	The known population standard deviation from the second population for the two-sample tests and intervals. Must be a real number > 0.
List1, List2	The names of the lists containing the data you are testing for the two-sample tests and intervals.
Freq1, Freq2	The names of the lists containing the frequencies for the data in **List1**and **List2** for the two-sample tests and intervals. Defaults=1. All elements must be integers ≥ 0.
x̄1, Sx1, n1, x̄2, Sx2, n2	Summary statistics (mean, standard deviation, and sample size) for sample one and sample two in the two-sample tests and intervals.
Pooled	Specifies whether variances are to be pooled for **Tsam2** and **TInt2**. **No** does not pool the variances. **Yes** pools the variances.
$\mathbf{p_0}$	The expected sample proportion for **ZPrp1**. Must be a real number such that $0 < p_0 < 1$.
x	The count of successes in the sample for the **ZPrp1** and **ZPin1**. Must be an integer ≥ 0.
n	The count of observations in the sample for the **ZPrp1** and **ZPin1**. Must be an integer > 0.
x1	The count of successes from sample one for the **ZPrp2** and **ZPin2**. Must be an integer ≥ 0.
x2	The count of successes from sample two for the **ZPrp2** and **ZPin2**. Must be an integer ≥ 0.
n1	The count of observations in sample one for the **ZPrp2** and **ZPin2** Must be an integer > 0.
n2	The count of observations in sample two for the **ZPrp2** and **ZPin2**. Must be an integer > 0.
C-Level	The confidence level for the interval instructions. Must be ≥ 0 and <100. If it is ≥ 1, it is assumed to be given as a percent and is divided by 100. Default=0.95.

Input	Description
Observed (Matrix)	The matrix name that represents the columns and rows for the observed values of a two-way table of counts for the **Chitst**. **Observed** must contain all integers ≥ 0. Matrix dimensions must be at least 2×2.
Expected (Matrix)	The matrix name that specifies where the expected values should be stored. **Expected** is created upon successful completion of the **Chitst**.
Xlist, Ylist	The names of the lists containing the data for **TLinR**. The dimensions of **Xlist** and **Ylist** must be the same.
RegEQ	The prompt for the name of the y= variable where the calculated regression equation is to be stored. If a y= variable is specified, that equation is automatically selected (turned on). The default is to store the regression equation to the **RegEQ** variable only.
y	Always use lowercase characters for stored regression equations.

Test and Interval Output Variables

The inferential statistics and distribution variables are calculated as indicated below. To access these variables for use in expressions, press [2nd] [CATLG-VARS] and then select the menu listed in the Variables and Catalog/Variables Menu column below.

All inferential statistics variables begin with the letters **st** to separate them from other variables.

If you upload TI-86 variables that contain the sigma (σ) or mu (μ) symbols to your computer, the Graph Link program will prompt you to rename them. This is because computer file names cannot contain these symbols. When you download the renamed variables to your TI-86, Graph Link restores the symbols and the files are loaded in the calculator under their original names.

Important: If you do not rename the sigma variables (stσ.86n, stσ1.86n, and stσ2.86n), they are stored on the computer under the names st_.86n, st_1.86n, and st_2.86n. You cannot delete or rename these files on your computer, and you will not be able to download them to your calculator.

	TI-86 Variables			
Variables and Catalog / Variables Menu	Tests	Intervals	TLinR, ANOVA	Math Symbols
p-value REAL	**stp**		**stp**	**p**
test statistics REAL	**stz, stt, stchi, stF**		**stt, stF**	**z, t,** χ^2**, F**
degrees of freedom REAL	**stdf**	**stdf**	**stdf**	**df**
sample mean of x values for sample 1 and sample 2 REAL	**stmean1, stmean2**	**stmean1, stmean2**		$\bar{x}1$, $\bar{x}2$
sample standard deviation of x for sample 1 and sample 2 REAL	**stSx1, stSx2**	**stSx1, stSx2**		**Sx1, Sx2**
number of data points for sample 1 and sample 2 REAL	**stn1, stn2**	**stn1, stn2**		**n1, n2**
pooled standard deviation REAL	**stSxp**	**stSxp**	**stSxp**	**Sxp**
estimated sample proportion REAL	**stphat**	**stphat**		$\hat{p}$
estimated sample proportion for population 1 REAL	**stphat1**	**stphat1**		$\hat{p}1$
estimated sample proportion for population 2 REAL	**stphat2**	**stphat2**		$\hat{p}2$
confidence interval pair REAL		**stLOWER, stUPPER**		**lower, upper**
mean of x values REAL	**stxbar**	**stxbar**		$\bar{x}$
sample standard deviation of x REAL	**stSx**	**stSx**		**Sx**

	TI-86 Variables			
Variables and Catalog / Variables Menu	Tests	Intervals	TLinR, ANOVA	Math Symbols
number of data points REAL	**stn**	**stn**		**n**
standard error about the line REAL			**sts**	**s**
regression/fit coefficients STAT			**a, b**	**a, b**
correlation coefficient REAL			**str**	**r**
coefficient of determination REAL			**stlrsqr**	**r^2**
regression equation STAT			**RegEQ**	**RegEQ**
factor DF, degrees of freedom REAL			**stfDF**	**DF**
factor SS, sum of square REAL			**stfSS**	**SS**
factor MS, mean square REAL			**stfMS**	**MS**
error DF, degrees of freedom REAL			**steDF**	**DF**
error SS, sum of square REAL			**steSS**	**SS**
error MS, mean square REAL			**steMS**	**MS**

Distribution (DISTR) Functions

STAT DISTR (Inferential Statistics Distribution) Menu [2nd] [MATH] [MORE] [F2] [F2]

TESTS	DISTR	DRAW	FUNC	Uninst
nmpdf	nmcdf	invnm	tpdf	tcdf

RsltOn	RsltOf			
chipdf	chicdf	Fpdf	Fcdf	bipdf
bicdf	pspdf	pscdf	gepdf	gecdf

Instruction	Function
nmpdf	Normal probability density
nmcdf	Normal distribution probability
invnm	Inverse cumulative normal distribution
tpdf	Student-*t* probability density
tcdf	Student-*t* distribution probability
chipdf	Chi-square probability density
chicdf	Chi-square distribution probability
Fpdf	F probability density
Fcdf	F distribution probability
bipdf	Binomial probability
bicdf	Binomial cumulative density
pspdf	Poisson probability
pscdf	Poisson cumulative density
gepdf	Geometric probability
gecdf	Geometric cumulative density

Note: ⁻1E99 and 1E99 approximate infinity. If you want to view the area left of *upperbound*, for example, specify *lowerbound*=⁻1E99.

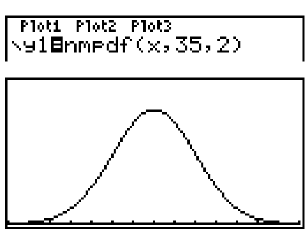
nmpdf

Computes the probability density function (pdf) for the normal distribution at a specified x value. The defaults are mean μ=0 and standard deviation σ=1. To plot the normal distribution, paste **nmpdf** to the y= editor. The pdf is:

$$f(x) = \frac{1}{\sqrt{2\pi}\,\sigma} e^{-\frac{(x-\mu)^2}{2\sigma^2}}, \sigma > 0$$

nmpdf(x[,μ,σ]**)**

For plotting the normal distribution, you can set window variables **xMin** *and* **xMax** *so that the mean μ falls between them, and then press* [GRAPH] [F3] [MORE] [F1] *to fit the graph in the window.*



Note: For this example,
xMin = 28
xMax = 42
xScl = 1
yMin = 0
yMax = .25
yScl = 1
xRes = 1

nmcdf

Computes the normal distribution probability between *lowerbound* and *upperbound* for the specified mean μ and standard deviation σ. The defaults are μ=0 and σ=1.

nmcdf(*lowerbound*,*upperbound*[,μ,σ]**)**

```
nmcdf(-1E99,36,35,2)
          .691462467787
```

invnm

Computes the inverse cumulative normal distribution function for a given *area* under the normal distribution curve specified by mean μ and standard deviation σ. It calculates the x value associated with an *area* to the left of the x value. $0 \le area \le 1$ must be true. The defaults are μ=0 and σ=1.

invnm(*area*[,μ,σ]**)**

```
invnm(.6914624678,35,
2)
         36.0000000358
```

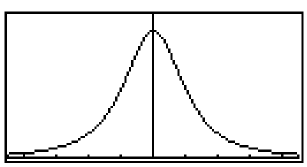
tpdf

Computes the probability density function (pdf) for the Student-t distribution at a specified x value. *df* (degrees of freedom) must be > 0. To plot the Student-t distribution, paste **tpdf** to the y= editor. The pdf is:

$$f(x) = \frac{\Gamma[(df+1)/2]}{\Gamma(df/2)} \frac{(1+x^2/df)^{-(df+1)/2}}{\sqrt{\pi df}}$$

tpdf(x,*df***)**

```
 Plot1 Plot2 Plot3
\y1=tpdf(x,2)
```



Note: For this example,
xMin = ⁻4.5
xMax = 4.5
xScl = 1
yMin = 0
yMax = .4
yScl = 1
xRes = 1

tcdf

Computes the Student-t distribution probability between *lowerbound* and *upperbound* for the specified *df* (degrees of freedom), which must be > 0.

tcdf(*lowerbound*,*upperbound*,*df***)**

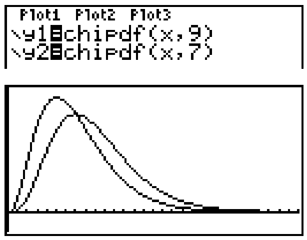
```
tcdf(-2,3,18)
          .965746564388
```

chipdf

Computes the probability density function (pdf) for the χ^2 (chi-square) distribution at a specified *x* value. *df* (degrees of freedom) must be an integer > 0. To plot the χ^2 distribution, paste **chipdf** to the y= editor. The pdf is:

$$f(x) = \frac{1}{\Gamma(df/2)}(1/2)^{df/2}\, x^{df/2-1} e^{-x/2},\ x \ge 0$$

chipdf(*x*,*df***)**



Note: For this example,
xMin = 0
xMax = 30
xScl = 1
yMin = ⁻.02
yMax = .132
yScl = 1
xRes = 1

chicdf

Computes the χ^2 (chi-square) distribution probability between *lowerbound* and *upperbound* for the specified *df* (degrees of freedom), which must be an integer > 0.

chicdf(*lowerbound*,*upperbound*,*df***)**

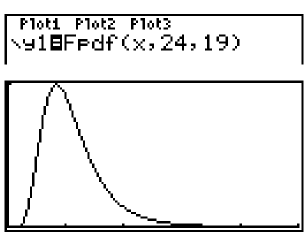
Fpdf

Computes the probability density function (pdf) for the F distribution at a specified *x* value. *numerator df* (degrees of freedom) and *denominator df* must be integers > 0. To plot the F distribution, paste **Fpdf** to the y= editor. The pdf is:

$$f(x) = \frac{\Gamma[(n+d)/2]}{\Gamma(n/2)\Gamma(d/2)}\left(\frac{n}{d}\right)^{n/2} x^{n/2-1}(1+nx/d)^{-(n+d)/2},\ x \ge 0$$

where n = numerator degrees of freedom
d = denominator degrees of freedom

Fpdf(*x*,*numerator df*,*denominator df***)**



Note: For this example,
xMin = 0
xMax = 5
xScl = 1
yMin = 0
yMax = 1
y Scl = 1
xRes = 1

Fcdf

Computes the F distribution probability between *lowerbound* and *upperbound* for the specified *numerator df* (degrees of freedom) and *denominator df*. *numerator df* and *denominator df* must be integers > 0.

Fcdf(*lowerbound*,*upperbound*,*numerator df*,*denominator df***)**

```
Fcdf(0,2.4523,24,19)
          .974998957633
```

bipdf

Computes a probability at x for the discrete binomial distribution with the specified *numtrials* and probability of success (p) on each trial. x can be an integer or a list of integers. $0 \le p \le 1$ must be true. *numtrials* must be an integer > 0. If you do not specify x, a list of probabilities from 0 to *numtrials* is returned. The pdf is:

$$f(x) = \binom{n}{x} p^x (1-p)^{n-x}, \; x = 0,1,\ldots,n$$

where n = *numtrials*

bipdf(*numtrials*,p[,x]**)**

```
bipdf(5,.6,{3,4,5})
 {.3456 .2592 .07776}
```

bicdf

Computes a cumulative probability at x for the discrete binomial distribution with the specified *numtrials* and probability of success (p) on each trial. x can be a real number or a list of real numbers. $0 \le p \le 1$ must be true. *numtrials* must be an integer > 0. If you do not specify x, a list of cumulative probabilities is returned.

bicdf(*numtrials*,p[,x]**)**

```
bicdf(5,.6,{3,4,5})
     {.66304 .92224 1}
```

pspdf

Computes a probability at x for the discrete Poisson distribution with the specified mean μ, which must be a real number > 0. x can be an integer or a list of integers. The pdf is:

$$f(x) = e^{-\mu} \mu^x / x!, \; x = 0,1,2,\ldots$$

pspdf(μ,x**)**

```
pspdf(6,10)
          .041303093412
```

pscdf

Computes a cumulative probability at x for the discrete Poisson distribution with the specified mean μ, which must be a real number > 0. x can be a real number or a list of real numbers.

pscdf(μ,x**)**

```
pscdf(.126,{0,1,2,3})
{.881614846785 .9926…
```

gepdf

Computes a probability at x, the number of the trial on which the first success occurs, for the discrete geometric distribution with the specified probability of success p. $0 \le p \le 1$ must be true. x can be an integer or a list of integers. The pdf is:

$$f(x) = p(1-p)^{x-1},\ x = 1,2,\ldots$$

gepdf(p,x**)**

```
gepdf(.4,6)
                .031104
```

gecdf

Computes a cumulative probability at x, the number of the trial on which the first success occurs, for the discrete geometric distribution with the specified probability of success p. $0 \le p \le 1$ must be true. x can be a real number or a list of real numbers.

gecdf(p,x**)**

```
gecdf(.5,{1,2,3})
         {.5 .75 .875}
```

DRAW (Distribution Shading) Functions

STAT DRAW (Inferential Statistics Draw) Menu 2nd [MATH] MORE F2 F3

TESTS	DISTR	DRAW	FUNC	Uninst	▸	RsltOn	RsltOf			
ShdN	Shdt	ShdChi	ShdF		▸					

Instruction	Function
ShdN	Shades normal distribution
Shdt	Shades Student-*t* distribution
ShdChi	Shades χ^2 distribution
ShdF	Shades F distribution

DRAW instructions draw various types of density functions, shade the area specified by *lowerbound* and *upperbound*, and display the computed area value.

Before you execute a DRAW instruction:

- Set the window variables so the desired distribution fits the screen.
- Turn off the y= functions.

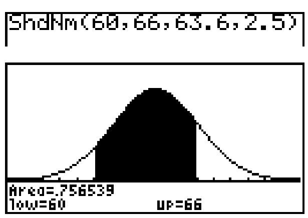
To clear the drawings, select **CLDRW** from the GRAPH DRAW menu.

To remove the menu from a drawing, press CLEAR.

ShdN

Draws the normal density function specified by mean μ and standard deviation σ and shades the area between *lowerbound* and *upperbound*. The defaults are μ=0 and σ=1.

ShdN(*lowerbound*,*upperbound*[,μ,σ]**)**

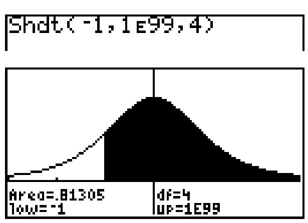


Note: For this example,
xMin = 55
xMax = 72
xScl = 1
yMin = ⁻.05
yMax = .2
yScl = 1
xRes = 1

Shdt

Draws the density function for the Student-*t* distribution specified by *df* (degrees of freedom) and shades the area between *lowerbound* and *upperbound*.

Shdt(*lowerbound*,*upperbound*,*df***)**

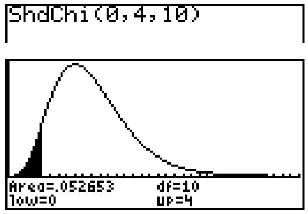


Note: For this example,
xMin = ⁻3
xMax = 3
xScl = 1
yMin = ⁻.15
yMax = .5
yScl = 1
xRes = 1

ShdChi

Draws the density function for the χ^2 (chi-square) distribution specified by *df* (degrees of freedom) and shades the area between *lowerbound* and *upperbound*.

ShdChi(*lowerbound*,*upperbound*,*df***)**

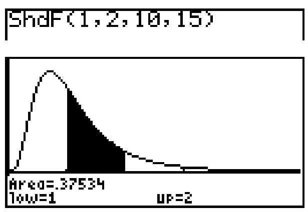


Note: For this example,
xMin = 0
xMax = 35
xScl = 1
yMin = -.025
yMax = .1
yScl = 1
xRes = 1

ShdF

Draws the density function for the F distribution specified by *numerator df* (degrees of freedom) and *denominator df* and shades the area between *lowerbound* and *upperbound*.

ShdF(*lowerbound*,*upperbound*,*numerator df*,*denominator df***)**



Note: For this example,
xMin = 0
xMax = 5
xScl = 1
yMin = -.25
yMax = .9
yScl = 1
xRes = 1

FUNC (Function) Parameters

STAT FUNC (Inferential Statistics Functions) Menu [2nd] [MATH] [MORE] [F2] [F4]

TESTS	DISTR	DRAW	FUNC	Uninst
Ztest	TTest	ZSam2	Tsam2	ZPrp1

RsltOn	RsltOf			
ZPrp2	ZIntl	TIntl	ZInt2	TInt2
ZPIn1	ZPIn2	Chitst	FSam2	TLinR
ANOVA				

Test Name	Function
ZTest	Test for 1 μ , known σ
TTest	Test for 1 μ, unknown σ
ZSam2	Test comparing 2 μ's, known σ's
Tsam2	Test comparing 2 μ's, unknown σ's
ZPrp1	Test for 1 proportion
ZPrp2	Test comparing 2 proportions
ZIntl	Confidence interval for 1 μ, known σ
TIntl	Confidence interval for 1 μ, unknown σ
ZInt2	Confidence interval for difference of 2 μ's, known σ's
TInt2	Confidence interval for difference of 2 μ's, unknown σ's
ZPIn1	Confidence interval for 1 proportion
ZPIn2	Confidence interval for difference of 2 proportions
Chitst	Chi-square test for 2-way tables
FSam2	Test comparing 2 σ's
TLinR	*t*-test for regression slope and ρ
ANOVA	One-way analysis of variance

You can bypass the inferential statistics editors and paste a hypothesis test or confidence interval instruction to the home screen. This section provides the parameters of each STAT FUNC instruction.

- Instructions that offer the **Data/Stats** input choice show both sets of input parameters.
- Instructions that do not offer the **Data/Stats** input choice show one set of input parameters.

The following table lists the function arguments alphabetically.

Function Argument and Result

ANOVA(*list1*,*list2*[,*list3*,...,*list20*]**)**

Performs a one-way analysis of variance for comparing the means of 2 to 20 populations.

Chitst(*observedmatrix*,*expectedmatrix*[,*drawflag*]**)**

Performs a chi-square test. *drawflag*=**1** draws results; *drawflag*=**0** calculates results.

FSam2 *listname1*,*listname2*,[*freqlist1*,*freqlist2*,*alternative*,*drawflag*]

where *listname1*,*listname2* refers to lists you have created in the list editor.

Performs a two-sample F-test. *alternative*= **-1** is < ; *alternative*=**0** is ≠ ; *alternative*=**1** is >. *drawflag*=**1** draws results; *drawflag*=**0** calculates results.

FSam2 *Sx1*,*n1*,*Sx2*,*n2*[,*alternative*,*drawflag*]

where *Sx1*,*n1*,*Sx2*,*n2* refers to summary statistics that you must enter.

Performs a two-sample F-test. *alternative*= **-1** is < ; *alternative*=**0** is ≠ ; *alternative*=**1** is >. *drawflag*=**1** draws results; *drawflag*=**0** calculates results.

TInt2 *listname1*,*listname2*[,*freqlist1*,*freqlist2*,*confidence level*,*pooled*]

where *listname1*,*listname2* refers to lists you have created in the list editor.

Computes a two-sample *t* confidence interval. *pooled*=**1** pools variances; *pooled*=**0** does not pool variances.

TInt2 $\bar{x}$*1*,*Sx1*,*n1*,$\bar{x}$*2*,*Sx2*,*n2*[,*confidencelevel*,*pooled*]

where $\bar{x}$*1*,*Sx1*,*n1*,$\bar{x}$*2*,*Sx2*,*n2* refers to summary statistics that you must enter.

Computes a two-sample *t* confidence interval. *pooled*=**1** pools variances; *pooled*=**0** does not pool variances.

TIntl *listname*,[*freqlist*,*confidence level*]

where *listname* refers to a list you have created in the list editor.

Computes a *t* confidence interval.

TIntl $\bar{x}$,*Sx*,*n*[,*confidence level*]

where $\bar{x}$,*Sx*,*n* refers to summary statistics that you must enter.

Computes a *t* confidence interval.

TLinR *Xlistname*,*Ylistname*,[*freqlist*,*alternative*,*regequ*]

where *Xlistname*,*Ylistname* refers to lists you have created in the list editor.

Performs a linear regression and a *t*-test. *alternative*= **-1** is < ; *alternative*=**0** is ≠ ; *alternative*=**1** is >.

Tsam2 *listname1*,*listname2*,[*freqlist1*,*freqlist2*,*alternative*,*pooled*,*drawflag*]

where *listname1*,*listname2* refers to lists you have created in the list editor.

Computes a two-sample *t*-test. *alternative*= **-1** is < ; *alternative*=**0** is ≠ ; *alternative*=**1** is >. *pooled*=**1** pools variances; *pooled*=**0** does not pool variances. *drawflag*=**1** draws results; *drawflag*=**0** calculates results.

Function Argument and Result
Tsam2 *x̄1*,*Sx1*,*n1*,*x̄2*,*Sx2*,*n2*[,*alternative*,*pooled*,*drawflag*] where *x̄1*,*Sx1*,*n1*,*x̄2*,*Sx2*,*n2* refers to summary statistics that you must enter. Computes a two-sample *t*-test. *alternative*=**⁻1** is < ; *alternative*=**0** is ≠ ; *alternative*=**1** is >. *pooled*=**1** pools variances; *pooled*=**0** does not pool variances. *drawflag*=**1** draws results; *drawflag*=**0** calculates results.
TTest *μ0*,*listname*[,*freqlist*,*alternative*,*drawflag*] where *μ0*,*listname* refers to the hypothesized value and to a list you have created in the list editor. Performs a *t*-test with frequency *freqlist*. *alternative*=**⁻1** is < ; *alternative*=**0** is ≠ ; *alternative*=**1** is >. *drawflag*=**1** draws results; *drawflag*=**0** calculates results.
TTest *μ0*, x̄,*Sx*,*n*[,*alternative*,*drawflag*] where *μ0*, x̄,*Sx*,*n* refers to summary statistics that you must enter. Performs a *t*-test with frequency *freqlist*. *alternative*=**⁻1** is < ; *alternative*=**0** is ≠ ; *alternative*=**1** is >. *drawflag*=**1** draws results; *drawflag*=**0** calculates results.
ZInt2(σ_1 ,σ_2,*listname1*,*listname2*[,*freqlist1*,*freqlist2*,*confidence level*]**)** where σ_1 ,σ_2,*listname1*,*listname2* refers to the known population standard deviations (from the first and second populations) and lists you have created in the list editor. Computes a two-sample *Z* confidence interval.
ZInt2(σ_1 ,σ_2 ,*x̄1*,*n1*,*x̄2*,*n2*[,*confidence level*]**)** where σ_1 ,σ_2 ,*x̄1*,*n1*,*x̄2*,*n2* refers to summary statistics that you must enter. Computes a two-sample *Z* confidence interval.
ZIntl *σ*,*listname*[,*freqlist*,*confidence level*] where *σ*,*listname* refers to the known population deviation and a list you have created in the list editor. Computes a *Z* confidence interval.
ZIntl *σ*,*x̄*,*n*[,*confidence level*] where *σ*,*x̄*,*n* refers to summary statistics that you must enter. Computes a *Z* confidence interval.
ZPIn1(*x*,*n*[,*confidence level*]**)** Computes a one-proportion *Z* confidence interval.
ZPIn2(*x1*,*n1*,*x2*,*n2*[,*confidence level*]**)** Computes a two-proportion *Z* confidence interval.
ZPrp1(*p0*,*x*,*n*[,*alternative*,*drawflag*]**)** Computes a one-proportion *Z*-test. *alternative*=**⁻1** is < ; *alternative*=**0** is ≠ ; *alternative*=**1** is >. *drawflag*=**1** draws results; *drawflag*=**0** calculates results.
ZPrp2(*x1*,*n1*,*x2*,*n2*[,*alternative*,*drawflag*]**)** Computes a two-proportion *Z*-test. *alternative*=**⁻1** is < ; *alternative*=**0** is ≠ ; *alternative*=**1** is >. *drawflag*=**1** draws results; *drawflag*=**0** calculates results.

Function Argument and Result
ZSam2(σ_1 ,σ_2,*listname1*,*listname2*[,*freqlist1*,*freqlist2*,*alternative*,*drawflag*]**)** where σ_1 ,σ_2,*listname1*,*listname2* refers to the known population standard deviations (from the first and second populations) and lists you have created in the list editor. Computes a two-sample *Z*-test. *alternative*= **-1** is < ; *alternative*=**0** is ≠ ; *alternative*=**1** is >. *drawflag*=**1** draws results; *drawflag*=**0** calculates results.
ZSam2(σ_1 ,σ_2 ,$\bar{x}1$,*n1*,$\bar{x}2$,*n2*[,*alternative*,*drawflag*]**)** where σ_1 ,σ_2 ,$\bar{x}1$,*n1*,$\bar{x}2$,*n2* refers to summary statistics that you must enter. Computes a two-sample *Z*-test. *alternative*= **-1** is < ; *alternative*=**0** is ≠ ; *alternative*=**1** is >. *drawflag*=**1** draws results; *drawflag*=**0** calculates results.
ZTest($\mu 0$,σ,*listname*[,*freqlist*,*alternative*,*drawflag*]**)** where $\mu 0$,σ,*listname* refers to the hypothesized value, the known population deviation, and a list you have created in the list editor. Performs a *Z*-test with frequency *freqlist*. *alternative*= **-1** is < ; *alternative*=**0** is ≠ ; *alternative*=**1** is >. *drawflag*=**1** draws results; *drawflag*=**0** calculates results.
ZTest($\mu 0$,σ,$\bar{x}$,*n*[,*alternative*,*drawflag*]**)** where $\mu 0$,σ,$\bar{x}$,*n* refers to summary statistics that you must enter. Performs a *Z*-test. *alternative*= **-1** is < ; *alternative*=**0** is ≠ ; *alternative*=**1** is >. *drawflag*=**1** draws results; *drawflag*=**0** calculates results.

Menu Map for Inferential Statistics and Distribution Functions

MATH menu (where STAT is automatically placed) [2nd] [MATH]

NUM	PROB	ANGLE	HYP	MISC	▸	INTER	STAT			

(MATH) STAT (Inferential Statistics and Distribution) Menu [2nd] [MATH] [MORE] [F2]

TESTS	DISTR	DRAW	FUNC	Uninst	▸	RsltOn	RsltOf			

STAT TESTS (Inferential Statistics Tests) Menu [2nd] [MATH] [MORE] [F2] [F1]

TESTS	DISTR	DRAW	FUNC	Uninst	▸	RsltOn	RsltOf			
ZTest	Ttest	Zsam2	Tsam2	ZPrp1	▸	ZPrp2	ZIntl	TIntl	ZInt2	TInt2
					▸	ZPin1	ZPin2	Chitst	FSam2	TLinR
					▸	ANOVA				

STAT DISTR (Inferential Statistics Distribution) Menu [2nd] [MATH] [MORE] [F2] [F2]

TESTS	DISTR	DRAW	FUNC	Uninst	▸	RsltOn	RsltOf			
nmpdf	nmcdf	invnm	tpdf	tcdf	▸	chipdf	chicdf	Fpdf	Fcdf	bipdf
					▸	bicdf	pspdf	pscdf	gepdf	gecdf

STAT DRAW (Inferential Statistics Draw) Menu [2nd] [MATH] [MORE] [F2] [F3]

TESTS	DISTR	DRAW	FUNC	Uninst	▸	RsltOn	RsltOf			
ShdN	Shdt	ShdChi	ShdF		▸					

STAT FUNC (Inferential Statistics Functions) Menu [2nd] [MATH] [MORE] [F2] [F4]

TESTS	DISTR	DRAW	FUNC	Uninst	▸	RsltOn	RsltOf			
ZTest	Ttest	ZSam2	Tsam2	ZPrp1	▸	ZPrp2	ZIntl	TIntl	ZInt2	TInt2
					▸	ZPIn1	ZPIn2	Chitst	FSam2	TLinR
					▸	ANOVA				