

[home] on]	HOME	Turns device on and takes you to the home screen
[esc]	ESCAPE	Removes menus or dialog boxes from the screen
[tab]	TAB	Moves to the next entry field
[ctrl]	CONTROL	Access secondary keys (gray functions above main keys)
[↑ shift]	SHIFT	Makes the next character uppercase
[menu]	MENU	Displays the menu for the current application
[ctrl][esc]	UNDO	Undoes the previous action
[ctrl][doc]	+PAGE	Add new page
[ctrl][enter]		Turns a fraction into decimal form
[ctrl] [=]	_	Allows you to enter a fraction



MATH  
TEMPLATE



Math Templates like exponent (other than squared), radical, absolute value...

**THERE'S NO PLACE LIKE [home] (always returns you to main menu)  
[home] [1] brings you to new doc where you choose the app you need.**

**Graphing a Function (linear, quadratic, exponential or absolute value)**

- 1 - From **HOME**, choose the Graph App (#2)
- 2 - Enter the equation into the equation input bar ( $f_1(x) = \underline{\hspace{2cm}}$ ), press **ENTER**.
- 3 - If you want to enter MORE THAN ONE equation on one graph, press **TAB**  
\* Notice the equation input bar now says  $f_2(x) = \underline{\hspace{2cm}}$
- 4 - For "special" equations (like  $x = \#$ ) press **MENU / GRAPH ENTRY / EQUATION TEMPLATES / LINE / CHOOSE APPROPRIATE FORMAT**
- 5 - For inequalities, press **DEL** and then select the appropriate inequality sign

**To view the table**

- 1 - Press **CTRL T** (only works with  $f(x)$  function and not Relation function)
- 2 - To get out of split table view, **CTRL T**.

To see more than one set of table values (for more than one function) while the table is in view, click the arrow next to  $f_1$  and select the appropriate function.

To quickly clear the graph of all equations: press **del** 3 times

**To trace points on a graph**

- 1 - Once equation is entered, press **MENU / 5: TRACE / 3: TRACE STEP** (default setting is automatic, which will give you every point. I suggest changing it to 1 or 0.5 depending on what you are looking for)
- 2 - Use the NavPad to move left and right along the graph and  $(x, y)$  coordinates will be displayed. You may also type any number and press **ENTER** to automatically look up an X-value and its related Y-value.

### Checking your **solution(s)** to a system of equations

- 1 - From **HOME**, choose the Graph App (#2)
- 2 - Enter equation 1 into the equation input bar, press **ENTER**. Press **TAB** to enter the second equation, press **ENTER**.
- 3 - Press **MENU / 6: ANALYZE GRAPH / 4: INTERSECTION**
- 4 - A dotted line appears saying "lower bound?" in the lower left-hand corner. Select the space to the left of the graph, press **ENTER**.
- 5 - A dotted line appears saying "upper bound?" in the lower left-hand corner. Select the space to the right of the graph, press **ENTER**.

The coordinates of the point of intersection will be displayed on the graph.

### Finding the **roots, zeros, solutions, x-intercepts** of a Quadratic Function

- 1 - From **HOME**, choose the Graph App (#2)
- 2 - Enter equation 1 into the equation input bar, press **ENTER**.
- 3 - Press **MENU / 6: ANALYZE GRAPH / 1: ZERO**
- 4 - A dotted line appears saying "lower bound?" in the lower left-hand corner. Select the space to the left of the x-intercept, press **ENTER**.
- 5 - A dotted line appears saying "upper bound?" in the lower left-hand corner. Select the space to the right of the x-intercept, press **ENTER**.

The coordinates of the intercept that falls between the boundaries will be displayed on the graph.

If you have multiple x-intercepts, you will need to do this multiple times.

### Finding the **vertex, minimum, maximum** of a Quadratic Function

- 1 - From **HOME**, choose the Graph App (#2)
- 2 - Enter equation 1 into the equation input bar, press **ENTER**.
- 3 - Press **MENU / 6: ANALYZE GRAPH / 2: MINIMUM or 3: MAXIMUM**
- 4 - A dotted line appears saying "lower bound?" in the lower left-hand corner. Select the space to the left of the vertex, press **ENTER**.
- 5 - A dotted line appears saying "upper bound?" in the lower left-hand corner. Select the space to the right of the vertex, press **ENTER**.

The coordinates of the vertex will be displayed on the graph.

It is wise to verify that you selected the correct option (min vs. max) by checking the location of the coordinate the calculator gives.

Finding the vertex may change your window view of the graph. There are 2 options to change it back:

- |   |   |
|---|---|
| <ol style="list-style-type: none"><li>1 - Select the small number next to the arrows on the axes. Double click to change the value, then press <b>tab</b> to go to each arrow. Press <b>enter</b> when you're done.</li></ol> | <ol style="list-style-type: none"><li>2 - Press <b>MENU / 4: WINDOW ZOOM / 5: ZOOM-STANDARD</b></li></ol> |
|---|---|

## Finding the Mean, Median, Quartile Ranges and Standard Deviation

1 -	From <b>HOME</b> , choose the List & Spreadsheets App (#4)																									
2 -	Arrow to the TOP of the column and NAME your list.	→																								
3 -	Input your data in the cells below	→																								
		<table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td style="width: 10px;">A</td> <td style="width: 40px;">x</td> <td style="width: 10px;">B</td> <td style="width: 40px;">y</td> </tr> <tr> <td>=</td> <td></td> <td></td> <td></td> </tr> <tr> <td>1</td> <td>1</td> <td>8</td> <td></td> </tr> <tr> <td>2</td> <td>2</td> <td>9</td> <td></td> </tr> <tr> <td>3</td> <td>3</td> <td>10</td> <td></td> </tr> <tr> <td>4</td> <td></td> <td></td> <td></td> </tr> </table>	A	x	B	y	=				1	1	8		2	2	9		3	3	10		4			
A	x	B	y																							
=																										
1	1	8																								
2	2	9																								
3	3	10																								
4																										
4 -	Press <b>MENU / 4: STATISTICS / 1: STAT CALCULATIONS / 1: ONE VARIABLE STATISTICS /</b> Select the column name you want to choose, press <b>ENTER</b> .																									
5 -	The information on the right will appear on your screen	<div style="border-left: 1px solid black; padding-left: 10px;"> <math>\bar{x}</math> = mean  <math>\sigma_x</math> = standard deviation  n = number of entries  min = minimum number  Q1 = lower quartile  Med = median  Q3 = upper quartile  max = maximum value </div>																								

\* To clear a list: **CTRL W**

## Determining the Line of Best Fit, Plotting Scatter Plots, and displaying the Correlation Coefficient for Line of Best Fit

1 -	From <b>HOME</b> , choose the List & Spreadsheets App (#4)	
2 -	Arrow to the TOP of the column and NAME your list(s).	
3 -	Input your data in the cells below each list	
4 -	If you <b>ONLY</b> need Regression Equation and r-value:	
	4a - Press <b>MENU / 4: STATISTICS / 1: STAT CALCULATIONS / 3: LINEAR REGRESSION (mx + b)*</b>	
	4b - Select the titles of your lists, then press <b>OK</b>	
5 -	The information on the right will appear on your screen	<div style="border-left: 1px solid black; padding-left: 10px;"> Title: Linear Regression Equation  RegEqn: m*x+b  m:  b:  r<sup>2</sup>:  r:  Residuals: {    } </div>

To see the scatter plot, after data is entered into list(s).

- 1 - Press **HOME /** Arrow down to select **ADD DATA & STATISTICS /** press **ENTER**
- 2 - Use NavPad, move to bottom and click to add x-variable list name, then move left and click to add y-variable list name.
- 3 - Press **MENU / 4: ANALYZE / 6: REGRESSION / CHOOSE APPROPRIATE REGRESSION EQUATION**

\* You can also perform Quadratic Regression or Exponential Regression when necessary. Choose the appropriate Regression when you press MENU.

### Finding/Viewing Residual Plots

1 - Once above steps for Linear Regression are performed, press **MENU / 4: ANALYZE / 7: RESIDUALS / 2: SHOW RESIDUAL PLOT**

\* Note: If Regression is not performed first, #7: Residuals will not show as an option.

2 - To view EACH residual value, press **4: ANALYZE / A: GRAPH TRACE** / Use the arrow keys to click on each point. The y-value for each point is the residual value.

### Using the Graphing Calculator to make a Histogram:

1 - From **HOME**, choose the Calculator App (#1)

2 - Press **CTRL / RIGHT PARENTHESIS** TO GET { }

3 - Input your data values separated by commas, then arrow right once to get out of brackets

4 - Press **CTRL / VAR**. This will give you a → to store your information. Enter the name of the data being stored (for example: grades, heights, weights, etc.)

5 - Press **HOME** / Arrow down to select **ADD DATA & STATISTICS** / press **ENTER**

6 - Use NavPad, move to bottom and click to add x-variable list name. Choose the name you just entered.

\* Note: the default graph is a DOT PLOT

7 - Press **MENU / 1: PLOT TYPE / 3: HISTOGRAM**

8 - Since we need intervals, we need to change how it is displayed on the screen. Press **MENU / 2: PLOT PROPERTIES / 2: HISTOGRAM PROPERTIES / 2: BIN SETTINGS / 1: EQUAL BIN WIDTH**

9 - Enter the range of your interval into the width space (for example 40 – 49 has a width of 10 since there are 10 #s in the interval) and the Alignment is where the data starts. **TAB / OK**

10 - Next, you must change your window. Press **MENU / 5: WINDOW/ZOOM / 2: ZOOM - DATA**

11 - If you hover over each bar, the interval is given using interval notation, along with the # of points within that range.

### Using the Graphing Calculator to make a Box and Whisker Plot:

1 - From **HOME**, choose the Calculator App (#1)

2 - Press **CTRL / RIGHT PARENTHESIS** TO GET { }

3 - Input your data values separated by commas, then arrow right once to get out of brackets

4 - Press **CTRL / VAR**. This will give you a → to store your information. Enter the name of the data being stored (for example: grades, heights, weights, etc.)

5 - Press **HOME** / Arrow down to select **ADD DATA & STATISTICS** / press **ENTER**

6 - Use NavPad, move to bottom and click to add x-variable list name. Choose the name you just entered.

\* Note: the default graph is a DOT PLOT

7 - Press **MENU / 1: PLOT TYPE / 2: BOX PLOT**

8 - If you hover over the box and whiskers, the Lower Extreme, Lower Quartile, Median, Upper Quartile, and Upper Extreme are displayed on the screen, respectively.

9 - If you want to extend the whiskers to the extremes, press **MENU / 2: PLOT PROPERTIES / 3: EXTEND BOX PLOT WHISKERS**