



## Graphing Calculator

### Quick Reference Guide for Moderators

To display the calculator, from the Window menu, select Graphing Calculator. The calculator is displayed in front of the other windows. Resize or re-position the Graphing Calculator window anywhere on your application.

You can enter only explicit functions in the graphing calculator. The calculator allows you to plot two functions on the same grid. If your function contains a variable, it must be represented by an  $x$ . Type your function in the function box and press Enter to graph it. Optionally, you can enter a second function in the second function box. Your first function is graphed in blue, the second in red.

The display region of the graph is defined by the X range and Y range values. The Grid Spacing draws visible lines that correspond to tick points on the  $x$ - and  $y$ -axis. By default, the display region is set at  $-5$  to  $5$  for the X range,  $-5$  to  $5$  for the Y range and the Grid Spacing is set to  $1$ . To display a different region of the graph, enter values for the X range and Y range and set the Grid Spacing.

### Assigning Privileges

1. Go to Window > Graphing Calculator to open the Graphing Calculator window.
2. The calculator column appears in the Participants window. Assign calculator privileges to those participants who will be using the shared calculator.

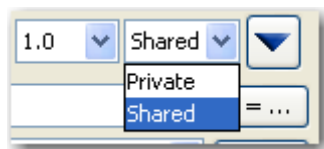
## Graphing Calculator Features

The screenshot shows the Graphing Calculator window with the following features labeled:

- Close button**: Located in the top right corner of the window.
- Follow Moderator**: A checkbox located below the close button.
- Y-axis**: The vertical axis of the graph.
- X-axis**: The horizontal axis of the graph.
- Set the grid spacing**: A label pointing to the grid lines on the graph.
- Select either the Private or Shared calculator**: A label pointing to the 'Shared' dropdown menu.
- Restore Defaults**: A label pointing to the '1.0' dropdown menu.
- Evaluate either function**: A label pointing to the 'X = ...' input boxes.
- Click to see the history of the functions that you entered**: A label pointing to the 'X = ...' input boxes.
- Set the viewing window range**: A label pointing to the 'X Range' and 'Y Range' input boxes.
- Function boxes**: A label pointing to the 'Y =' and 'Y =' input boxes.
- Evaluate either function**: A label pointing to the 'X = ...' input boxes.
- Click to see the history of the functions that you entered**: A label pointing to the 'X = ...' input boxes.
- Set the viewing window range**: A label pointing to the 'X Range' and 'Y Range' input boxes.
- Zoom in**: A label pointing to the magnifying glass icon.
- Zoom out**: A label pointing to the magnifying glass icon with a minus sign.
- Move visible area**: A label pointing to the four-way arrow icon.
- Select a point on the graph to find the x and y coordinates**: A label pointing to the grid area.

## Private and Shared Calculators

The graphing calculator feature supplies everyone with two calculators: a *private* and a *shared* calculator. You can open and use the *private* calculator. It is visible only to you and you do not need privileges in order to use the *private* calculator. The *shared* allows users to work in a collaborative environment and interact on the calculator together. Both graphing calculators function identically. In order to switch between the Private and Shared calculator, select Shared or Private from the drop down menu in the Graphing Calculator window.



## Using the Shared Calculator

The calculator can be used in one of two ways: without the Follow Moderator option selected or with it. Go to the Tools menu and from Graphing Calculator you can select Follow Moderator.

### Using the shared calculator without the Follow Moderator option selected

- You and your participants can work on the shared calculator as needed.
- Participants can switch to their private calculator or close their Graphing Calculator window at any time.
- You can change the display region at any time.
- Participants can make changes on the graphing calculator only when they have calculator privileges. If participants do not have calculator privileges, their calculator buttons and menus are grayed out.

### Using the shared calculator with the Follow Moderator option selected

From the Tools menu, select Graphing Calculator and then select Follow Moderator. When the Graphing Calculator window is open, the shared graphing calculator is displayed on everyone's session. When Follow moderator is selected:

- The participants are forced to view the shared Graphing Calculator window and see all the changes that are made on your calculator.
- Participants cannot dismiss the Graphing Calculator or use their private calculator. You, however, can always use your private calculator.
- Participants can make changes on the calculator only when they have calculator privileges. If participants do not have calculator privileges, their calculator buttons and menus are grayed out.
- If you dismiss the Graphing Calculator window, then the participants' (private and shared) calculators are dismissed as well.

## Entering Mathematical Operators and Functions

The following table lists the allowable mathematical operators.

Type	To perform this operation...	Type	To perform this operation...
+	Add	/	Divide
-	Subtract	^	Exponent
*	Multiply	()	Parenthesis

Use the following abbreviations for these functions and numbers.

Type	To represent this function or number...	Type	To represent this function or number...
sqrt	Square Root	sec	Secant
abs	Absolute Value	cot	Cotangent
log	Logarithm (base 10)	asin	Arcsine
ln	Natural Logarithm	acos	Arccosine
sin	Sine	atan	Arctangent
cos	Cosine	pi	$\pi$
tan	Tangent	e	e
csc	Cosecant		