



Activity Overview

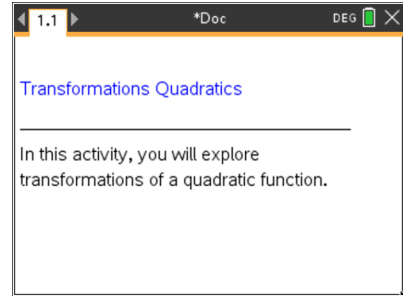
In this activity, you will create and use sliders to investigate transformations of quadratic functions in a *Graphs* application.

Materials

- Technology needed (TI-Nspire™ handheld, computer software)

Step 1: Preparing the document

- Open a new document by clicking > **New** > **Add Notes**.
- Type: Transformations Quadratics. Format as desired.
- Add other words as needed (See image to the right.)

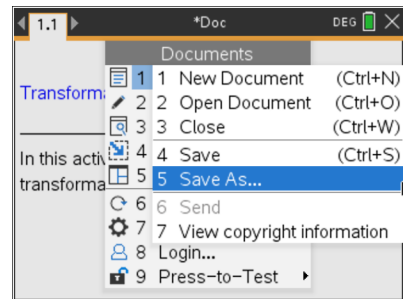


Note: To obtain capital letters, press the key, then the letter.

- Press > **File** > **Save As**

Type: Transformations_Quadratics

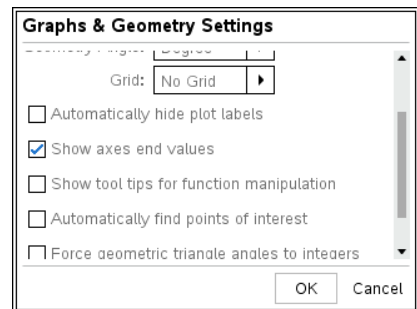
Tab to and press .



Note: To obtain the underscore, press . Save the document throughout the creating.

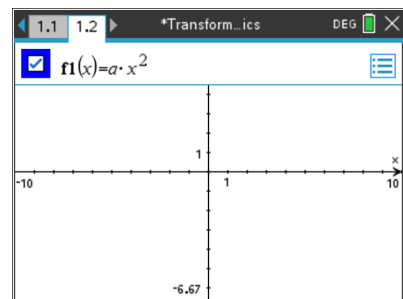
- To add a new page, press > **Add Graphs**.

- Press **Menu** > **Settings**. Press to move from one field to the next and press to uncheck all the boxes except *Show axis end values*. Tab to OK and press or .



Step 2: Type a function into f1(x)

- Press until the cursor is in the **f1(x) =** entry line at the top of the screen.
- To graph the equation $y = a \cdot x^2$, type .

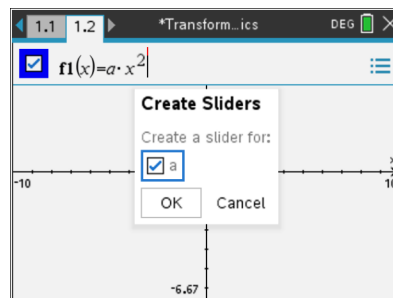




Step 3: Sliders

A dialogue window will appear prompting you to determine the parameters for which you want a slider to be created. Press **enter** or click on OK.

Note: Do not click on the screen or otherwise de-select the slider window.

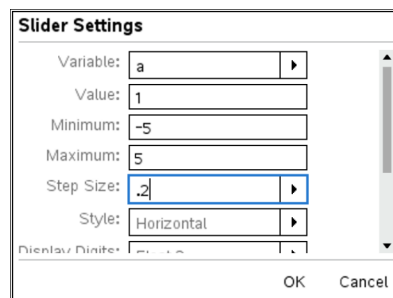
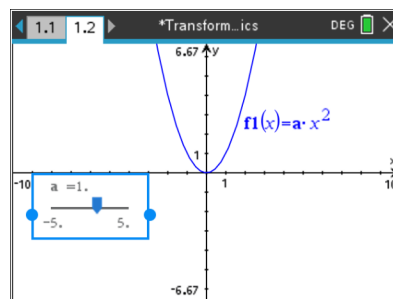


Step 4: Open the slider settings menu

With the slider for **a** selected, click press **ctrl** **menu**, and choose **Settings....**

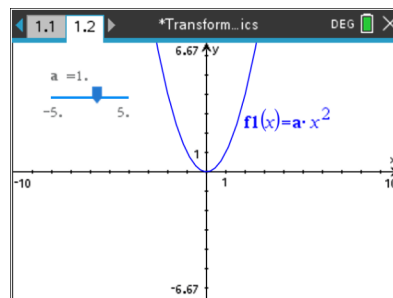
The slider settings shown at the right are displayed. If desired, change the settings.

- Press **tab** to move to the next field.
- For those settings that are not visible in the screen to the right, keep the default values.
- Press **enter** or click on OK to close the slider settings.




Step 5: Move the Slider

Use the Touchpad to move the slider for parameter **a** to the upper-left corner of the screen and then press **2nd** or **enter**.



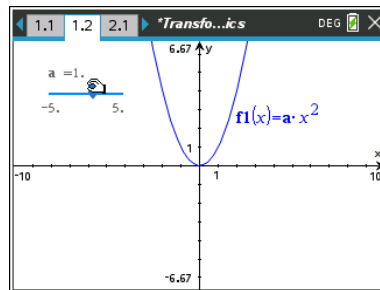


Step 6: Investigate the Math

To change the values of a parameter, use the Touchpad to move the cursor over the slider controller. When an “open hand” (☞) appears, press **ctrl**  to grab the slider controller.

Drag the slider controller using the Touchpad to change the values of the parameters. Observe the effects on the graph.

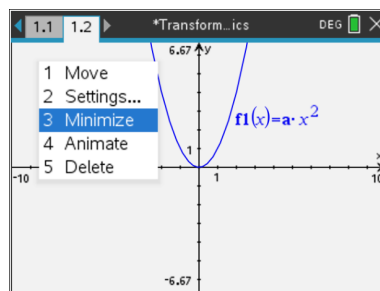
- What math concepts can be explored with this activity?
- What questions could be asked to highlight the math?



Step 7: More Slider Settings

A slider can be horizontal, vertical, or minimized. To minimize the slider, move the cursor over the slider, click to select, and press **ctrl** **menu** to display the context menu. Select **Minimize**.

To change the value of the variable, click the right or left arrow. Alternately, press ◀ or ▶ on the Touchpad.



Step 8: Add a new problem

1. To add a new problem, press **doc** > **Insert** > **Problem**.
2. Add a new Graphs page: press **Menu** > **Add Graphs**. Using previous steps 2 through 7, insert a slider to control the variable c in the equation: $f1(x) = x^2 + c$
3. Have the slider go from -5 to 5 in steps of 1 with an initial value of 0 .

