






## Overview

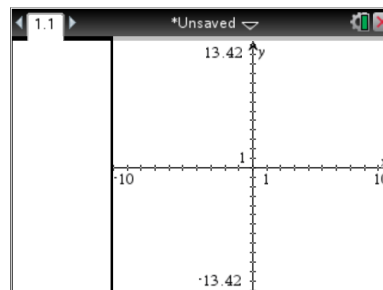
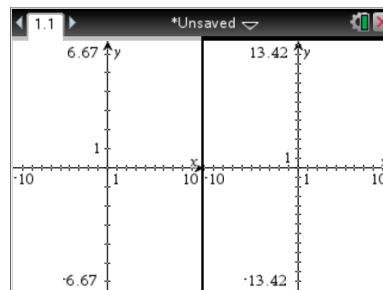
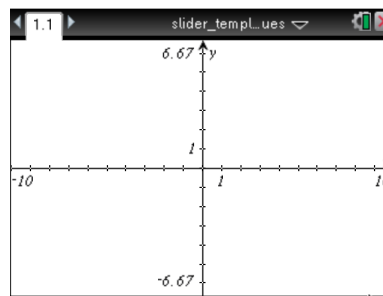
A slider is a useful calculator tool in action/consequence documents. Sliders can be used to control various parameters, for example, in equations, or values in a table. This calculator feature may be used to illustrate transformations and translations of graphs, specific values of a function, and limits. This document provides detailed steps showing how to construct a tns file with one minimized slider that cycles through a specific list of values together with two traditional sliders.

## Materials

- TI-Nspire™ handheld or Teacher Software

### Step 1—Preparing the document

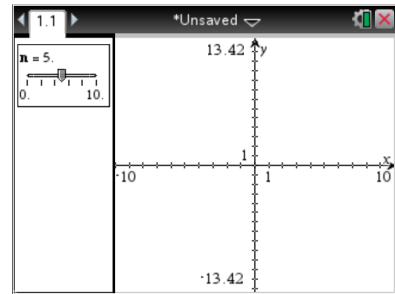
1. Open a new document on the handheld by pressing  > **New Document**. Open a new document in the Teacher Software by clicking **File > New**.
2. Select **Add Graphs**.
3. Press  > **Page Layout**, and under the Page Layout Menu, select layout to split the page in half vertically.
4. Add a Graphs page to the right-hand work area as well.
5. In the left work area, select **MENU > View > Hide Axis**.
6. Using the computer software, position the cursor along the boundary of the two screens. Left-click and hold the button down to move the boundary to the left, leaving room for a slider. On the handheld, select  > **Page Layout > Custom Split**, and use the arrow keys to move the boundary to the left.



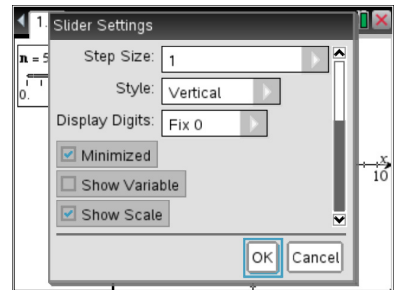
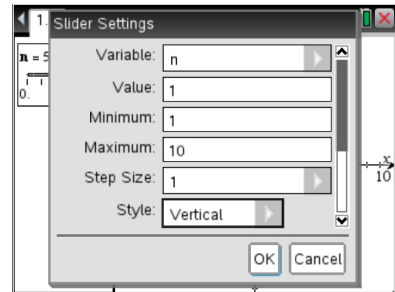


### Step 2—Adding a Slider

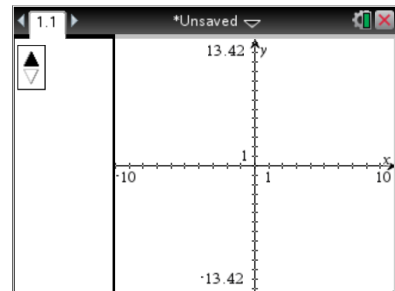
- In the left work area, select **MENU > Actions > Insert Slider**, and position the slider near the top left portion of the screen.
- Press enter to drop the slider, and rename the slider variable  $n$ .



- Right-click (on the handheld, press **ctrl** **menu**) in the slider box, and select **Settings**.
- Change the slider settings as indicated in the screens to the right, and click OK.



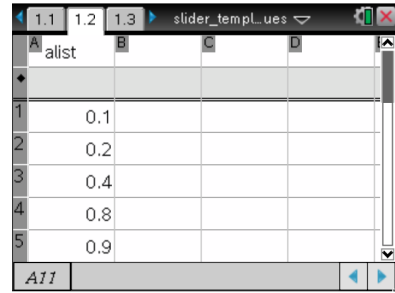
- In the figure to the right, the slider is minimized, and the variable  $n$  is not shown.





### Step 3—Creating a Spreadsheet

11. Select **doc** > **Insert > Lists & Spreadsheet** to insert a Lists and Spreadsheets page.
12. In Column A, enter the numbers you would like the slider to cycle through.
13. Click in the top row, and name the column **alist**.



### Step 4—Creating a Math Box

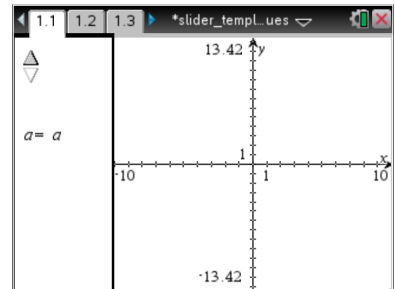
14. Select **doc** > **Insert > Notes** to insert a Notes page.
15. Select **MENU > Insert > Math Box**, and define the variable **a** to be **a := alist[n]**.

Note: **alist** and **n** should be available under **var**.

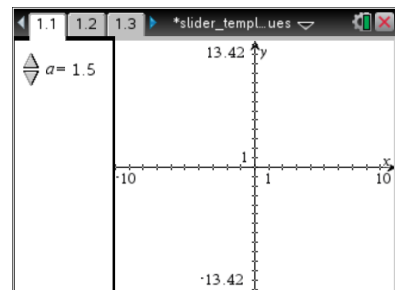


### Step 5—Activating the Slider

16. Click Page 1.1, and select **MENU > Actions > Text**.
17. Click below the slider, and add the text **a =**.
18. Click on another location below the slider, and add another text box with just the letter **a**.



19. Select **MENU > Actions > Calculate** and click on the text box with only the letter **a**.
20. In the pop-up pane, tap L for the variable **a**, and position the value of **a** in the left panel next to the top slider (see figure).
21. Press **esc** to deactivate **Actions > Text**.
22. Select **MENU > Actions > Hide/Show**, and click on the text box with only the letter **a**.
23. Tap **esc** to deactivate **Actions > Hide/Show**.
24. Grab and move the remaining text box and the value of **a** as desired.



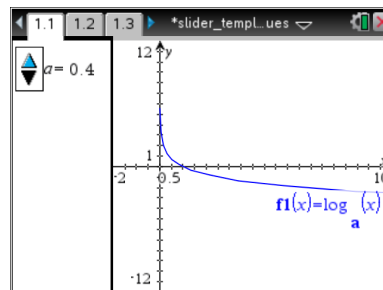
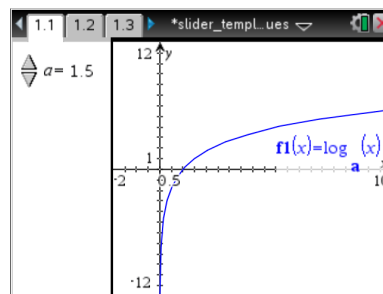
By following these steps, you have labeled the values of the slider.



The slider will now cycle through the values in the column labeled **alist** on the Lists & Spreadsheet page. For example, in the right panel, define the logarithmic function  $f1(x) = \log_a x$ .

25. Use the slider to change the value of  $a$  and view the various graphs.

Note: The function  $\log_a x$  can be accessed through **[ctrl]** **[log]** or by typing  $\log(x,a)$ .



26. Using the handheld, select **[docv]** > **Insert** > **Problem**. Using the computer software, select **Insert** > **Problem**.

27. Insert a new Calculator page at the beginning of the Problem. After copying the pages below, you can delete this blank Calculator page.

28. On the handheld, press **[ctrl]** **[⌘]** to view the document pages. Select the page to be copied (1.1). Press **[ctrl]** **[menu]** > **Copy**, select the position for the new (copied) page, and press **[ctrl]** **[menu]** > **Paste**.

- Using the Computer Software, select **Toolbox** > **Page Sorter**. Right-click (control-click on the Mac) on the appropriate page, and select Copy (or use **ctrl+C**). Select the position for the new (copied) page, right-click, and select Paste (or use **ctrl+V**).

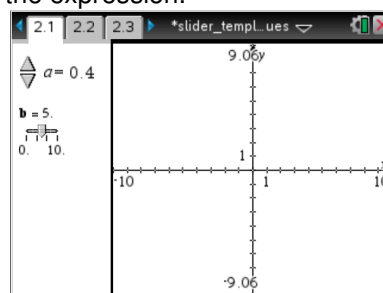
29. Copy Page 1.1, and paste into the new problem as Page 2.1.

- Copy Page 1.2, and paste into the new problem as Page 2.2.
- Copy Page 1.3, and paste into the new problem as Page 2.3.

30. Move to Page 2.3, click in the Math Box, and tap **[enter]** to evaluate the expression.

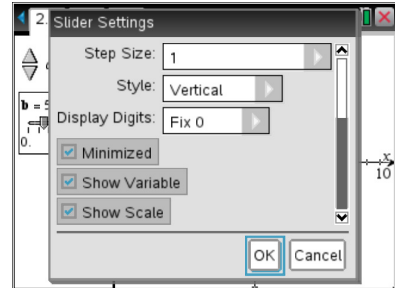
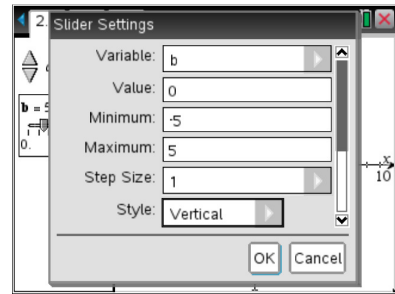
A document / problem can contain both value sliders and traditional sliders.

31. Add a traditional slider to this problem. In the left work area of Page 2.1, select **MENU** > **Actions** > **Insert Slider**. Position this second slider below the first, and name the slider variable  $b$ .



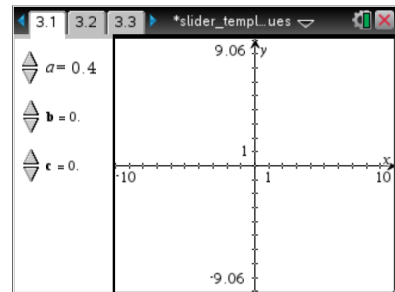


- 32. To change the slider settings associated with  $b$ , right-click in the slider box, and select Settings.
- 33. Change the slider settings as desired. For example, consider the settings in the figures to the right.



- 34. Clear any function that was used in Problem 1.
- 35. You can now add a function characterized by the parameters  $a$  and  $b$  on the entry line of the right screen. For example, type  $f1(x) = \log_a(x+b)$ . Then click the slider arrows on the left screen, and watch the graph of the function  $f1$  change dynamically with the value of the slider.

- 36. Insert another new problem (3.1).
- 37. Copy Pages 2.1, 2.2, and 2.3, and paste them into the new problem as Pages 3.1, 3.2, and 3.3, respectively.
- 38. On Page 3.3, click in the Math Box, and tap enter to evaluate the expression.
- 39. In the left work area of Page 3.1, select **MENU > Actions > Insert Slider** to add another traditional slider to this problem.
- 40. Position this third slider below the first and second, name the slider variable  $c$ , and use slider settings as desired.



- 41. Clear any functions that were used in Problem 2.
- 42. You can now add a function characterized by the parameters  $a$ ,  $b$ , and  $c$  on the entry line of the right screen. For example, type  $f1(x) = c \cdot \log_a(x+b)$ . Then click the slider arrows on the left screen, and watch the graph of the function  $f1$  changes dynamically with the value of the slider.

Note: Additional sliders that cycle through specific values and/or traditional sliders can be added. Create another list of numbers and a list name (for example, **blist**, **clist**, etc.) for each additional slider that cycles through specific values.