

Opening Activity

Concepts

- Introduction to TI Navigator™
- Basic functionality of the NavNet App on the calculator

Materials

- TI-84 Plus
- TI-Navigator system

Overview

Participants will experience TI-Navigator™ from a student's perspective.

Using the Calculator

1. Press the **[ON]** button located on the bottom left of the calculator.
2. Press the **[APPS]** button.
3. Move down to NavNet (or **[ALPHA]** N). See Figure 1.
4. Press **[ENTER]** to open NavNet. See Figure 2.
5. Sign in using the user name and password given you by the instructor. You will now be at the TI-Navigator Home screen. See Figure 3.
 - The name may be as few as 3 characters but cannot exceed 32 characters.
 - By default, the calculator is in ALPHA mode. The letters are in green above the keys.

Introduction to Quick Poll

1. Your instructor will ask you a series of questions. Answer each question by moving your cursor to your choice and pressing the **[Y=]** button. (“SEND” soft key)
2. Sample questions:
 - Have you ever seen the TI-Navigator before? (Yes/No)
 - I'm excited about seeing what TI-Navigator has to offer for my classroom. (Agree/Disagree) {verbal}
 - The use of technology is welcomed in my classroom. (True/False)
 - I use technology in the classroom (Always/Sometimes/Never)
 - On a scale of 1-5, with 1 being the lowest, indicate your comfort level with using the computer. Use A for 1, up to E for 5. (Multiple Choice A through E) {verbal}

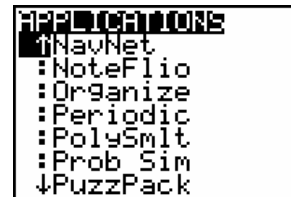


Figure 1



Figure 2



Figure 3

- How many years have you been teaching? (Open Response)

Introduction to Screen Capture

1. Exit NavNet by pressing the “QUIT” soft key (**GRAPH** button).
2. Clear the Home screen by pressing the **CLEAR** button.
3. Your instructor will ask you a series of questions. Answer each question by typing your answer on the Home screen. Clear the Home screen after each answer.
4. Sample questions:
 - Simplify the expression: $(x-5)^2$.
 - Graph your favorite equation.
 - Display the window settings for your graph.
 - Press the following key sequence on your calculator. **2nd** **+** **2**.

Introduction to Activity Center

1. Go back to NavNet (**APPS**), select NavNet). Notice that you don't have to log in again. During any class session, you only have to log in once.
2. Select 1:Activity Center from the TI-Navigator Home screen. See Figure 3.
3. Play “Catch Me If You Can”.
 - The instructor will have a green cursor while each student will have a white cursor.
 - Chase the instructor's cursor until you “catch” it.
 - After a while, the instructor will change each cursor to a unique shape and color. Can you identify yourself?
4. Play “Guess My Rule”.
 - The instructor will ask you to contribute 3 points that follow a mathematical rule.
 - To contribute each point, press the “MARK” soft key.
 - After the instructor re-configures the activity, you will be asked to contribute an equation to fit the points on the screen.
 - To submit your equation, type it after the “y=” prompt and press the “SEND” soft key.

Launch Pad Question

Quick Poll: I'm ready to begin setting up my own Navigator Classroom. (Agree/Disagree)

Setting Up The Navigator Classroom

Concepts

- Setting up a TI-Navigator™ classroom

Materials

- TI-Navigator software.

Overview

Participants will add a class and populate that class with a sample student roster. They will also use other tools for managing a class.

Adding Classes

1. Begin the TI-Navigator software on the computer by double-clicking the TI-Navigator icon on the desktop. See Figure 1.
2. Select the Add Class icon from the tool bar (see Figure 2) or select Add Class from the File menu.
3. For each class enter the name of the class and press the Add Class button. When you have entered your last class, press the Finish button. We will create one class for this institute which we will call “Practice Class”.

Adding Students

1. Choose the student’s class from the pull down menu under Current Class. See Figure 3.
2. Select the Add Student icon from the Classroom Tab or select Add Student from the Class menu. See Figure 4.
3. For each student enter the student’s first name, last name, and user name. The user name must be globally unique for the entire TI-Navigator software.
4. For this institute, we will use the following students:
 - Jon, Smith, Jon
 - Deb, Jones, Deb
 - Marco, Polo, Marco
 - Sonja, Perez, Sonja
 - Raymone, Tyson, Raymone



Figure 1

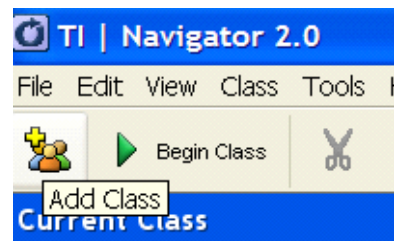


Figure 2

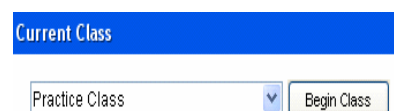


Figure 3

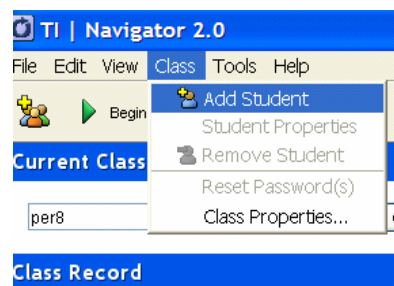


Figure 4

5. You may choose a password for each student, or each student may choose their own when they log in to NavNet for the first time. This will then be the student's password unless the teacher chooses to reset it.
6. The display name is seen only by the teacher in the Seating Chart view of the classroom. By default it is the student's first name. You may choose to give any student a different display name.
7. The Student ID is optional.
8. The Assign Classes button allows the teacher to add the student to other Navigator classrooms.

Viewing Classes in Seating Chart View Versus Student List View

1. There are two ways to view the students in a classroom: Seating Chart and Student List.
2. You may toggle between these two views by selecting the appropriate view under the View button. See Figure 5.
3. Under the Seating Chart view you can rearrange the students to reflect their seating arrangement in the classroom.
4. Under the Student List view, you can organize the students alphabetically by any attribute by clicking the title cell of a column.

Teacher Preferences

1. Teacher preferences are used to set the user name and password for the teacher to log in using a calculator.
2. Logging in as the teacher allows access to key features of TI-Navigator from the calculator, such as Quick Poll, File Transfer, and Activity Center.
3. To set up teacher preferences, select the Teacher Preferences icon from the tool bar or Teacher Preferences under the Tools menu. See Figure 6.
4. Specify a username and password. For this institute use Teacher for the Username and AAA for the Password. See Figure 7.
5. Click OK.

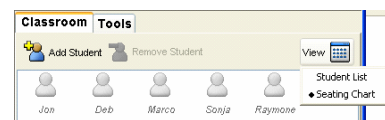


Figure 5



Figure 6

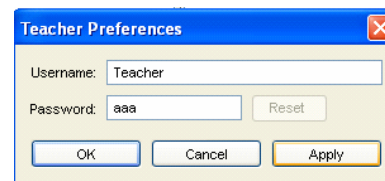


Figure 7

Resetting Passwords

- For any reason a teacher may choose to reset passwords for any number of students. You may not change the password of any student who is currently logged on to the network.
- Select any students whose passwords you want to reset. You may hold down the “Ctrl” button on the keyboard to select any number of nonconsecutive students or the “Shift” button to select any number of consecutive students.
- Select Reset Password(s) from the Class menu. See Figure 8.
- The students will choose their new password the next time they log on to the network.
- If you want to specify passwords for the students, you must do so when you first add a student, or you may specify passwords one at a time after the class has been set up. Double-click a student or select a student and choose Properties from the Edit menu to set the password.
- Click the Reset button.
- Either allow the student to choose their password the next time they log in or specify a password. See Figure 9.

Removing a Class or Student

- Removing a class:
 - From the pull down menu under Current Class select the class you want to remove.
 - Choose Remove Class from the File menu.
 - Confirm that the correct class is going to be removed and click the Remove button. See Figure 10.
- Removing a student:
 - From either the Seating Chart view or the Student List view, select the student you want to remove.
 - Click on the Remove Student icon or select Remove Student from the class menu. See Figure 11.
 - The student is removed from the class. The icon will be removed when you change classes and come back to this class or when you restart TI-Navigator.

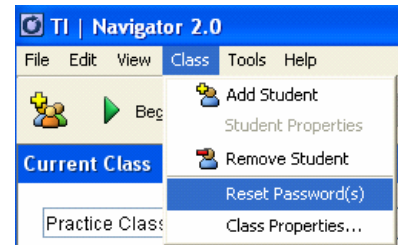


Figure 8

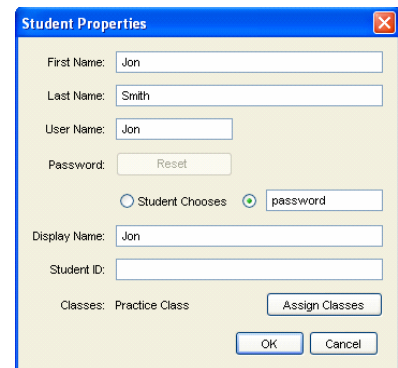


Figure 9

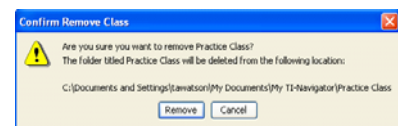


Figure 10

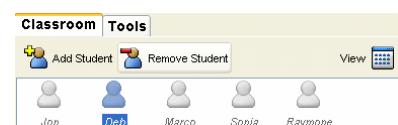


Figure 11

Dual-Enrollment or Moving a Student to a Different Class

1. Double-click the student you wish to move or dual-enroll (or you may select the student and choose Properties from the Edit menu.)
2. Select the Assign Classes button. See Figure 12.
3. Use the check boxes to mark the class or classes you want the student to be assigned to. Uncheck any class you do not want the student to be enrolled in.

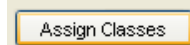


Figure 12

Importing a Class Roster To a New Class (optional)

1. An alternative to adding a class and adding students individually within the TI-Navigator software is creating a text file containing at least the following necessary fields: First Name, Last Name, and User Name.
Notes:
-students must be imported when the class is first created.
-you cannot import students to an existing class.
2. Open Notepad or any other text editor. The file must be set up as follows:
 - At minimum line 1 of the file must have all of the following text typed exactly: First Name, Last Name, User Name (spaces after commas are optional.)
 - All other student property fields are optional, but if used, they must be typed on Line 1 separated by commas.
 - On each successive line, type the student properties chosen in the steps above separated by commas (e.g. Jack, Smith, Jack). Each student must be in a new line. See Figure 13.
 - Save the file as a text file (txt file extension).
3. Begin the TI-Navigator software on the computer by double-clicking the TI-Navigator icon on the desktop. See Figure 1.
4. Select the Add Class icon from the tool bar or select Add Class from the File menu. See Figure 2
5. For each class enter the name of the class and click on the Add Class icon. See Figure 14.
6. Select the class you just entered.
7. Click on the Import Students button in the dialog box. Browse until you find the file that you saved in step 2.

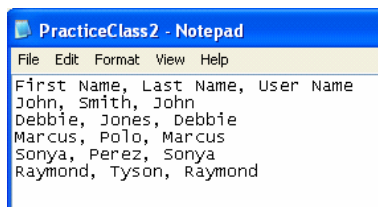


Figure 13



Figure 14

8. Click on the name of the file, and select Open.
 - When the import is successful, you will receive a confirmation message indicating the number of students added to the class.
9. After you have added your last class, press the Finish button.
10. Note: This process can be done using a spreadsheet program by using the cells to separate the data fields rather than commas. The file must be saved as a comma delimited file (csv file extension).
11. You may also import all of your students to one master class list and then reassign them to their appropriate class after they have been created.

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Using Screen Capture

Concepts

- Using Screen Capture to assess student understanding

Materials

- TI-84 Plus
- TI-Navigator system

Overview

Participants will use Screen Capture to view the screen of any or all students.

Creating Screen Captures

- Double click on the TI-Navigator icon from the desktop.
- Choose Practice Class from the pull-down menu under Current Class and click the Begin Class button.
- Log in two calculators as two students from the Practice Class. (e.g. Jon and Deb)
- Select the Screen Capture icon from the tool bar or the Tasks section of the Tools tab (or select Screen Capture from the Tools menu). See Figure 1.
- Select the Class icon to take a screen capture of the entire class or select the Students icon to take a screen capture of individual students. See Figure 2.
 - When using the Students option, hold down the “Ctrl” key to select any number of nonconsecutive students or hold down the “Shift” key to select any number of consecutive students.
- Click OK.
- The student calculator screens will be tiled alphabetically according to Last Name. See Figure 3.
- The teacher has the option of choosing whether the students names are displayed with the screen captures.
 - If a screen capture is viewed by the class, student names should not be displayed.
 - While the student calculators are on the Navigator Home screen, the screen capture will display student names.

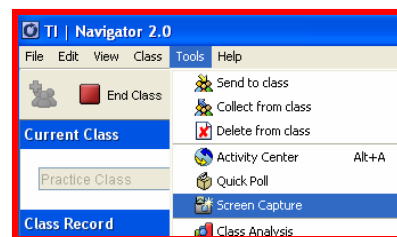


Figure 1



Figure 2

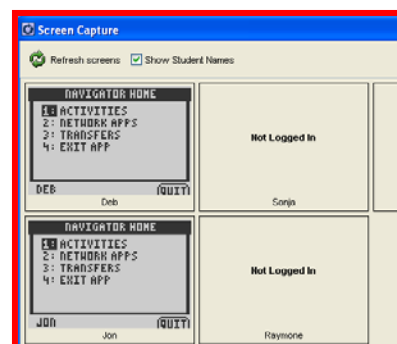


Figure 3

- If a screen capture is performed when the student calculators are outside of the NavNet application, the student names will not display on the computer unless the Show Student Names is selected.
9. On the student calculators, exit the NavNet application by selecting 4:Exit App from the TI-Navigator Home screen or the “QUIT” soft key.
 10. Type a message on each student calculator.
 11. On the computer, select the Refresh Screens icon on the Screen Capture window. See Figure 4.
 12. Toggle the Show Student Names option on and off to view the difference in the Screen Capture window.
 13. Experiment with the screen capture.
 14. To end the class session, on the computer, click the End Class button.

Discussion on Usages in the Classroom

1. What are the different usages of screen capture in a classroom?
2. What are the educational advantages of using screen capture during a class?
3. Think of a concept that was recently taught in your classroom, and write 5 different screen capture prompts.

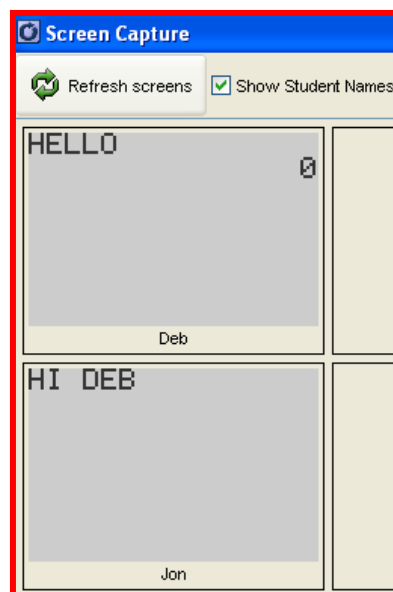


Figure 4

Using Quick Poll

Concepts

- Using Quick Poll to assess student understanding

Materials

- TI-84 Plus
- TI-Navigator system

Overview

Participants will use Quick Poll from both the computer and calculator to take a student poll.

Quick Poll from the Computer

- Double click on the TI-Navigator icon from the desktop.
- Choose Practice Class from the pull down menu under Current Class and click the Begin Class button.
- Use the USB graph link cables to connect two calculators to the computer. Log in one calculator as a student in the Practice Class (e.g. Jon).
 - Press **[APPS]** button.
 - Use the down arrow, **[↓]**, to move the cursor to NavNet.
 - Press **[ENTER]** button.
 - Enter a Username and Password.
- Conducting the poll:
 - Select the Quick Poll icon from the tool bar or the Tasks section of the Tools tab (or select Quick Poll from the Tools menu). See Figure 1.
 - Check the Resubmit check box to allow students to change their answer.
 - Choose Agree Disagree 3 from the pull down format.
 - In the entry box next to Poll Prompt type “I’m learning a lot about TI-Navigator.” See Figure 2.
 - Click on the Start Poll button to send the poll to the class. See Figure 3.
- Answering the quick poll as a student:
 - The question appears on the calculator.
 - The student scrolls to their answer choice using the arrow keys **[↑]** **[↓]** and pressing the “SEND” soft key to record their choice.

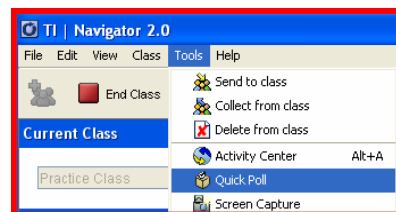


Figure 1



Figure 2



Figure 3

- Since the teacher selected the Resubmit option, the student has the option of resubmitting their choice. Try it.
6. Viewing poll results: (See Figure 4)
 - Click on the Stop Poll button to end the poll. (See Figure 5) You may pause and resume the poll if you choose.
 - Poll results are constantly updated on the computer.
 - Click on the Send Results button (Figure 6) to allow the students to view the poll results on their calculators.
 - The default view on the computer is Poll Details. You may also view individual student submissions under Poll Summary.
 - Student names are hidden by default and may be shown by marking the check box next to Show Student Names. See Figure 7.
 7. Try a few quick poll questions on your own.

Discussion on Usages in the Classroom

1. What are the different usages of quick poll in a classroom?
2. What are the educational advantages of using quick poll during a class?
3. Think of a concept that was recently taught in your classroom, and write five quick poll questions which could have been used to assess student understanding. Try to use various questions formats.
4. What are the advantages of allowing students to resubmit their quick poll answers?

Quick Poll From The Teacher Calculator

1. Log into another calculator as the teacher.
(e.g. Teacher, AAA)
2. From the TI-Navigator Home screen on this calculator, choose 4:Quick Poll by pressing 4 and **[ENTER]**.
3. Select the appropriate format.
4. Ask the class a question verbally.
5. Press the “SEND” soft key.
6. On the student calculator, answer the question. Make sure you press the “SEND” soft key to record the answer.

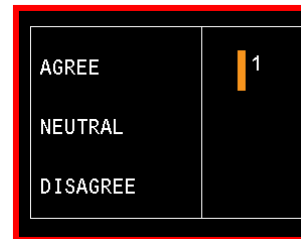


Figure 4



Figure 5



Figure 6

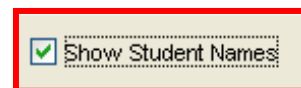


Figure 7

7. Notice that the student results are recorded on the teacher calculator and the computer screen.
8. To ask another question, use the “EDIT” soft key on the teacher calculator and go back to step 3.
9. You may view the results on the computer screen or use the computer to send the results to the student calculators. Try it.
10. Note: The resubmit option is not available when the quick poll is generated from the teacher calculator.

Quick Poll History

1. You may review the results of all quick poll questions from a current class session by clicking the History icon. See Figure 8.
2. If you use the computer to conduct the quick poll and type the question in the Poll Question box, the question will also be saved in the History.
3. Take a look at the quick poll history of your current Practice Class session. See Figure 9.

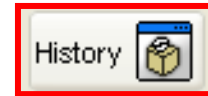


Figure 8

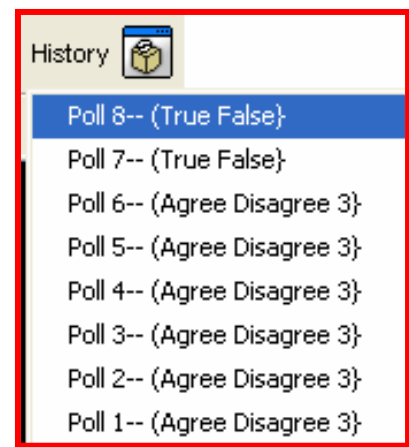


Figure 9

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Introduction to LearningCheck™

Concepts

- Basic functionality of LearningCheck™ Creator

Materials

- TI-84 Plus
- TI-Navigator system
- NavOpening.edc file

Overview

In this activity, participants will review the LearningCheck™ App from a student's perspective.

Using the Calculator (Participant Instruction)

1. Press the **[ON]** button located on the bottom left of the TI-84 Plus. Press the **[APPS]** button.
2. Use the down arrow **[↓]** to move the cursor to NavNet. See Figure 1.
3. Press **[ENTER]** to open the NavNet application.
4. Enter your USERNAME as directed by your instructor and press **[ENTER]**.
5. Enter your PASSWORD and press **[ENTER]**.
6. At this point, the instructor will “force-send” you a file. Once the assignment has been received on your calculator, press **[ZOOM]** (“BACK” soft key). See Figure 2
7. Move the cursor to NETWORK APPS and press **[ENTER]**. See Figure 3.
8. Scroll to LearnChk and hit **[ENTER]** to open the app. See Figure 4.
9. Press **[ENTER]** on the App Introduction screen.



Figure 1



Figure 2



Figure 3



Figure 4

10. Move the cursor in the Assignment LIST to highlight the assignment called NavOpening.
See Figure 5.
11. Press **[ENTER]** on the calculator to open the NavOpening Assignment.
12. Press **[ENTER]** on the first item in the list to view the first question. See Figure 6.
13. Now you are ready to begin your journey exploring the Navigator functionality of LearningCheck.
14. Begin the LearningCheck assignment called NavOpening and refer to the helpful hints below.

Helpful Hints

1. To move to the next question in a document, press the **[GRAPH]** key, which is below the softkey “NEXT”.
2. To move to a previous question, press **[2nd] [GRAPH]** which will move the question sequence in reverse.
3. To read text which extends beyond the text box on the screen, press **[▲]** or **[▼]**.
4. To move between answers to a multiple choice question, press the **[▲]** or **[▼]** keys.
5. To select an answer to a multiple-choice question, press **[ENTER]** on your selection to fill in the bubble. If the bubble is not filled in, your answer was NOT recorded.
6. To select other options, press the **[Y=]** key which is below the softkey “MENU” on the calculator screen.
7. Note: You can be certain that you have an answer that has been recorded for a question if there is a box in front of the title of the question. On the given student screen, Question 8 Grammar does not have an answer recorded. See Figure 7.

Retrieve Class Data (Instructor Demonstration)

1. The instructor will perform the sequence of steps for this section. The process is given here for you to follow along.
 - To retrieve class data, the instructor moves to the Class Analysis program by clicking the Class Analysis icon on the toolbar. See Figure 8.
 - Click on the Choose an Assignment for Analysis icon. See Figure 9.

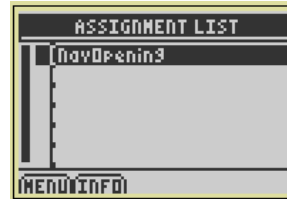


Figure 5



Figure 6

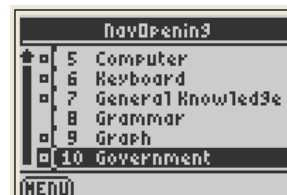


Figure 7

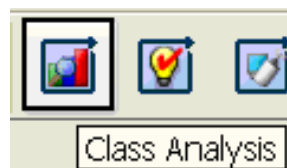


Figure 8



Figure 9

- Browse for the NavOpening LearningCheck document and double click on it. See Figure 10.
2. Click on the Collect Answer Files From Classroom Devices icon to retrieve the data from student calculators. See Figure 11.
 3. The pop-up window Collect Answer Files from Class appears and the following options are selected:
 - Delete Answer File from Device after Collect.
 - Delete Assignment File from Device after Collect.
 - This allows the teacher to manage the memory of the student calculators. Click the white boxes if the check marks are not present.
 4. Click the Start Transfer button from the resulting Collect Answer Files From Class at the bottom center of the pop-up window.
 - The data collected from the student calculators is displayed in a spreadsheet. See Figure 12.
 - Each student's data is coming in as a separate file called a user file with a file extension .usf.
 - Class Analysis calls on these files and displays them as a spreadsheet. The data will not be lost unless you delete the user files.
 5. From this point, the data can be printed, saved, and viewed in a slide show.
 6. A valuable tool in TI-Navigator is the Class Results Slide Show option. Access this from the icon on the top task bar. See Figure 13.
 7. The beginning of the slide show will show the title of the activity. See Figure 14.
 - The menu bar at the top will allow you to move between questions and display a bar graph of answers among the class.
 - The first question frame in the NavOpening activity appears as shown in Figure 15.
 8. A bar graph of student responses is shown to the right. Note that if a teacher registers a response as the correct answer the bar will be green instead of blue. See Figure 16.



Figure 10



Figure 11

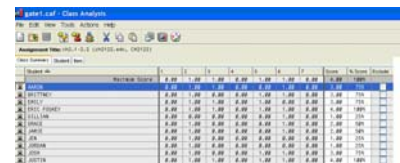


Figure 12

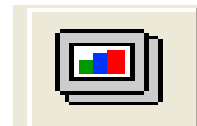


Figure 13



Figure 14

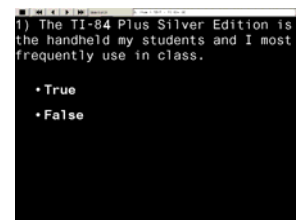


Figure 15

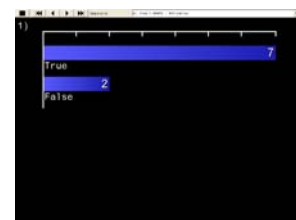


Figure 16

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LearningCheck™

Entering Information

Concepts

- Entering information in a LearningCheck™ file

Materials

- TI-Navigator system™
- HUB.jpg file

Overview

In this activity, you will enter one information item that includes both text and an image.

Introduction

1. Double click on the TI LearningCheck™ Creator icon from the desktop. See Figure 1.
2. Click OK on User Profile Selection – guest pop-up window.

Entering Information

1. Single click on the Text and Image button under the Information heading. See Figure 2.
 - In the Item 1 Template (Text and Image), clear out the existing title and enter “Hubs” in the white text box beside the Title.
2. In the Hubs Template (Text and Image) enter the following information in the white box in the Text section:
 - “Hubs allow communication between student calculators and the access point in the Navigator system.”
3. Click on the Browse button in the Image section of the pop-up window.
4. Use the pull down menu next to “Look in:” to find the file location that contains the jpeg image called HUB as directed by your instructor.
5. Select the HUB.jpg image and double click on the file name.



Figure 1

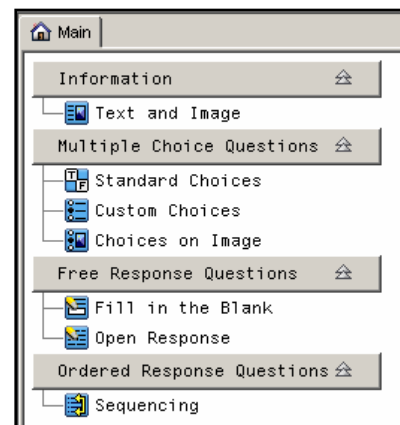


Figure 2

6. Use the Device Type Pull-Down Menu to choose the view to the TI-83 Plus Family. See Figure 3.
7. Click on the Scale/Crop Tool. See Figure 4.
 - Note: For some images (bitmap, jpeg) that are not created on the calculator, using the Scale/Crop Tool causes a portion of the original image to be shown. See Figure 5. Its use is not recommended for this application.
 - Click on the Scale/Crop Tool to get the image back to normal.
8. Why does the tool exist?
 - The Scale/Crop Tool is useful when using a captured device screen (PIC file) as an image. When viewing a PIC, the scale/cropped image will be the exact size of the viewable area on the calculator screen.
9. Click OK to register the information and return to the main screen.

Previewing Questions on the Computer

1. Click on the Tools in the top menu. Move the cursor to Preview and then select Preview All. See Figure 6.
2. In the Select a Device pop-up window click OK to select the TI-83 Plus Family.
 - Note that the preview can be changed to the TI-84 Plus family by clicking the down arrow.
3. Watch the upper left corner of the computer screen to preview the screens viewed by the students.
 - Note all the calculator keystrokes (rectangles around certain words, ex. WINDOW) indicated for the remainder of the steps are not pushed on the calculator. Instead, use the mouse to move the computer's mouse pointer over the appropriate button on the image of the calculator that will pop-up. See Figure 7.
4. Click on the ZOOM key to view the image after you have read the information.
5. Click on the GRAPH key to go to the next screen. Since all the information has been viewed you will see a summary of the information.
6. Close the pop-up window.

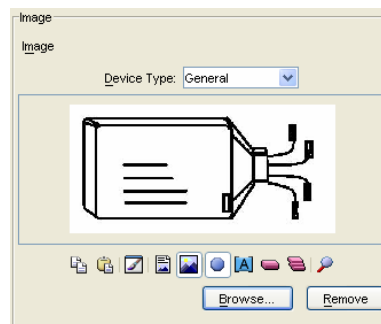


Figure 3

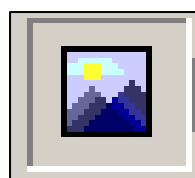


Figure 4

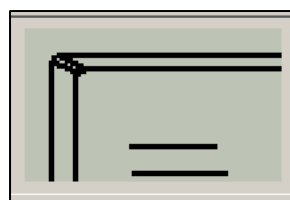


Figure 5

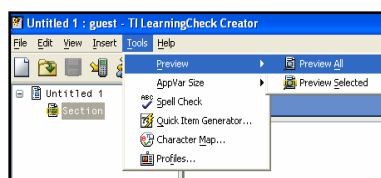


Figure 6

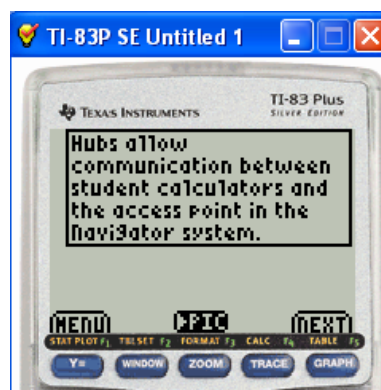


Figure 7

Saving the Education Document (edc file)

1. Click on File in the top menu.
2. Select Save.
3. To change the file name from the default name type “Info Example”.
4. Double click on the folder directed by the instructor, which will be your personal folder to save all other files during the institute.
5. Click on the Save button.
6. Close the TI-LearningCheck Creator software.

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LearningCheck™ Entering Multiple Choice Questions

Concepts

- Types of multiple choice questions
- Creation of multiple choice questions
- Graphics in multiple choice questions

Materials

- TI-84 Plus™
- TI-Navigator system™
- Reference sheet from instructor for multiple choice questions

Overview

In this activity, you will enter three multiple choice questions (Standard Choices, Custom Choices, Choices on Image) and send the created education document to the class using the TI-Navigator™ system.

Introduction

1. Double click on the TI LearningCheck Creator icon from the desktop.
2. Click OK on User Profile Selection – guest pop-up window.

Entering Standard Choices Multiple Choice Question

1. Single click on Standard Choices button under Multiple Choice Questions heading. See Figure 1.
2. In the Item 1 Template (Multiple Choice – Standard Choices) pop-up window, click the pull-down arrow under Response in the Response section.
 - Cursor to the appropriate answer choice option for the Multiple Choice – Standard Choices on the Reference Sheet and click the left mouse button.
3. To identify a choice as correct click on the circle beside the desired response. The correct answer for this question is underlined on your Reference Sheet.
 - In situations where there is no correct answer, such as opinion polling, no circle should be selected.
4. Click inside the white Text field under the Question section and enter:
 - The text from the Multiple Choice – Standard Choices on the Reference Sheet.

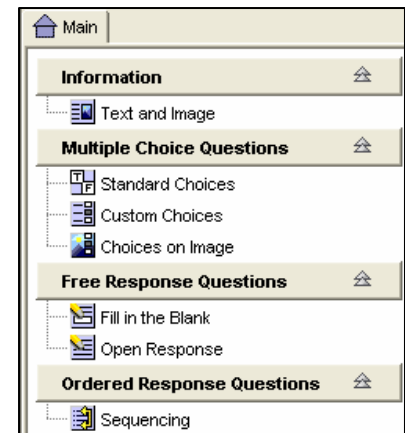


Figure 1

- This will become the title of the question by default. But, if you want a different title in the title box, you can click on the white box beside Title in the pop-up window.
5. Click OK at the bottom right corner of the window.

Entering Custom Choices Multiple Choice Question

1. Single click on the Custom Choices button under the Multiple Choice Questions heading. See Figure 1.
2. In the Item 2 Template (Multiple Choice – Custom Choices), click inside the white Text field under the Question section and enter:
 - The text from the Multiple Choice – Custom Choices on the Reference Sheet.
 - If you need special symbols, use the character map. Click on Tool in the menu bar and select Character Map. See Figure 2.
 - The Character Map can be used to create various symbols in LearningCheck documents as needed.
3. Click inside the white Text field under the Response section and enter:
 - The first answer choice listed from the Multiple Choice – Custom Choices on the Reference Sheet.
4. Click on New at the bottom right of the text box and enter:
 - The second answer choice listed from the Multiple Choice – Custom Choices on the Reference Sheet.
5. Click on New at the bottom right of the text box and enter:
 - The third answer choice listed from the Multiple Choice – Custom Choices on the Reference Sheet.
6. Click on New at the bottom right of the text box and enter:
 - The fourth answer choice listed from the Multiple Choice – Custom Choices on the Reference Sheet.
7. Click in the circle to the left of the correct answer choice which is underlined on the Reference Sheet, marking this as the correct response.
8. Click OK at the bottom right hand corner of the window.

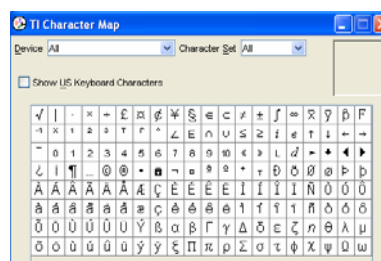


Figure 2

Entering Choice On Image Multiple Choice Question

- Single click on the Choices on Image button under the Multiple Choice Questions heading. See Figure 1.
- In the Item 3 Template (Multiple Choice – Choices on Image), click inside the white Text field under the Question section and enter:
 - The text from the Multiple Choice – Choices on Image on the Reference Sheet.
- Click on Browse in the Response section of the pop-up window.
 - Use the pull-down menu next to “Look in:” to find the file location that contains the bitmap image as directed by your instructor.
- Select the appropriate image file listed on the Reference Sheet and double click on the file name.
- Select the TI-84 family in the Device Type pull-down menu. See Figure 3.
- Click on the Scale/Crop Tool, if necessary. See Figure 4.
- Click Correct Point Tool. See Figure 5.
- Move the cursor to the location of the filled-in bubble on the image on the Reference Sheet and left click. This marks the correct answer to the question.
- Click on the Incorrect Point Tool. See Figure 6.
- Place the cursor on the location of the open bubbles on the image on the Reference Sheet and left click each time to insert a point. This marks the incorrect answers to the question.
- If a point or points are outside the viewable region on the calculator, you will see the message, “One or more points is partially or completely outside the image”.
 - To move points within the image, use the Erase Tool to erase a single point or the Clear Tool to erase all points. See Figure 7.
- Click on the Label Points tool. See Figure 8.
- Click on each of the points you created in any order. Letters will be assigned to the points starting at A.
- To change a label, left click on it and type the desired label.

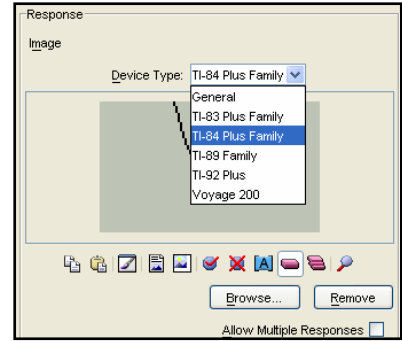


Figure 3

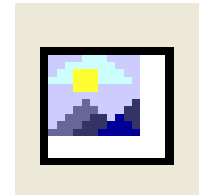


Figure 4



Figure 5

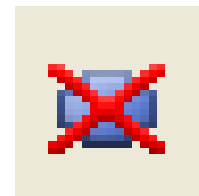


Figure 6



Figure 7

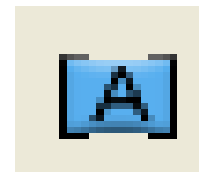


Figure 8

- Labels must be uppercase letters or numbers and are one character in length.

15. Click OK at the bottom right hand corner of the window.

Creating Titles For Questions

1. As you create a question, its title will be the first few words of the question, as the default set-up. See Figure 9.
 - Once a question is complete, you can rename it.
 - Change the title of at least one of the questions by: moving the mouse pointer over a blue question bar and double click
or
left click to highlight the question bar and right click and select Edit.
2. In the white Text box next to Title, delete the current title and then type in the desired title.
3. Click OK in the bottom right hand corner.

Previewing Questions On The Computer

1. Click on Tools in the top menu, move cursor to Preview and then select Preview All. See Figure 10.
2. In the Select a Device pop-up window, change the device to the TI-84 Plus Family and click OK.
3. Watch the upper left corner of your computer screen to preview the screens viewed by students.
 - Note all the handheld keystrokes (rectangles around certain words, for example, **WINDOW**) indicated for the remainder of the steps are not pushed on the calculator.
 - Instead you will use the mouse to move the computer's mouse pointer over the appropriate button on the image of the calculator that will pop-up. See Figure 11.
4. For the first question, click on the **WINDOW** button to move between the possible responses.
 - Since there are no arrows on the preview, you must use the **WINDOW** key (TAB soft key) to move between responses.
5. When you have the desired response selected press ENTER on the computer keyboard.

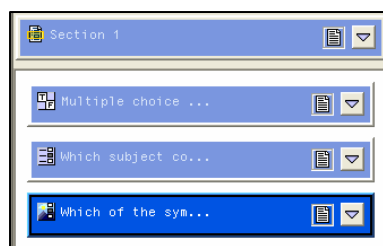


Figure 9

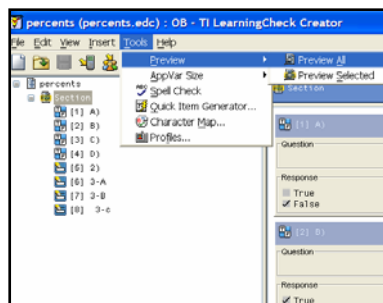


Figure 10

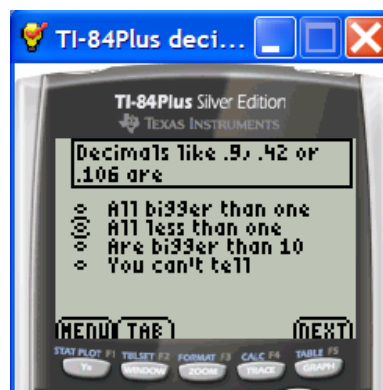


Figure 11

6. Use the **[GRAPH]** key to move to the next question.
7. For the second question, click on the **[WINDOW]** button to move between possible responses.
8. When you have the desired response selected press ENTER on the computer keyboard.
9. Use the **[GRAPH]** key to move to the next question.
10. For the third question, click on the **[ZOOM]** key to view the image after you have read the question.
11. Use the **[WINDOW]** key to tab between the selections on the image. Press ENTER on the computer keyboard to select the desired point on the image.
12. Use the **[GRAPH]** key to go to the next screen. Since all the questions have been viewed, you will see a summary of the questions answered.
13. Close the pop-up window.

Renaming The Education Document (.edc file)

1. Double click on the default name of the document called Untitled 1, in order to rename your file. See Figure 12.
2. Enter “MC Examples” in the white text box under Document Title. See Figure 13.
3. Move the mouse pointer to the bottom right hand corner of the pop-up window and click OK.

Saving The Education Document (.edc file)

1. Click File in the top menu and select Save. See Figure 14.
2. To change the file name from the default name, type “Multiple Choice Examples”.
3. Click on the Save button.

Simulating a Transfer with a Single Calculator From LearningCheck

1. Make sure that the USB unit-to-unit cable is connecting the PC and the calculator together.
2. Make sure the calculator is logged into NavNet.
3. Click on the Send to Class icon. See Figure 15.

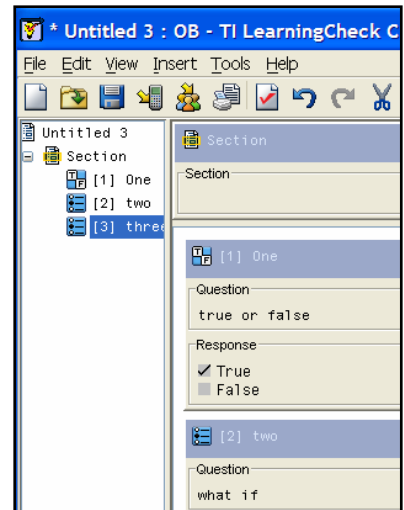


Figure 12

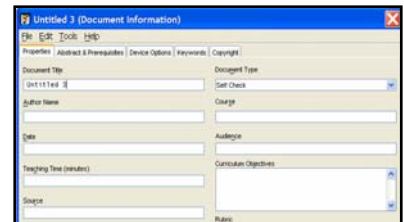


Figure 13

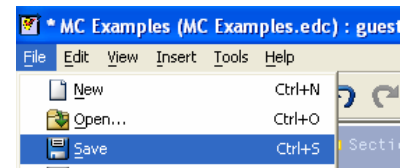
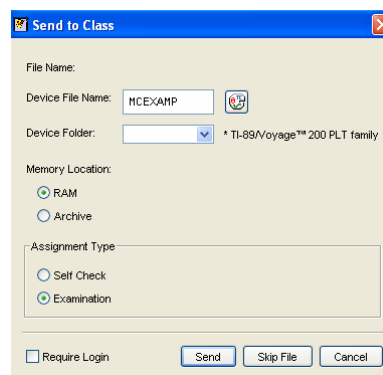
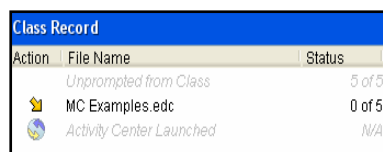


Figure 14



Figure 15

4. Change the Memory Location Selection to Archive.
5. Click Send in the “Send to Class” window. See Figure 16.
6. You will see the sent file listed in the Class Record List on the TI-Navigator Home Screen. This line will also show how many students have received the assignment. See Figure 17.
7. The USB unit-to-unit cable simulates transfer of files to one calculator while the Access Point allows the transfer of files to many calculators in a wireless way. If the Access Point is not connected to your computer, the files to be transferred will automatically be sent down the USB cable even though the Class Icon has been selected.
 - If sending to class from the LearningCheck application, students must be logged into NavNet to receive the assignment.
 - If sending to class from the Navigator home screen, teachers have the option to “force send” to all connected students.
8. At this point, the class has received the “Multiple Choice Examples” assignment on their calculator.

**Figure 16**

Action	File Name	Status
	Unprompted from Class	5 of 5
	MC Examples.edc	0 of 5
	Activity Center Launched	N/A

Figure 17

LearningCheck Fill In The Blank Questions

Concepts

- Creation of fill in the blank questions
- Transferring an educational document to the class

Overview

In this activity, you will create fill in the blank questions with alpha and numeric input and retrieve the answer files from a class using the TI-Navigator system.

Materials

- TI-84 Plus
- TI-Navigator™ system
- LearningCheck Creator program

Fill In The Blank Features

1. LearningCheck questions can be composed by the teacher with blanks, allowing the students to enter their answers.
2. The blanks may be constructed to hold alpha or numeric characters.
 - The student will automatically be able to enter alpha characters on the calculator if the teacher selects a text style fill in the blank.
 - If the teacher selects a numeric style fill in the blank question, the student will automatically be able to enter a numeric character on the calculator.
3. For teachers who are concerned with students unable to spell adequately, a pull-down style fill in the blank question style can be selected.
 - It has the “feel” of a multiple choice question.
 - Students will be able to select a word from a pop-up window which will be inserted in the blank.
 - This works well for students with English as a second language.

Composing Fill In The Blank Questions

1. Click on the white page icon on the task bar to begin a new LearningCheck education document.
2. Click OK on the User Profile Selection – Guest pop-up window.
3. To start constructing the question, click the Fill in the Blank icon under Free Response Questions within the Main panel as shown in Figure 1.
 - The Item 1 Template (Fill in the Blank) will be seen as shown in Figure 2.

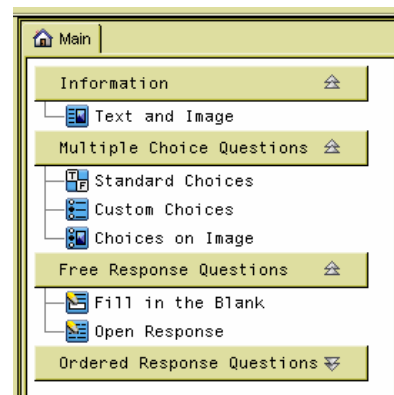


Figure 1

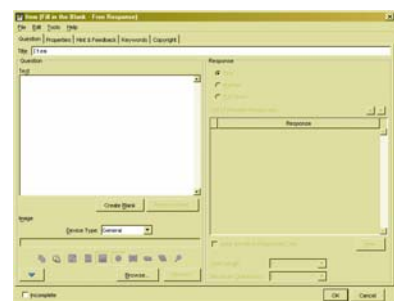


Figure 2

Using Fill In The Blank as a Drop-Down Option

1. Highlight the default title “Item 1” in the white Title field (top left side of template) and enter the title from the Fill In The Blank – Pull-Down part of the Reference Sheet.
2. Click on the white Text field (Question section) and enter the text from the Fill In The Blank – Pull-Down part of the Reference Sheet.
3. To create a blank, highlight the word or number to be filled in by the student.
 - Move the mouse pointer to the word that was underlined in the text statement on the Reference Sheet and highlight it. See Figure 3.
4. Press the Create Blank button below the Text box at the bottom right of the Question section.
 - Note the highlighted word is now a text type of Fill in the Blank recorded in the Response section.
5. To create a pull-down type of Fill in the Blank question, move the cursor to the white circle to the left of the words Pull Down under the Response section title and left click with the mouse.
 - Note that under the List of Possible Responses the appearance of a multiple choice style of question appears. The correct response by default, is associated with the highlighted text.
6. Move the mouse pointer over the New button in the Response section. Click the mouse button.
7. From the Reference Sheet, enter the first choice for the blank in the Text field of the Response section.
8. Move the mouse pointer over the New button in the Response section and click the button.
9. From the Reference Sheet enter the second choice for the blank in the Text field of the Response section.
10. Move the mouse pointer over the New button in the Response section and click the button.
11. From the Reference Sheet enter the third choice for the blank in the Text field of the Response section. See Figure 4.
12. Click OK at the bottom right hand corner of the Fill in the Blank template. This will close the template.

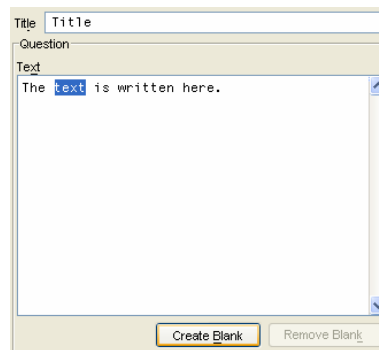


Figure 3

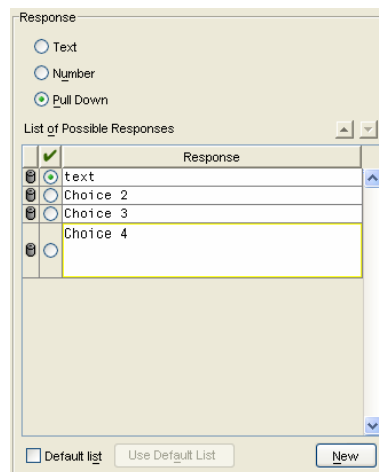


Figure 4

13. Double click on the default document name, Document 1, found on the left side of the Navigator software.
 - Overwrite the default name under Document Title by highlighting it and entering “Fill In The Blank”.
 - Click OK at the bottom right corner.

Using Fill In The Blank - Text/Numeric Option

1. Highlight the default title Item in the white Title field, (top left side of template) and enter the title given on your reference sheet.
2. Click on the white Text field (Question Section) and enter the text from the Fill In The Blank – Text/Numeric part of the Reference Sheet.
3. To create a blank, highlight the word or number to be filled in by the student.
 - Move the mouse pointer to the word that was underlined in the text statement on your reference sheet and highlight it. See Figure 5.
4. Press the Create Blank button below the Text box at the bottom right of the Question section.
 - Note the highlighted word is now a text type of Fill in the Blank recorded in the Response section. See Figure 6.
5. To create a second blank, highlight the word or number to be filled in by the student.
 - Move the mouse pointer to the number that was underlined in the text statement on your reference sheet and highlight it.
6. Press the Create Blank button below the Text box at the bottom right of the Question section.
 - Note the highlighted word is now a text type of Fill in the Blank recorded in the Response section.
 - Under the type of response in the Response section, move your cursor to the circle on the left side of the word Number and left click with the mouse.
 - The program automatically copies your number and allows options for creating a range of values of the tolerance for a specific value. See Figure 7.
7. Click OK at the bottom right hand corner of the Fill in the Blank template. This will close the template.
8. Double click the default document name, Document 1, found on the left hand side of the TI-Navigator software.

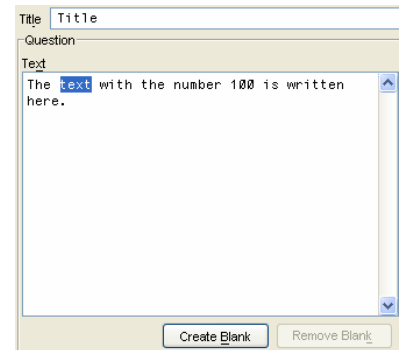


Figure 5

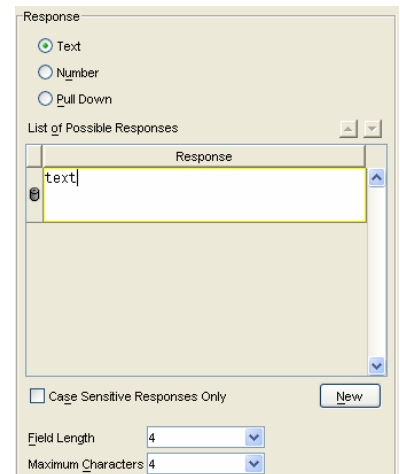


Figure 6

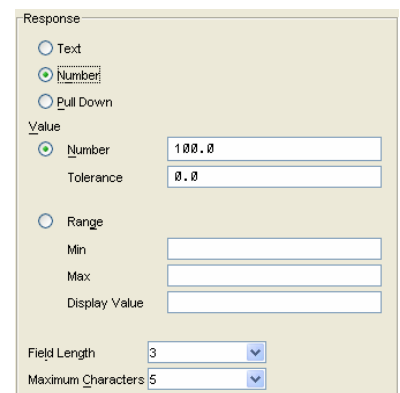


Figure 7

- Overwrite the default name under Document Title by highlighting it and entering “Fill in the Blank”.
- Click OK at the bottom right corner.

Simulating a Transfer with a Single Calculator

1. Save the educational document by clicking the Save icon or use the File, Save menu. See Figure 8.
2. Make sure that the USB unit-to-unit cable is connecting the PC and the calculator together.
3. Make sure the calculator is logged into NavNet.
4. Send the Fill in the Blank education document to the class using the Send to Class icon.

Answering a Fill In the Blank Question

1. Access and begin the assignment on the calculator.
2. The first blank is surrounded by a rectangle as shown in Figure 9.
3. If a blank was set up as a:
 - PULL DOWN, any key will access the words that can be inserted into the blank. See Figure 10. Press the number of the word desired or use the \uparrow or \downarrow arrow keys to highlight the number next to the word. Press [ENTER] to select the word.
 - TEXT RESPONSE, the calculator keypad is locked in alpha mode (A appears in the top right hand corner of the calculator screen). See Figure 11. Find the green letters on the calculator keypad (or use the TI-keyboard) and enter the correct answer.
 - MULTIPLE BLANK QUESTION, press the [WINDOW] key to move to the next blank. This key is below the word TAB on the calculator screen. See Figure 12.
 - NUMERIC RESPONSE, press the numbers on the calculator keypad that corresponds to the desired answer. See Figure 13.
4. Press the [GRAPH] key to move to the NEXT question.
5. When the last question is answered, the App returns to the item list. The presence of a square to the left of a question’s name indicates that the question has been answered. See Figure 14.
6. To exit the LearnChk App, press the [Y=] key found under the word MENU from the calculator screen.
7. Select 5 to exit the App.

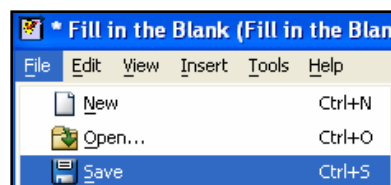


Figure 8



Figure 9

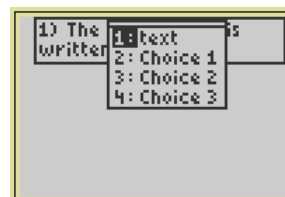


Figure 10

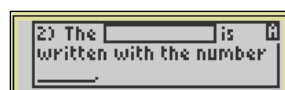


Figure 11

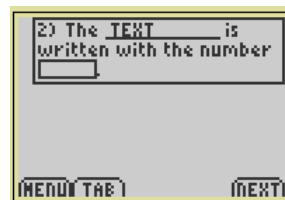


Figure 12

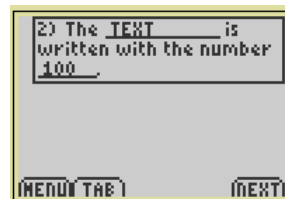


Figure 13

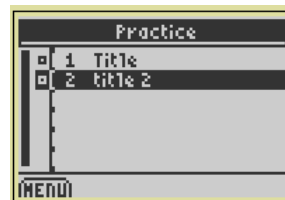


Figure 14

Simulating a Collection from a Single Calculator from Class Analysis

8. Return to the computer and select the sent file listed in the Class Record. If there are students who did not receive the file, you must stop the transfer before you can collect the answers by clicking the STOP button. See Figure 15.
9. The program which collects and grades the answers to an educational document is Class Analysis.
10. Click on the Class Analysis icon from within the TI-Navigator software or from the desktop. See Figure 16.
11. Once Class Analysis is open, click on the Choose an Assignment for Analysis icon. See Figure 17.
12. Browse for the Fill in the Blank educational document (*.edc) that was saved earlier, select the file and click on Open. See Figure 18.
13. Click on the Collect Answer Files From Classroom Devices icon to retrieve the data from student calculators. See Figure 19.
14. The pop-up window Collect Answer Files from Class appears as shown in Figure 20. Ensure that there are checkmarks to the left of the options:
 - Delete Answer File from Device after Collect.
 - Delete Assignment File from Device after Collect.
 - This allows the teacher to manage the memory of the student calculators. Click the white boxes if the checkmarks are not present.
15. Acting in the role of teacher, retrieve the student data from the calculator by pressing the Start Transfer button as shown in Figure 20.
 - Be sure that the calculator and the computer are connected with the USB unit-to-unit cable.
16. Once the transfer is complete, two green file names appear on the pop-up transfer window. See Figure 21.
 - One file is the assignment file (... \FILLINT...) and one is the answer file (... \UFILLINT...)
 - Use the mouse to click on the Close button to stop the transfer.
17. The data is collected from the calculators and displayed in a spreadsheet.

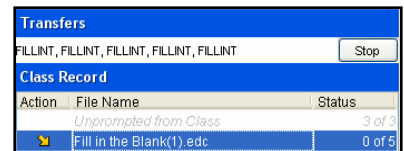


Figure 15

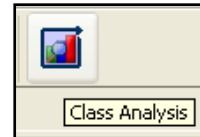


Figure 16



Figure 17

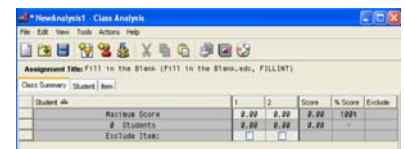


Figure 18



Figure 19

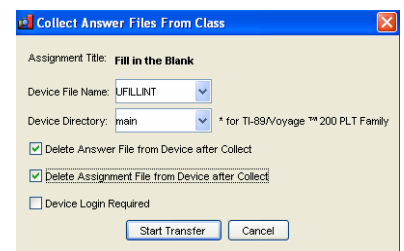


Figure 20

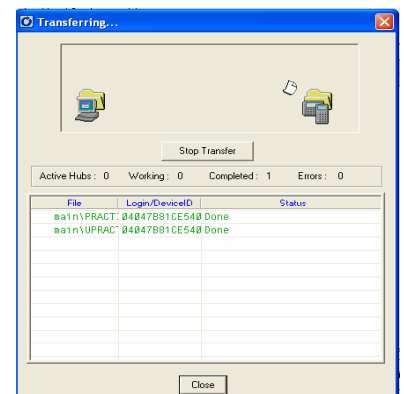


Figure 21

- From this point, the data can be printed, saved and viewed in a slide show.
 - Each student's data is coming with a file extension .usf
 - Class Analysis calls on these files and displays them as a spreadsheet. The data will not be lost unless you delete the user files.
- To save the data, click on File at the top left corner of the software window and select Save to save the file on the desktop of the computer. See Figure 22.
 - The assessment results are saved in a .caf file (Class Analysis file). The LearningCheck document is saved in an .edc file (education document).
 - To print a report, click on File at the top left corner of the software window and select Print Report. See Figure 23.
 - Explore the various printing options.
 - The Class Summary option will give the spreadsheet of grades for all students.
 - Selecting Hard Copy of Assignment will print a copy of the assignment without answers. This utility works well for file copies or makeup work.
 - If Answer Key and Include Item Data are both checked, a hard copy of the assignment with answers is printed for your files.
 - A valuable tool in TI-Navigator is the Class Results Slide Show option.
 - To examine the data from your questions in a slide show, click the Class Results Slide Show icon as shown in Figure 24 on the Class Analysis menu bar.
 - The beginning of the slide show will show the title of the activity.
 - The menu bar at the top will allow you to move between questions and display a bar graph of answers among the class. See Figure 25.
 - To access the bar graph of student responses, press the single right arrow from the menu. This moves you forward through the slide show.
 - Note that if a teacher registers a response as the correct answer, the bar will be green instead of blue.
 - Close the TI-Navigator software.

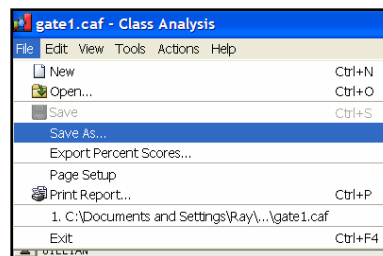


Figure 22

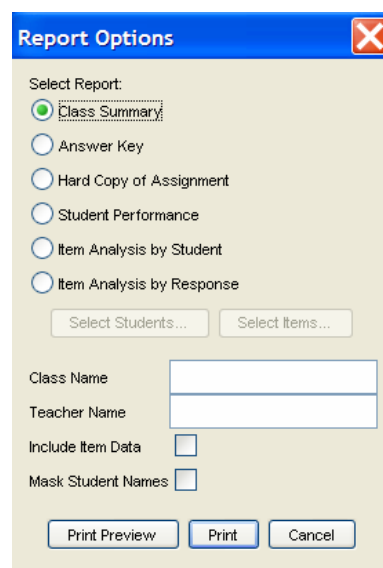


Figure 23

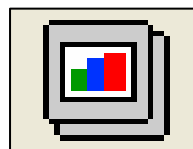


Figure 24



Figure 25

LearningCheck Open Response Questions

Concepts

- Answering Open Response questions with TI-keyboards
- Writing Open Response questions

Materials

- TI-84 Plus
- TI-Navigator™ system
- TI-keyboard

Overview

In this activity, you will use the TI-keyboard to answer questions without having to use the **[ALPHA]** button.

Answering An Open Response Question

1. Press the **[APPS]** button and use the arrow key to scroll down to NavNet. See Figure 1.
2. Press **[ENTER]** to open the NavNet application. See Figure 2.
3. Enter your USERNAME and press **[ENTER]**. Enter your PASSWORD and press the soft key OK.
4. At this point, the instructor will “force send” you a file. Once the assignment has been received on your calculator, hit the BACK soft key. See Figure 3.
5. Move the cursor to Network Apps and press **[ENTER]**. See Figure 4.
6. Scroll to LearnChk and press **[ENTER]** to open the App. See Figure 5.

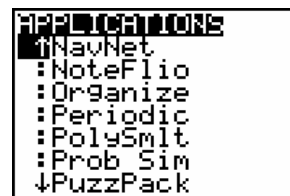


Figure 1



Figure 2



Figure 3



Figure 4



Figure 5

7. Press **[ENTER]** on the App introduction screen. See Figure 6.
8. Move the cursor in the Assignment List to highlight the opening activity called “email addresses”.
9. Press **[ENTER]** on the calculator to open the “email addresses” assignment.
10. Press **[ENTER]** on name to get to the question.
11. Press the MENU soft key and scroll down to 8:Use keyboard. See Figure 7.
12. Use the TI-keyboard to type the text of the answer to the question, as you would use a word processor. When finished, press the NEXT soft key to move to the next question.
13. Enter your e-mail address. To access the @ symbol on the calculator if keyboards are not available, press the **[Y=]** key which corresponds to MENU, scroll down to 7:Special characters and select @. Press **[ENTER]** on the calculator, and the DONE soft key to paste the character on the screen.
14. When finished entering the text, disconnect the calculator from the TI-keyboard. Reconnect the calculator to the hub.
15. The instructor will collect answers from all participants when they are finished.

Writing An Open Response Question

1. To create an Open Response question, open the LearningCheck creator software. Click on Open Response as shown in Figure 8 to open the template for entering the question.
2. Give the question a title. Use “Email Address” for this example. Then in the Text box below Question type the following:
 - If you wish to receive periodic updates on your child’s progress during the year, please enter your name and e-mail address below. See Figure 9.
 - Click OK to finish the question.
3. There is an area for a suggested response, but Class Analysis does not grade Open Response Questions.
4. Change the default document name, Document 1 to “Parent Email”.

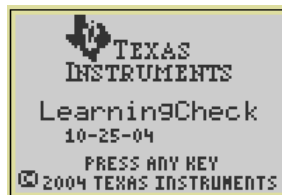


Figure 6



Figure 7

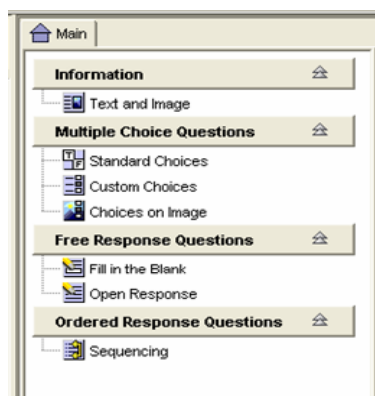


Figure 8

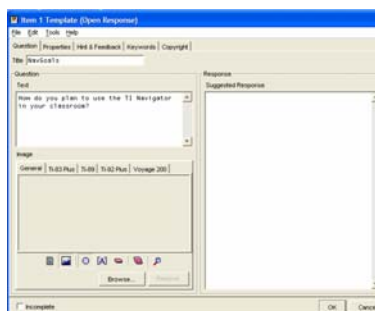


Figure 9

Simulating A Transfer With A Single Calculator

1. Save the educational document by clicking the Save icon or use the File, Save menu.
2. Make sure that the USB unit to unit cable is connecting the PC and calculator together.
3. Make sure the calculator is logged into NavNet.
4. Send the Parent education document to the class using the Send to Class icon in LearningCheck. See Figure 10.
5. As a student, open the question on your calculator and answer it.
6. As the teacher, return to the computer and use Class Analysis to collect the student responses using the Collect Answer Files From Classroom Devices icon. See Figure 11.
7. Examine the data from your question in a slide show by moving the cursor to the Slide Show icon on the Class Analysis menu bar. See Figure 12.

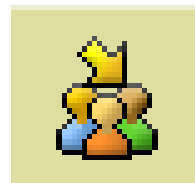


Figure 10



Figure 11

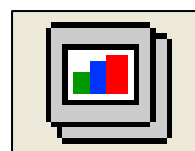


Figure 12

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LearningCheck Sequencing Questions

Concepts

- Answering ordered response or sequencing questions
- Creating ordered response or sequencing questions

Materials

- TI-84 Plus
- TI-Navigator™ system

Overview

In this activity, you will create and answer ordered response/sequencing questions and send the education document to a single calculator using the TI-Navigator system.

Comments About Sequencing Questions

1. A Sequencing question requires the student to sort items. For example, you can give students the steps of the scientific method in the incorrect order and have them rearrange them to the correct order.
2. In this example, you will be given the days of the week in mixed order. Your task is to put them in the correct order.

Answering A Sequencing Question

1. The instructor will send you the “Days” education document.
2. Once you receive the activity, access it through the menus.
3. On the Days assignment, press **[ENTER]** to look at the question. See Figure 1.
4. To move between the options press the **[▲]** and **[▼]** arrows.
5. Notice when you enter the question, there is a new tab above the **[TRACE]** soft key, which allows students to check the answer. See Figure 1.
6. Press this key and LearningCheck will tell you that the answer is incorrect. See Figure 2.
7. To move items in the sequence, move to the desired location and press **[ENTER]** to select the item you want to move. Use the **[▲]** and **[▼]** arrow keys to move the item to the desired place and press **[ENTER]** to relocate the item. Note: If you need to do a calculation, you can pause the application in order to use the calculator.

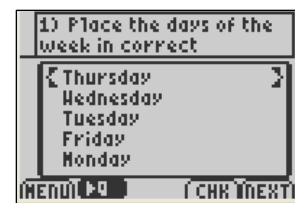


Figure 1

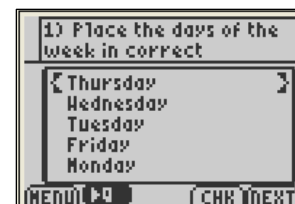


Figure 2

Pausing The App To Answer A Question

1. In order to pause the application, press the MENU soft key and select 5:Pause App. See Figure 3.
2. You can now use the calculator for any necessary calculations. To re-enter Navnet, press the [APPS] key and select Navnet. You will automatically re-enter the App and the network.

Writing An Ordered Response Question

1. Open the LearningCheck Creator software.
2. Click on Sequencing, (see Figure 4), to make the template appear in order to write the question.
3. In the title box, type the title of the question. For this example use “Order”.
4. To enter the text for the question, click on the text field under Question, and then type the text:
”Put the numbers in order from least to greatest”
See Figure 5.
5. To enter the items to sort. Click the Text field under Response.
Now you may enter the first item in the correct sequence. The first item will be “-6”. As you type the number will appear in the Correct item list.
6. To enter the second item, “-3”, click NEW and type the number. See Figure 6. In the same manner, add the numbers “0”, “2” and “12”.
7. To finish the question, click Generate Presentation Sequence. This will jumble the choices as they would appear on the calculator. See Figure 6.

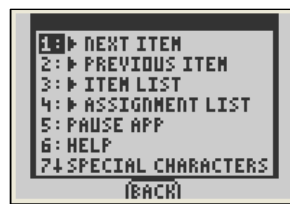


Figure 3

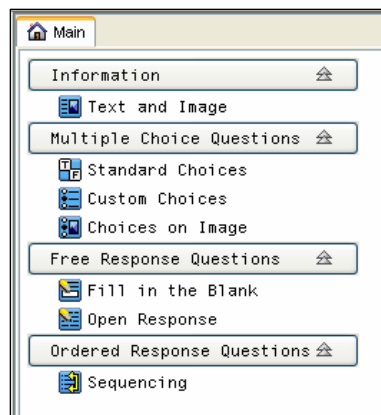


Figure 4

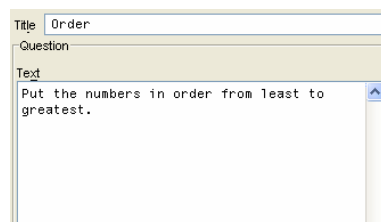


Figure 5

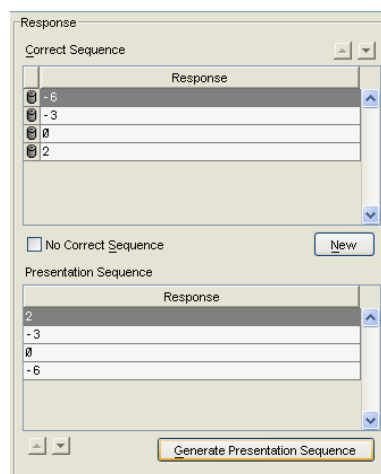


Figure 6

8. Click OK to finish the question.
9. To name the file that you will send to the calculator, double click in Document 1 along the left side of the screen. See Figure 7.

This will open the Document Information window. See Figure 8.

It will allow you to name the file as it will appear on the calculator. Enter the information such as author name, and identify the file as an Examination or Self-Check. In this window enter the name "Ordering". Click OK to finish the changes.

Sending To A Single Calculator

1. Connect your calculator to your computer with the USB silver cable.
2. Send the LearningCheck file "Ordering" to the calculator and practice answering the sequence question on the calculator.

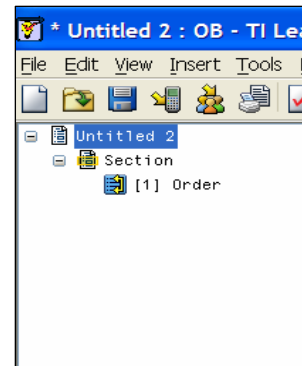


Figure 7

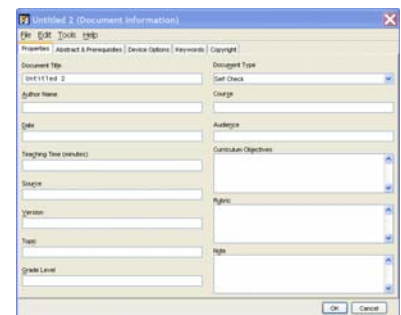


Figure 8

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Writing An Education Document

Concepts

- Practice writing an education document with various types of questions
- Practice sending and answering an education document
- Practice collecting and viewing the answer file for an education document

Overview

In this activity, you will practice writing questions for an education document, send the document to a class, answer the assignment on a student calculator, collect the student responses, and view the class results.

Materials

- TI-84 Plus
- TI-Navigator™ system

Creating A 7-Question Education Document

1. Open the TI-Navigator software.
2. Open the LearningCheck Creator.
3. Click OK in the User Profile Selection-Guest.
4. Using the Assessment information from the Reference Sheet, create the following types of questions:
 - Multiple Choice
 - Fill-In-The-Blank (Drop Down)
 - Fill-In-The-Blank (2 Blanks)
 - Multiple Choice With Image
 - Sequencing
 - Open Response
5. Save the file as “Assessment”.
6. Login a student on a calculator.
7. Using LearnCheck, send Assessment to the class (the single calculator in this case).
8. Complete the assignment on the calculator.
9. Retrieve the data using TI-Navigator.
10. Examine the data from your assignment in a slide show.
11. Save the Class Analysis file as “First Assignment”.
12. Close the TI-Navigator software.

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Item Banks

Concepts

- Use Item Bank questions in a LearnCheck file.

Materials

- TI-84 Plus
- TI-Navigator™ system

Overview

Participants will experience TI-Navigator™ from a student's perspective.

Item Banks

- In the LearningCheck software, click File, Open Item Bank. See Figure 1.
- Choose the LearnCheck file called Middle School Math. See Figure 2.
- To transfer a question from the Item Bank into the working document, click and hold on the desired question and drag into the question section. See Figure 3.

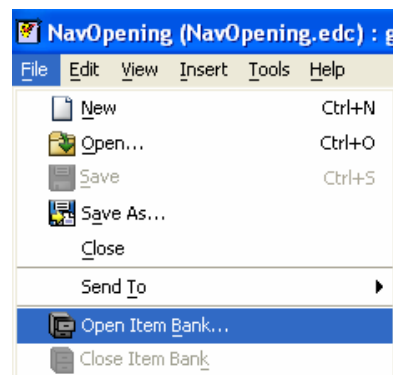


Figure 1

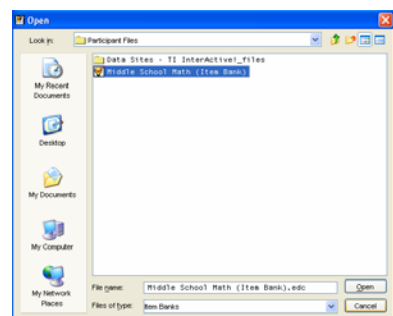


Figure 2

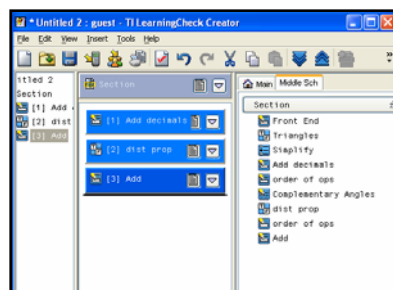


Figure 3

4. In order to close any Item Bank, right click on the Item Bank and choose Close Item Bank. See Figure 4.

Notes

1. To preview a question, double click on question in the Item Bank.
2. You can insert several Item Banks by repeating steps 1 and 2 above.
3. Each Item Bank appears as a separate tab on the far right of the screen. See Figure 5.
4. To switch between Item Banks, click on the desired tab.

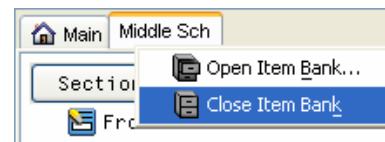


Figure 4

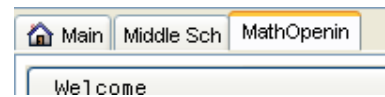


Figure 5

Sending Files

Concepts

- Sending files

Materials

- TI-84 Plus
- TI-Navigator system
- Days.edc file

Overview

Participants will work on sending files using TI-Navigator.

Sending All Types of Calculator Files

1. Open the TI-Navigator software.
2. Begin Class and log in two student calculators.
3. Click on the “Send to Class” icon. See Figure 1.
4. Select file to send (e.g. Days.edc) and click Next. See Figure 2.
5. Select Class or select Individual Student(s) using the “Ctrl” key to select non-consecutive students.
6. If “Force send” is desired, click in white box to the left of “Force send to students now”.
7. Click on Finish. See Figure 3.
8. You will see the sent file listed in the Class Record List on the Navigator Home Screen. This line will also show how many of the students have received the file. See Figure 4.



Figure 1



Figure 2



Figure 3

Class Record		
Action	File Name	Status
	<i>Unprompted from Class</i>	20 of 20
	practice (1).edc	1 of 20
	NavOpening(1).edc	1 of 1
	NavOpening.edc	1 of 1
	Math Opening.edc	1 of 1
	sequences.edc	0 of 1
	Untitled 1.edc	0 of 20
	answers2.edc	1 of 20

Figure 4

Sending Education Document (Alternative Method)

1. Open the TI-Navigator software.
2. Begin Class and log in two student calculators.
3. Open the Learning Check software by clicking the Learning Check icon. See Figure 5.
4. Click OK on the User Profile Section window.
5. Open the education document which is to be sent by clicking the Open File icon or by choosing Open under the File menu.
6. Choose the file to be sent (e.g. Days.edc).
7. Click on the Send to Class icon. See Figure 6.
8. Select the appropriate properties and click the “Send” button. See Figure 7.
9. You will be returned to the TI-Navigator software screen and the file will be listed under the Class Record listing. See Figure 8.
10. Notes:
 - When sending an education document through LearningCheck, it will be sent to the entire class.
 - The USB cable simulates the transfer of files to one handheld while the Access Point allows the transfer of files to many handhelds in a wireless way. If the Access Point is not connected to your computer, the files to be transferred will automatically be sent down the USB cable even though the Class icon has been selected.
 - If sending to class from within the LearningCheck software (see Figure 9), students must be logged into NavNet to receive the assignment. This is a “Force Send” option.
 - If sending to class from the Navigator home screen (see Figure 10), teachers have the option to “Force Send” to all connected students or allow students to retrieve the transfer at their request.

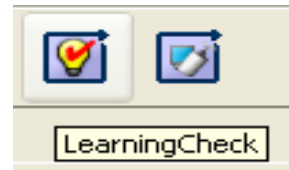


Figure 5



Figure 6

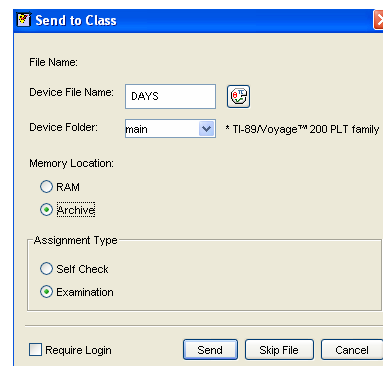


Figure 7

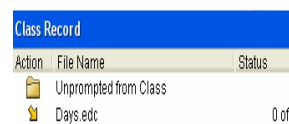


Figure 8

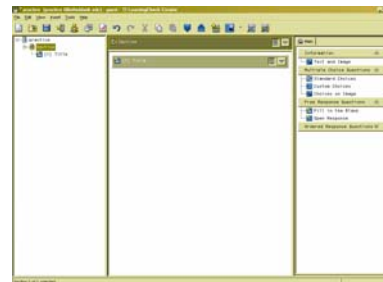


Figure 9

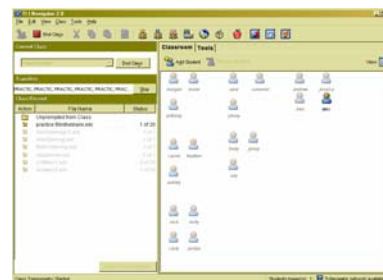


Figure 10

Collecting Files

Concepts

- Collecting files from student calculators

Materials

- TI-84 Plus
- TI-Navigator system

Overview

Participants will use TI-Navigator to collect files located on student calculators. The files can be collected from an individual student, a subset of students, or an entire class.

Introduction

- In order to have a file to collect from the student calculators, enter numbers into list L1 of two calculators.
- Open the TI-Navigator software.
- Begin class and log in two student calculators.
- Click on the “collect from class” icon. See Figure 1.
- Select file to be collected (e.g. L1 under Lists) and click Next. See Figure 2.
If you would like to collect more than one file from the student calculators, then highlight all desired files by using the “Ctrl” key.
- Select Class or select Individual Student(s) using the “Ctrl” key to select non-consecutive students.
- If “Force collect” is desired, click in the white box to the left of “Force collect from students now”. See Figure 3.
- If “Delete after collecting” is checked, after the collection both the assignment and answer file will be deleted from the calculators.
- Click on Next.
- Choose location where you would like the collected file(s) to be saved. See Figure 4.
- Click Finish.

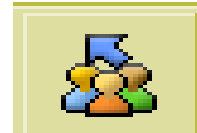


Figure 1

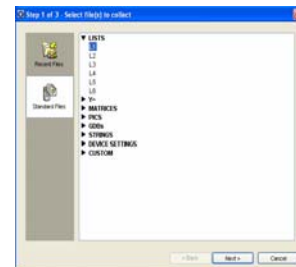


Figure 2

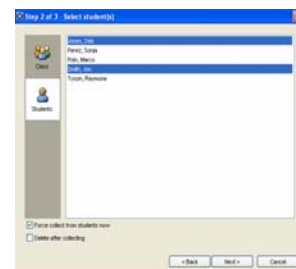


Figure 3



Figure 4

12. You will see the collected file listed in the Class Record List on the Navigator Home Screen. This line will also show how many of the students' files have been received. See Figure 5.
13. Discussion: How might this be a useful feature for your classroom?



Action	File Name	Status
	Unprompted from Class	0 of 2

Figure 5

Interdisciplinary Lesson: Research and Notes with StudyCards

Concepts

- Introduction to TI StudyCards Creator and App
- Using Navigator to collect and share files

Materials

- TI-84 Plus
- TI-Navigator system™
- TI StudyCards Creator
- StudyCard App

Overview

Participants will simulate how students could use TI StudyCard Creator to produce notes for research or review and then work with TI-Navigator to collect and share the results with the class.

Introduction To TI StudyCards Creator

1. StudyCards Creator allows you to create stacks of electronic “flash” cards that can be downloaded to and displayed on your calculator.
2. The software TI StudyCards Creator is available for free download from the web site <http://education.ti.com> for educators and students.
3. There are two general types of stacks that are available and as you begin you need to decide what type of stack you want to create.
 - **Self Check:** This creates an index card that students can view on their calculator and “flip” the card to access more information or check their understanding.
This may be particularly useful for research notes, where a key fact can be placed on one side and reference to author, publication, date, etc. can be placed on the “back”.
 - **Multiple Choice:** This allows the student to respond to a question on the front of a card by choosing an answer and then receive immediate feedback. If the student answer was incorrect, the correct answer is displayed, and the question is shuffled to the bottom of the deck to reappear until answered correctly. This may be particularly useful for review of notes and concepts or for studying for a unit or course assessment.

Sending StudyCards App To Calculators

- In order to view the StudyCard stacks made by the Creator software you need the StudyCards App to be on the calculator. This App comes preloaded on the TI-84 and the TI-83 Plus Silver Edition, and unless it has been deleted, it does not need to be re-installed.
 - You may still want to follow through the steps below to practice distributing this to students who do not have the App on their calculators. It will not harm any files on the calculators by re-installing it.
 - You can install the App one calculator at a time by sending the App to the calculator via TI-Connect or the Creator software itself.
 - Or, alternatively you can use TI-Navigator to send it to all the calculators in the class at the same time.
- To use TI-Navigator, open the TI-Navigator software and once it is open, click on the Tools tab. Then click on the App Transfer icon.
 - Note: There is no need to login or begin the class to transfer Apps. This is similar to when you first load the Apps required to use TI-Navigator.
- Deselect all the Apps required for TI-Navigator since you have already transferred them by clicking on the Send box beside the App to remove the check mark. See Figure 1.
- Click on the Add Application button and browse to find the StudyCard App on your computer. Click Add to put the App on to the list to be transferred. The Send box should already be checked. See Figure 1.
 - Another App we will be using in the next activity is the Notefolio App. You may want to send it now too by also adding it to the list of Apps.
- Click Start Transfer to begin transferring the Apps selected. This will take a few minutes.
- After each calculator has the App successfully transferred you can stop the transfer and close the dialog box by clicking on the Stop Transfer button and then the Close button. On the calculator, press the **[APPS]** key and confirm that the App is now listed. (They are in alphabetical order so you may need to scroll down.)

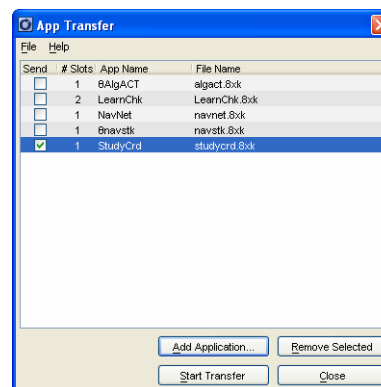


Figure 1

StudyCards For Sharing Research/Notes

- In this section we will explore using TI StudyCards Creator to collect research notes from groups in the class and share them with the rest of the class. Alternatively this could be used as a way to prepare review notes for a unit or course assessment.
One scenario is where you may ask different groups in class to research a section of a topic or a unit or course. Using TI StudyCards Creator they will create a stack of cards on that topic and using TI-Navigator you will collect their work and distribute it to the rest of the class. Thus everyone in the class will share the benefit of all the work done by others. As a teacher you may also keep a copy of the electronic stacks on the computer and assess the student work.
- Begin the TI StudyCards Creator software by double clicking on the icon on the desktop.
- You will be asked to indicate whether it is a New Stack or you wish to open an existing stack of StudyCards. This is a New Stack. Select the TI-83 Plus Family/TI-84 Plus Family. Also select the stack type. We can start with Self Check but feel free to create another stack with Multiple Choice later. Click OK. See Figure 2.
 - Note: With Levels indicates that cards can be created with levels of difficulty requiring students to master easier questions before moving on to more difficult ones.
- To create a card it is a matter of simply filling in the various fields. Select a title for your stack, such as “Research” or if for a particular topic or unit you may wish to give it that name. Version number, Created By and Date are optional but valuable when students are creating stacks to share with the class. See Figure 3.
- Each card should be given a name as an identifier. This will make it easier when sorting a large stack of cards by various sub topics.
- Finally you can place information that will appear on the front and back of the card. Since this is a Self Check there is no field to indicate a correct answer. If you select Multiple Choice you will be asked for choices or answers and to indicate the correct choice.
- When you are finished with the first card you may either select New Card under the Edit menu or click the icon on the tool bar to move to a new card.

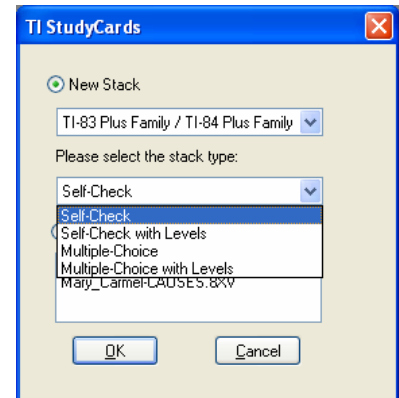


Figure 2

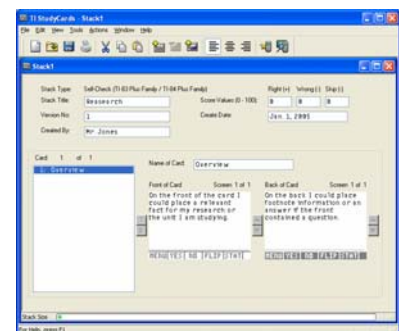


Figure 3

8. Create a second and third card to practice with the software.
 - Note you may also include graphics on the cards.
 - Notice that under the list of cards you may change the order of the cards. This is particularly useful when students are conducting research notes and may need to re-order the subtopics or group certain facts together.
9. Once you have finished creating the stack, save it as a file on the computer. (File Save) You also will want to send the stack to one of your calculators. To send the stack to your calculator select Send to Device under the Action menu or select the icon on the toolbar. Ensure the calculator is connected to the computer via the graph link cable.
 - Notice if the StudyCard App is not already on the calculator you can send it to the calculator using the Action menu and selecting Send StudyCards App.
10. Once you send the stack to the calculator you are now ready to view it using the StudyCard App on the calculator.
11. To simulate a classroom environment you may want to create another stack of StudyCards, (perhaps Multiple Choice) and place these on the other calculator. To start a new stack you may select New from the File menu, or click on the icon on the toolbar or exit and re-enter the software. Ensure you give this stack a different name than the previous one for when we collect and share stacks using TI-Navigator.

Viewing A StudyCard Stack

1. To view and use stacks of StudyCards created on the computer, press the **[APPS]** key and choose the application entitled StudyCrd.
2. After the introduction screen a menu will appear allowing you to either continue with the last stack you used (1) or choose from all the stacks loaded on the calculator (2). You may also change the Settings to allow cards to repeat or be shuffled. See Figure 4.
3. Open the stack you sent to the calculator by selecting 2 and then the stack you created.



Figure 4

4. If the cards are in Self Check format they will function as index cards. The first screen is the front of the card. By pressing the soft key FLIP which is the **TRACE** key you can see the back of the card. The **▶** key moves to the next card, **◀** moves to the previous card. **▲** or **▼** are used to see more of the text if it could not all fit on the screen. See Figure 5.
5. If the cards are Multiple Choice format, the question will appear with numbered choices. When the number of a choice is entered then you will be told if the choice is correct or not. The correct answer will be displayed and incorrect responses will mean the card is shifted to the bottom of the stack. See Figure 6.
6. The MENU soft key will take you to the main menu for other options or to exit the App.

Collecting and Distributing StudyCard Stacks Using TI-Navigator

1. Once each group has created a stack of research or review notes you can now use TI-Navigator to collect the files and then distribute them to the rest of the class.
2. Open TI-Navigator and start the class. Login on your two calculators to simulate a classroom. Each “student” should have one of the two study card stacks you have created. In the classroom, as the teacher you will need to know the name of the stack. You may wish to assign particular topic names for the stacks to each group ahead of time.
3. Click on the Collect from Class icon. You will be taken through a three step process to collect the files.
4. Step 1 is to select the files to collect. StudyCard stacks are stored as AppVars type of files. Select CUSTOM and then from the drop down menu choose APPVARS. Beside that type in the name of the file, noting that the name is case sensitive. When you are done click ADD. See Figure 7.
You can at this stage select multiple files to collect. Add the other StudyCard stack name you created to the list. Although not everyone will have the files you listed you will be able to retrieve it from the calculator that contains that file. Click Next to continue.

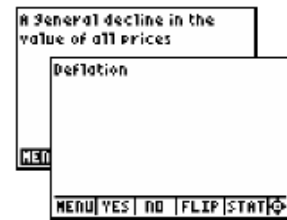


Figure 5

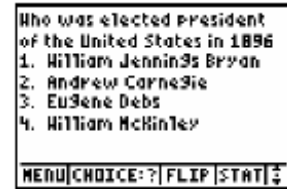


Figure 6

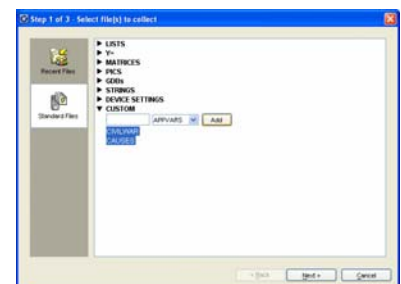


Figure 7

5. Step 2 is to indicate either you wish to collect from the whole class or from specific students. You may collect from the whole class in this case although only one student has each file.
You may check the box Force collect from students now to ensure that you retrieve the file regardless of what the student is currently doing. Click Next. See Figure 8.
6. Step 3 asks you to indicate what folder you wish to place the collected AppVar files. When you have selected the folder click Finish. See Figure 9.
7. If you selected from the whole class when you click on a particular file in the Class Record you will see the one student who had the file in green, the other in yellow indicating that the file was not available on their calculator. The files will be collected in the folder you indicated with the student login in front of the file name. See Figure 10.
8. To send the StudyCard stacks collected to the entire class for them to review click on the Send to Class icon. This will initiate a two step process.
9. Step 1 is to select what files are to be sent. Find the folder where the StudyCard stacks were collected and highlight both files. Click Next. See Figure 11.
10. Step 2 is to indicate who is to receive the files. In this case we want the entire class to receive the files. Students will thus receive their own file back plus all the other stacks created. You may also check Force send to students now to ensure students receive the files regardless of what they are doing at the time. Click Finish. See Figure 12.
11. Students now will be able to review the research or notes created in StudyCards by their class mates by opening the StudyCard App and opening the various stacks.

Discussion

1. Discuss various ways you may be able to use StudyCards in your classes.
2. How might being you be able to share other student work and files with TI-Navigator in this fashion?

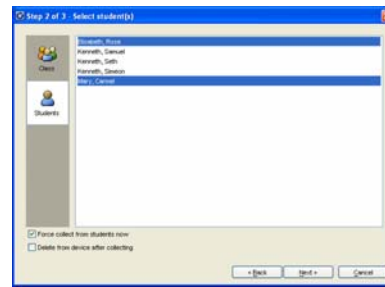


Figure 8

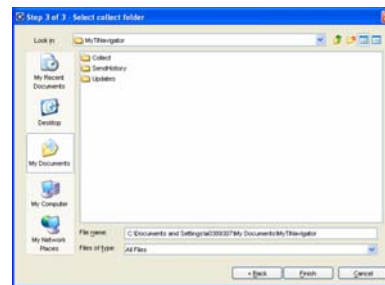


Figure 9

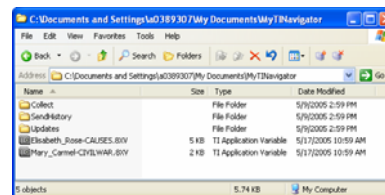


Figure 10

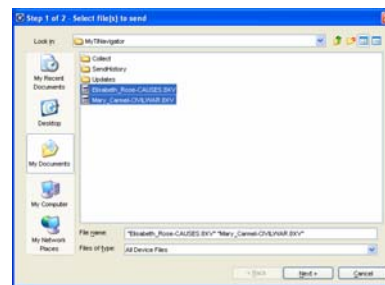


Figure 11

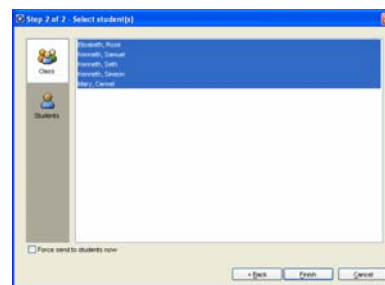


Figure 12

Interdisciplinary Lesson: Working With Theses

Concepts

- Introduction to TI NoteFolio Creator and App
- Using Navigator to collect and share files

Materials

- TI-84 Plus
- TI-Navigator system™
- TI NoteFolio Creator
- NoteFolio App
- TI Keyboard

Overview

Participants will simulate how students could use TI Notefolio App to write a thesis or introductory paragraph and then use TI-Navigator to collect the files and discuss them with the teacher and class.

Introduction To TI NoteFolio Creator and App

1. TI NoteFolio Creator is a software word processor which allows you to create notes and export them to your calculator. You can also create notes on the calculator with the NoteFolio App and import them into the TI NoteFolio Creator. The NoteFolio Creator has the basic features of a simple word processor with the added options of being able to import or export files with the graphing calculator.
2. The software TI NoteFolio Creator is available for free download from the web site <http://education.ti.com> for educators and students.
3. Another important feature when you install TI NoteFolio Creator is a NoteFolio plug-in is installed in MS Word which allows you to import and export the notes from the Creator into MS Word and vice versa.
 - An option on the menu bar in MS Word is added which says TI Tools. Under this menu you also have the option to send directly to the calculator a file created in MS Word. See Figure 1.
 - Also notes created on the calculator with the NoteFolio App or created in the NoteFolio Creator are MS Word compatible. Notes created on the calculator can be saved in the Creator or on the computer and then exported to MS Word.

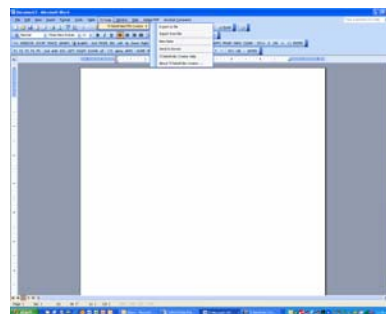


Figure 1

- This feature of MS Word compatibility allows the opportunity for students to write notes or begin portions of a paper on the calculator and later export it to MS Word without having to retype the text. They then complete their work and format accordingly as before.

Sending TI NoteFolio App To Calculators

- In order to create notes on the calculator you need the NoteFolio App to be on the calculator. This App comes preloaded on the TI-84, and unless it has been deleted, it does not need to be re-installed.
 - You may still want to follow through the steps below to practice distributing this to students who do not have the App on their calculators. It will not harm any files on the calculators by re-installing it.
 - You can install the App one calculator at a time by sending the App to the calculator via TI-Connect or the Creator software itself.
 - Or, alternatively you can use TI-Navigator to send it to all the calculators in the class at the same time.
- To use TI-Navigator, open the TI-Navigator software and once it is open, click on the Tools tab. Then click on the App Transfer icon.
 - Note: There is no need to login or begin the class to transfer Apps. This is similar to when you first load the Apps required to use TI-Navigator.
- Deselect all the Apps required for TI-Navigator since you have already transferred them by clicking on the Send box beside the App to remove the check mark. See Figure 2.
- Click on the Add Application button and browse to find the NoteFolio App on your computer. Click Add to put the App on to the list to be transferred. The Send box should already be checked. See Figure 2.
- Click Start Transfer to begin transferring the Apps selected. This will take a few minutes.
- After each calculator has the App successfully transferred you can stop the transfer and close the dialog box by clicking on the Stop Transfer button and then the Close button. On the calculator, press the **[APPS]** key and confirm that the App is now listed. (They are in alphabetical order so you may need to scroll down.)

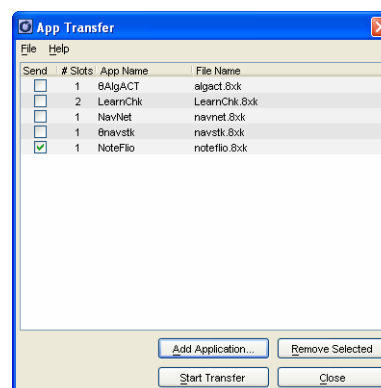


Figure 2

7. You may wish to open the NoteFolio Creator and type in some sample text and send it to the calculator either by using Send to Device under the Action menu or using the icon on the toolbar. Note you can also send the App to a single calculator using Send NoteFolio App under the same Action menu. See Figure 3.
8. Similarly if you have MS Word you can create a Word document and also practice sending it to the calculator using the TI Tools menu options.
 - Note: The NoteFolio App is only a basic text editor and is limited to the memory available on the calculator so extremely large or graphic intensive files are not appropriate.
9. You can open the NoteFolio file on your calculator by pressing the **[APPS]** key and selecting the NoteFolio App. After the introduction screen you will open to a blank document. See Figure 4.
10. Pressing the MENU soft key (**[GRAPH]**) will give you a choice of options, one being File, over the **[Y=]** key. Under File you can choose to open an existing note and all Notefolio files on the calculator will be listed. Select the one you want to view. See Figure 5.
11. Other options including Editing choices of Cut, Copy and Paste are also available using the soft keys.

NoteFolio App For Analyzing Theses

1. In this section we will explore using the NoteFolio App and the TI Keyboard as a method to discuss what makes a good thesis and an opportunity for the teacher to make edits and changes electronically to student work.
2. Often one of the most difficult aspects of a paper for students in writing their thesis or introductory paragraph. One recommended method to have students improve their ability to write a good thesis or introductory paragraph is to see actual examples and discuss what is good or bad about a particular thesis and how it might be improved.
3. Using the NoteFolio App we will create two different thesis or introductory paragraphs on the student calculators and use TI-Navigator to collect the files for teacher review and also to be able to display and discuss with the class.

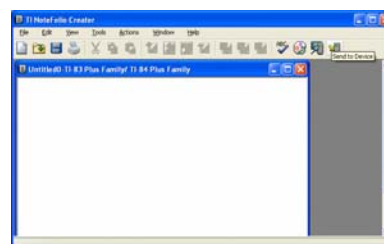


Figure 3



Figure 4

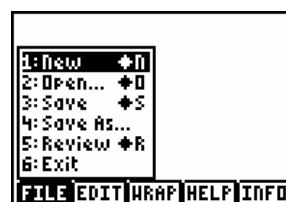


Figure 5

4. Open the NoteFolio App to create a thesis or introductory paragraph. To type you can use the alpha keys on the calculator but if available connecting the full QWERTY TI Keyboard to the calculator will make the exercise very easy for students. Connect to the TI Keyboard using the same black unit to unit cable used to connect to the TI Navigator hubs.
5. The Help menu will reveal various keyboard shortcuts which are available which you may wish to use.
6. Once you have typed a thesis or introductory paragraph you need to use the File menu soft key on the calculator to Save the file. All students should save the file with the same name so it can be retrieved using TI-Navigator. In this example you may wish to call the NoteFolio files created on each calculator "THESIS". See Figure 6.
7. Using your other calculator type a different thesis or introductory paragraph and also save it as "THESIS". This will simulate a class where each student is typing their own thesis.

Collecting NoteFolio Files Using TI-Navigator

1. Once each student has entered their thesis or introductory paragraph you can now use TI-Navigator to collect all the files and either review them yourself or display them for the class to discuss.
2. Open TI-Navigator and start the class. Login on your two calculators to simulate a classroom. Each "student" will have the NoteFolio file called THESIS on the calculator.
3. Click on the Collect from Class icon. You will be taken through a three step process to collect the files.
4. Step 1 is to select the file to collect. NoteFolio files are stored as AppVars type of files. Select CUSTOM and then from the drop down menu choose APPVARS. Beside that type in the name of the file, in this case THESIS, noting that the name is case sensitive. When you are done click ADD. See Figure 7.
5. Step 2 is to indicate that you wish to collect from the whole class. Note: You may also select from specific students if necessary. You may also check the box Force collect from students now to ensure that you retrieve the file regardless of what the student is currently doing. Click Next. See Figure 8.

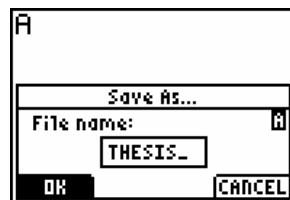


Figure 6



Figure 7

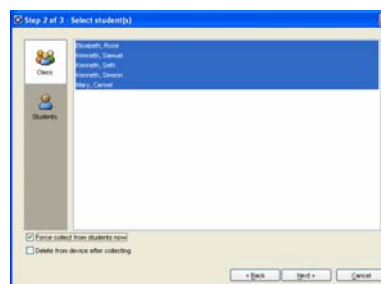


Figure 8

6. Step 3 asks you to indicate what folder you wish to place the collected AppVar files. When you have selected the folder click Finish. See Figure 9.
7. The files will be collected in the folder you indicated with the student login in front of the file name. You will then know which file belongs to which student. See Figure 10.
8. Double clicking on either of the files will open them in TI NoteFolio Creator.
9. One option is that you may then review, edit, comment and re-save the file for each student if you wish to assess their work. Recall they can export the file into MS Word and continue working on their paper.
The file could also be exported back to their calculator and they could work on it with the NoteFolio App if computer access is a limited.
10. Another option is to open the file in TI NoteFolio Creator and display it for the class to discuss and suggest improvements. Again the file can be edited as per the discussion and re-saved and later exported to MS Word. This provides a good opportunity for students to examine a number of various theses or introductory paragraphs and discuss the components of a good thesis and where improvements may be made. A large number of students can quickly and easily receive teacher and peer feedback as all students visually can read the thesis.
Note: One area which may be a concern is the displaying of a student's name. TI-Navigator when collecting the THESIS file will place the user name in front of the file. Possible solutions around this if it is a concern are:
 - You can change the file name itself from Smith_John-THESIS to something such as 1-THESIS
 - You can copy text into a blank document
 - You can create a class of "fake" names and have students login to TI-Navigator with one of those names which only you and them would know
11. Another option to collecting this type of work from students is to use a LearningCheck file and using an open response question where the students answer with their thesis or introductory paragraph. The responses can then be collected using Class Analysis. The disadvantage is that students lose the opportunity to edit their work and export it to a word processor such as MS Word to continue their work.

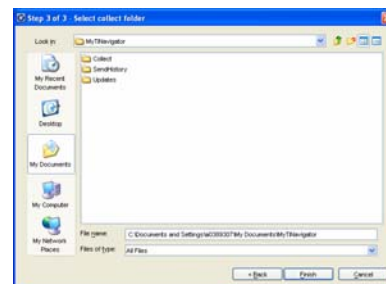


Figure 9

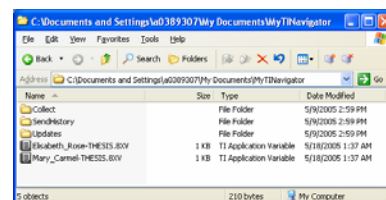


Figure 10

Discussion

1. Discuss various ways you may be able to use NoteFolio in your classes.
2. How might being you be able to share other student work and files with TI-Navigator in this fashion?

Homework Questions From The Class

Concepts

- Work with TI-InterActive!™
- Collect data from students using TI-Navigator™

Materials

- TI-84 Plus
- TI-Navigator™ system
- TI-InterActive!™

Overview

This activity will set up a TI-InterActive! document that will allow teachers to determine quickly which homework problems students were having difficulty completing.

Setting Up The Worksheet

1. Open the TI-InterActive! software by double clicking on the icon on the desktop. See Figure 1.
2. Click the List icon. See Figure 2. This will open the Data Editor work area (or go to the Insert menu and choose “List”).
3. Save the Data Editor work area to the worksheet document by clicking the “Save to Document” icon. (or go to the File menu and choose “Save to Document”) See Figures 3 and 4.



TI InterActive!

Figure 1

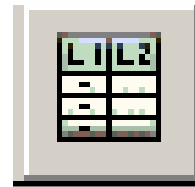


Figure 2



Figure 3

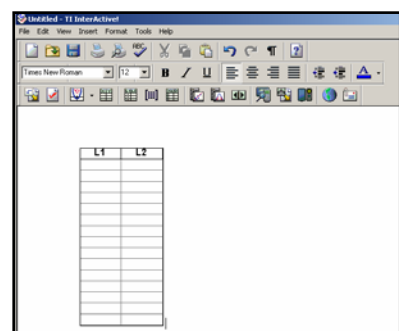


Figure 4

4. Click the arrow to the right of the Graph icon and choose the Scatter Plot icon. See Figures 5 and 6.
5. In the Functions window, see Figure 7, click on the Style icon. See Figure 8.
6. Change the Plot Type to Histogram. See Figure 9.

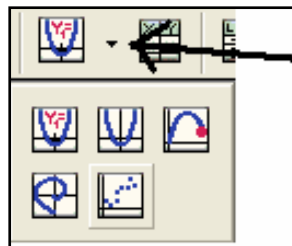


Figure 5

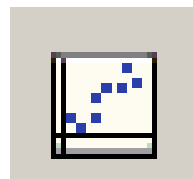


Figure 6

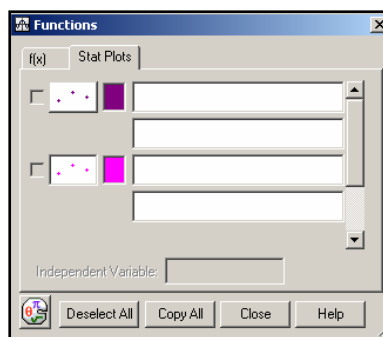


Figure 7



Figure 8

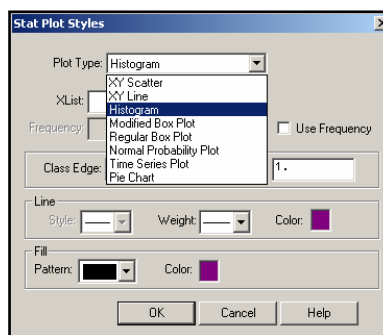


Figure 9

7. Type "L1" in the Xlist box and, if desired, change the color by clicking the Color box. See Figure 10.
8. Click OK.
9. Turn on the Histogram by clicking on the box to the left of the Style icon, See Figure 11.
10. In the Graph window, adjust the settings so that the graph is only showing Quadrant 1.
 - Xmin = 0
 - Xmax = # of problems in homework assignment
 - Ymin = 0
 - Ymax = # of students in class divided by 2
11. Save the Graph work area to the document worksheet by clicking the "Save to Document" icon, or from the File menu selecting "Save to document".
12. Now you are ready to collect the homework questions from your class. See Figure 12.
13. Save the TI-InterActive! document for class by clicking the Save icon or go to the File menu and choose "Save". Make a note as to where you have saved the file.
14. Exit TI-InterActive!.

Collecting Homework Questions From The Class

1. Start the TI-Navigator software and have students log into the Navigator classroom.
2. Start the TI-InterActive! software.
3. Open the TI-InterActive! worksheet you created to collect the homework questions from the class by clicking the Open icon, browsing for the file and click Open.
4. Have the students enter the homework questions in L1 for which they had difficulty.
 - Click the **[STAT]** key.
 - Choose 1:Edit.
 - Type each number of a homework question followed by the **[ENTER]** key.
5. Double click on the Lists in the worksheet to open the Data Editor window.
6. Go to the File menu, choose Import, then from Class. See Figure 13.

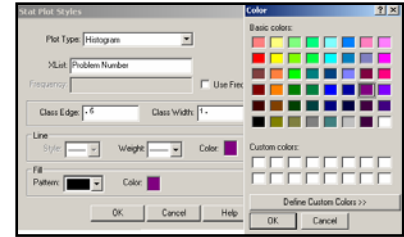


Figure 10



Figure 11

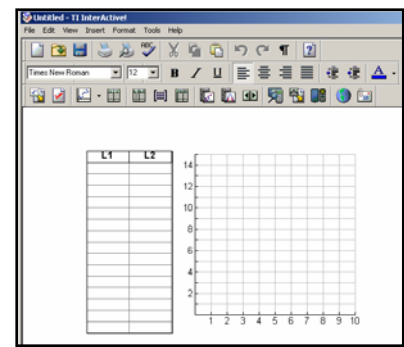


Figure 12

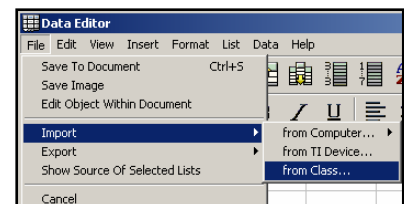


Figure 13

7. Click on the Augmented List(s) tab. See Figure 14.
8. Type L1 in the First row of boxes.
9. Click Import.
10. The students' homework questions will be augmented into the Data Editor window's L1.
11. Click the "Save to Document" icon or go to the File menu and choose "Save to Document".
12. Now you will know what questions your students really need to see in class.
13. For future reference, save the TI-InterActive! document worksheet. (see comments below)

Comments

- Once the "Setting Up The Worksheet" steps are done once, the data list and graph can be copied and pasted for the next class. Or you can have a blank one set up for use each day and do a "Save As" at the end of class for your records (instead of just a "Save").
- Keeping a cumulative record of the question histograms can be useful the next time the course is taught. Modifications can be made to address the most common questions. See Figure 15.

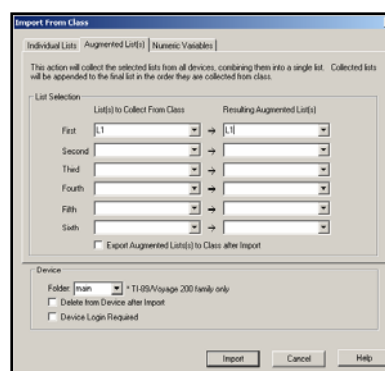


Figure 14

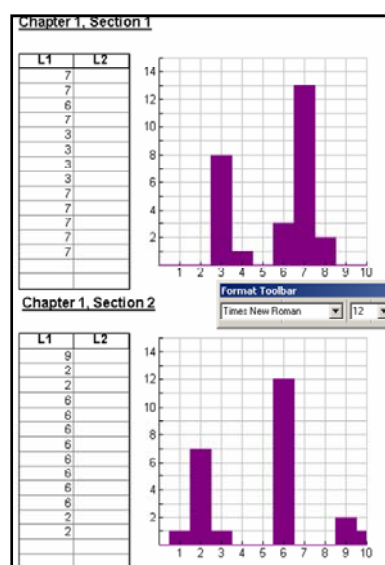


Figure 15

Activity Center

Concepts

- Using Activity Center to conduct various activities

Materials

- TI-84 Plus™
- TI-Navigator system™

Overview

Participants will use Activity Center to set up sample activities and experience them from both a student's and teacher's perspective. They will adjust the settings of different views and contribute points, equations and lists.

Graph View Tab

- Begin the Practice Class and log in one of the calculators as the teacher and the other as a student.
- Select 1: Activity Center from the TI-Navigator Home. See Figure 1.
 - The calculator will display a message "WAITING FOR TEACHER". See Figure 2.
- Select the Activity Center icon from the tool bar or the Tasks section of the Tools tab (or select Activity Center from the Tools menu). See Figure 3.
- There are five viewing tabs: List, List-Graph, Graph, Graph-Equation, Equation.
- Select the Graph tab.
- Change the basic window settings to $[-20, 20]$ by $[-5, 5]$ by entering the appropriate values in the boxes at the end of the axes.
 - Note the resulting changes to the viewing screen.
- Click on the Edit Window Settings icon or select Edit Window Settings from the Edit Menu. See Figure 4.



Figure 1

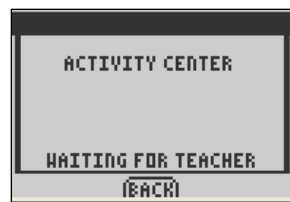


Figure 2

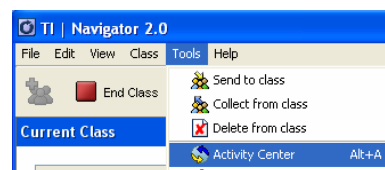


Figure 3

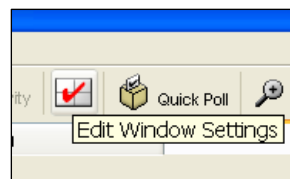


Figure 4

8. Adjust the settings to reflect the following: (See Figure 5)
 - X scale of 2
 - Y scale of 2
 - Axis Labels turned on
 - X for X Label
 - Y for Y Label
9. Click OK.
10. From the Graph tab window the Axes, Axis Label and Grid options can be toggled on and off. Try it.
11. To return to the Zoom Standard window settings quickly, click the Zoom Standard icon in the toolbar. See Figure 6.
12. The Zoom In, Zoom Out and Zoom Square icons are used to quickly change the window settings. Try it.
 - The Zoom Stat icon is used to match window settings to lists. This will be discussed later.

Contribute Points, Equations and Lists

1. Setting up “Catch Me If You Can” activity:
 - From the Contribute pull-down menu within the Activity Center, select the Points option. See Figure 7.
 - Select the Configure button and use the following settings: (See Figure 8)
 - Number of points per student: 0
 - Step Size: 1
 - X-List: X
 - Y-List: Y
 - Deselect (uncheck) Display Coordinates and Send Graph Contents as background
 - Select the OK button.
2. Perform the “Catch Me If You Can” activity.
 - Select Start Activity from the toolbar, and “chase yourself” around the grid.
 - Select Stop Activity from the toolbar to end the activity.

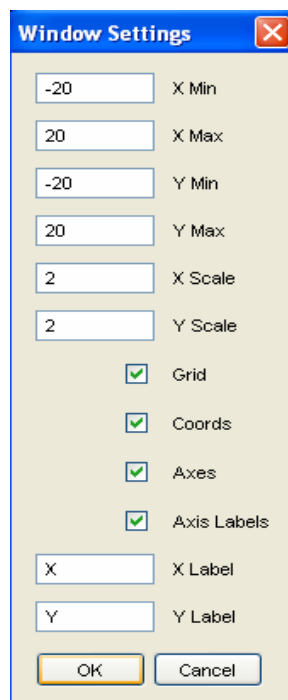


Figure 5

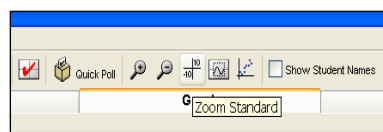


Figure 6

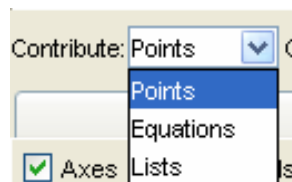


Figure 7

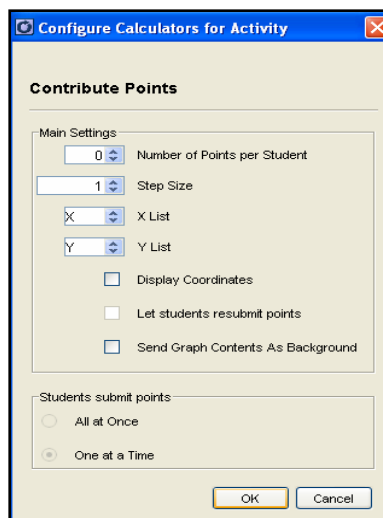


Figure 8

3. Setting up “Guess My Rule” activity:
 - Click on the Zoom Standard icon followed by the Zoom Square icon. See Figure 9. This will give everyone convenient window settings.
 - Click on the Window Settings icon to change the X scale and Y scale to 1.
 - From the Contribute pull-down menu within the Activity Center, select the Points option. See Figure 7.
 - Select the Configure button and use the following settings: (See Figure 10)
 - Number of points per student: 3
 - Step Size: 0.5
 - X-List: X
 - Y-List: Y
 - Select (check) Display Coordinates
 - Select (check) Let Students Resubmit Points
 - Deselect (uncheck) Send Graph Contents as background
 - You can choose to allow students to submit points All At Once or One at a Time
 - Select the OK button
4. Perform the “Guess My Rule” activity.
 - Select Start Activity from the toolbar.
 - On the student calculator mark 3 points according to the following rule:
 - “Make your x-coordinate 1 greater than your y-coordinate.”
 - Select Stop Activity from the toolbar. See Figure 11.
 - Reconfigure Activity Center to contribute Equations, with the following settings: (See Figure 12)
 - Number of equations per student: 1
 - Select Let students view graphs of equations
 - Deselect Let students resubmit equations
 - Deselect Send Current Graph Contents As Background
 - Select Empty Equations
 - (The other options are useful for other activities which you will see used later.)
 - Select the OK button
 - Select Start Activity from the toolbar.
 - On the student calculator enter a “guess” of the math rule that fits these points and [send].

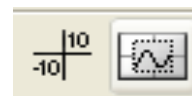


Figure 9

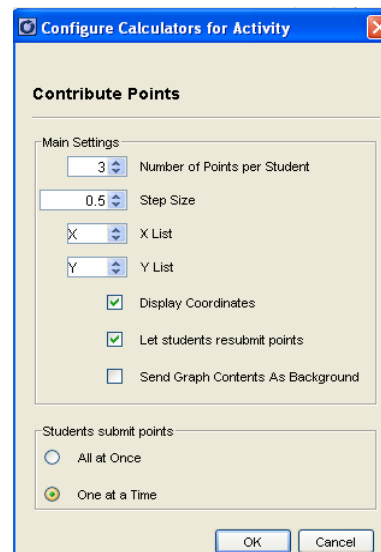


Figure 10

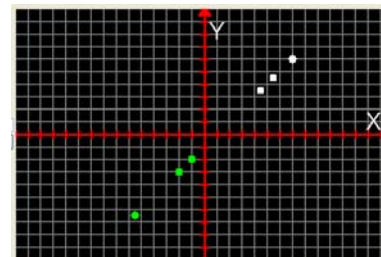


Figure 11

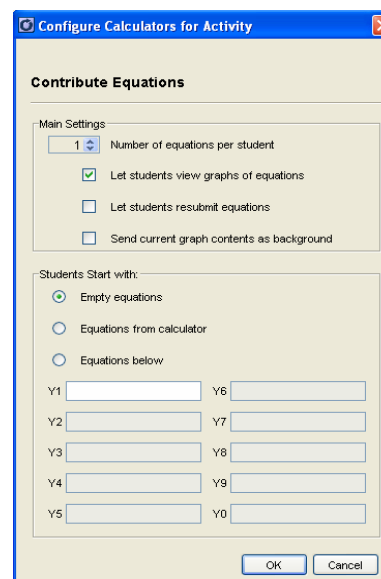


Figure 12

- Select Stop Activity from the toolbar. See Figure 13.
 - To clear the data from the screen, from the Edit menu select Clear Activity Data. See Figure 14.
 - Practice another round using the following rule: “Make the y-coordinate two less than twice the x coordinate.”
 - Clear the data from the screen for the next activity (from the Edit menu select Clear Activity).
5. Setting up “Happy Birthday – Part 1” activity:
- From the Contribute pull-down menu within the Activity Center, select the Lists option. See Figure 15.
 - Select the Configure button and use the following List properties: (See Figure 16)
Select Create independent lists using 1 list named L1.
 - Click the OK button.
 - Deselect Let students view sequence plots.
 - Select Empty lists. See Figure 17. (The other options are useful for other activities which we will use last.)
 - Click the OK button.

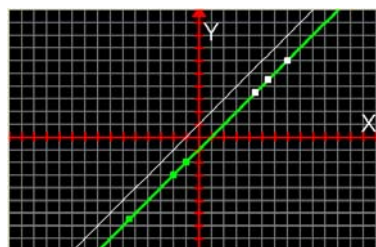


Figure 13

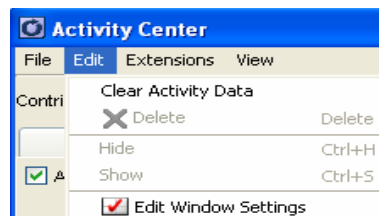


Figure 14

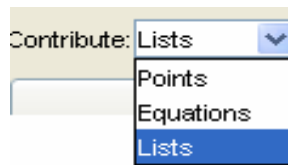


Figure 15

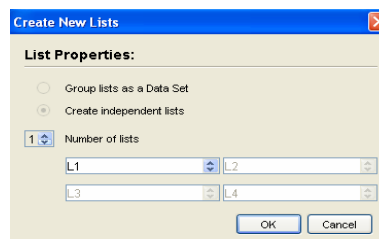


Figure 16

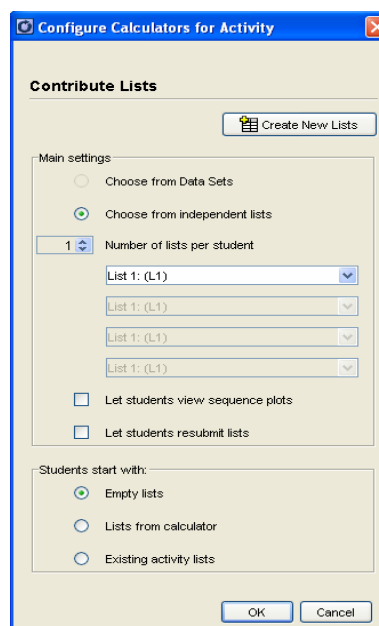


Figure 17

6. Perform the “Happy Birthday – Part 1” activity:
- Select Start Activity from the toolbar.
 - On the two calculators, enter five days and “Send” (to simulate 10 students’ days of birth).
 - Select the List tab to view the lists. See Figure 18.
 - Click the cell with L1 to order the list in ascending/descending order.
 - Question: “Can it be known from the list if any two students have the same birthday?”
 - Select Stop Activity from the toolbar.
 - Clear the data from the activity center (from the Edit menu select Clear Activity).
 - Select Start Activity from the toolbar.
 - On the two calculators, enter five months and “Send” (to simulate 10 students’ months of birth).
 - Click the cell with L1 to order the list in ascending/descending order.
 - Question: “Can it be known from the list if any two students have the same birthday?”
 - Select Stop Activity from the toolbar.
 - Clear the data from the activity center.
7. Setting up “Happy Birthday – Part 2” activity:
- Reconfigure the activity to contribute two lists (L1 and L2) of the type “Group Lists as a Data Set”. See Figure 19.
 - Click the OK button.
 - Note: With creating a Data Set, lists are considered pairs whose dimensions must match, while creating Independent Lists may have different dimensions.
 - Use the following settings: (See Figure 20)
Select Choose from Data Sets and use the pull-down menu to select the L1-L2 Data Set.
Select Let students resubmit lists.
Select Empty Lists.
 - Click the OK button.
8. Performing the “Happy Birthday – Part 2” activity:
- Select the Start Activity from the toolbar.
 - On the two calculators, enter five months (L1) and five days (L2) and “Send” (to simulate 10 students’ birthdays).
 - Select Stop Activity from the toolbar.
 - Question: “Can it be known from the grouped lists if any two students have the same birthday?”

Display Name	L1
Teacher	4
Teacher	12
Teacher	26
Teacher	30
Teacher	20
<Hidden>	16
<Hidden>	2
<Hidden>	4
<Hidden>	30
<Hidden>	15

Figure 18

Create New Lists

List Properties:

Group lists as a Data Set
 Create independent lists

Number of lists: 2

L1 L2
L3 L4

OK Cancel

Figure 19

Configure Calculators for Activity

Contribute Lists

Choose from Data Sets
 Choose from independent lists

Add to Data Set:
Data Set 2: (L1, L2)

Configure Plots

Preview 1: Off Preview 4: Off
 Preview 2: Off Preview 5: Off
 Preview 3: Off Preview 6: Off

Let students resubmit lists

Students start with:
 Empty lists
 Lists from calculator
 Existing activity lists

OK Cancel

Figure 20

9. Extension of the “Happy Birthday” activity:
 - Using the List-Graph tab, the scatter plot can be created of the collected data.
 - Question: “From the scatter plot, what indicates that students have the same day of birth? What about the same month of birth?”

Reflections

1. Having been introduced to the Activity Center, what are some things that you would like to be able to do with your class?
2. In what ways could you use:
 - Contributing Points?
 - Contributing Equations?
 - Contributing Independent Lists?
 - Contributing Grouped Lists?
3. How might you design lessons using more than one type of data contribution?

Math Lesson: Sending Internet Data To The Class

Concepts

- Downloading data from the Internet
- Sending data to students
- Saving and Collecting Pictures

Materials

- TI-84 Plus
- TI-Navigator™ System
- Internet access
- TI Connect™ software

Overview

Participants will use data from the Internet to explore the changes in world population over time and to make projections into the future.

Downloading The Data

1. Open TI Connect software.
2. To have a place to store the data, use TI Connect to create a list.
 - Click on TI DataEditor to begin. See Figure 1.
3. Go to File, and then New.
 - Choose TI-83 Plus, List, and L1 from the pop-up window. See Figure 2.
 - This will create a column called L1.
 - Repeat this process to create a second list called L2.
 - Now minimize TI Connect.
4. If you have access to the Internet, open the Internet browser and go to the world population data site for TI-InterActive!, education.ti.com/us/product/software/tii/datasites/worldpop.html. See Figure 3.
 - If you do not have Internet access, then use the Internet explorer file called Data Sites – TI InterActive!
 - The file may be found at the direction of the instructor.
5. Highlight the data for years and population by clicking the mouse on year 0.
 - Hold the mouse button down and drag to the end of the data.

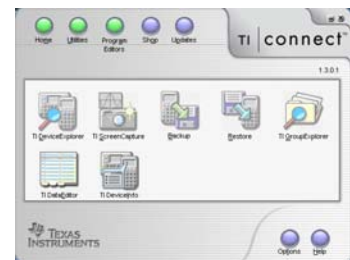


Figure 1

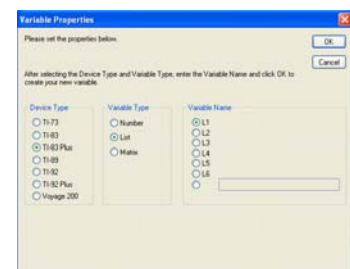


Figure 2

Year	Population (in billions)
1	3.0
1000	3.5
2000	3.6
3000	3.6
4000	3.7
5000	3.7
6000	3.7
7000	3.7
8000	3.7
9000	3.7
10000	3.7
11000	3.7
12000	3.7
13000	3.7
14000	3.7

Figure 3

- Choose Edit and then Copy to copy the data to the clipboard. Using Ctrl – C on the computer keyboard will achieve the same goal.
6. Minimize the Internet browser and maximize the TI DataEditor.
 7. Click the first position in L1.
 - Paste the data into L1 and L2 by choosing Edit and then Paste. Use Ctrl – V on the computer keyboard will achieve the same goal. See Figure 4.
 8. To save, click on L1, and then choose File and Save to save the list L1.
 - Repeat the process for L2.
 - Save the lists as directed by the instructor.

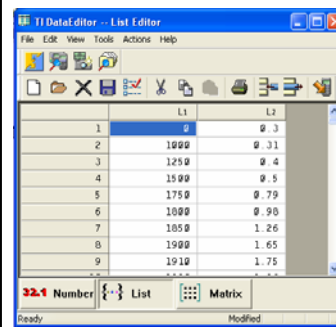


Figure 4

Sending The Data To The Calculator

1. Open the TI-Navigator software. Click Begin Class. Click the Send to Class icon on the menu bar.
2. Step 1 of 2: Select the file(s) to send. Locate L1 and L2 saved above and select both. Click Next.
3. Step 2 of 2: Select student(s). Click Class to send to all students logged on or click Students and select particular students. If desired you can check the Force send to students now box. Click Finish.

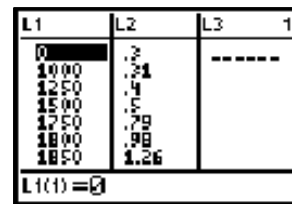


Figure 5

Creating The Scatter Plot On The Handheld

1. Press **CLEAR** to erase the Home Screen.
 - Press the **STAT** key. Choose 1:Edit. Press **ENTER**. This shows the data. See Figure 5.
2. Press **2nd** [STAT PLOT] to access the Stat Plot menu. See Figure 6.
3. Select Plot 1 by pressing **ENTER**. The word ON should be flashing.
 - Press **ENTER** to activate Plot 1. See Figure 7.
4. Press **▼** to go to Type. Beside Type select the first icon, which represents the scatter plot.
5. Press **▼** to go to Xlist. Press **2nd** [1] to get L1.
6. Press **▼** to go to Ylist. Press **2nd** [2] to get L2.
7. Press **▼** to go to Mark. Press **▶** to go to smallest mark, Press **ENTER**. See Figure 8.



Figure 6



Figure 7



Figure 8

8. Press **[ZOOM]**. Go to 9: ZoomStat to see the handheld-generated graph of the world population data from year 0 to 2150. See Figure 9.

Saving Pictures

- Press **[2nd]** **[DRAW]** to access the DRAW menu.
 - Scroll to **[STO]** to store the picture in memory.
 - Save by choosing 1:StorePic and then press **[ENTER]** to confirm the save on the Home Screen of the handheld. See Figure 10.
- Enter "1" to give this picture a name. See Figure 11.
 - Press **[ENTER]** to store the picture in the handheld's memory as PIC 1.

Collecting Pictures

- Open TI Navigator software. Click Begin Class. Click the Collect from Class icon on the menu bar.
- Step 1 of 3: Select the file(s) to collect. Select PICS then Pic1. Click Next. See Figure 12.
- Step 2 of 3: Select student(s). Click Class in order to send to all students logged on or click Students and select particular students.

If desired check the Force send to students now box.

If desired check the Delete after collecting box.

See Figure 13.



Figure 9

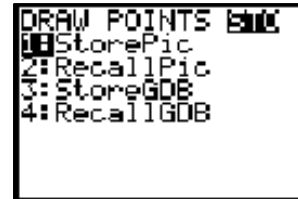


Figure 10

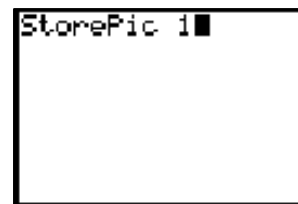


Figure 11



Figure 12

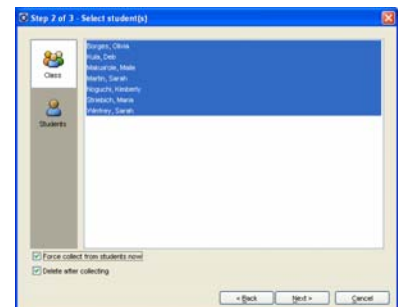


Figure 13

4. Step 3 of 3: Select collect folder. Save as directed by the instructor. Click Finish. See Figure 14.

Notes For Teacher

1. The teacher could also get a screen capture from all students, then display and discuss.
2. To save the screen capture from students, the teacher could press Alt-PrntScr to copy the Screen Capture window to the clipboard and then paste it into a Word (or similar) document.

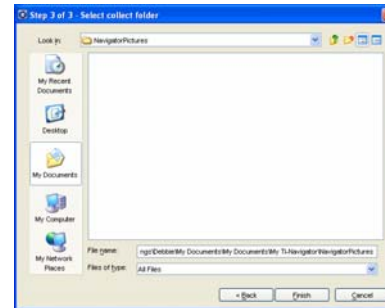


Figure 14

Math Lesson: Pass The Ball

Math Concepts

- Scatter plot
- Function
- Proportional relation

Materials

- TI-84 Plus
- TI-Navigator™
- Stopwatch
- Tennis ball

Overview

In this activity, we will collect data of the form (number of people, time it takes to pass a ball), make numerical prediction, build a scatter plot, and model with a proportional relation of the form $y = mx$. Data will be entered in Activity Center and transferred by TI-Navigator to student handhelds.

Description Of The “Pass The Ball” Activity

1. For the ball pass activity, begin by having three people stand in a circle.
 - You will be repeating the activity for six different numbers of teachers.
 - Use different teachers to maximize participation.
2. For each round, the starter will bounce, catch, and pass the ball to the next person. Continue bouncing, catching, and passing the ball until it is back to the starter.
3. Start and stop with the same person. Time how long it takes the ball to get all the way around the circle. Have teachers record the times on the table. See Figure 1.
4. For the last round, have everyone in the room participate. Before timing, have teachers predict how long they think it will take and write it on their handout. Ask teachers to share their predictions. Then time.

Using TI-Navigator For The Activity

1. Launch TI-Navigator and Begin Class.
2. Click the Send to Student icon. Select the two LearningCheck documents to send to the students, Post Test and Rule Answers.
3. Describe the “Pass the Ball” activity to the participants and perform six rounds of the activity (just not the last round where everyone participates).
4. Do a Quick Poll with the following three questions:
 - How long will it take to pass the ball to everyone?
 - How long will it take to pass the ball to 50 people?
 - How many people would be in the circle if it takes 50 seconds to pass the ball?

Sample Table

Number of People	Time in Seconds
4	6
6	9
7	13
9	16
25	46
N	$1.7N$

Figure 1

5. Discuss the results.
6. Click on the Activity Center icon.
 - Click on the List tab.
 - Click on the Create New List button.
 - Select Create Data Set and number of lists equal to 2.
 - Click OK.
 - Click in the data box for L1 and type in value.
 - Tab to L2 and type in value. Press enter and repeat until all data has been entered.
 - Select Contribute Lists and click Configure.
 - Select Existing activity lists then click OK.
7. Click Start Activity to send the lists to the class.
8. Once the class receives the lists, click Stop Activity. They can quit the App and make a scatter plot of the data in L1 and L2 and fit the data with a function rule.
 - Do not use the **STAT** button.
9. Click on List-Graph tab.
 - Configure Plots for L1 and L2.
 - Use the settings icon to create an appropriate viewing window.
 - Select Contribute Equations, click Configure, with number of equations equal to 1.
 - Check Let students view graph of equations, do not check Send Graph Contents as Background.
 - Click on Graph-Equation tab to view graphs and equations as students contribute their equations.
10. Have the participants complete the “Rule Answers” LearningCheck document.
 - This document contains several questions relating to the results.
 - Have participants use a consensus rule, or their own to respond to these questions.
 - Display answers using Slide Show and discuss results.
11. Have the participants open the “Post Test” LearningCheck document and discuss.
 - This is a set of questions similar to the activity.
 - Use the Activity Worksheet for students to record solutions.
 - The results of this worksheet may be used as a summative assessment.

Math Lesson: Projectile Motion

Concepts

- Position, velocity, and acceleration
- Collecting files from student handhelds

Materials

- TI-84 Plus
- TI-Navigator™ software
- TI-84 Plus picture PIC1

Overview

Participants will receive a graph of the height of a rocket over time. The instructor will ask participants questions about the rocket involving height, velocity, and acceleration. Participants will respond by moving the free-floating cursor to the appropriate point on their graph. After each question, TI-Navigator will be used to collect participants' results (screen captures) and display them for the class. This display can encourage class discussion of the relation between height, velocity, acceleration, and the graph.

Introduction

1. Students are often hesitant to respond to questions in class because they are afraid of being wrong. TI-Navigator allows students to respond to questions anonymously.
2. This feature encourages more students to participate and become involved in classroom discussions.

Procedure

1. Launch TI-Navigator, Begin Class, then send the picture PIC1 to the class.
 - See the Tip Sheet for sending a picture.
2. Participants should clear their Y= menus.
 - Go to the Y= menu and clear each entry. See Figure 1.
 - Deselect all scatter plots.
 - Set Window: Xmin = -1, Xmax = 15, Xscl = 1, Ymin = 0, Ymax = 500, Yscl = 100. See Figure 2.
3. Participants should turn off their axes.
 - Go to the Graph Format by pressing 2nd ZOOM ([Format]).
 - Highlight AxesOff and press ENTER . See Figure 3.
4. Each participant should open the picture PIC1.
 - Press 2nd PRGM ([Draw]). Scroll to STO, then use the arrow keys, and scroll to 2:RecallPic. See Figure 4.

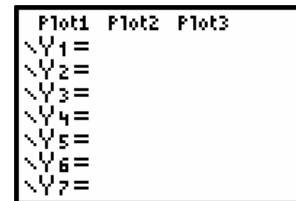


Figure 1

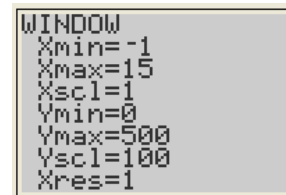


Figure 2



Figure 3

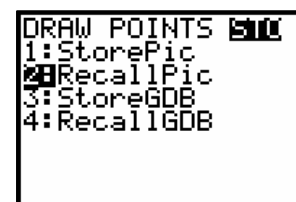


Figure 4

- Press **[ENTER]** to paste the RecallPic command to the Home Screen. See Figure 5.
 - Select 1. See Figure 6.
 - Press **[ENTER]** to open the picture. See Figure 7.
5. How high did the rocket travel?
 - Use your TI-84 Plus cursor movement keys and the free-floating cursor to mark the point on the graph that corresponds to the highest point in the rocket's trajectory.
 - Wait for your instructor to collect the class results.
 - How high do you think the rocket traveled?
 6. The instructor will capture screen shots of each participant's home screen and display the class results.
 7. The instructor should ask the participants to discuss the reasoning behind various answers (screen shots).
 - The responses should remain anonymous so that participants (students) are more likely to participate in the discussion.
 8. When was the rocket's velocity zero?
 - When your teacher tells you to do so, mark the point on the graph that shows when the rocket's velocity is zero.
 - Wait for your instructor to capture the screen shots and display class results, then choose one of the responses and explain why a student might have marked that point.
 - Tell whether or not you think this is the correct point.
 9. When did the rocket engine finish burning?
 - When your teacher tells you to do so, mark the point on the graph that shows when the rocket engine finished burning. Wait for your instructor to capture the screen shots and display class results. Use the collated results to see what your classmates thought.
 10. When was the rocket's velocity greatest?
 - When your teacher tells you to proceed, use your handheld to mark the point when the rocket's velocity was greatest.
 - After you have seen the collated class results, choose one of the responses, mark it in the and explain why a student might have marked that point.
 - Tell whether or not you think this is the correct point.



Figure 5

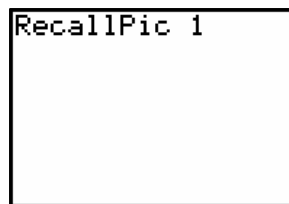


Figure 6



Figure 7

11. When was the rocket's velocity constant?
 - When your teacher says it is okay to proceed, use your handheld to mark a point on the graph where the velocity is constant, then view the collated class responses.
 - Why would the rocket fall with a constant velocity?
12. When do you think the rocket touched down?
 - Where did it touch down?
 - Explain why you chose these answers.
13. When did the rocket's velocity change from positive to negative?
 - When your teacher tells you to do so, mark the point on your TI-84 Plus graph that shows when the rocket's velocity changed from positive to negative.
 - After you have seen the collated class results, choose one of the responses and explain why a student might have marked that point.
 - Tell whether or not you think this is the correct point.
14. When did the rocket's velocity change from increasing to decreasing?
 - When your teacher tells you to do so, mark the point on your TI-84 Plus graph that shows when the rocket's velocity changed from increasing to decreasing.
 - The instructor should collate the results and ask participants to discuss the reasoning behind various answers (screen shots).
 - The responses should remain anonymous so that participants (students) are more likely to participate in the discussion.
15. During what time interval was the rocket accelerating?
16. During what time period was it decelerating?
 - During either or both of 15 and 16, the instructor may do screen captures of student responses from the home screen or have the students return to the Activity Center and do a Quick Poll.

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Science Lesson: Measurement

Concepts

- Measurements in Inches and Centimeters

Materials

- TI-84 Plus
- TI-Navigator system™
- LearningCheck files Measure and PostMeasure
- Four objects to measure and ruler with inches and centimeters

Overview

Participants will collect data and use the Activity Center to determine the relationship between inches and centimeters.

Quick Check

1. Open the TI-Navigator software.
2. Begin the TI-Navigator class.
3. Have students log into the TI-Navigator class using the NavNet application.
4. Click on the Tools tab.
5. Click on Quick Poll.
6. In the Quick Poll window click on the pull down box and select Agree Disagree 3.
7. Click on Start Poll.
8. Ask the students the question, "Do you feel comfortable with the metric system?"
9. Stop the Quick Poll.
10. View the bar graph and discuss the Agree, Neutral, Disagree.
11. Close the Quick Poll window.

Pre-Assessment For Measurement

1. Open the LearningCheck software.
2. Open the LearningCheck file Measure.
3. Send the assignment Measure to the class by clicking the Send to Class icon.
4. When the Transfer is complete on the student calculators, press **ZOOM** (soft key BACK) to go back to the TI-Navigator home screen.

5. Press 2: NETWORK APPS.
6. Press **[ENTER]** when LearnChk appears.
7. Highlight Measure and press **[ENTER]**.
8. Have the students complete the Measure assignment.
9. When the students are finished, select MENU.
10. Press 6 to TURN IN the LearnCheck assignment.
11. When Send is done press BACK.
12. Press MENU.
13. Press 5 to EXIT APP.
14. On the teacher computer, close the LearningCheck software.
15. Open the Class Analysis software.
16. Click the Choose An Assignment for Analysis icon and associate the Measure file.
17. Click the Add Student Answer Files icon, find the students files that were collected, username_umeasure. Highlight them and click on Open.
18. The teacher can view the spreadsheet to privately see the pre-knowledge of the class before continuing with the lesson.

Activity

Computer (Teacher)

1. Open the Activity Center.
2. Click on the List tab.
3. Click on the Contribute pull-down menu and change it to Lists.
4. Click on the Configure button.
5. In the Create New Lists:
 - Use two lists with list properties “Group Lists as a Data Set”
 - Replace L1 with IN and L2 with CM.
 - Click OK.
6. In the Configure Calculators for Activity:
 - In the Students start with window click on Empty Lists. See Figure 1.
 - Click OK.
7. Click the Start Activity button.

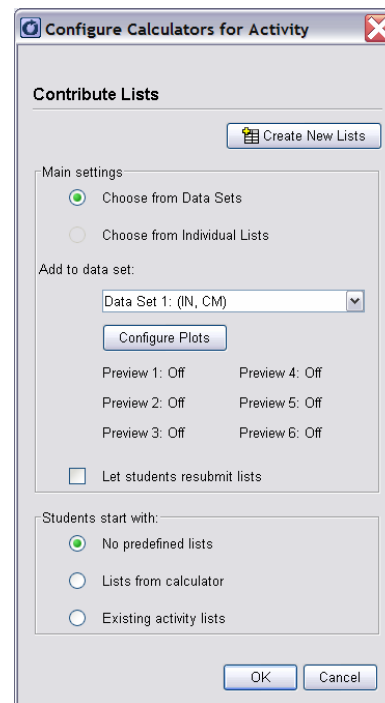


Figure 1

Calculator (Student)

1. From the TI-Navigator Home Screen on the calculator, press 1 to start the ACTIVITY CENTER.
2. Have students measure four objects in inches and centimeters.
3. The students should record the inches, typing the inches in the IN column and the corresponding centimeters in the CM column.
4. When all measurements have been completed, press the SEND soft key to SEND the data points to the shared workspace in the Activity Center.

Computer (Teacher)

1. After all the students have submitted their points, click the Stop Activity button.
2. Click on the Contribute pull-down and change it to equations.
3. Click on the List-Graph tab.
 - Click on Configure Plots (See Figure 2)
 - Click on the Plot1 X-List pull-down and select IN.
 - Click on the Plot1 Y-List pull-down and select CM.
 - Click OK.
4. Click on the View button and select Zoom Stat.
5. Click on Configure. (See Figure 3)
 - Set the number of equations to 1.
 - Check Let students view graphs of equations.
 - Check Let students resubmit equations.
 - Check Send current Graph Contents As Background.
 - Click on Empty Equations.
 - Click OK.
 - Click on Start Activity

Calculator (Student)

1. Press PLOT.
2. View the graph.
3. Press EQN.
4. Type in an equation to fit the plot (start with 2x).
5. Press **WINDOW** to see if the equation fits the data.
6. Repeat steps 3 to 5 until the equation fits the data.

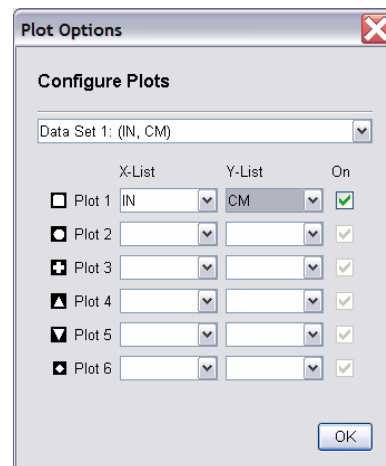


Figure 2

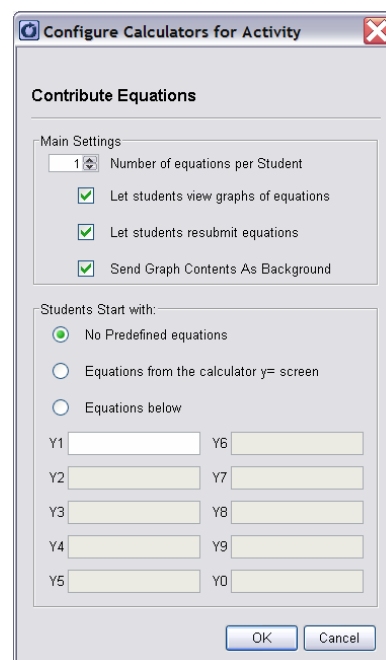


Figure 3

7. Press $\boxed{Y=}$ to SEND the equation to the instructor.
8. Students may resubmit a new equation by changing the equation and pressing SEND again.

Computer (Teacher)

1. When students have submitted all of their graphs, the teacher can mouse over the graphs and the equation will appear generating class discussion. If the Show Students box is checked the mouse over will show the students' name also.

Teacher Notes

1. The slope of the line 2.54 cm/in is the conversion factor for converting between centimeters and inches. The equation $y=2.54x$ can also be written as centimeters=2.54*inches ($cm=2.54*in$)
2. Example:
 - Given 5.00 inches how many centimeters are there?
 $y=2.54cm/in*5.00in$ $y=12.7cm$
 - Given 25.0 centimeters how many inches are there?
 $25.0cm=2.54cm/in*x$ $x=9.84in$
3. Conversion Factors:
 - Length: 1 in = 2.54 cm 1 mi = 1.6093 km
 - Mass: 1 oz = 28.35 g 1 lb = 0.4536 kg
 - Volume: 1 gal = 4.5461 L 1 fl oz = 29.574 mL

Post-Assessment For Measurement

1. Send the class the Postmeasure LearningCheck assignment.
2. Have the students complete the assignment and submit when they are done.
3. Use the Class Analysis software to see if there was improvement in the learning.

Science Lesson: C2F Program And Data Transfer

Concepts

- Temperature conversion from Celsius to Fahrenheit

Materials

- TI-84 Plus™
- TI-Navigator system™
- C2F calculator program

Overview

Participants will use Activity Center and a Celsius to Fahrenheit conversion program to review the relationship between the two units.

Student Directions

Receiving C2F Program

1. Plug the calculator into the hub.
2. Press **[APPS]**.
3. Select NavNet.
4. Enter username and password.
5. When you are logged in, C2F will be transferred to your calculator.
6. Press soft key BACK.
7. Press 4 to EXIT APP.

Run C2F

1. Press **[PRGM]**.
2. Select C2F.
3. Follow the screen instructions.
4. When the data is gathered a graph will appear.
5. Press **[2nd] [MODE]** to quit.

Log Back Into NavNet

1. Press **[APPS]**.
2. Select NavNet.
3. Press 1 to start the Activity Center.
4. Press the soft key SEND to send the lists.
5. Wait.

Model The Set Of Data

1. Press **[WINDOW]** to observe the plot.
2. Press **[WINDOW]** to add an equation.
3. Enter the model that should fit the graph.
4. Press **[WINDOW]** to view the fit. If the graph does not fit go back to the equation and adjust it until it fits best.
5. When your equation fits the data press **[Y=]** to SEND the equation.

Teacher Directions

Send C2F To Student Calculators

1. Open TI-Navigator.
2. Begin Class.
3. Click on the Tools tab.
4. Click on Send to class.
5. Select the file C2F and click Next.
6. Send to the class.
7. Check the Force send to students now box.
8. Click on Finish.

Pull Data From Student Calculators

1. Under the Tools tab click on Activity Center.
2. Click on the List tab.
3. Select the Contribute pull down and select Lists. See Figure 1.
4. Click OK on the Create new Lists. See Figure 2.
5. Select the Lists from calculator button.
6. Click OK.
7. Click Start Activity.

When All Students Lists Have Arrived

1. Click Stop Activity.
2. Click on the List-Graph tab.
3. Change the Contribute pull down menu to Equations. See Figure 3.

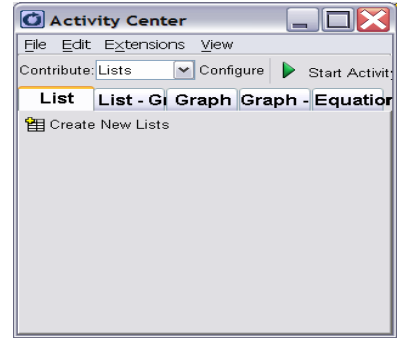


Figure 1

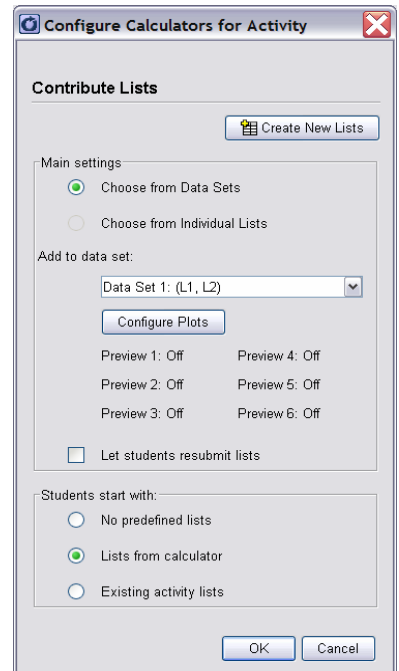


Figure 2

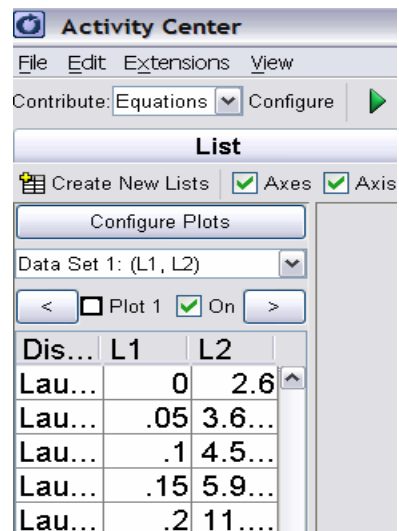


Figure 3

4. Click on Configure Plots. See Figure 4.
5. Select L1 from the X-List pull down.
6. Select L2 from the Y-List pull down.
7. Click OK.
8. Click Configure.
9. Configure Calculators for Activity. See Figure 5.
 - Set the number of equations to 1.
 - Check Let students view graph of equations.
 - Check Let students resubmit equations.
 - Check Send graph contents as background.
 - Select No predefined equations.
 - Click OK.
10. Click Start Activity.
11. Discuss the class results.

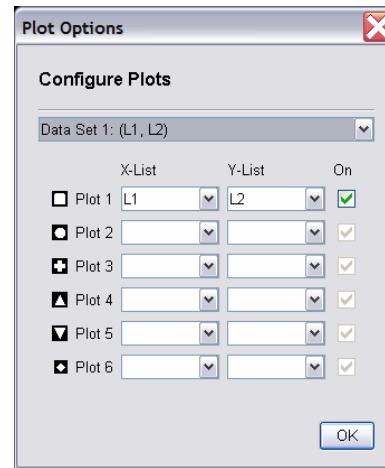


Figure 4

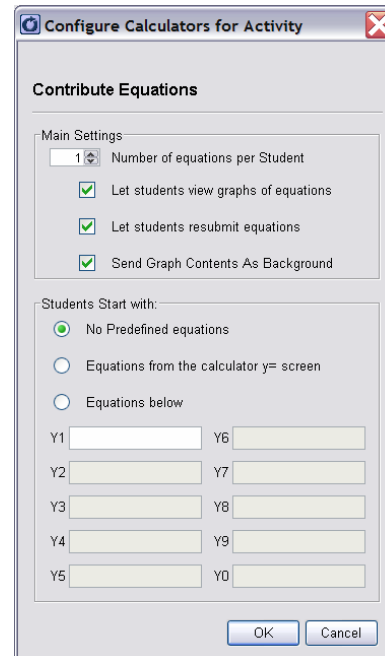


Figure 5

Science Lesson: Gravity Lab

Concepts

- Collect Ball Bounce data with CBR™
- Estimate the acceleration due to gravity based on the data

Materials

- TI-84 Plus™
- TI-Navigator system™
- CBR™
- PreGravity LearnCheck file

Overview

Participants will use a CBR to collect Ball Bounce data and then using Activity Center fit the data to a quadratic and use that to estimate the acceleration due to gravity.

Quick Check

1. Open the TI-Navigator software.
2. Begin the TI-Navigator class.
3. Have the students log into the TI-Navigator classroom using the NavNet application.
4. Send the LearnCheck file PreGravity to class. Be sure to check Force send to student on the transfer screen. See Figure 1.
5. Have the students answer the LearnCheck assignment on their calculator.
6. Retrieve the results through the Class Analysis software. Choose to delete the answers and assignment from the student's calculator.
7. After all the results have been collected, use the slide show option to share and evaluate results.
8. After a short discussion of the results go to Quick Poll and ask the question "Does gravity always operate everywhere?" as an Agree Disagree 5.
9. The Quick Poll results will generate a class discussion.
10. Stop the poll and end the Navigator class.
11. Connect a CBR to the instructor's calculator which is connected to an overhead panel or to a TI-Presenter.

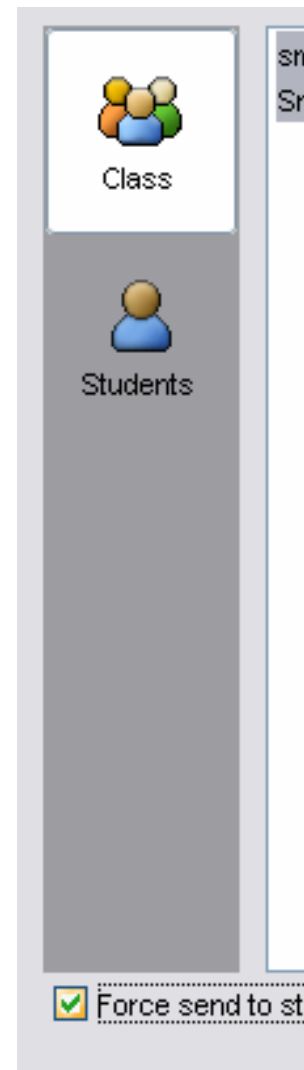


Figure 1

Activity

1. Using the CBL/CBR App on your calculator, select RANGER. See Figure 2.
2. Next select APPLICATIONS from the Main Menu. See Figure 3.
3. Select METERS and BALL BOUNCE. See Figure 4.
4. As the instructor, follow the screen instructions and collect Ball Bounce data.
5. Connect the instructor's calculator to the USB link cord.
6. Begin the TI-Navigator class again and only log in the calculator with the Ball Bounce data on it.
7. Open the Activity Center.
8. On the Contribute selection, choose List and then Configure.
9. Use two lists, L1 and L2 (the default), as Group Lists as a Data Set and then press OK.
10. Select List from calculator under Students start with, then press OK. See Figure 5.
11. Click the Start Activity button.
12. Select SEND on the soft key on the calculator with the Ball Bounce data.
13. After Ball Bounce data is transferred, click the Stop Activity button.
14. While the students are logging into the TI-Navigator class, change the Activity Center configuration so the Students start with Existing activity lists and then click OK.
15. After all the students have logged into the TI-Navigator class and entered the Activity Center, click the Start Activity button. The students will receive the Ball Bounce data on their calculators in L1 and L2.



Figure 2

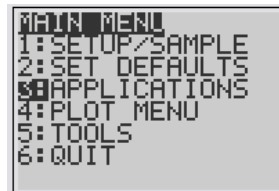


Figure 3



Figure 4

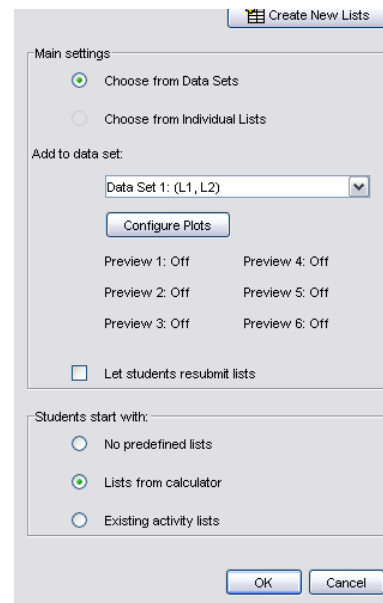


Figure 5

16. Select the List-Graph tab in the Activity Center and Configure Plots to L1 and L2 and then click OK. See Figure 6.
17. Click the Stop Activity button.
18. Reconfigure to contribute Equations and allow the students to supply two equations, view graphs, resubmit equation and send graph content as background. Select empty equations option for the student.
19. Click OK and click the Start Activity button.
20. Assign different groups different bounces and allow them to model the parabolic bounce using the vertex form, $y=a(x-h)^2+k$, where h and k are the vertex coordinates of the individual bounces.
21. Have students submit and resubmit their equations until satisfied with their fits.
22. Select the Graph-Equation tab and as a class examine the results and explore similarities and differences of the equations.
23. Reminding the students that the distance equation used in Physics is $D=0.5gt^2+vt+d_0$, have them determine the acceleration of gravity from this activity.
24. Have the students press **2nd** **MODE** to quit and exit the application unless doing the extension.

Extension

1. Using the Y2 position of the previous Activity Center screen, model the bounce peaks using the equation $y=a*b*(x-c)+d$. The b value will approximate the retention height of the ball. Different balls or different inflation levels could be used and investigated.

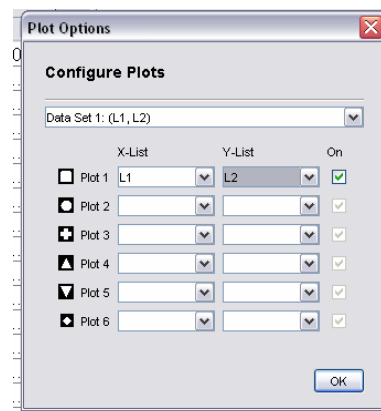


Figure 6

Post Lab Activity

Using the relationship $D=0.5gt^2+v_0t+d_0$, where g is equal to -9.8 m/s/s and d_0 and v_0 are the initial height and velocity of the problem, answer the following questions.

1. If a rock is dropped from 40 m, calculate the time it would take to hit the ground.
2. If an object takes 5.3 seconds to fall from rest position, calculate its starting height.
3. If an object is thrown upward vertically at an initial velocity of 5.2 m/s and takes 7 seconds to hit the ground, calculate the initial height of the object.
4. If an object is thrown down at -3.2 m/s from a height of 45 m, calculate the time for the object to reach the ground.
5. If a rock is thrown vertically upward at an initial velocity of 5.7 m/s, how long will it take for the rock to reach 10 m for the first time? The second time?

Algebra LearningCheck™ Reference Sheet

Multiple Choice

- Standard Choices:
 - Title: Prime
 - Text: Six is a prime number.
 - Answer Choices: True-False
- Custom Choices:
 - Title: Properties
 - Text: Which of the following demonstrates the reflexive property?
 - Answer Choices: $\underline{x=x}$, $yx=xy$, $1x=x$, $(ab)c=a(bc)$
- Choices on Image:
 - Title: Vertex
 - Text: Which of the following represents the vertex of a parabola?
 - Image: Parabola.bmp (See Figure 1)

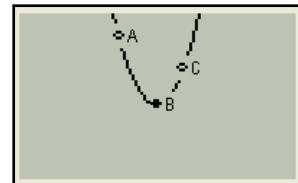


Figure 1

Fill In The Blank

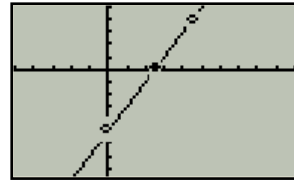
- Pull Down
 - Title: Polynomial
 - Text: A polynomial with an x^2 term as its highest power is a quadratic equation.
 - Choices for text field: linear, exponential, power, quadratic
- Text/Numeric
 - Title: Prime Number
 - Text: Zero and 1 are neither prime nor composite numbers.

Assessment Information

Title: First Assignment

- Multiple Choice:
 - Title: Equation
 - Text: Solve for x : $6x + 2 = 14$
 - Answer Choices: -2, 2, $8/3$, $-8/3$

2. Fill in the blank (drop down):
 - Title: Vocabulary
 - Text: In Algebra, a(n) variable is used to represent an unknown value.
 - Choices for text field: equation, coefficient, exponent, variable
3. Fill in the blank (multiple blank):
 - Title: Properties
 - Text: The Additive Identity property states: $a + \underline{0} = a$
4. Multiple Choice with Image:
 - Title: X-Intercept
 - Text: Which of the following represents the X-intercept?
 - Image: x-intercept.bmp (See Figure 2)
5. Sequencing:
 - Title: Order of Operations
 - Text: Put the following in correct order
 - Choices: Exponents, Add/Subtract, Brackets, Multiply/Divide
6. Open Response:
 - Title: Functions
 - Text: In the space below, describe how to determine if the graph of a curve is a function.
7. Multiple Choice with Standard Choices:
 - Title: Quadratics
 - Text: A quadratic equation has real solutions.
 - Choices: Always-Sometimes-Never

**Figure 2**

Chemistry LearningCheck™ Reference Sheet

Multiple Choice

- Standard Choices:
 - Title: Electrons
 - Text: There are 5 valence electrons in chlorine.
 - Answer Choices: True-False
- Custom Choices:
 - Title: Sig Figs
 - Text: How many significant figures in 0.0230?
 - Answer Choices: 2, 3, 4, 5
- Choices on Image:
 - Title: Atom
 - Text: Where is the proton located?
 - Image: atom.bmp (See Figure 1)

Fill In The Blank

- Pull Down
 - Title: Mass
 - Text: The Mass number is the number of protons and neutrons.
 - Choices for text field: protons, neutrons, protons neutrons and electrons, protons and neutrons
- Text/Numeric
 - Title: Atomic Number
 - Text: The atomic number of sodium is 11.

Assessment Information

Title: First Assignment

- Multiple Choice:
 - Title: Neutron
 - Text: The neutron is
 - Answer Choices: positive, negative, neutral
- Fill in the blank (drop down):
 - Title: Atomic Number
 - Text: The atomic number is the number of protons.
 - Choices for text field: electrons, neutrons, protons



Figure 1

3. Fill in the blank (multiple blank):
- Title: Ions
 - Text: Cations are positively charged ions and anions are negatively charged ions.
4. Multiple Choice with Image:
- Title: Polar Bonds
 - Text: Which bond has the greatest polarity?
 - Image: Lewis structure.bmp (See Figure 2)
5. Sequencing:
- Title: Metric System
 - Text: Put the metric units in order from largest to smallest.
 - Choices: km, hm, dam, m, dm, cm, mm
6. Open Response:
- Title: Formula Mass
 - Text: The formula mass of CH₄ is:
7. Multiple Choice with Standard Choices:
- Title: Ions
 - Text: Ions of the same atom have different number of protons.
 - Choices: Agree-Disagree

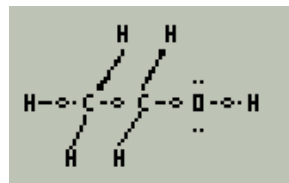


Figure 2

Geometry LearningCheck™ Reference Sheet

Multiple Choice

- Standard Choices:
 - Title: Parallel Lines
 - Text: If two lines do not cross, they are parallel.
 - Answer Choices: True-False
- Custom Choices:
 - Title: Angles
 - Text: Two angles whose sum is 90 degrees are:
 - Answer Choices: supplementary, complementary, vertical, linear pair
- Choices on Image:
 - Title: Vertex
 - Text: Which of the following represents the vertex of an angle?
 - Image: Angle.bmp (See Figure 1)

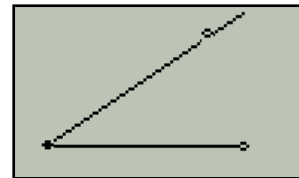


Figure 1

Fill In The Blank

- Pull Down
 - Title: Equations
 - Text: $y = 3x + 4$ is in slope-intercept form
 - Choices for text field: point-slope, standard, slope-intercept
- Text/Numeric
 - Title: Quadrilaterals
 - Text: Quadrilaterals have an angle sum of 360 degrees and two pair of sides that are parallel.

Assessment Information

Title: First Assignment

- Multiple Choice:
 - Title: Proving Triangles
 - Text: Which of the following is not a way to prove triangles congruent?
 - Answer Choices: ASA, SSA, SAS, AAS

2. Fill in the blank (drop down):
 - Title: Vocabulary
 - Text: Two lines that intersect at a right angle are perpendicular.
 - Choices for text field: parallel, skew, perpendicular, none of these
3. Fill in the blank (multiple blank):
 - Title: Squares
 - Text: Squares have all sides congruent and all angles equal to 90 degrees.
4. Multiple Choice with Image:
 - Title: Midpoint
 - Text: The midpoint of segment AB is:
 - Image: Midpoint.bmp (See Figure 2)
5. Sequencing:
 - Title: Number of Sides
 - Text: Put the following in least to greatest order based on the number of sides.
 - Choices: Rhombus, Hexagon, Triangle, Pentagon
6. Open Response:
 - Title: Linear Pair Postulate
 - Text: In the space below, explain the linear pair postulate.
7. Multiple Choice with Standard Choices:
 - Title: Rhombus
 - Text: The diagonals of a rhombus bisect each other.
 - Choices: True-False

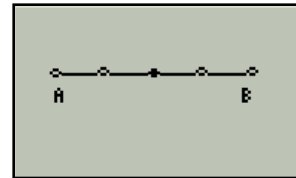


Figure 2

Physics LearningCheck™ Reference Sheet

Multiple Choice

- Standard Choices:
 - Title: Gravity
 - Text: All objects fall with the same acceleration on earth.
 - Answer Choices: True-False
- Custom Choices:
 - Title: Friction
 - Text: Which objects would probably give the greatest frictional force when in wood?
 - Answer Choices: metal, rubber, sand paper, ice
- Choices on Image:
 - Title: SHM
 - Text: Identify where the pendulum would have the greatest kinetic energy.
 - Image: Pendulum.bmp (See Figure 1)



Figure 1

Fill In The Blank

- Pull Down
 - Title: Free Fall
 - Text: An object starting at rest will fall 5 m in one second.
 - Choices for text field: 10 m, 15 m, 32 m, 5 m
- Text/Numeric
 - Title: Falling Objects
 - Text: If a rock is thrown downward with a velocity of 3 m/s, its final velocity after 4.2 seconds is -44 (with a tolerance of +/- 1)

Assessment Information

Title: Sound

- Multiple Choice:
 - Title: Wave Type
 - Text: Sound waves are which type of waves?
 - Answer Choices: Transverse, Longitudinal, Electromagnetic

2. Fill in the blank (drop down):
 - Title: Terms
 - Text: A common term for frequency is pitch.
 - Choices for text field: loudness, noise, scale, pitch
3. Fill in the blank (multiple blank):
 - Title: Interference
 - Text: When sound waves combine to form larger than normal amplitudes it is called positive interference and when they cancel each other it is called negative interference.
4. Multiple Choice with Image:
 - Title: Wave Form
 - Text: Identify the node on the sine wave.
 - Image: wave.bmp (See Figure 2)
(Answer is point c, when $X = 0$)
5. Sequencing:
 - Title: Musical Instrument
 - Text: If the following instrument played a middle C, place them in order from simple to complex sounds produced.
 - Choices: tuning fork, piccolo, flute, oboe
6. Open Response:
 - Title: Acoustics
 - Text: Explain the factors that must be considered when designing a perfect sound system for your car.
7. Multiple Choice with Standard Choices:
 - Title: Ultrasonic
 - Text: Sound waves can be used to see through things that can not be seen with your eyes.
 - Choices: True-False

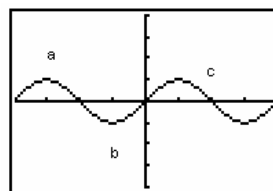


Figure 2

Social Studies LearningCheck™ Reference Sheet

Multiple Choice

1. Standard Choices:
 - Title: Census
 - Text: The federal census of population is taken every five years.
 - Answer Choices: True-False
2. Custom Choices:
 - Title: President
 - Text: To serve as President of the United States, a person must have attained:
 - Answer Choices: 25 years of age, 35 years of age, 40 years of age, 45 years of age
3. Choices on Image:
 - Title: Equilibrium Point
 - Text: Which point represents the equilibrium point for the quantity demanded and quantity supplied?
 - Image: Equilibrium.bmp (See Figure 1)

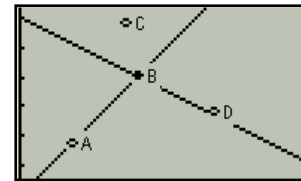


Figure 1

Fill In The Blank

1. Pull Down
 - Title: Government
 - Text: The chief executive and the administrative offices make up the Executive branch of government.
 - Choices for text field: Legislative, Judicial, Executive
2. Text/Numeric
 - Title: Original 13
 - Text: Of the original 13 states, the one with the largest representation in the first Congress was Virginia.

Assessment Information

Title: First Assignment

1. Multiple Choice:
 - Title: Communism
 - Text: Communism was the type of government in:
 - Answer Choices: Canada, Russia, Germany

2. Fill in the blank (drop down):
 - Title: Presidents
 - Text: The first Republican party candidate elected president was Lincoln.
 - Choices for text field: Roosevelt, Reagan, Jefferson, Lincoln
3. Fill in the blank (multiple blank):
 - Title: Economic Policies
 - Text: The Federal Reserve sets monetary policy while the Federal Government sets fiscal policy.
4. Multiple Choice with Image:
 - Title: Quantity vs Price Graph
 - Text: Which point represents where quantity demanded equals quantity supplied?
 - Image: Equilibrium.bmp (See Figure 2)
5. Sequencing:
 - Title: Economists
 - Text: Place in chronological order the following economists:
 - Choices: Adam Smith, Karl Marx, John Maynard Keynes, John Kenneth Galbraith
6. Open Response:
 - Title: President
 - Text: A President elected in the general election in November takes office the following year on what date?
7. Multiple Choice with Standard Choices:
 - Title: Chief Lawmaker
 - Text: The Supreme Court is the chief lawmaking body of the state.
 - Choices: True-False

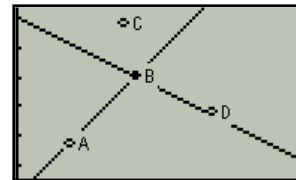


Figure 2

Tip Sheet: Upgrading TI-84 OS

Check for the latest OS Version for a Calculator

You have two options to verify if you have the latest operating system on your graphing calculator.

1. Go to the following website to identify the latest version for your calculator and check the version on your calculator.
<http://education.ti.com/us/product/apps/latest.html>
2. Open TI-Connect and connect your calculator to the computer using the TI Connectivity cable. Then click the blue circle above “Updates”. You need to have an internet connection as the software checks the TI site for the version of the latest OS. See Figure 1.



Figure 1

Check OS Version of the TI-84 Calculator

1. Turn on your graphing calculator.
2. Press **2nd** **+** [MEM].
3. Select 1: About.
4. Check for OS version number under the type of calculator. See Figure 2.

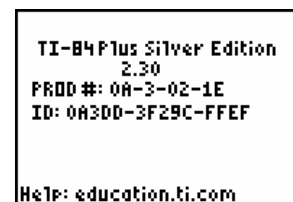


Figure 2

Upgrading the OS using the Computer

1. Before you begin to install any new Apps or update your OS, be sure you have a new set of batteries in your TI calculator for optimum performance.
2. Download the latest version of the OS from <http://education.ti.com/us/product/apps/latest.html> onto your computer desktop.
3. Open TI-Connect and connect your calculator to the computer using the TI-Connectivity cable.
4. Use the mouse to drag the OS file on the desktop to the TI Device Explorer icon in the TI-Connect window. See Figure 3.
You will see the file transfer to the calculator.



Figure 3

Upgrading the OS from Another Calculator

1. Link a calculator with the correct OS to another calculator which needs the OS using a unit to unit cable.
2. On the “Receiving Calculator”:
 - Turn the calculator on if it is not on.
 - Press **2nd** **[X,T,θ,n]** **[LINK]**.
 - Use the **▶** button to move to the RECEIVE menu.
 - Choose 1:Receive by pressing **[ENTER]**.
 - The calculator is “Waiting” to receive the OS.
3. On the “Sending Calculator”:
 - Turn the calculator on if it is not on.
 - Press **2nd** **[X,T,θ,n]** **[LINK]**.
 - Scroll using the **▼** button to the option G:SendOS under the SEND menu.
 - Choose G:SendOS by pressing **[ENTER]**.
 - The calculator will now send the OS to the other calculator.
4. Note: The receiving calculator will give you a warning that by upgrading the OS all RAM will be erased and it may erase archived files. Select “Continue” if you want to continue with the upgrade.

Tip Sheet: Sending Apps Via App Transfer

Sending Apps

1. Open TI-Navigator™ software.
2. Click on Tools tab. See Figure 1.
3. Click on App Transfer icon. See Figure 2.
4. You will see the App Transfer Window. See Figure 3.
5. Click Start Transfer button. You will see the transfer window with the status of the transfer. See Figure 4.
6. When all calculators are done, click the stop transfer button.



Figure 1



App Transfer

Figure 2

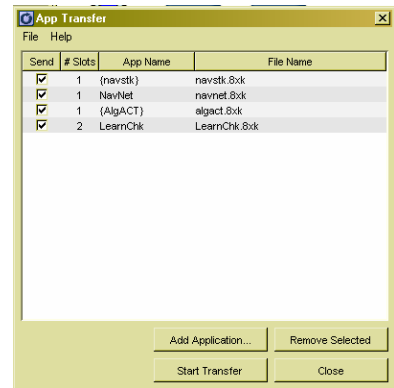


Figure 3

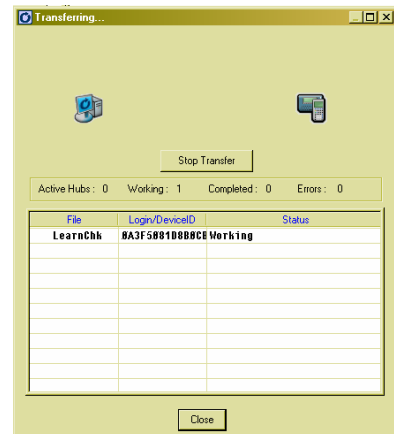


Figure 4

7. When the Progress screen (see Figure 5) closes, click the close button in the transfer window.
8. Click the close button at the bottom of the transfer window.

Notes

- To add applications to be sent, click on the Add Application button (see Figure 6) and navigator to the location of the app.
- Apps to be sent must be checked in the send column.
- To remove an app from being sent, uncheck the box to the left of the app name by clicking in the box.
- A class must not be in session for App Transfer to work.

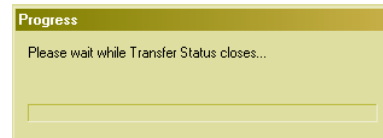


Figure 5



Figure 6

Tip Sheet: NavNet Student Login

Logging In

1. Press the **[APPS]** button.
2. Access the NavNet App by using the down arrow **⏏** on the upper right side of the calculator to move the cursor to NavNet. See Figure 1.
3. Press **[ENTER]** to open the NavNet application. See Figure 2.
4. Students login to NavNet with a username and password assigned by the teacher.
 - The minimum number of characters required to log in is three. The maximum number of characters is 32.
5. Now the student is ready to participate in a TI-Navigator enhanced classroom. See Figure 3.
6. Some teachers create “Direction Cards” to aid students in learning the procedure of logging into the Navigator classroom. See Figure 4.
 - It is also helpful for students to write their name and password on it.

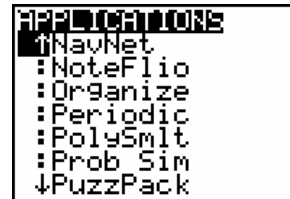


Figure 1



Figure 2



Figure 3

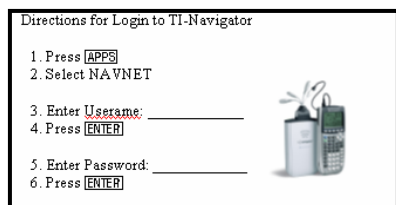


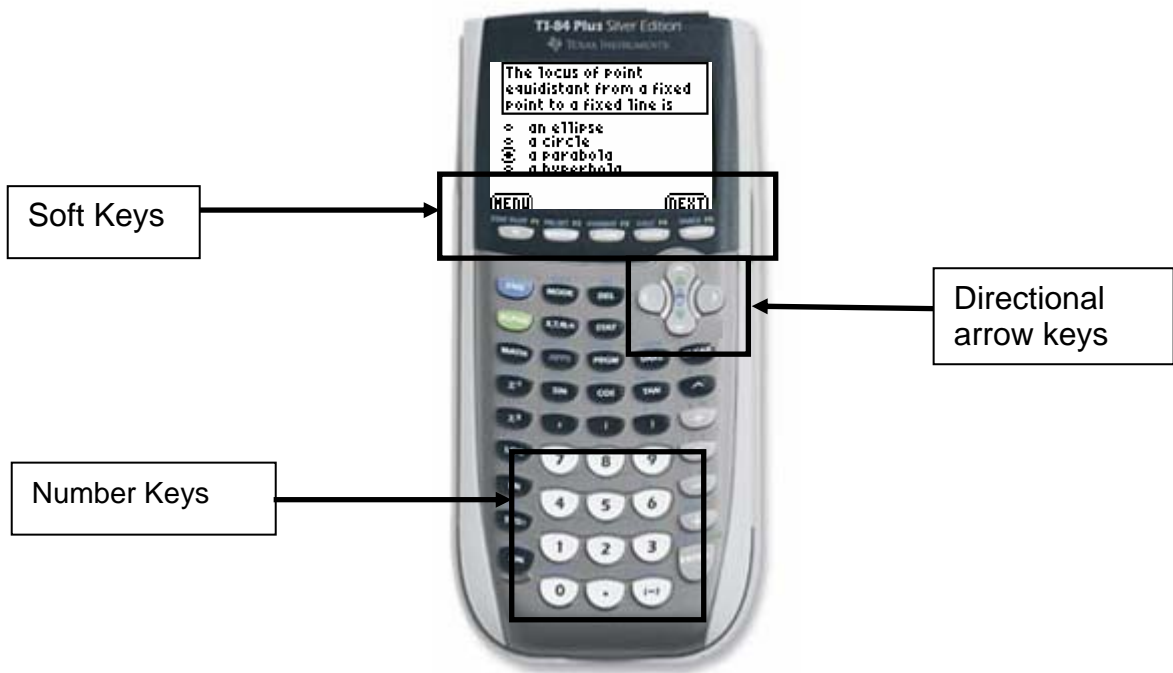
Figure 4

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TI-84 Plus LearningCheck™ App

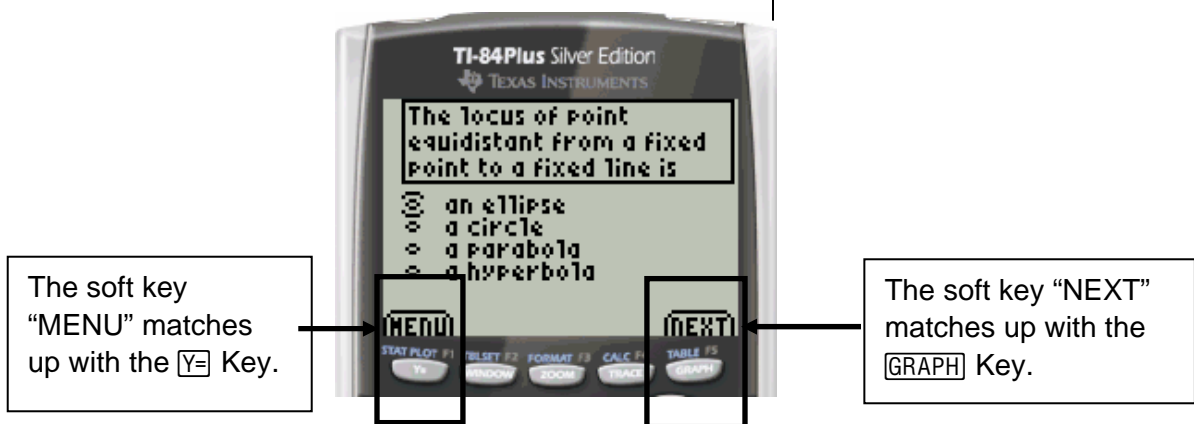
Navigation: Overview

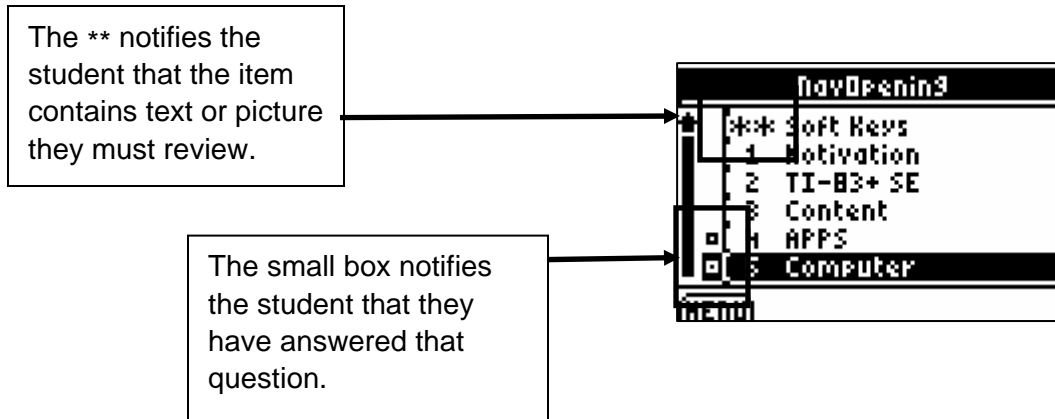
1. LearningCheck uses the directional arrow keys, number keys, and soft keys for navigation. The diagram below shows the location of these keys.



Navigation: Soft Keys

1. The Soft Keys correspond with the five keys located at the top of the TI-84 Plus.





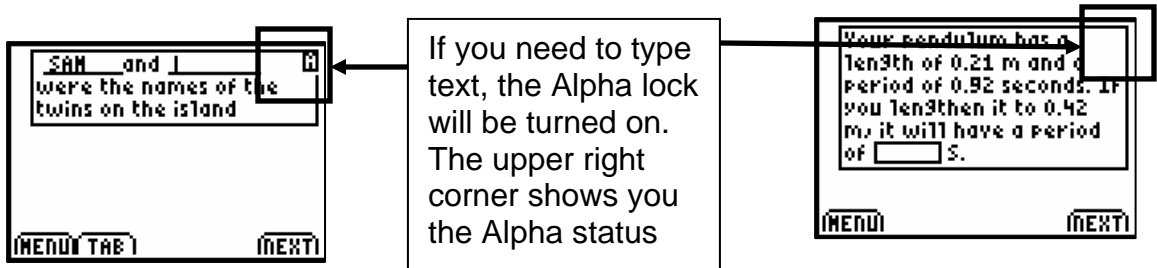
Entering Answers: Multiple Choice

1. Use the directional arrow keys to scroll through answer choices and the **ENTER** key to select the answer.
2. If you want to deselect an answer, press **ENTER** again.
3. To move to the next item, press the soft key "NEXT."



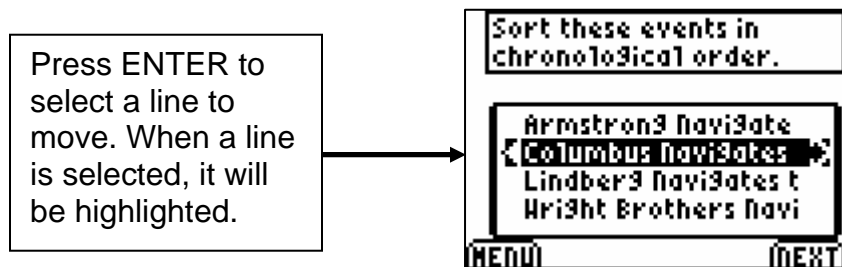
Entering Answers: Fill-In-The-Blank

1. To select a blank, press the **ENTER** key.
2. Type or select your answer.
3. To move to another blank, press the soft key, "TAB."



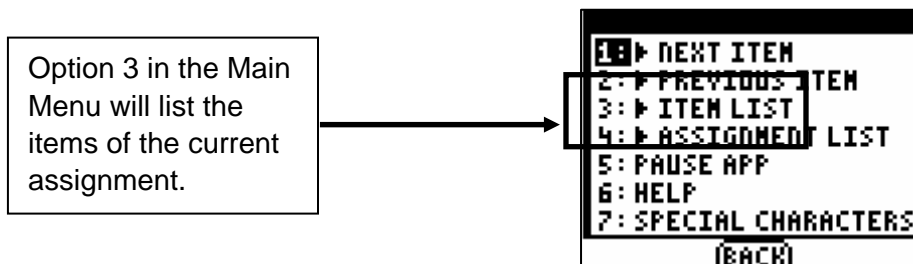
Entering Answers: Sequencing

1. To select a line to move, press the **ENTER** key.
2. To move the line, use the directional up and down keys.
3. Press **ENTER** to deselect the line.



Menu Options: Item List

1. Press the "MENU" soft key to access the main menu for LearningCheck.
2. To view the complete list of items in the assignment, press the **3** key to select the *Item list* option.



Menu Options: Special Characters

1. At times, you may want to put special characters (Greek, math symbol, etc) into your answers.
2. You can do so by going to the main menu and selecting *Special Characters*.

Use the Directional Arrows to highlight the character you want. Press **ENTER** to paste it into your answer.



Menu Option: Pause App

1. You can pause the App to use some of the functionality of the TI-84 Plus. You can do so by going to the menu screen and selecting the *Pause App* option.
2. To resume the assignment, press the **APPS** key and select NavNet.
3. Select 2:Network Apps.
4. Scroll to LearnChk and press **ENTER**.

Option 5 in the Main Menu will Pause the LearningCheck App.
Option 8 will allow you to attach and use the keyboard.



Menu Option: Use Keyboard

5. When a student is logged into the NavNet app the I/O port is dedicated to the Navigator Network.
6. To use a TI keyboard to answer a LearningCheck question, you must go to the menu screen and select Use Keyboard. Then you may plug the calculator to a keyboard and answer the questions.
7. To reconnect the calculator to the Navigator system you must go to the menu screen and select Resume Network.

Tip Sheet: Previewing A Question

Previewing A Question

1. When creating questions for LearningCheck™, you may need to preview the question format using the Preview function.
2. Choose the type of question you would like to create from the right side of the LearningCheck software. See Figure 1.
3. Enter the text and/or graphic(s) for your question. See Figure 2.
4. When you are finished entering the question, go to Tools, Preview, Preview Selected.
 - Note: You can also create all your questions first, and then choose Preview All. See Figure 3.

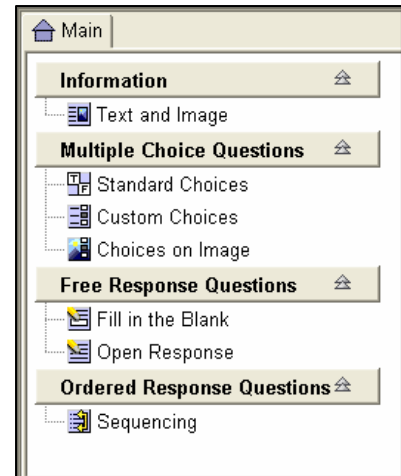


Figure 1

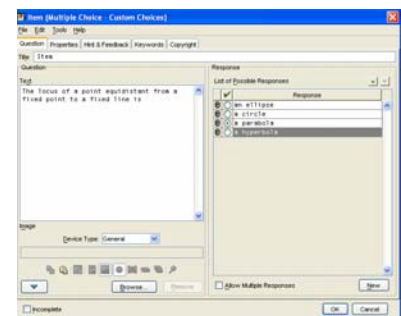


Figure 2

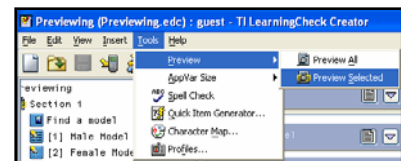


Figure 3

5. It is important to preview your questions to check the actual appearance of the question on the calculator screen. See Figures 4 and 5.
- The question in Figure 4 shows answers that have been cut off on the right-hand side of the calculator screen.
 - The question in Figure 5 shows answers that fit correctly in the screen.
 - Although this may be a teacher preference, previewing the question can prevent horizontal scrolling.

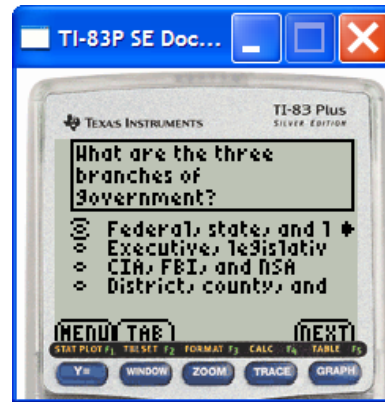


Figure 4

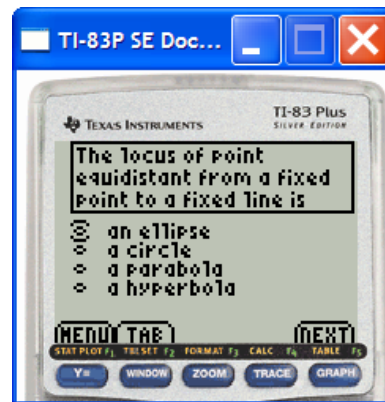


Figure 5

Tip Sheet: Sending An Education Document (Alternative Method)

Sending An Education Document

1. Open the TI-Navigator™ software.
2. Begin class and have the students log into the NavNet application.
3. Open the LearningCheck software by clicking the LearningCheck icon. See Figure 1.
4. Click OK on the User Profile Section window.
5. Open the education document which is to be sent by clicking the Open file icon (or choosing Open under the File menu). See Figure 2.
6. Choose the file to be sent.
7. Click on the Send to Class icon in the LearningCheck software. See Figure 3.
8. Select the appropriate properties and click the Send button. See Figure 4.
9. You will be returned to the TI-Navigator software screen and the file will be listed under the Class Record listing. See Figure 5.
10. When sending an education document through LearningCheck, it will be sent to the entire class as a “force send”.

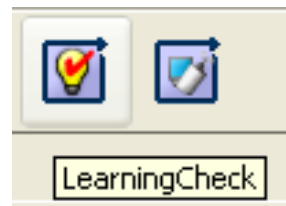


Figure 1

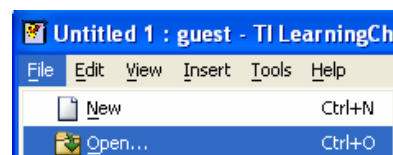


Figure 2

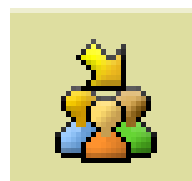


Figure 3

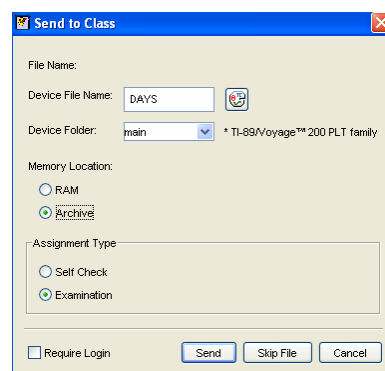


Figure 4

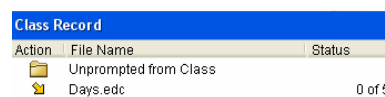


Figure 5

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Tip Sheet: Collecting An Education Document

Method 1 – Using Class Analysis

1. Open the TI-Navigator software.
2. Begin Class and have the students log into the NavNet application.
3. Open the Class Analysis software by clicking on the Class Analysis icon. See Figure 1.
4. Click the “Choose an Assignment for Analysis” icon to associate the education document which is to be collected. See Figure 2.
5. Browse for the education document for which you wish to collect the answers.
6. Click Open.
7. You should see the document listed after “Assignment Title”. See Figure 3.
8. Click on the Collect Answer Files from Classroom Devices icon. See Figure 4.
9. Select the appropriate properties and click the Start Transfer button. See Figure 5.
10. You will be returned to the TI-Navigator software screen and you will receive the following message. See Figure 6. Click OK.

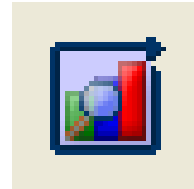


Figure 1



Figure 2

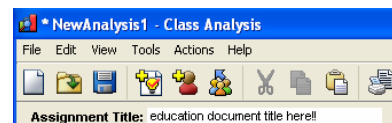


Figure 3

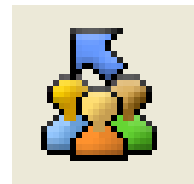


Figure 4

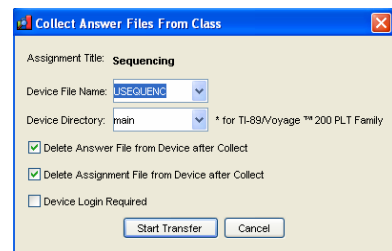


Figure 5

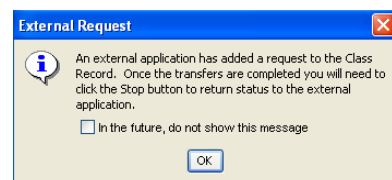


Figure 6

11. The answer file will be listed under the Class Record listing (UASSIGNM) with the blue collect arrow in front of it. See Figure 7.
12. If you choose to delete the assignment file and/or answer file, the red x symbol will be in front of them in the Class Record listing. See Figure 8.
13. Once you have received all the answer files that you expect to receive, click the Stop button located above the Class Record listing under External Request. This is what the warning was earlier. See Figure 9.
 - Remember, if you click on a file in the Class Record listing, you can see who had completed the request (green box around the student) and who has not completed the request (red box around the student).
14. Returning to the Class Analysis software, the assignment has been graded and populated into a spreadsheet.
15. The slide show of anonymous class results can be viewed by clicking the Class Results Slide Show icon. See Figure 10.
16. Adjustments can be made to the spreadsheet and saved for future analysis.
17. When collecting an education document through Class Analysis, it will be collected from the entire class as a “force collect”.

Method 2 – Not Using Class Analysis

1. Open the TI-Navigator software.
2. Begin Class and have the students log into the NavNet application.
3. Click on the “Collect from Class” icon. See Figure 11.
4. Select the education document for which you want to collect the answer file(s) and click Next.
 - If you would like to collect more than one file from the student calculators, then highlight all desired files by using the CTRL key.
 - If you want to collect a file you recently sent the class, choose “Recent Files” and the files will be listed which have been recently sent. See Figure 12.



Figure 7



Figure 8

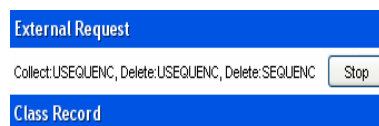


Figure 9

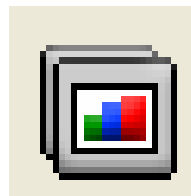


Figure 10

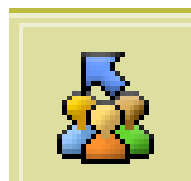


Figure 11

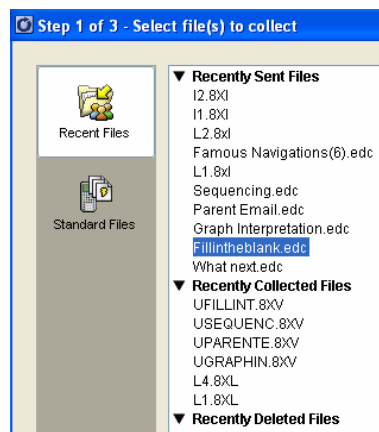


Figure 12

5. Select Class Send or Individual Student(s) using the CTRL key to select nonconsecutive students. See Figure 13.
6. If force collect is desired, click in the white box to the left of “Force collect from students now”. See Figure 14.
7. If delete after collecting is checked, collection will delete both assignment and answer file from the calculators.
8. Click on Next.
9. Choose location where you would like the collected answer file(s) to be saved. This is very important to remember for when you look at the files. See Figure 15.
10. Click Finish.
11. You will see the collected answer file listed in the Class Record List on the Navigator Home screen. This line will also show how many of the student answer files have been collected. Remember, answer files begin with the letter “U” followed by the first seven letters of the assignment file. See Figure 16.
12. To view the answer files, they need to be opened in Class Analysis.
13. Open the Class Analysis software by clicking the Class Analysis icon. See Figure 17.
14. Click the “Choose an Assignment for Analysis” icon to associate the education document which is to be collected. See Figure 18.
15. Browse for the education document for which you wish to collect the answers.
16. Click Open.

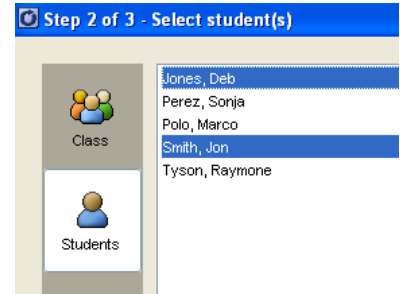


Figure 13

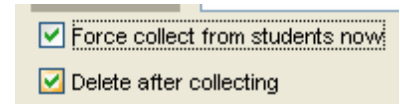


Figure 14

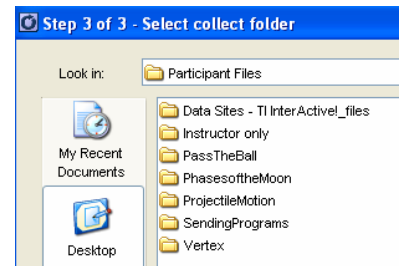


Figure 15

Class Record		
Action	File Name	Status
	Unprompted from Class	
	UFILLINT	2 of 5

Figure 16

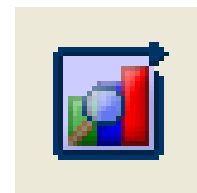


Figure 17



Figure 18

17. You should see the document listed after Assignment Title. See Figure 19.
18. Since the files have already been collected, we need to open those particular student answer files.
19. Click on the Add Student Answer Files icon. See Figure 20.
20. Browse for the answer files. The names will have the following format: LastName_FirstName_UASSIGNM. (e.g. Smith_Jon_UTEST).
21. Click Open and the files are loaded into the spreadsheet.
22. The slide show of anonymous class results can be viewed by clicking the Class Results slide Show icon. See Figure 21.
23. Adjustments can be made to the spreadsheet and save for future analysis.

Verifying Transfer of Files from Students

1. From the Navigator Home Screen, select the file to be verified in the Class Record.
2. The seating chart view of the class will indicate if a student has successfully transferred the file, not attempted to transfer the file, or there was a problem with the transfer of the file by a colored box around the student icon. See Figure 22.
3. If the file was transferred successfully, then the box will be green.
4. If the file has not been transferred, then the box will be red.
 - If the transfer was a “Force collect”, this may be because the student is not logged into the Navigator class.
 - If the transfer was not a “Force collect”, then the student hasn’t initiated the transfer yet.
5. If there was a problem with the transfer of the file, then the box will be yellow.
 - If the transfer was a “Force collect”, this indicates that the student did not have the requested file on their calculator.

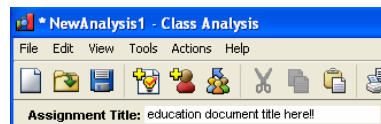


Figure 19



Figure 20

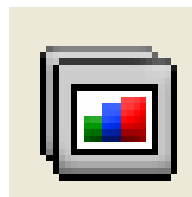


Figure 21



Figure 22

Tip Sheet: Sending Files

Setting Up The Class Record to Send All Types of Calculator Files

1. Open the TI-Navigator™ software.
2. Begin Class and have the students log into the NavNet application.
3. Click on the “Send to Class” icon. See Figure 1.
4. Select all the files you wish to send to the class. Use the CTRL key to select nonconsecutive files. Click Next. See Figure 2.
5. Select Class Send or Individual Student(s) Send.
 - If you would like to send to a subset of students only, then highlight all desired students by using the CTRL key. See Figure 3.
 - An alternative would be to select the students before clicking on the “Send to Class” icon from the Seating Chart view of the class on the Navigator Home screen.
6. If force send is desired, click in the white box to the left of “Force send to students now”. See Figure 4.
7. Click on Finish.
8. You will see the sent file(s) listed in the Class Record List on the Navigator Home screen. This line will also show how many of the students have received the files. See Figure 5.

Student Retrieval of Files in Class Record

1. If the file(s) were sent as a “force send”, then the students will receive the files automatically.
 - All students who have already logged into the TI-Navigator classroom will automatically receive the files even if they are not currently in the NavNet App.
 - If the student hasn’t logged into the TI-Navigator classroom yet, then they will receive the files as soon as they log into the NavNet App.
2. If the file(s) were not forced to the students, then the students must retrieve them.



Figure 1

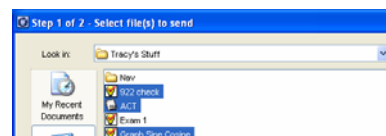


Figure 2

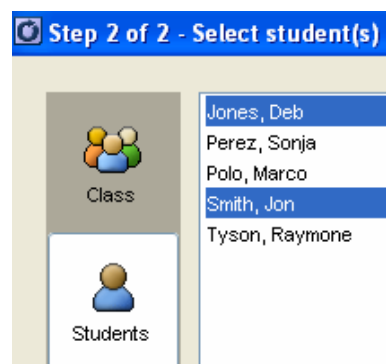


Figure 3

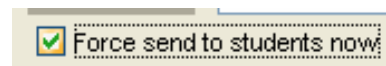


Figure 4

Class Record		
Action	File Name	Status
	Unprompted from Class	5 of 5
	Graph Sine Cosine.edc	0 of 2
	ACT.8xp	0 of 2
	922 check.edc	0 of 2

Figure 5

3. From the TI-Navigator Home screen on the student calculator, select 3:Transfers.
4. Select 1:Auto Send/Recv.
5. The student will receive all file(s) designated for them in the Class Record.
6. If there are no files to receive, then the student receives the message “No Files To Transfer”.

Verifying Transfer of Files to Students

1. From the TI-Navigator Home screen, select the file to be verified in the Class Record.
2. The seating chart view of the class will indicate if a student has successfully received the file or has not received the file by a colored box around the student icon. See Figure 6.
3. If the file was successfully received by the student, then the box will be green.
4. If the file was not received by the student, then the box will be red.
 - If the transfer was a “force send”, this may be because the student is not logged into the TI-Navigator class.
 - If the transfer was not a “force send”, then the student has not initiated the transfer yet.



Figure 6

Tip Sheet: Collecting Files

Collecting Files

1. Open the TI-Navigator software.
2. Begin Class and have the students log into the NavNet application.
3. Click on the “collect from class” icon. See Figure 1.
4. Select the file(s) to be collected and click Next. See Figure 2.
 - If you would like to collect more than one file from the student calculators, then highlight all desired files by using the “Ctrl” key.
 - If you want to collect a file you recently sent the class, choose “Recent Files” and the files will be listed which have been recently sent.
5. Select Class or Individual Student(s) using the “Ctrl” key to select non-consecutive students.
6. If “Force collect” is desired, click in the white box to the left of “Force collect from students now”. See Figure 3.
7. If “Delete after collecting” is checked, after the collection both the assignment and answer file will be deleted from the calculators. See Figure 4
8. Click on Next.
9. Choose location where you would like the collected file(s) to be saved. See Figure 5.
10. Click Finish.
11. You will see the collected file listed in the Class Record List on the Navigator Home Screen. This line will also show how many of the students’ files have been received. See Figure 6.

Student Transfer of Files in Class Record

1. If the file(s) were collected as a “Force collect”, then the students will transfer the file(s) automatically.
 - All students who have already logged into the Navigator classroom will automatically transfer the files even if they are not currently in the NavNet App.

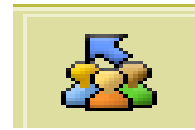


Figure 1

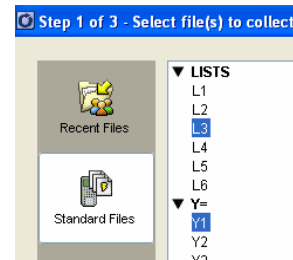


Figure 2

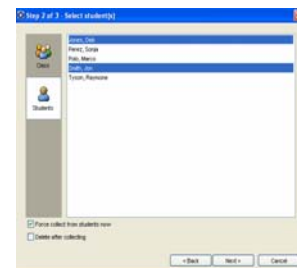


Figure 3

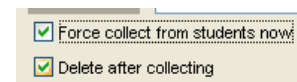


Figure 4

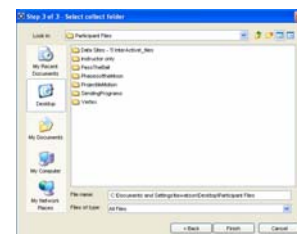


Figure 5

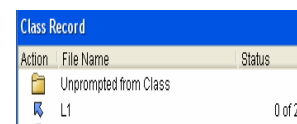


Figure 6

- If the student hasn't logged into the Navigator classroom yet, then they will transfer the files as soon as they log into the NavNet App.
2. If the files were not forced from the students, then the students must transfer them.
 3. From the TI-Navigator (NavNet) Home Screen on the calculator, select 3:Transfers.
 4. Select 1:Auto Send/Recv.
 5. The students will transfer all file(s) designated for them in the Class Record.

Verifying Transfer of Files from Students

1. From the Navigator Home Screen, select the file to be verified in the Class Record.
2. The seating chart view of the class will indicate if a student has successfully transferred the file, not attempted to transfer the file, or there was a problem with the transfer of the file by a colored box around the student icon. See Figure 7.
3. If the file was transferred successfully, then the box will be green.
4. If the file has not been transferred, then the box will be red.
 - If the transfer was a "Force collect", this may be because the student is not logged into the Navigator class.
 - If the transfer was not a "Force collect", then the student hasn't initiated the transfer yet.
5. If there was a problem with the transfer of the file, then the box will be yellow.
 - If the transfer was a "Force collect", this indicates that the student did not have the requested file on their calculator.



Figure 7

Tip Sheet: Aggregating Data and Lists

Aggregating

There are two types of aggregating data: aggregating of data sets and aggregating of lists. The aggregating of data sets has the assumption that the collected lists of data from the students are considered pairs whose dimensions must match. The aggregating of lists has the assumption that the lists are independent and may have different dimensions. In either case, the aggregated data may be returned to the students for further investigation on their calculators.

Aggregating of Data Sets

1. Open the TI-Navigator™ software.
2. Begin Class and have the students log into the NavNet application.
3. Open the Activity Center in the Navigator software.
4. Select the List tab.
5. From the Contribute pull-down menu within the Activity Center select Lists. See Figure 1.
6. Select “Create New List”. See Figure 2.
7. Select “Group Lists as a Data Set” and choose the number of lists you wish to collect from the students (e.g. (x, y, z) pairs requires 3 lists). If desired, change the names of the lists.
8. Click OK.
9. Select the Configure button.
10. Choose the settings you wish for the activity along with the setting “Students start with: Empty lists”.
11. Click OK.
12. Click the “Start Activity” button.
13. Once the students enter the Activity Center on their calculators, they are able to enter their data sets into the given lists and send them.

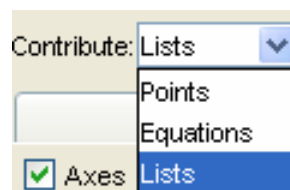


Figure 1

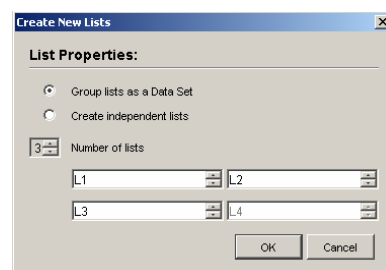


Figure 2

14. If the student enters data which do not have the same dimensions, they will get an error message “Lists Must Be The Same Length” when they try to send.
15. All the students’ data will appear on the Navigator’s Activity Center.
16. If desired, the data can be plotted on the screen from the List-Graph tab and clicking the “Configure Plots” to set up the plot.
17. Click the “Stop Activity” button.

Aggregating of Lists

1. Open the TI-Navigator software.
2. Begin Class and have the students log into the NavNet application.
3. Open the Activity Center in the TI-Navigator software.
4. Select the List tab.
5. From the Contribute pull-down menu within the Activity Center select Lists. See Figure 3.
6. Select “Create New List”. See Figure 4.
7. Select “Create independent lists” and choose the number of lists you wish to collect from the students.
8. Click OK.
9. Select the Configure button.
10. Choose the settings you wish for the activity.
11. Click OK.
12. Click the “Start Activity” button.
13. Once the students enter the Activity Center on their calculators, they are able to enter their data into the given lists and send them.
14. All the students’ data will appear on the TI-Navigator’s Activity Center.
15. If desired, the data can be plotted on the screen from the List-Graph tab and clicking the “Configure Plots” to set up the plot.
16. Click the “Stop Activity” button.

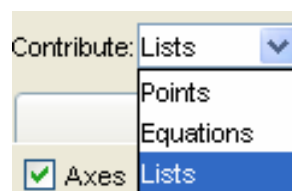


Figure 3

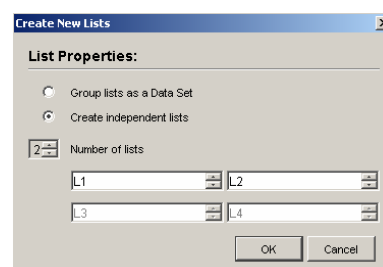


Figure 4

Returning Aggregated Data to the Student Calculators

1. After receiving data from the students, it is desirable to return the aggregated lists to the student calculators.
2. In the Activity Center, click the “Configure” button.
3. Choose the “Students start with: Existing activity lists”.
See Figure 5.
4. Click OK.
5. Click the “Starting Activity” button.
6. The students who are in the Activity Center on their calculators will receive the aggregated lists on their calculators.
7. When all the students have received the lists, click the “Stop Activity” button.
8. Students may now exit the NavNet application and investigate the aggregated data using their calculator.

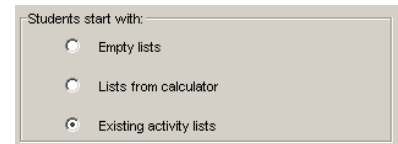


Figure 5

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