Teachers Teaching with Technology™
Professional Development from Texas Instruments

Getting Started with TI-Nspire™ Navigator™ in Secondary Science

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Materials for Workshop Participant*

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Student Login

TI PROFESSIONAL DEVELOPMENT

Objective

- Participants will learn how students log in to a TI-Nspire™ Navigator™ class.

TI-Nspire™ Navigator™ Features

- Logging in to the TI-Nspire™ Navigator™ System from a handheld

TI-Nspire™ Technology Skills:

- Logging in as a student

Tech Tips:

- Make sure the font size on your TI-Nspire handheld is set to Medium.

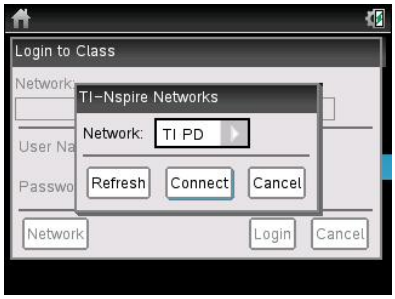
The TI-Nspire™ Navigator™ System uses both your computer and your students' handhelds. Your computer and your students' handhelds communicate through the TI-Nspire™ Navigator™ access point.

You do not have to log in to communicate with your students' handhelds; you can use the Transfer Tool to send or delete documents and/or operating systems on the students' handhelds. However, if you plan to use Quick Poll, Class Capture, Live Presenter, or place documents in the Portfolio during the TI-Nspire Navigator class session, then you must log in student handhelds to the TI-Nspire™ Navigator™ network.

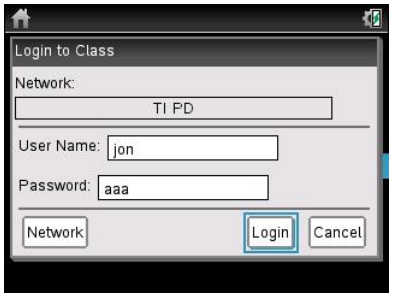
1. On the teacher computer, within the TI-Nspire™ Navigator™ Teacher Software, press Begin Class.
2. Turn on the handheld that is connected to a wireless network adapter (or locked in the cradle). You will notice the following icons on the handheld in the upper right hand corner.

Icon	Status	Meaning
	Blinking	The handheld is searching for an access point.
	Solid with ✓	The handheld has found an access point.
	Solid	The handheld is not communicating with the wireless network adapter. Detach the handheld from the wireless adapter, wait for the icon to disappear, and then reattach the handheld to the adapter.
	Blinking	The handheld is connected to the network and is ready to log in.
	Solid	The handheld is logged in to the network and is fully charged.

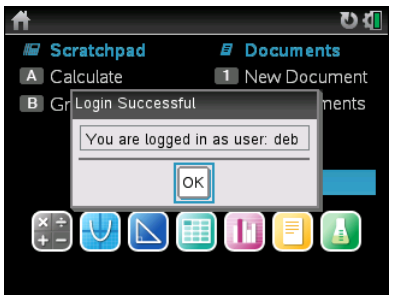
3. When the icon appears solid in the upper right-hand corner of the handheld, a “Login to Class” dialog box will appear.
    - If the dialog box does not appear, have students press [on] > **Settings > Login…**.



4. When logging in for the first time, a network must be selected. Click the **Network** button, select the appropriate network from the Network drop-down field, and click **Connect**.
    - A network only needs to be selected once, not every time a handheld is logged in.
5. Students will first enter their User Name, press [tab], and then enter their Password.
    - Passwords must be at least 3 characters. The teacher might have chosen the student password when setting up the class.



6. Press [enter], and the “Login Successful” dialog box will appear on the handheld.



The TI-Nspire™ Navigator™ Experience

TI PROFESSIONAL DEVELOPMENT

Objective

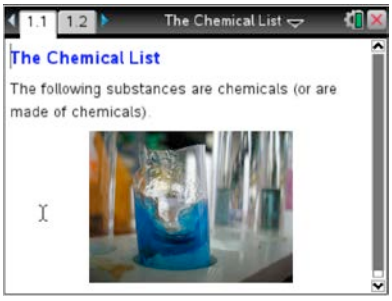
- Model a constructivist science lesson that uses many features of the TI-Nspire™ Navigator™ System.

About the Lesson

- Participants will take on the roles of students to experience a constructivist lesson on chemicals using the TI-Nspire Navigator System.
- Participants will be exposed to the various components of the TI-Nspire Navigator System as directed by the instructor.

TI-Nspire Navigator™ Features

- Sending a document
- Sending quick poll questions
- Live Presenter
- Class Capture
- Reviewing class results
- Saving results to the Student Portfolio



TI-Nspire™ Technology Skills:

- Logging into the TI-Nspire Navigator System
- Answering and Submitting an Open Response (Explanation) Quick Poll
- Opening a TI-Nspire document
- Navigating a TI-Nspire document
- Selecting an answer to a question

Lesson Materials:

Equipment

- TI-Nspire Navigator System
- One TI-Nspire handheld per teacher

TI-Nspire documents

- *What_is_a_Chemical Poll.tns*
- *Chemical_PreSurvey.tns*
- *Is_it_a_Chemical_1.tns*
- *Is_it_a_Chemical_2.tns*
- *Is_it_a_Chemical_3.tns*
- *The_Chemical_List.tns*
- *The_Real_Chemical_List.tns*

Lesson on "Is it a Chemical?"

As participants, you will act as students in a science classroom with a TI-Nspire Navigator System. The instructor will guide you through the log-in process, the opening of TI-Nspire documents on the handheld, the interaction with documents, the answering of quick poll questions sent through the TI-Nspire Navigator System, and interacting through the Live Presenter feature.

This is a **demonstration** activity. You will have the opportunity to perform all the TI-Navigator tasks in subsequent activities in the workshop. Right now, focus on interacting with the lesson as a student, and notice the use of the TI-Nspire TI-Navigator Systems. The next activity will give you the opportunity to reflect on these uses and how they impacted the activity and the classroom.

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"Is it a Chemical?" Activity

This is a demonstration activity, but the steps for the activity are included for later use by the participants.

1. IMPORTANT: Ask participants to choose one of their students from the recent past. Ask them to take part in this activity **thinking, acting, and responding as that student at the beginning of the school year in a science class.**
2. Use Live Presenter (log a handheld in yourself) to show participants how to log in.
3. Have participants log in to the class.

Pre-Assessment Quick Poll

4. Open the diagnostic assessment, *What_is_a_Chemical_Poll.tns*, and click "Start Poll."
5. Use Live Presenter to show participants how to answer the quick poll and submit their answer.
6. Click "Stop Poll" when everyone has completed it and quickly review the class results with discussion where necessary. Remember, this is a pre-assessment to help teach the upcoming lesson.

Sending and Collecting a Document

7. Send the participants the document *Chemical_PreSurvey.tns*. Use Live Presenter to show them how to access the document, answer a multiple choice question, and move from one page to the next. Ask participants to press ctrl ▲ when they are done with the survey. Use Class Capture to monitor progress.
8. Collect the results of the document, delete the document from the participants' handhelds, and save them to the Student Portfolio. Briefly review the Class Results of the survey with the group.

Quick Poll Yes or No

9. Explain to the group that you are going to send them three quick poll questions to determine if specific substances are or are not chemicals (or made of chemicals). After each question, participants will defend the reasons for their choices. Also, ***remind them that they should answer these questions thinking like their student that they chose at the beginning of the lesson!!!***
10. Open the file *Is_it_a_Chemical_1.tns,* and click "Start Poll" for the first question. Let the participants see the live results of the poll. After most of them have answered the question, click "Stop Poll" and engage the participants in a discussion about the reasons for their choices. Take time to thoroughly discuss the question and elicit different points of view about why they said "yes" or "no." Tell them that they should listen to the discussion to either strengthen or modify their personal definition of a "chemical." Repeat the process for the questions on Pages 1.2 and 1.3.

Quick Poll Drag-and-Drop

11. Explain to the group that you are going to send them a different list of substances, and they will have to determine if they are or are not chemicals (or made of chemicals).
12. Send them *Is_it_a_Chemical_2.tns,* and ask them to drag the names to the "Chemical" or "Not a Chemical" side of the screen. (Using Live Presenter, use your own handheld to show participants how to pick up, drag, and let go of the names.) Consider making one or more participants the Live Presenter and ask them to explain why they are moving a name to one column or another. Also, use Class Capture to monitor progress.

Quick Poll Multiple Responses

13. Explain to the group that you are going to send them a final list of substances that they will have to determine if they are or are not chemicals (or made of chemicals). They will also be asked to defend their choices in a class discussion once all of the results have been collected.
14. Send them *Is_it_a_Chemical_3.tns*. (Using Live Presenter, use your own handheld to show participants how to answer a multiple response question.) Use Class Capture to monitor student progress, and ask the participants to press ctrl ▲ when they are done.
15. Collect the results of the document, delete the document from the participants' handhelds, and save them to the Student Portfolio. Review the Class Results of the survey with the group. Take time to thoroughly discuss each item and elicit different points of view about why they said the substances are or are not chemicals (or are made of chemicals). Remind them that they should listen to the discussion to either further strengthen or modify their personal definition of a "chemical."

Review and Discussion

16. Now it's time for the big reveal. Tell them that you will now show them which substances were chemicals (or were made of chemicals). Send them *The_Chemical_List.tns*. Ask them to read the document and discuss with them the implications of this list. ("How does it strengthen or change your definition of the word 'chemical'?")
17. Somewhere in the discussion, act flustered, and say "Oh, I'm sorry, wait a minute. I'm sorry but I sent you the wrong file. Here is the correct file that shows which substances are made of chemicals." Proceed to send them the file *The_Real_Chemical_List.tns*. After they have had a moment to look at the "real" file, discuss the impact of showing students *The_Chemical_List.tns*.
    - *[Note: The_Chemical_List.tns states that 12 of the substances are chemicals (or are made of chemicals). That's not a lie but it's also not quite the whole truth. The_Real_Chemical_List.tns states that ALL 17 substances are chemicals (or are made of chemicals).]*

18. If this took place in a real science class, there would most likely be some dissonance between the students' definition of 'chemical' and their everyday view of the material world. Discuss with the participants how they would proceed at this point.
    - One possible strategy would be to discuss the common characteristics of all 17 substances. The teacher could also ask students what is **not** a chemical (or is **not** made of chemicals). Hopefully through this discussion, the teacher would guide students to reason that a chemical is any substance made of atoms or molecules. Also, they should discuss that forms of energy (i.e. sound, light, heat) or subatomic particles (i.e. electrons, protons or neutrons) are not considered to be chemicals.
19. Mention to the participants that a potential wrap-up activity would be for students to complete the *Chemical_PostSurvey.tns* document. This is the same file as the *Chemical PreSurvey.tns* file so that overall changes in perception could be measured.

Note: If this was a classroom situation with multiple classes using the same handhelds, it would be important to delete *The_Chemical_List.tns* and *The_Real_Chemical_List.tns* from the students' handhelds so that future class periods would not already have the information.

Some notes about *The_Real_Chemical_List.tns*:

1) 4-hydroxy-3-methoxybenzaldehyde is the main ingredient in vanilla extract.

2) Acetylsalicylic acid is the main ingredient in aspirin.

3) Sodium hydroxide is the main ingredient in most oven cleaners.

4) Sodium chloride is the chemical name for non-iodized table salt. (Iodized table salt also contains potassium iodide.)

5) Ice, water, and steam are all different states of the same chemical. It's important to note that steam is not visible to human eyes.

6) Both a cookie and the smell from a cookie are made of chemicals. The smell is actually molecules leaving the cookie and entering your nose.

7) Oxygen and gold are chemical elements. ALL elements are chemicals.

8) Carbon is another element. Atoms of carbon can bond in different ways in the solid state which results in different forms (also called allotropes) of carbon. Some common allotropes of carbon are diamond, graphite, and charcoal.

TI-Nspire™ Scavenger Hunt – The Calculator Application

TI PROFESSIONAL DEVELOPMENT

Activity Overview

In this activity, you will learn how to perform basic calculations in the Calculator application. You will also be introduced to various features and commands.

1. Press [home on] twice. There are three sections on the screen. In the bottom section, there are seven icons which represent seven different applications. Predict what these applications are:

   _____

2. What happens to the screen when you press and hold [ctrl] and then tap [−] several times? What happens when you tap [+] instead?

   _____

3. Open a New Document by using the Touchpad to move your cursor to New Document. Click by pressing [ ]. If the handheld asks you, "Do you want to save?" answer 'no.'
   How did you answer "no"? _____

4. Select 'Add Calculator' by pressing [enter]. How else could you select it?

   _____

5. Press [6][^][5] and [enter]. How does the problem appear on your screen? _____
   What is the answer? _____ Press [2][8][^] and explain what happens when you press [^].

   _____
   Where is the cursor located? _____ Find 28^3 _____.

6. Find 36^2 _____. There is a quicker way to type 36^2 without using [^]. Instead we can use the [x²]. Where is it located, and why is it faster this way? _____

7. Type [3][÷][8] and [enter]. What is the answer? _____
   Try [3][÷][8] again, only this time press [ctrl] and [enter]. What is the answer? _____
   One more time, type in [3][÷][8], but this time include a decimal point at the end and then press [enter]. What is the answer? _____

8. Press [ctrl][÷]. What appears on your screen? _____ Where is the cursor? _____
   Type in [1][2], press [tab], type in [9][8], and press [enter].
   What is the answer? _____ What did pressing [tab] do? _____

9. Press ▲ once so the last answer is highlighted, and then press [enter]. What happens?

   _____
   Press ◀ once. Where is the cursor? _____

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Delete the current number by pressing [del]. Type in [2][8], and press [enter]. What is the answer?

_____

10. Press ▲ several times, and then press [enter]. Try this a few times. What happens?

_____

11. Press ▲ twice (to highlight the last problem you entered) and press [del]. What happens?

_____

Press [del] several more times. What is happening each time you press [del]?

_____

12. Press [ctrl] and ▲. What do you see? _____
Press [del][enter]. What does the screen say? _____

13. Press [ctrl][0]. This is a calculator screen, but what looks different about it? _____
Now type in [3][(][5][−][8] and [enter]. What is the answer? _____
You typed in 3(5-8, but what does the problem look like on the handheld? _____

14. Press [ctrl][x²] to get a square root. Then type [2][3][−][7], move one space to the right, and type [+][2][enter]. What is the answer? _____
What does the problem look like on the screen? _____
What happened to the square root bar? _____
Where did the cursor move when you moved one space to the right? _____

15. Press [(][(−)][1][7][)][x²][enter]. What is the answer? _____
What makes the [(−)] button different from the [−] button? _____

16. Press [on], and open a New Document. Select 'No' when it asks if you want to save the document.
Press [ctrl][on] to turn off the handheld. **These are the last things you should do on your handheld before you put it away each day!**

17. How can you clear your screen entirely? _____

18. How can you recall the last answer? _____

19. How do you know where you are typing on the Calculator screen? _____

20. How can you make sure your answer is in the form of a decimal and not a fraction?

_____

Demonstration – Formative Assessment

TI PROFESSIONAL DEVELOPMENT

Objective

- Demonstrate sending, collecting, and saving a TI-Nspire™ document with questions.

TI-Nspire™ Navigator™ Features

- Sending a document
- Auto-Refresh of Class Capture
- Collecting a document
- Viewing class results
- Saving to Portfolio

TI-Nspire™ Technology Skills:

- Logging into the TI-Nspire Navigator system
- Opening a TI-Nspire document
- Navigating a TI-Nspire document
- Answering questions in a TI-Nspire document

Assessment Activity

Participants will be students in a classroom with a TI-Nspire™ Navigator™ System. 'Students' are asked a series of questions in a TI-Nspire document. The 'teacher,' your instructor, will use the Class Capture feature to monitor students' progress through the assessment.

When all students have completed the assessment, the teacher will collect the questions and immediately review the results with the class. After class, the teacher can compare the results to previous questions asked on an earlier day to monitor learning over a period of time.

This is a demonstration activity. You will have the opportunity to perform all the TI-Navigator tasks in subsequent activities in the workshop.

Notes for Today's Activity

These notes provide an overview of the activity, but they are not intended to describe all of the steps performed by the 'teacher' and 'students.'

1. The teacher will start class and open the document *Demo_FA_Math.tns*, *Demo_FA_MG_Science.tns*, or *Demo_FA_HS_Science.tns*.
2. Students log in to the class. One participant will wait and play the role of a student who comes to class late.
3. The teacher sends the document to the class.
4. The teacher monitors the documents being sent to the class.
5. The teacher uses Class Capture of the entire class to assist students in opening the document.
6. The teacher might use Live Presenter to review navigation of a document and answering questions.
7. The teacher will ask the "late student" to log in to the class. Note: The "late student" still receives the document and can begin working.

8. The teacher uses the Auto-Refresh feature of Class Capture to monitor the progress of the class.
9. Ask students to press ctrl ▲ when they are finished. This makes it easy for the teacher to know when students have completed their assessment because all of the screens will be the same.

Discussion Questions/Points:

- Why did the teacher Class Capture the entire class? Class Capture will ensure that late students will be part of the Class Capture when they log in to the class, assuming that Auto-Refresh is used.
- Why is Auto-Refresh useful? Students work at different rates. Class Capture with Auto-Refresh allows the teacher to monitor students as the class progresses.
- Once a student finishes an assignment, what types of additional tasks can be assigned to keep the student engaged? One reason that students sometimes become discipline problems is that they have finished their work. If the teacher knows which students are finished with their work, they can be given another task while waiting for the rest of the class.

10. When all students are finished, the teacher will discuss the types of questions that were included in the assessment and which ones can be graded automatically by the system.
11. The teacher will collect the document using one of two methods: Click the **Collect from Class** icon, or right-click on the document name in the Class Record.
    - The “Collect from Class” method has the option to delete the file after collection.
    - Using the right-click method does not include the option to delete the file, but it can be deleted later by selecting the **Delete from Class** icon.
12. The teacher can show the results in the Review workspace by right-clicking on the collection of the document in the Class Record.
    - The Page Sorter view in the Documents Toolbox allows navigation of the document and class results.
    - Correct answers appear in GREEN. If an answer is marked incorrectly, it can be adjusted.
    - Questions that aren’t auto-graded can be graded when viewing the results with the class.
13. Save the collected results to the Portfolio by right-clicking on the document in the Class Record.

Discussion Question:

- Why would you want to save the document to the Portfolio? Saving to the Portfolio allows the teacher to compare student results with previous work by the student to monitor improvement in student understanding.

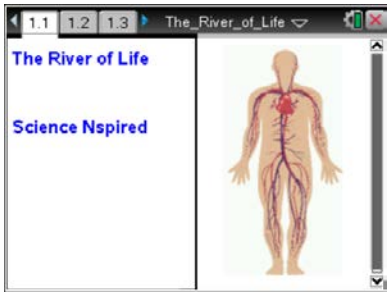
The River of Life

TI PROFESSIONAL DEVELOPMENT

Name _____

Class _____

Blood is a body part that often gets overlooked because it is made, in large part, of liquid. This liquid portion of the blood is called the plasma, while the "solid" portion is made up of the blood cells. Later, you will have an opportunity to research what the different components of the blood do for you. For now, however, you will examine the relationship between the body weight and the blood volume of a human. Look at the data table below and discuss with a partner what you observe about the relationship between body weight and blood volume.



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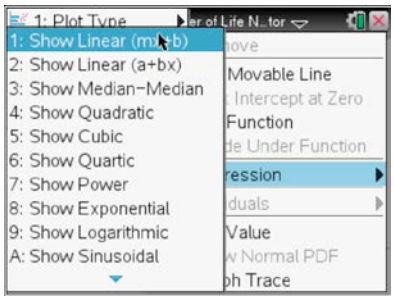
1. Open the TI-Nspire™ document *The_River_of_Life_MG.tns* or *The_River_of_Life_HS.tns*.

Press ctrl ▶ and ctrl ◀ to navigate through the lesson.

2. On Page 1.3, look for any trends in the data of human body weight (in pounds) and human blood volume (pints of blood).
3. Now, graph the data by inserting a Data & Statistics page. Press ctrl doc and select Data & Statistics.
4. Select **weight** as the *y*-value and **volume** as the *x*-value.
5. Answer the questions on Pages 1.6 and 1.7.
6. (Page 1.6) Estimate the weight (in pounds) of a woman who has 11.5 pints of blood in her body.

7. (Page 1.7) Estimate the number of pints of blood that would be in a 200-pound man.

8. Determine the equation of the line that represents the relationship between body weight and blood volume by analyzing the data. Press **Menu > Analyze > Regression > Show Linear**. Then answer the question on Page 1.10.



9. (Page 1.10) Which equation expresses the correct relationship for the graph?
   a) volume (in pints) = 12lb/pt * weight (in pounds)
   b) weight (in pounds) = 12lb/pt * volume (in pints)
   c) volume (in pints) = 12pt/lb * weight (in pounds)
   d) weight (in pounds) = 12pt/lb * volume (in pints)

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10. On Page 1.11, perform a Graph Trace by selecting **Menu > Analyze > Graph Trace**. Move the cursor left and right to get a better estimate of the answers to the original questions and then answer them on Pages 1.13 and 1.14.
11. (Page 1.13) Estimate the weight (in pounds) of a woman who has 11.5 pints of blood in her body.

12. (Page 1.14) Estimate the number of pints of blood that would be in a 200-pound man.

13. Compare your answers from Pages 1.6 and 1.7 with Pages 1.13 and 1.14.
14. Read Page 1.16 and 1.18 to determine an even better method of determining body weight and blood volume. Answer the questions on Page 1.17 and 1.19.
15. (Page 1.17) Determine the weight (in pounds) of a woman who has 11.5 pints of blood in her body.

16. (Page 1.19) Determine the number of pints of blood that would be in a 200-pound man.

17. (Page 1.20) Your turn! How many pints of blood do you have in YOUR body?

The remaining questions are a bit more challenging. See how many of them you can get right!

18. (Page 1.22) How many pints of blood would there be in a person who had a weight of 75 kg? (Hint: there are about 2.2 pounds in one kilogram.)

19. (Page 1.23) If this weight/blood volume relationship were true for other animals, too, how many gallons of blood would there be in a horse that had a weight of 500 kg?

20. (Page 1.24) Estimate the weight of a person who has two gallons of blood in her body.

21. (Page 1.25) If you decided to donate blood at the blood bank, you would donate one pint. Using your own weight, calculate the percentage of your blood you would be donating.

22. (Page 1.26) If 52% of your blood is water, what is the volume of water (in pints) circulating in your blood vessels right now?

23. (Page 1.27) Red blood cells are by far the most numerous cells in the blood, averaging about 4.5×10^6 cells per microLiter (1000 microLiter = 1ml; 1000ml = 1L). How many microLiter are there in one Liter?

24 (Page 1.28) Using the information in the previous question, calculate the approximate number of red blood cells you have in your body right now.

25. (Page 1.29) White blood cells (WBCs) are another type of blood cell in your body. Human blood contains about 7.0×10^3 WBCs per microLiter. Calculate the approximate number of leukocytes (WBCs) you have in your body right now.

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Science Objectives

- Students will calculate the volume of blood in their own bodies.
- Students will analyze and quantify some of the components of their blood.

Math Objectives

- Students will use tabular data to accurately generate a scatter plot.
- Students will generate a linear regression model, use the function to perform calculations, and interpolate a value on the regression model.

Materials Needed

- TI-Nspire™ or TI-Nspire™ CAS handheld unit for each student

Vocabulary

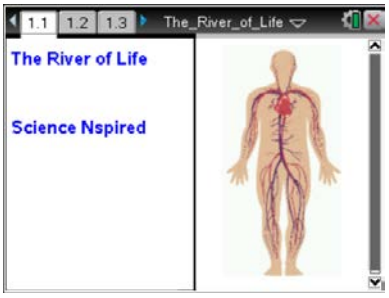
- plasma
- erythrocytes
- leukocytes
- milligram
- microliter

About the Lesson

- This lesson involves generating a linear regression model for human blood volume vs. body weight.
- As a result, students will:
  - Algebraically calculate their own blood volume.
  - Interpolate on the regression model to determine their blood volume.

TI-Nspire™ Navigator™ System

- Use Class Capture to monitor student progress.



TI-Nspire™ Technology Skills:

- Download a TI-Nspire™ document
- Open a document
- Move between pages
- Entering and graphing data using multiple applications
- Tracing, interpolating, predicting

Discussion Points and Possible Answers

Press ctrl ▶ and ctrl ◀ to navigate through the lesson.

1. Open the TI-Nspire™ document *The_River_of_Life_MG.tns* or *The_River_of_Life_HS.tns*.
2. On Page 1.3, look for any trends in the data of human body weight (in pounds) and human blood volume (pints of blood).
3. Now, graph the data by inserting a Data & Statistics page. Press ctrl doc and select Data & Statistics.
4. Select **weight** as the *x*-value and **pint** as the *y*-value.
5. Answer the questions on Page 1.6 and 1.7.

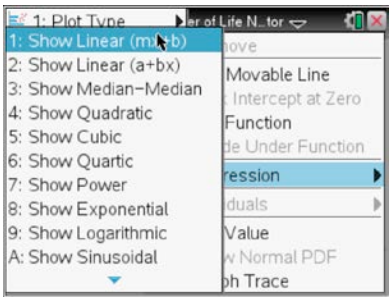
6. (Page 1.6) Estimate the weight (in pounds) of a woman who has 11.5 pints of blood in her body.

   Answer: Answers will vary.

7. (Page 1.7) Estimate the number of pints of blood that would be in a 200-pound man.

   Answer: Answers will vary.

8. Determine the equation of the line that represents the relationship between body weight and blood volume by analyzing the data. Press **Menu > Analyze > Regression > Show Linear**. Then answer the question on Page 1.10.



9. (Page 1.10) Which equation expresses the correct relationship for the graph?
   a) volume (in pints) = 12lb/pt * weight (in pounds)
   b) weight (in pounds) = 12lb/pt * volume (in pints)
   c) volume (in pints) = 12pt/lb * weight (in pounds)
   d) weight (in pounds) = 12pt/lb * volume (in pints)

   Answer: *b) weight (in pounds) = 12lb/pt * volume (in pints)*

10. On Page 1.11, perform a Graph Trace by selecting **Menu > Analyze > Graph Trace**. Move the cursor left and right to get a better estimate of the answers to the original questions and then answer them on Pages 1.13 and 1.14.
11. (Page 1.13) Estimate the weight (in pounds) of a woman who has 11.5 pints of blood in her body.

    Answer: Answers will vary.

12. (Page 1.14) Estimate the number of pints of blood that would be in a 200-pound man.

    Answer: Answers will vary.

13. Compare your answers from Pages 1.6 and 1.7 with Pages 1.13 and 1.14.
14. Read Page 1.16 and 1.18 to determine an even better method of determining body weight and blood volume. Answer the questions on Page 1.17 and 1.19.

15. (Page 1.17) Determine the weight (in pounds) of a woman who has 11.5 pints of blood in her body.

    Answer: 138 pounds

16. (Page 1.19) Determine the number of pints of blood that would be in a 200-pound man.

    Answer: 16.7 pints

17. (Page 1.20) Your turn! How many pints of blood do you have in YOUR body?

    Answer: Answers will vary.

The remaining questions are a bit more challenging. See how many of them you can get right!

18. (Page 1.22) How many pints of blood would there be in a person who had a weight of 75 kg? (Hint: there are about 2.2 pounds in one kilogram.)

    Answer: 15.6 pints

19. (Page 1.23) If this weight/blood volume relationship were true for other animals, too, how many gallons of blood would there be in a horse that had a weight of 500 kg?

    Answer: 11.4 gallons

20. (Page 1.24) Estimate the weight of a person who has two gallons of blood in her body.

    Answer: 193 pounds

21. (Page 1.25) If you decided to donate blood at the blood bank, you would donate one pint. Using your own weight, calculate the percentage of your blood you would be donating.

    Answer*:* Answers will vary. Lower percentage for heavier people*.*

22. (Page 1.26) If 52% of your blood is water, what is the volume of water (in pints) circulating in your blood vessels right now?

    Answer*:* Answers will vary*.*

23. (Page 1.27) Red blood cells are by far the most numerous cells in the blood, averaging about 4.5 x 10^6 cells per microLiter (1000 microLiter = 1ml; 1000ml = 1L). How many microLiters are there in one Liter?

    Answer: There are 1 million (1,000,000 or $1x10^6$) microLiters in one Liter.

24 (Page 1.28) Using the information in the previous question, calculate the approximate number of red blood cells you have in your body right now.

    Answer: Answers will vary

25. (Page 1.29) White blood cells (WBCs) are another type of blood cell in your body. Human blood contains about 7.0×10^3 WBCs per microLiter. Calculate the approximate number of leukocytes (WBCs) you have in your body right now.

    Answer: Answers will vary

TI-Nspire Navigator Opportunity: Class Capture can be used to monitor student progress.

The TI-Nspire™ Navigator™ Classroom

TI PROFESSIONAL DEVELOPMENT

Objective

- Perform various TI-Nspire™ Navigator™ skills demonstrated in previous activities.

About the Lesson

- Participants will role-play in this activity as a teacher and/or a student.
- The participant playing the role of the teacher will conduct a directed lesson using the features of the TI-Nspire Navigator System.
- The participant playing the role of the student will perform the tasks of a student for the lesson.
- Participants should then switch roles and repeat the process for another lesson.

TI-Nspire™ Technology Skills:

- Opening a TI-Nspire document
- Navigating a TI-Nspire document

Lesson Materials:

Equipment

- Computer with TI-Nspire™ Navigator™ Teacher software (for a pair of participants) with two USB ports
- Two TI-Nspire™ learning handhelds per participant
- Standard A to Mini-B USB Cables

TI-Nspire™ Navigator™ Features

- Setting Up a Class
- Sending a Document
- Class Capture
- Live Presenter
- Quick Poll
- Student Portfolio
- Student Data

Roles

Working in pairs, assign one role as the teacher and one role as the student. The “teacher” will operate the computer, and the “student” will operate two TI-Nspire handhelds. Participants will have an opportunity to switch and experience both roles.

Instructions

If a step below has **Teacher** in front of it, the participant operating the computer will perform the task. If the instruction has **Student** in front of it, the participant operating the TI-Nspire handhelds will perform the task.

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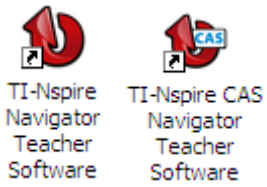
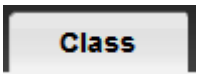
Adding a Class

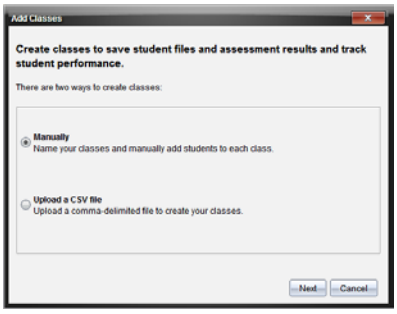


1. **Teacher:** Open the Teacher Software on the computer by double-clicking the Teacher Software icon on the desktop.
    - If necessary, close the Welcome Screen.
2. **Teacher:** If necessary, open the Class workspace by clicking on the **Class** tab.

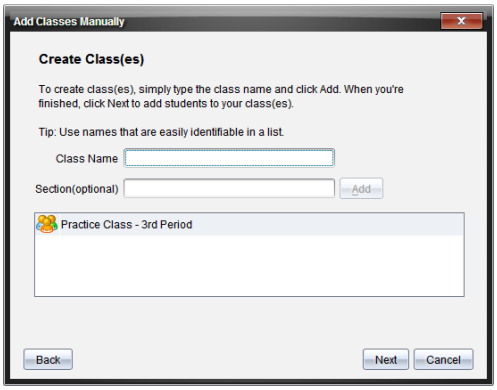


3. **Teacher:** Select the **Add Classes** icon from the tool bar, or select **Add Classes** from the **Class** menu.

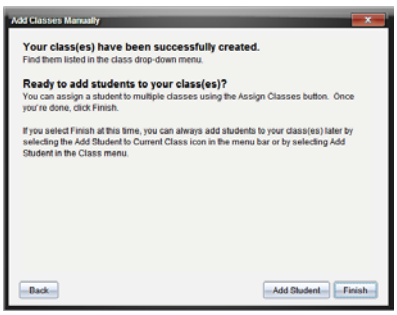
4. **Teacher:** Click on **NEXT** to enter the class and students manually.
    - The process for uploading a CSV file to create classes is located in a tip sheet. It can be discussed at a later time.



5. **Teacher:** Enter “Practice Class” as the class name and “3rd Period” as the section.
    - It is not necessary to complete the Section field. But it allows teachers to name classes by subject only (e.g. Algebra) and use the section field to distinguish between classes of the same subject (e.g. 3rd Period).

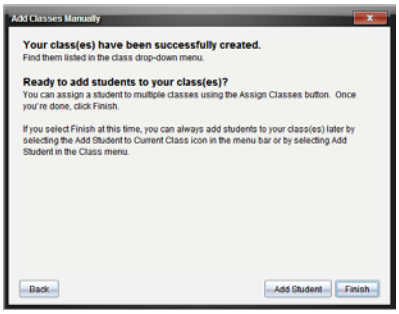


6. **Teacher:** Click on the **Add** button.

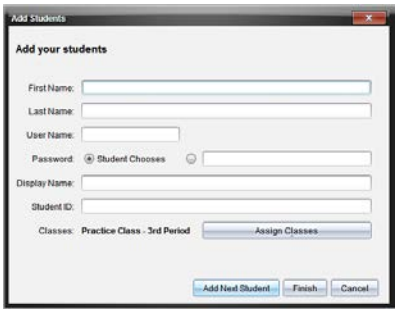


7. **Teacher:** Click **Next**.

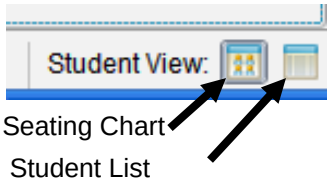
Adding Students



1. **Teacher:** To immediately add students to the class, click the **Add Student** button.
   - If the teacher closes the Class Wizard by clicking **Finish**, select the **Add Student** icon or select **Add Student** from the **Class** menu.



2. **Teacher:** For each student below, enter the first name, last name, and user name into the Add Students window. Select **Add Next Student** to add another student.
   - Jon, Smith, Jon
   - Deb, Jones, Deb
   - Marco, Polo, Marco
   - Sonja, Perez, Sonja
   - Raymone, Tyson, Raymone
3. **Teacher:** You can choose a password for each student, or each student can choose his or her own password when they log in to the class for the first time.
   - This will then be the student's password unless the teacher chooses to reset it.
   - By default, the Display Name is the student's first name. The Display Name can be edited as desired.
   - The Student ID is optional but sometimes important if you want to import grades into grade book software.
4. **Teacher:** After the last student's name is entered, click **Finish**.
5. **Teacher:** To switch the student view between **Seating Chart** and **Student List**, use the Student View icons in the lower right corner of the software.



Log in Students

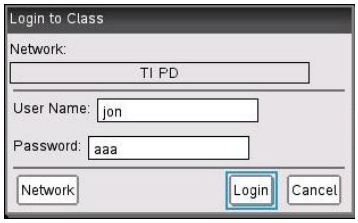
1. **Teacher:** Begin the class by clicking **Begin Class**.
   - Each student's icon should change from light gray to light blue/yellow.

2. **Teacher:** Connect both of the TI-Nspire handhelds to your computer using USB cables. One end goes into your computer's USB port and the other into the TI-Nspire handheld.

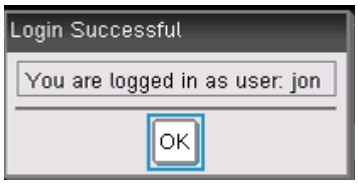
Note: In your classroom, each student's handheld will not be connected to your computer in this way. They will each have their own wireless module that will communicate with your computer.

3. **Student:** Turn on each handheld.

4. **Student:** Log in a student on one of the handhelds.
   - The login window should pop up on the handheld's screen.
   - If it does not, press [on] to access the Home screen, select [5] for Settings and [5] for Login.



5. **Student:** Type **jon** as the username of one handheld, press ▼ on the Touchpad/Clickpad, type **abc** as the password, and press [enter].
   - You will see a message pop up on the handheld stating: "You are logged in as user: jon"



6. **Student:** Press [ctrl] to select the OK button.

Note: The passwords used can be the same for all students or unique to each individual. Some teachers assign everyone the same password so that they do not have to reset any passwords. Some teachers allow students to pick their own passwords.

7. **Student:** Log in as **deb** on the other handheld.
   - If necessary, press [on] to access the Home screen, select [5] for Settings & Status and [5] for Login.
   - **Student:** Type **deb** as the username of another handheld, press ▼ on the Touchpad/Clickpad, type **abc** as her password, and press [enter].
   - You will see a message pop up on the handheld stating: "You are logged in as user: deb"

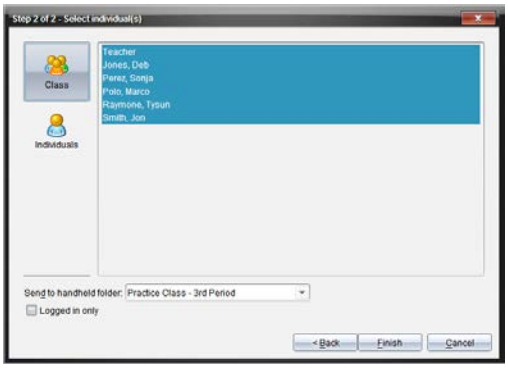
8. **Student:** Press [ctrl] to select the OK button.

Send a Document

1. **Teacher:** Click **Send to Class**.

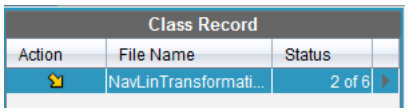
2. **Teacher:** Browse for the TI-Nspire document titled *Density_of_Metals.tns* provided for this activity in the location specified by your instructor. Click on the TI-Nspire document name so that it is highlighted.
   - Each person, when in the Teacher role, should use *Density_of_Metals.tns*.

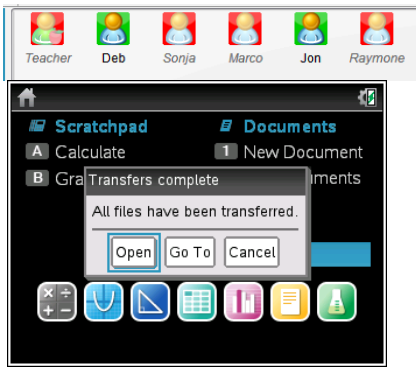
3. **Teacher:** Click **Finish** to send the document to the handhelds.



- You are able to send a document to specific individuals. However, the default is to send to the entire class. This is advisable because late students automatically get the document after they log in with minimal disruption.
- You do not have to wait until the students log in before sending a TI-Nspire document. Documents can be sent any time after a class has been started.
- On the handheld, all documents will be sent to a folder with the same name as the class (in this case, the Practice Class – 3rd Period folder).

4. **Teacher:** Click on the 1st row in the Class Record. The row will turn blue, and you will see red and green student icons in the Classroom View.
   - A green icon indicates that the student has received the document; a red icon indicates that that student has not received the document.
   - Students with a red icon might be absent, or communication has been disrupted.
   - It is good practice to monitor the transfer of the documents sent to ensure that your students receive them.



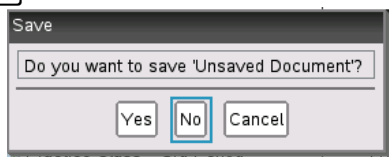


5. **Student:** Students know they have received a document based on the “Transfers Complete” pop-up window.

Open the Document

Remember: The participant in the **teacher** role should be looking at the computer screen and not the handhelds. The participant in the **student** role should be looking at the screen of their handheld and not the computer screen. This is to model the classroom experience.

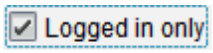
1. **Student:** Pick **one** of the two handhelds and follow the Teacher's instructions in step 2.
2. **Teacher:** Say: "Open the document that was just sent to your handheld. To do this, Press enter or ▶ del "
   - If the handheld had a document open prior to opening this one, you would be asked to choose whether to save the prior document. Select No by pressing ▶ .



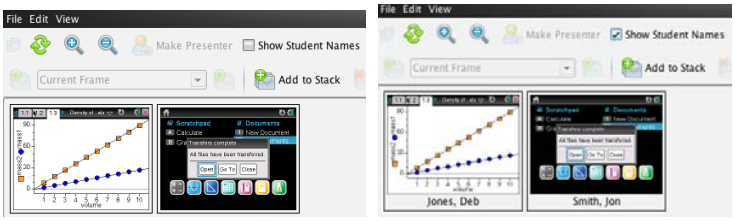
Class Capture and Live Presenter

1. **Teacher:** Without looking at the student handhelds, press the **Take Screen Capture** icon and select **Class Capture**.

2. **Teacher:** Click on the check box next to "Logged in only" to place a check mark inside. This will show screen captures for only those students that have logged in. Click **OK** to display the screens.



3. **Teacher:** If the student only opened the document on one handheld as requested, the participant playing the role of teacher will notice that one student in the class has not opened the document.
4. **Teacher:** Click on the check box beside Show Student Names, and observe the names appearing under the screenshots.



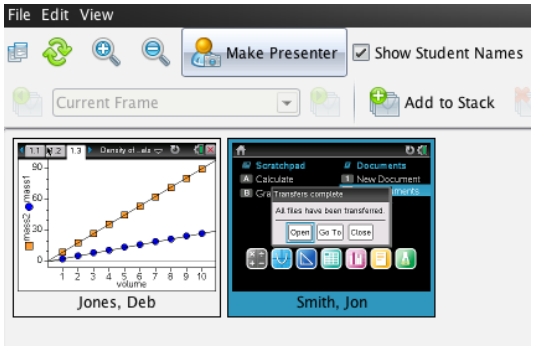
Pause and Think About:

i. Are there scenarios where you want to see the name with the screenshot of each handheld?
ii. Can you think of a scenario where you would not want the names displayed?
iii. If you notice that a student has not yet followed your instructions, how could you get the student back on track?

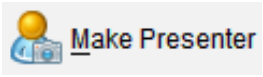
5. **Teacher:** Click on the one screen capture that does not have the first page of the document. It might be Jon's or Deb's handheld.
   - You want all students to properly process your verbal instructions. Class Capture can help you in this regard.

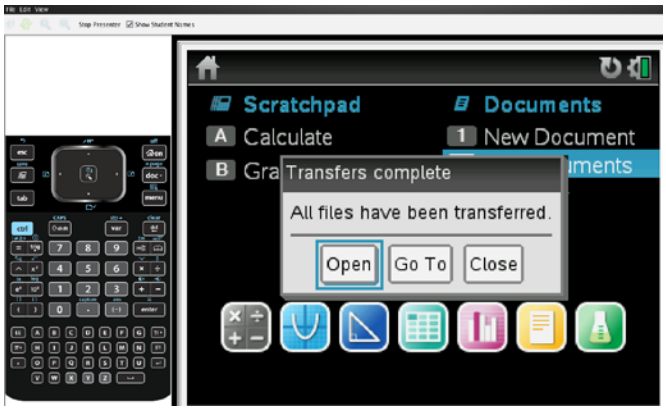
How do you get this student back on track?

- One strategy makes use of the Show Student Names feature within Class Capture to identify students that are having difficulty. Students close to them can help them get back on track.
- Another strategy to get a student back on track is to make the student the Live Presenter and coach the student back. This is the strategy described below.



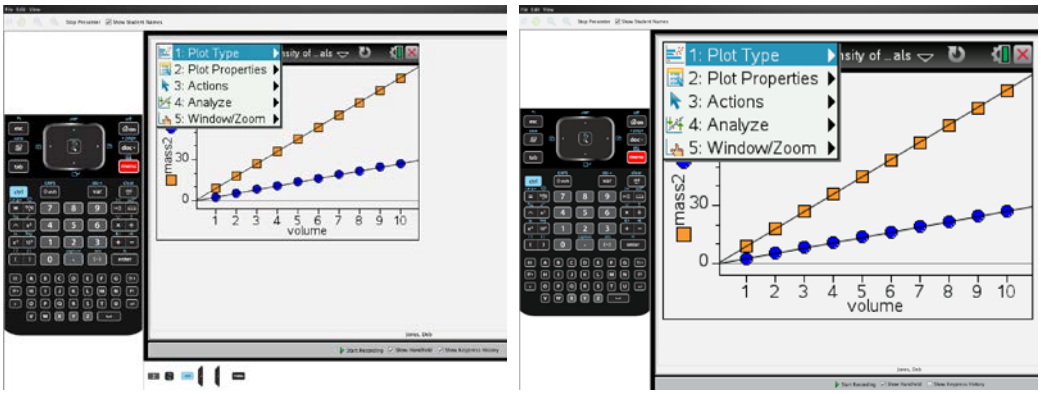
6. **Teacher:** Click on the Screen Capture of the student who is not on the appropriate screen, and click the **Make Presenter** button. You can now view a live feed of the handheld belonging to that student.
   - You will see the student's handheld on your computer screen.
   - The Live Presenter is a tool inside Class Capture that will show what the student is doing in real time. See Below. Note that you will see the handheld type used by the student according to the keypad they are using. This student is using TI-Nspire with touchpad.



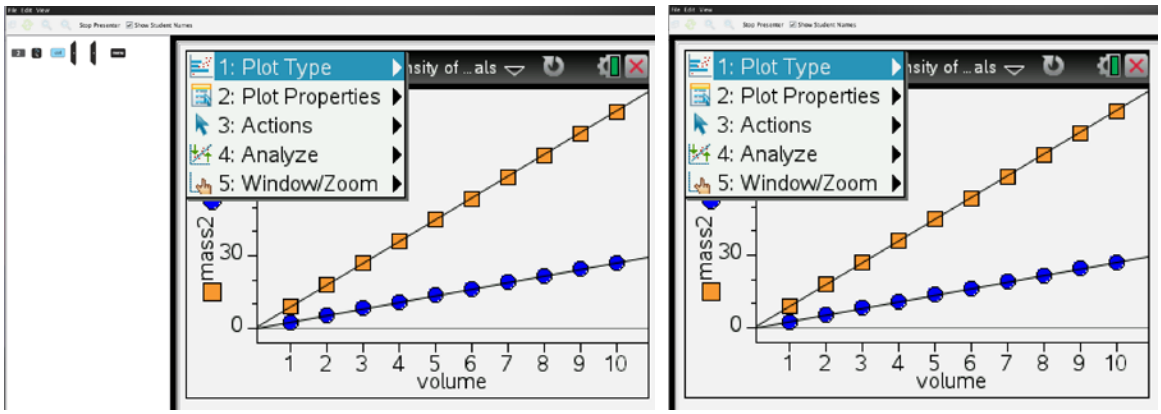


7. **Student:** Pick up the second handheld that has Deb logged into it, and follow the teacher's directions.
8. **Teacher:** Direct the student to press enter or on the handheld to open the document that was sent to the class.

Note: The teacher can customize the layout of the presenter. Currently, the default is to show the Handheld and Key Press History. You can turn off either or both of these views to customize the Live Presenter. You will see the key press history and the screen changing in real time. Notice on your computer software that you will see the specific buttons the student pushes identified by red outlines.

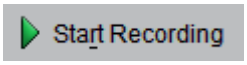


Show Handheld and Key Press History Show Handheld Only

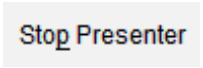


Show Key Press View Only Neither Handheld Nor Key Press History

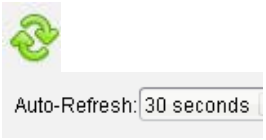
Note: One other important feature of Live Presenter is the ability to record keystrokes. Pressing **Start Recording** initiates the recording of an .avi video file. When you press **Stop Recording**, you will be prompted to save the .avi file in the Practice Class folder that exists on your computer.



9. **Teacher:** Once this student has opened the document, click on the **Stop Presenter** button.



10. **Teacher:** Direct the student to interact with the document using the accompanying Student Activity handout (if applicable).
11. **Student:** Interact as directed with the TI-Nspire document.
12. **Teacher:** While students are working, monitor their progress with the Class Capture. Refresh manually or set up Auto-Refresh as desired



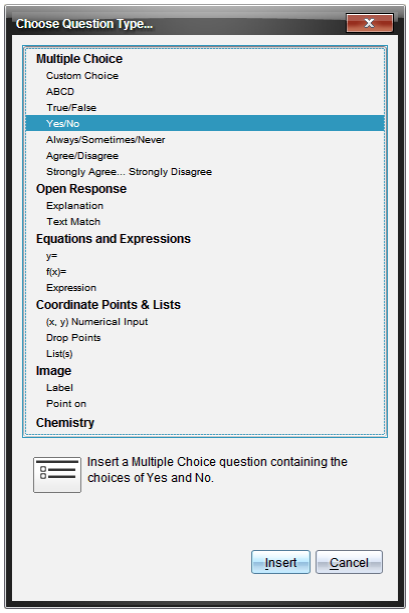
Pause and Think About:

How could the use of Class Capture and Live Presenter change the way you can teach?

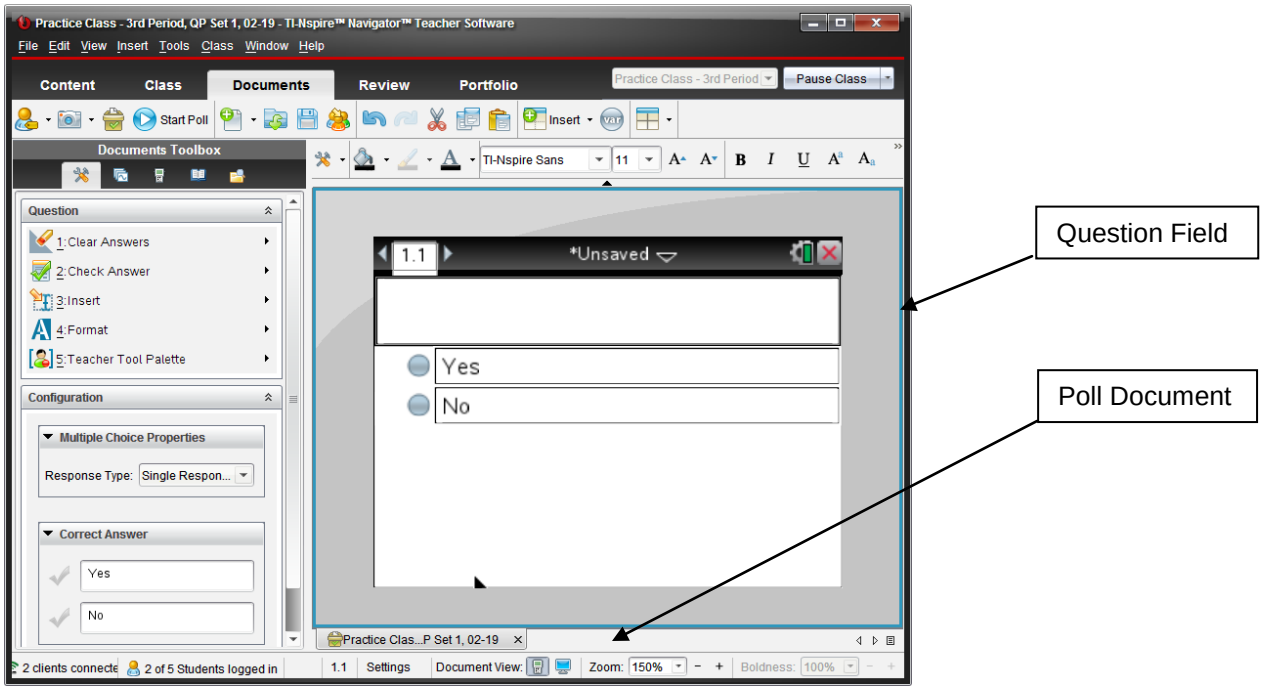
Quick Poll

1. **Teacher**: Close the Class Capture feature of the software on your computer.
2. **Teacher**: Now, click the **Quick Poll** icon.

   - The Choose Question Type dialog box appears.
   - There are a variety of question types available:
     - Multiple Choice: Custom Choice, ABCD, True/False, Yes/No, Always/Sometimes/Never, Agree/Disagree, Strongly Agree… Strongly Disagree
     - Open Response: Explanation, Text Match
     - Equations and Expressions: y=, f(x)=, Expression
     - Coordinate Points & Lists: (x,y) Numerical Input, Drop Points, and List(s)
     - Image: Label, Point on
     - Chemistry



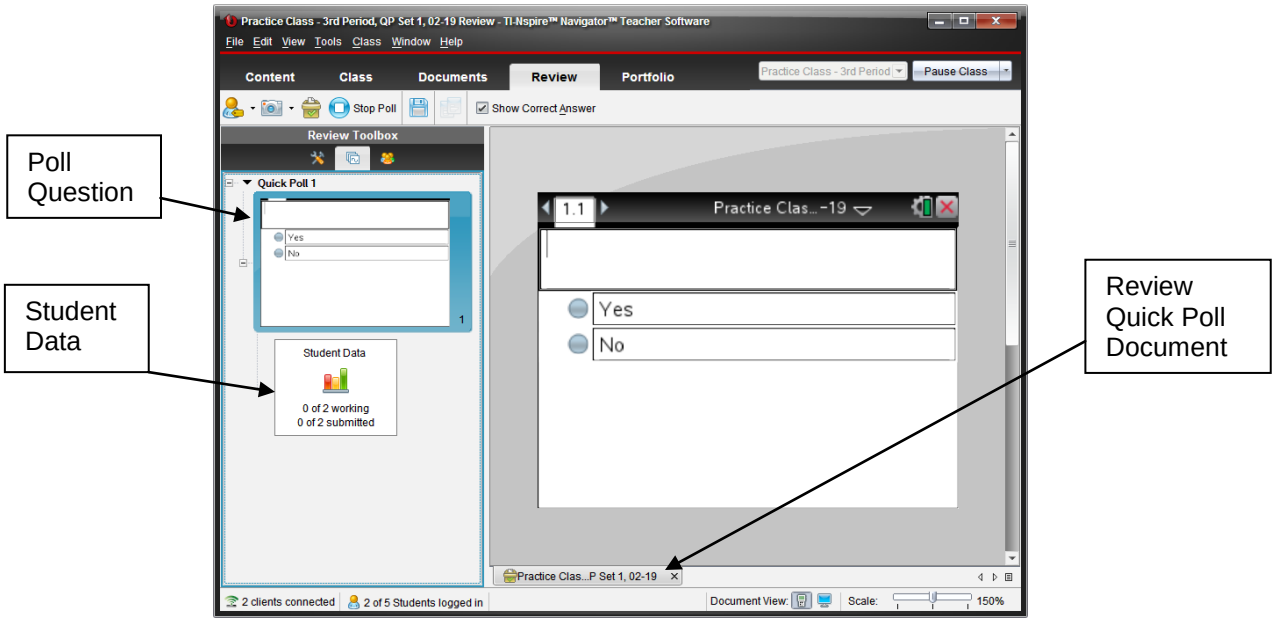
3. **Teacher**: Select the Multiple Choice - Yes/No question type and press **Insert**.
   - A document titled “Practice Class – 3rd Period, QP Set 1, DATE” opens in the Document workspace with a question page.
   - If desired, the question can be entered into the question field or it can be left blank and the question can be asked orally.



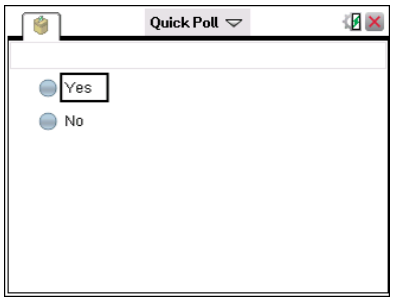
4. **Teacher:** Press the **Start Poll** button.

- Assume that you are going to ask the following question orally to your class without the need for the question text.
- Ask the student a yes/no question orally about the activity.

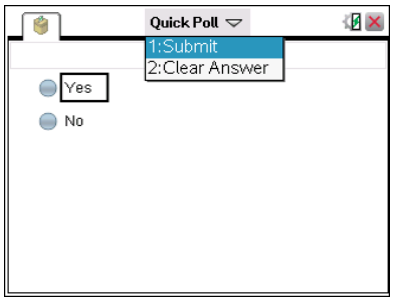
Note: Immediately after pressing the **Start Poll** button, the software opens to the Review workspace and creates a Review Poll document containing the Poll Question and Student Data.



5. **Teacher:** Monitor the number of incoming responses by watching the Student Data.
   - As the students begin to answer the poll, the numbers will change in real-time according to the number of students working on the question and the number of students who have submitted their answer.
   - Shown to the right is what a student sees on his or her handheld. All students have been sent the poll.

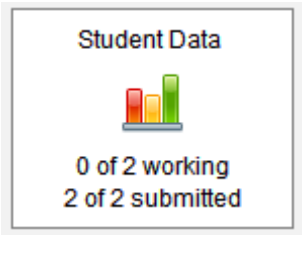


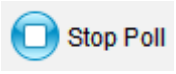
6. **Teacher**: If this is the first time a student has been asked to respond to a poll, you might have to give instructions for answering a poll and submitting an answer. Tell the student:
   - "To answer the question, use the arrow keys to move to the Yes or No answer. Press the click key to "color" in the answer bubble of your choice."
   - "To submit your answer, press the DOC button and select **1:Submit**.
   - Alternatively, click on the down arrow to the right of the words **Quick Poll** at the top of the screen. Select **1:Submit**.
   - On a Clickpad handheld, press ctrl then the home key to open the Quick Poll pull-down menu.



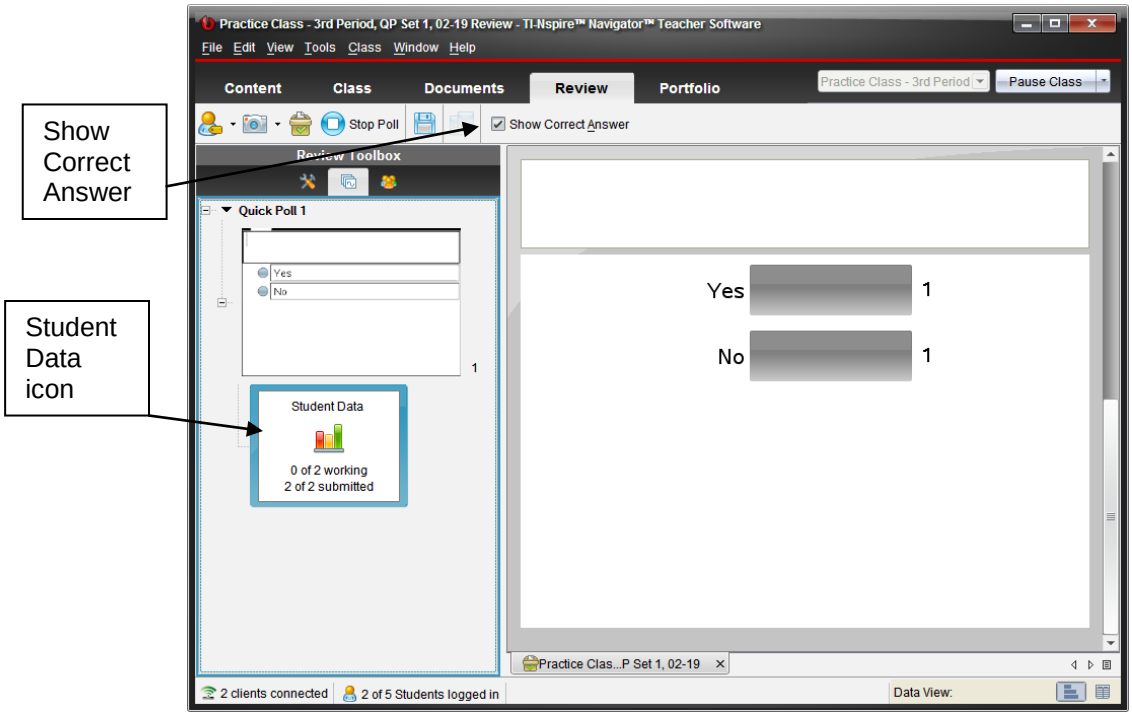
7. **Student**: Follow the teacher's instructions to send student responses from each handheld to the teacher's computer. On one of the handhelds, send Yes as the answer to the poll. On the other handheld, send No as the answer to the poll.

8. **Teacher**: Monitor the Student Data, and click the **Stop Poll** button once you have received an answer from each handheld.
   - As the students begin to answer the poll, the numbers will change in real-time according to the number of students working on the question and the number of students who have submitted their answer.

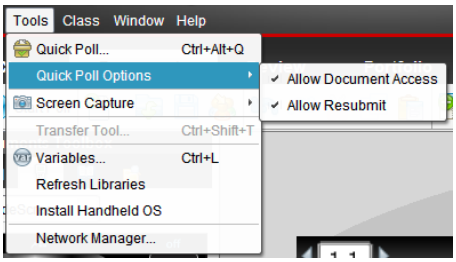




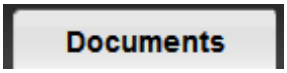
9. **Teacher**: Click the **Student Data** icon, and note that the incoming answers have been collected and organized for you.



Note: By default, the "Allow Resubmit" option is turned off. This option allows students to resubmit their answers until the poll is stopped. When the "Allow Resubmit" option is turned off, then the student has only one chance to respond to the question and the poll will disappear as soon as the student submits an answer.

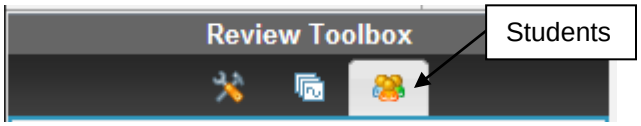


10. **Teacher:** The "Allow Resubmit" option is located in the Documents workspace under the **Tools > Quick Poll Options** menu. Return to the Documents workspace, and select **Allow Resubmit**.

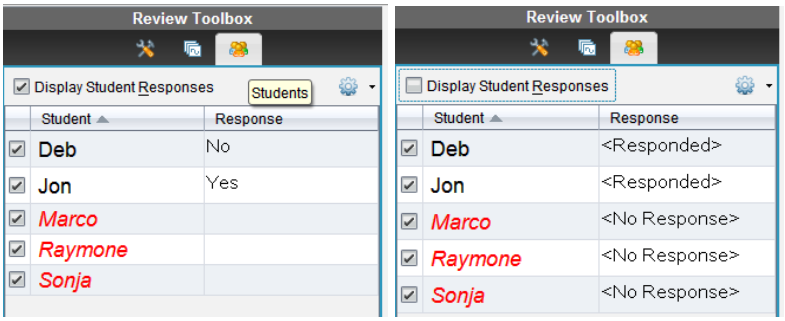


Pause and Think About:
When would you want students to Resubmit answers to a poll?
When would you not want students to Resubmit answers to a poll?

11. **Teacher**: Type the text of another appropriate yes/no question for the activity in the Quick Poll Question page that is already open.
12. **Teacher**: Press the **Start Poll** button.
13. **Student**: Select a response, and submit it for both handhelds.
    - The Quick Poll window remains open on the handhelds since the teacher selected the Allow Resubmit option.
14. **Student:** Change an answer on one handheld and resubmit.
15. **Teacher:** Monitor the Class Results, and click **Stop Poll** once you have received answers from all of your "students."
16. **Teacher**: Click on the **Student Data** icon for Quick Poll 2 to see the student responses.
17. **Teacher**: Click on the **Students** icon under the Review Toolbox to see each student's response. The students' names that are in red have not answered the poll.



18. **Teacher**: Click on the check box beside **Display Student Responses**, and observe what happens. Notice all the responses are hidden, but the teacher knows who has responded.



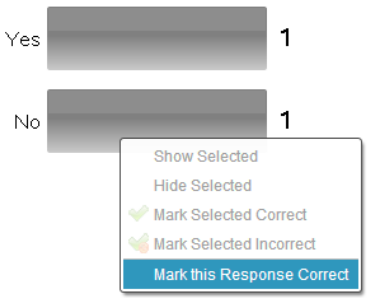
Pause and Think About:

i) How could you use this feature in your classroom?

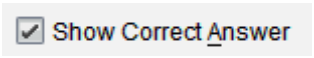
ii) Are there times when you want or don't want your students to see the responses?

iii) Is there pedagogical value in the information provided?

19. **Teacher**: In the Class Results display area, right-click on the bar representing the answer No, and select **Mark this Response Correct**.



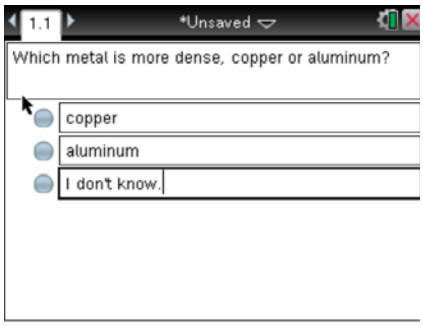
    - The bar next to the word No will change to green to signify that it has been recorded as the correct answer if **Show Correct Answer** is selected.



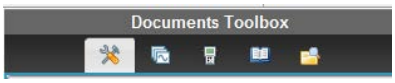
    - This will allow the teacher to record and track the correctness of each student's answer to the question posed.
    - If the correct answer to a question is never marked, the teacher can still gauge class understanding from the results, but the question will not be included in any scoring when the results are saved into the Student Portfolio.

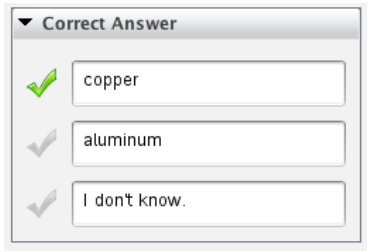
20. **Teacher**: Return to the Document workspace.
21. Turn off the "Allow Resubmit" option by pressing **Tools > Quick Poll Options**.
22. **Teacher:** Click the Quick Poll icon.

23. **Teacher**: Select the Multiple Choice - Custom Choice type of question, and press **Insert**.
24. **Teacher**: Click in the question field, and type an appropriate question for the activity.
25. **Teacher**: Click in the first answer field, and type the first answer choice.
26. **Teacher:** Using **Tab** or the down arrow, navigate to the second answer field. Type the second answer choice.
27. **Teacher:** Press **Enter** to open an additional answer field, and type in a third answer choice.
    - To remove an empty answer field, click in that field, and press **Backspace**.



Note: If this process is not being completed in front of students, the teacher could mark the correct answer when writing the question. Open the **Document Tools** in the Documents Toolbox and click on the checkmark in front of the correct answer.



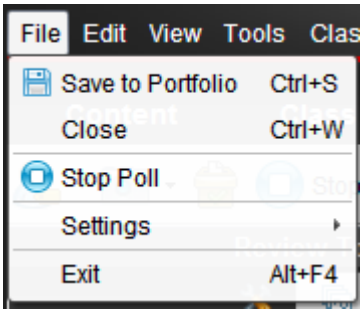


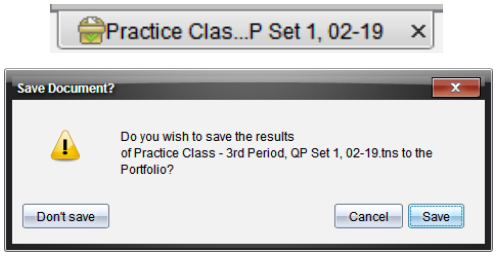
28. **Teacher:** Send the Quick Poll to the class by pressing **Start Poll**.
29. **Student:** Answer the Quick Poll question on both handhelds, and submit the responses.
30. **Teacher:** Monitor the incoming responses. If necessary, repeat instructions on how students submit a Quick Poll response
31. **Teacher**: Click on the **Stop Poll** button after students have responded to the question.

Saving to the Portfolio

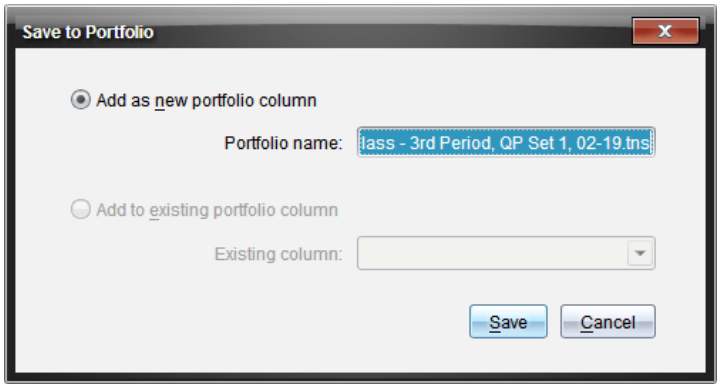
The Quick Poll questions and class results for a class session are compiled into one Review Document for up to 15 Quick Poll questions. If more than 15 Quick Poll questions are sent during a class session, another Review Document will open and compile the next 15 Quick Poll questions and results. These results can be saved into the Portfolio at any time during the class session. Saving the results will help the teacher monitor student progress over time and make diagnostic decisions regarding student performance.

1. **Teacher**: Click on the X to close the Review Document containing the Quick Poll questions and class results, and click **Save**. Alternatively, select **File > Save to Portfolio**.

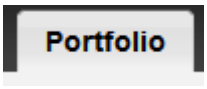


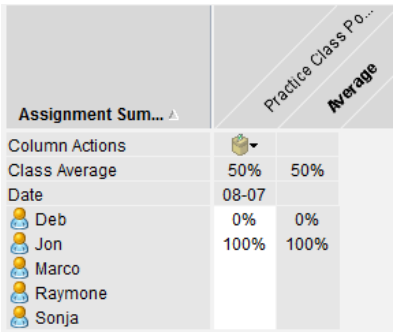


2. **Teacher:** If desired, change the name of the portfolio column, and click **Save**.

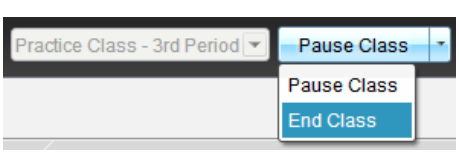


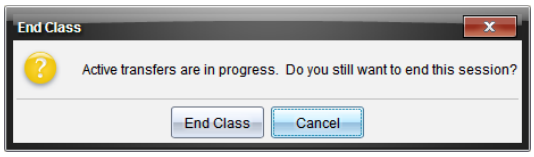
3. **Teacher:** To view the portfolio, go to the Portfolio workspace. The Assignment Summary displays the results in a gradebook type display.
   - The portfolio will be discussed in depth in a later activity in the workshop.





4. **Teacher:** To end the class, select **End Class** from the pull-down menu next to the Class Name.
   - If a pop-up window indicates 'Active transfers are in progress," press **End Class**. The alert indicates that the TI-Nspire document sent to the class is still available for those who have not yet logged in to the class session.





Switch Roles

Now switch roles and repeat the activity. When creating a new class, be sure to use a different class name and select that class name before starting the class.

Practice Using Assessment Documents

TI PROFESSIONAL DEVELOPMENT

Objective

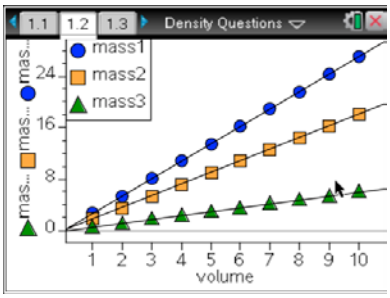
- To become more familiar with the available type of assessment questions for TI-Nspire™ documents.
- To practice sending and collecting TI-Nspire documents.
- To practice saving documents containing assessment questions to the Portfolio.
- To practice opening class documents with assessment questions and reviewing the class results.
- To provide a practice session for participants who have not previously created a class with TI-Nspire™ Navigator™ software.

About the Lesson

- Answer a variety of assessment questions on the TI-Nspire handheld.
- The purpose of this activity is not to create the documents but to use them once they are created.

TI-Nspire Navigator Features

- Setting Up a Class
- Sending a Document
- Class Capture
- Student Portfolio
- Class Results



TI-Nspire™ Technology Skills:

- Opening a TI-Nspire document
- Navigating a TI-Nspire document
- Answering various question types in a TI-Nspire document

Tech Tips:

- To work with a TI-Nspire document that has been collected, right-click on the collected document in the Class Record.

Lesson Materials:

Equipment

- Computer with TI-Nspire Navigator teacher software (for a pair of participants) and two USB ports
- Two TI-Nspire handhelds per participant
- Two TI-Nspire computer-handheld cables per participant

TI-Nspire document

- *Density_Questions.tns*

Roles

Working in pairs again, switch roles from the previous activity, “Density of Metals.” The **Teacher** will only operate the computer, and the **Student** will only operate the TI-Nspire handhelds. Each participant will get an opportunity to switch and experience both roles.

Instructions

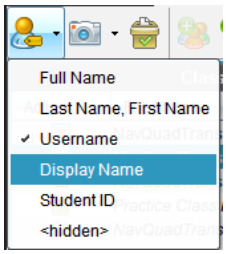
If a step below has the label **Teacher** in front of it, the participant operating the computer will perform the task. If the instruction has **Student** in front of it, the participant operating the TI-Nspire handhelds will perform the task.

Note: If you were able to play both roles in the previous lesson (**Teacher** and **Student**), then you do not have to create a new class. You may start this lesson at step 4.

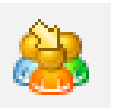
1. **Teacher**: Start the TI-Nspire Navigator Teacher Software on the computer.
2. **Teacher:** Create a class named Practice Class.
3. **Teacher:** Add five students to your class. You can make up any names you want for this class (or use the names from the last lesson).
4. **Teacher:** Change the display name for the students within the software using the “Display Name” options.
    - The change will affect all workspaces.
5. **Student:** Connect both of your TI-Nspire handhelds to the computer using the USB cords provided.

Note: If there is still an available USB connection or you are using a USB hub, the participant playing the role of teacher might also attach a handheld and log in so there will be more student results at the end of the session.

6. **Teacher:** Begin class.
7. **Teacher:** Send the document *Density_Questions.tns* to all students in the class.



NEW Display Name Option



Questions for Thought:

- Why do we want to send the document to all students? Why not only those who are logged-in?

8. **Student:** Turn on each handheld.
9. **Student:** Log in as one of the students in the class.

Questions for Thought:

- How do the students know they have received the document?
- How does the teacher know who has received the document?
- Where do you expect to find the sent document? At this point, make sure both of you easily find the sent file and the underlying file structure.

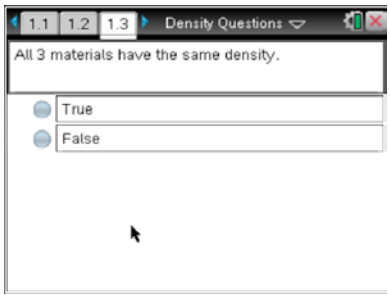
10. **Student:** Open the *Density_Questions.tns* document.
    - Press [on], and select My Documents.
    - Move the cursor down until you find the folder Second Practice Class.
    - Press [enter] to open the folder.
    - Locate the document, and press [enter] to load the file.
    - When you receive the message "Do you want to save changes to …" if you have saved the previous file or do not want to save the file, tab to "no," and press [enter].
    - You should see the title page of the document.
11. **Teacher:** Monitor students using the Class Capture tool.
12. **Student:** Go through the document answering all questions.

Questions for Thought:

- How do you move to the next page?
- Make sure you make at least one mistake as you go through the two sample questions so you can see the difference between how correct and incorrect answers are shown in the slide show. Since Open Response questions do not self-grade, make the mistakes on the other type of questions.

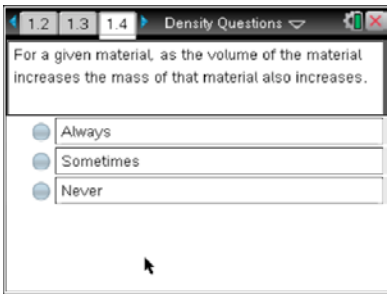
Note: Later in the workshop, you will learn how to create these documents.

13. Page 1.3 illustrates a True/False problem.
    - The cursor starts in the question box. Press [tab] until you select the answer you want to choose. Press [enter] to select that answer. Move to the next page.

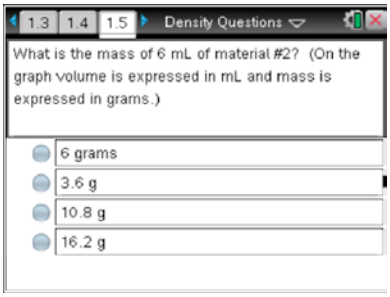


14. Page 1.4 illustrates an Always/Sometimes/Never problem.

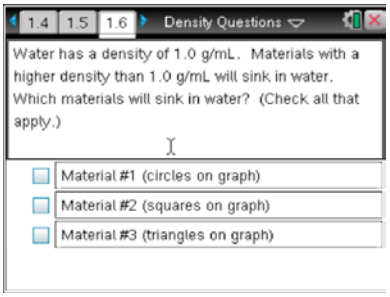
    - The cursor starts in the question box. Press tab until you select the answer you want to choose. Press enter to select that answer. Move to the next page.



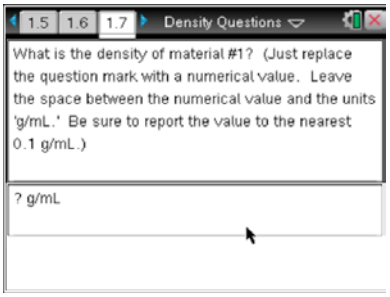
15. Page 1.5 illustrates a 4-option multiple choice question.
    - You navigate all question pages using the same techniques.
    - The circles preceding each option indicate there is only one correct answer for this question.



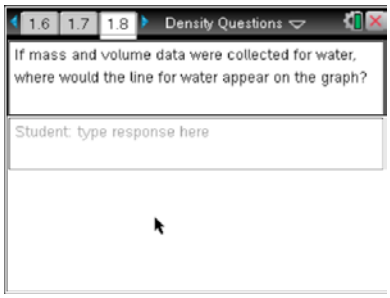
16. Page 1.6 illustrates a 4-choice multiple choice problem where there might be more than one correct answer.
    - The square in front of the choice indicates multiple correct answers are possible.
    - To receive full credit for this type of problem, you must get all possible choices correct.



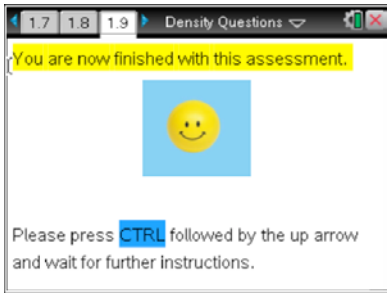
17. Page 1.7 illustrates an open response question called *text match*.
    - Press tab to move to the answer area.
    - Replace the question mark with a numerical value. Be sure to keep the blank space between the value and the units 'g/mL.'
    - If you make a mistake and need to reinsert the blank space, ␣, it is found at the bottom right on the alpha portion of the keyboard.
    - This type of open response question will be graded automatically if the student's answer matches your answer exactly. You may, however, mark other student answers as correct if there are slight variations in their work. Just right-click on their answer bar in the Results section to mark it as correct.



18. Page 1.8 illustrates an open response question called *explanation*.
    - Press tab to move to the answer area.
    - Type your answer in the answer box.
    - The blank space, ␣, is found at the bottom right on the alpha portion of the keyboard.
    - One difference between the open response (explanation) question type and all others is the system can grade the other question types if you mark the correct answer when you develop the assessment. It cannot grade an open response question automatically.
    - Continue to the next page.

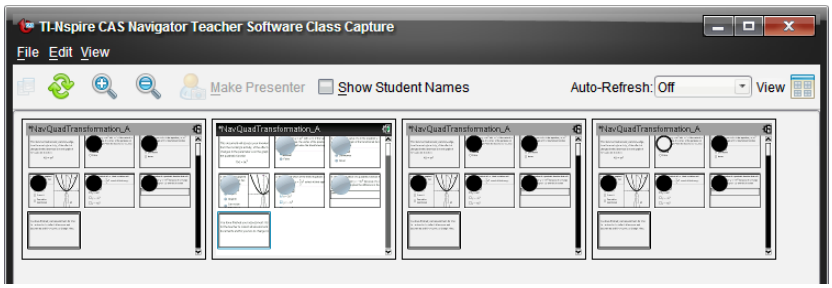


19. Page 1.9 is being used to send a message to the student.
    - What are some uses of a message page like this at the end of an assessment?



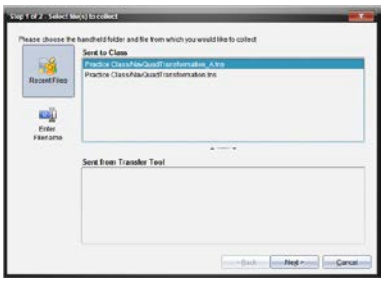
20. **Student**: Once you come to the last page, you have finished the assessment. Stop and wait for the teacher to collect your document.
21. **Teacher**: Using the Class Capture tool, you know the class is finished when all screen captures show the last page of the document.

Classroom Tip: An alternative to the last page would be to ask students to press ctrl ▲ when they have finished answering the questions. This might be easier to distinguish in the Class Capture view of an entire class. An added benefit is the ability to determine that the student answered all questions. Notice in the fourth screen capture below there is an empty circle. The empty circle indicates that no answer has been selected.

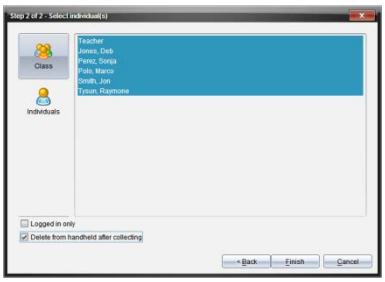


Collecting the Document, Storing it in the Student Portfolio, and Viewing Class Results

To Collect the Document



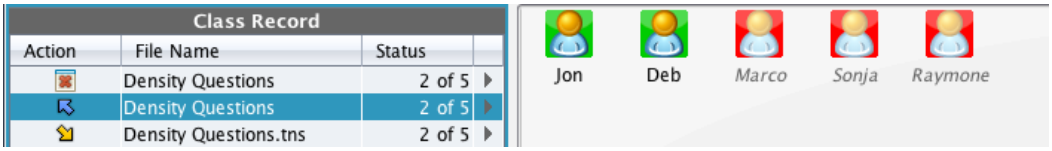
1. **Teacher:** To collect the document, click on the Collect from Class icon.
2. **Teacher:** Select the appropriate document from those listed.
3. **Teacher:** Select Next at the bottom of the dialogue box.



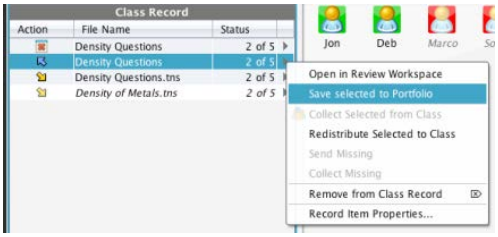
4. **Teacher:** With this method, you can choose to delete the file from the device once you have it collected. You can also choose to only collect from some members of the class. Select Finish at the bottom of the dialogue box.
   - You can select the document name in the Class Record, and the icon for each student will change color to show you which file transfers were successful.

Question for Thought:

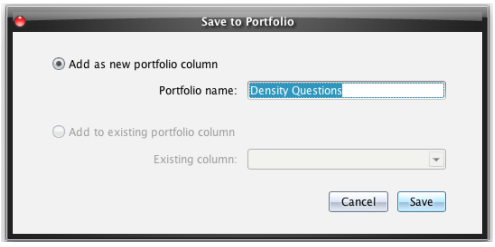
- Discuss why you would want to delete the file and when you might want to leave it on the handhelds.



To Save the Results in the Student Portfolio



5. **Teacher:** Right-click on the document name in the Class Record section of the TI-Nspire Navigator software, and select Save to Portfolio.
   - Be sure to select the line with the file name being collected.

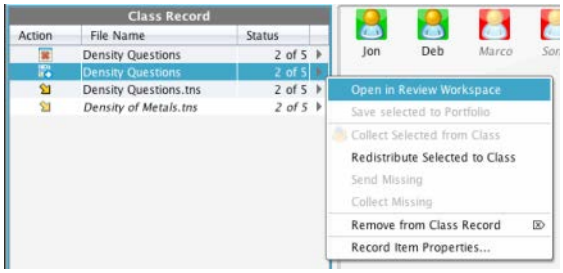


6. **Teacher:** If desired, changed the name of the portfolio column.

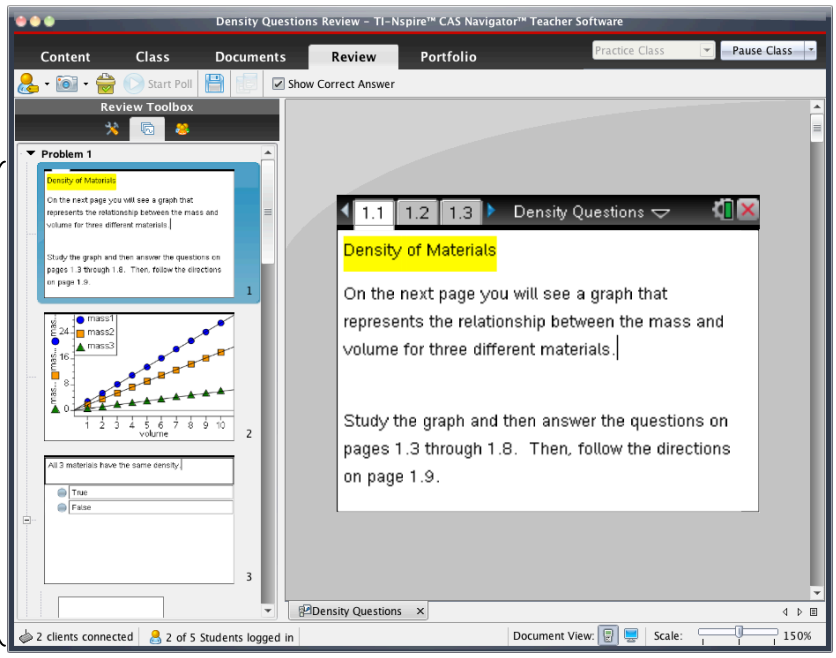
Note: The student portfolio will be discussed in detail later in the workshop.

To Display Class Results

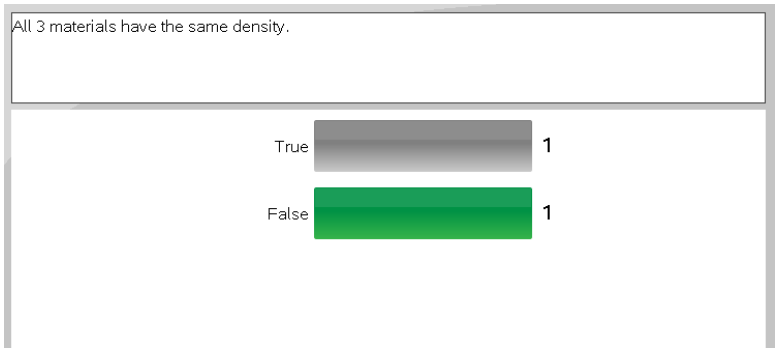
7. **Teacher:** Right-click on the document name in the Class Record section of the TI-Nspire Navigator software, and select Open in Review workspace.



Page Sorter View of Document



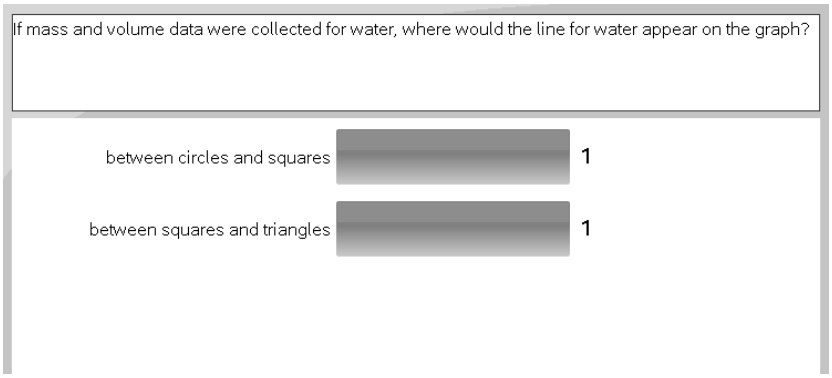
8. **Teacher:** Using the Page Sorter View of the document, click on the Class Results icon to display the results for the associated question.



9. **Teacher:** Scroll through the page sorter view (or use the down arrows on the computer keyboard) to move through the document and display the class results.

Question for Thought:

- When you show the answer slide for Page 1.8, notice there are no green rows. Can you remember why?



Switch Roles

10. Now switch roles. Return to step 4 at the beginning of this activity, and repeat all of the steps.

Class Capture Features for Science

TI PROFESSIONAL DEVELOPMENT

Objective

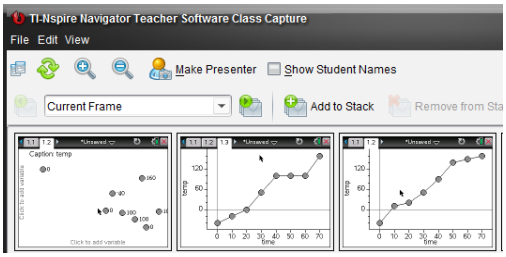
- Introduce additional features of the Class Capture tool of the TI-Nspire™ Navigator™ System.

About the Lesson

- Participants will act as students in a lesson looking for visual patterns in the graphs of data.
- Participants will discuss the graph of time versus temperature for water changing from ice to steam.

TI-Nspire Navigator™ Features

- Class Capture
- Live Presenter



TI-Nspire™ Technology Skills:

- Logging in to the TI-Nspire Navigator System
- Creating a TI-Nspire document and adding Lists & Spreadsheet and Data & Statistics pages
- Entering data into a List & Spreadsheet page
- Creating a scatterplot on a Data & Statistics page
- Changing the format of a plot

Lesson Materials:

TI-Nspire document

- Class_Capture_Features_ Science_QP.tns

Lesson on States of Matter

Participants will act as students in a classroom with a TI-Nspire Navigator System. Once you have logged in, opened a new document, and added a Lists & Spreadsheet page, the instructor will assign you a “student scenario”. After entering your scenario data, you will add a Data & Statistics page and create an XY Line Plot.

This is a demonstration activity. You will have the opportunity to perform all of the TI-Navigator tasks in subsequent activities in the workshop. Right now, focus on interacting with the lesson as a student, and notice the usage of the TI-Navigator System.

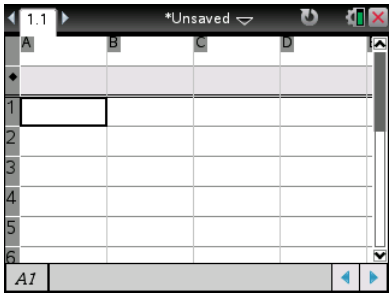
Notes for Today’s Activity

Notes are included here so that, in the future, the participant teachers can use them in their own classrooms with their own students. Participants will be referred to as ‘students’ here.

1. Students will log in to the TI-Nspire Navigator session.
2. Instruct students to open a new document and start with a Lists & Spreadsheet page.

Wait for further instructions once the Lists & Spreadsheet page is open.

3. Use Class Capture to make sure that each student has a Lists & Spreadsheet page and is waiting to enter their "student scenario" data.



   - Show the Class Capture, and discuss any issues that might exist in a classroom at this point.
   - If you want, select one student to be the Live Presenter to demonstrate how to enter a list name and the data.
   - Continue to refresh the Class Capture until all screens are in the same location.

4. Ask students to enter data for *water changing from ice to steam* using the following experimental procedure:
   "Imagine that a very cold ice cube is placed in a beaker. The beaker is put in an oven that supplies heat at a constant rate every minute. A sensor is used to monitor the temperature of the ice cube as it is heated. The ice is initially -40°C at t = 0 seconds. At 70 seconds, the final temperature is 160°C."

   - Students are asked to fill in the temperatures for ten second intervals between 0 and 70 seconds. Students (participants) will be asked to intentionally enter data that displays common misconceptions found below.

5. Student Misconceptions:

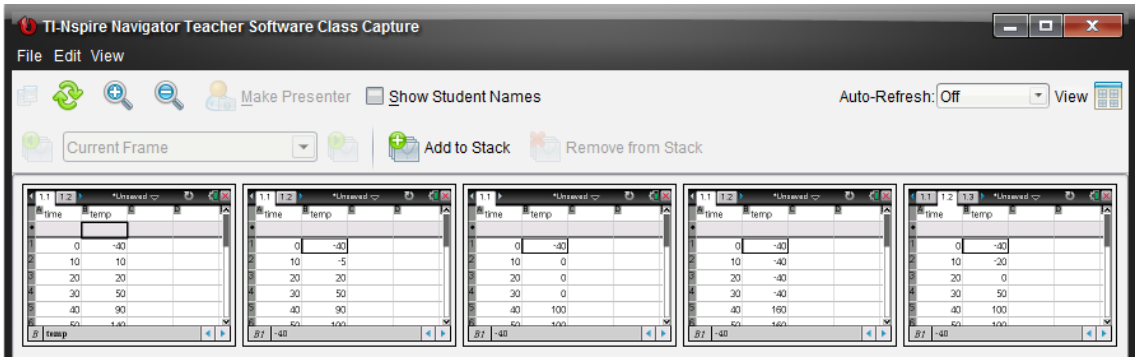
Student A: This student thinks the rate of change for the temperature will be constant.

Student B: This students knows that when the water is boiling, the temperature is constant, but thinks that the temperature is consistently rising during the melting phase.

Student C: This student knows that the temperatures during a phase change remains constant, but forgets that once the water has turned to steam the temperature will continue to rise.

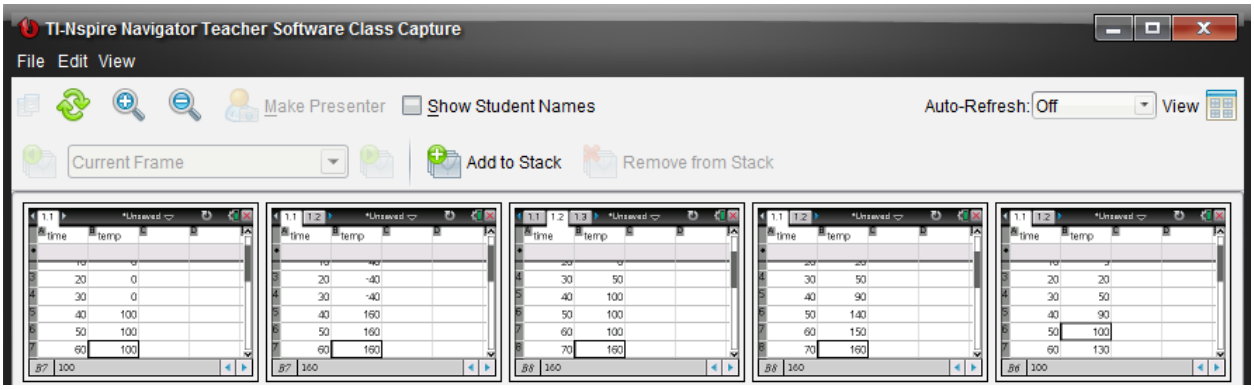
6. Refresh the Class Capture until all students have entered data. A portion of a sample Class Capture is shown below for discussion purposes.

   - When all students have successfully added their data, click the Add to Stack icon.

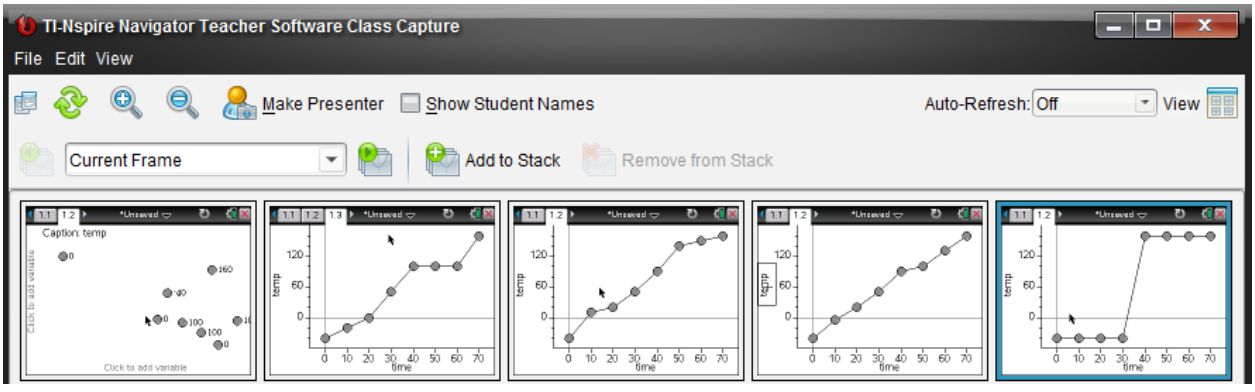


Note: If a participant enters data that does not meet the instructions, leave it until you discuss the graphs the first time. Having incorrect results provides an opportunity to discuss results that do not fit the requested pattern. In all likelihood, this is likely to happen in a real classroom.

7. Ask students what patterns they see in the data. On the board or overhead, list all that are mentioned. Accept any idea, rearranging the screen to illustrate what is mentioned. For example, in response to “they have plateaus” you could rearrange the captures as illustrated below.
   Sample responses to the Class Capture above could be the following: “Some increase the entire time”. “Some go in steps”. Etc.

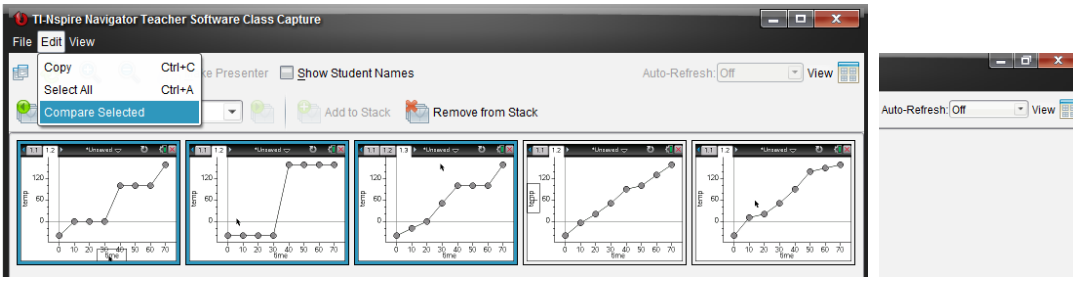


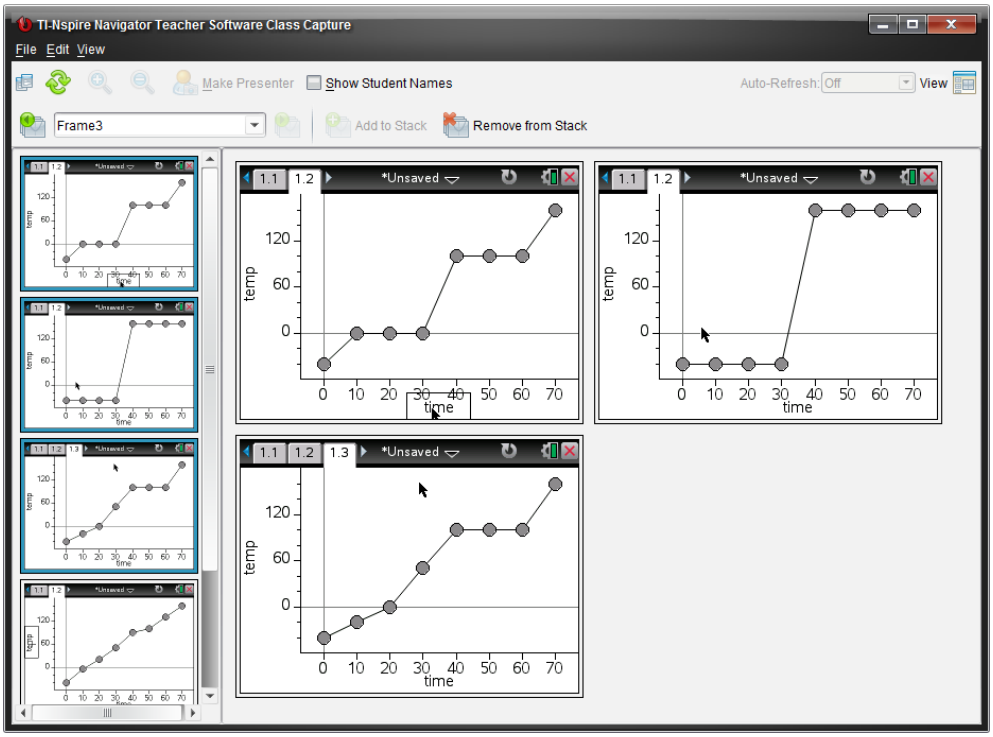
8. Now the students will insert a Data & Statistics page and create a scatterplot with time along the horizontal axis and temperature along the vertical axis.
   - Take a Class Capture of the plots and discuss the results paying particular attention to patterns in the plots. A sample Class Capture is shown below.
   - Use Live Presenter to help if some students are behind. When all students have completed the task, click the **Add to Stack** icon.



9. As you are showing the Class Captures of the various patterns—after looking at all the screens together— select those that fit the pattern, and choose **Edit > Compare Selected** to allow a larger image to be viewed. Compare and contrast different plots of the data.

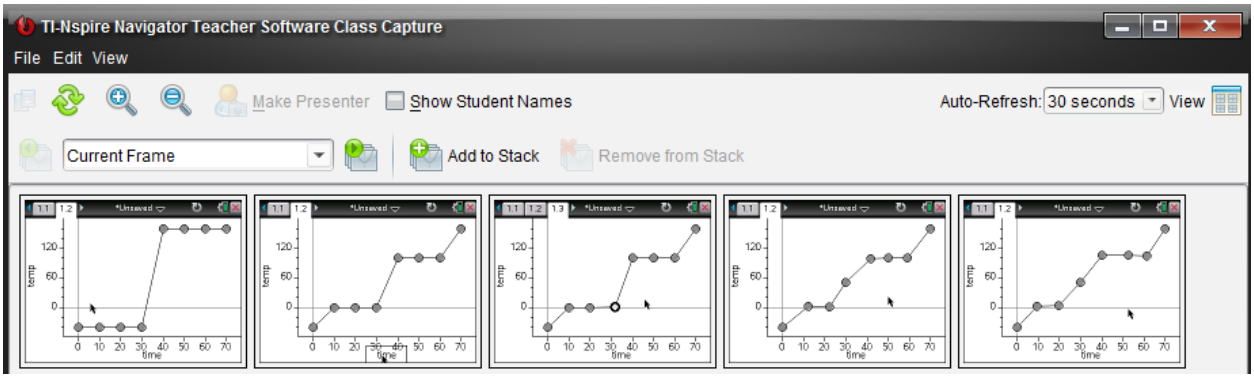
   - After each comparison, return to the Tiled view.
   - Click **Add to Stack** after all students are finished.





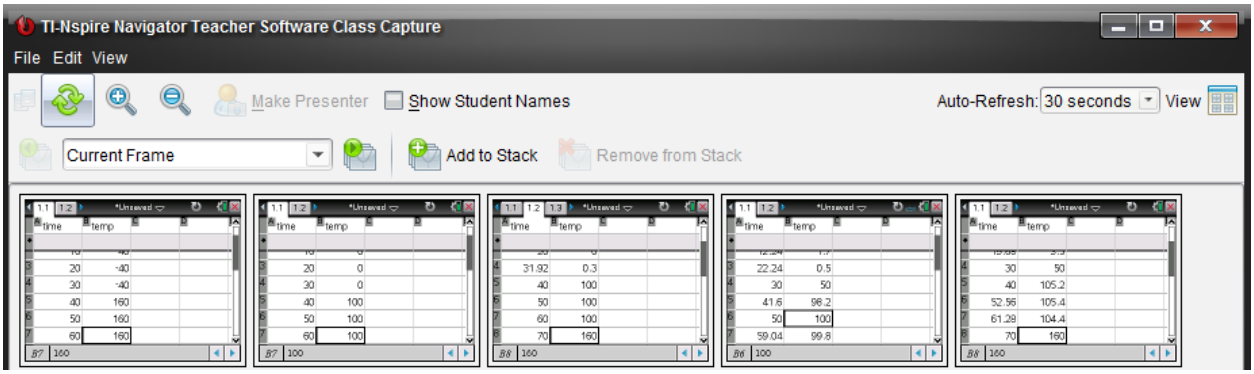
10. Ask each participant to grab and move his or her data points so that it reflects the learning from the discussions.

    - Refresh the Class Capture to make sure that all have successfully accomplished the task. Click **Add to Stack** whenever an interesting set of screens is displayed.
    - Make one person the Live Presenter, and allow that person to talk the group through the steps as necessary.



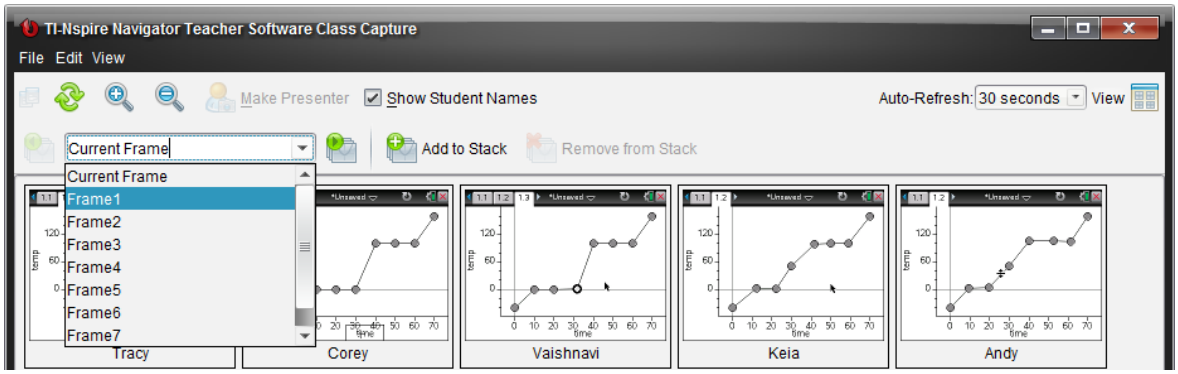
11. Ask students to make a conjecture about the changes in the data as the plot has been changed. Give them a few minutes to examine the data.

    - What changes need to be made to the data to make the plot more accurate?
    - Set Class Capture to Auto Refresh every 30 seconds as they work. Click **Add to Stack** when an interesting result is captured.



12. Next, review the lesson by examining the Captures that have been stored in the Stack.

- Click on the drop down menu and select Frame 1. Scroll through all Captures stored during the lesson by clicking the **Next Frame** icon. This will allow the teacher to reflect on the lesson and identify students that need additional assistance.



13. Your instructor will open the document *Class_Capture_Features_Science_QP.tns* next.

- The teacher will send each Quick Poll and discuss the results.
- Look at the various representations of the results, especially for the first question, the Multiple Response Custom Choice question. Also change the Data View for some of the Quick Polls.

Note: In the Class Workspace, go to **File > Settings > Teacher Preferences** to select or deselect **Randomize order in Screen Capture**.

14. You will be asked whether you want to save the stacks when you close the Class Capture window. The default storage location is **My Documents > TI-Nspire > Stacks**.

- Each Class Capture is saved as an individual .jpg file with the User Name, stack number, date, and time in the file name.

Introduction to the Vernier DataQuest™ Application

TI PROFESSIONAL DEVELOPMENT

Objective

- Introduce the features of the Vernier DataQuest™ application for the TI-Nspire™ handheld.

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About the Lesson

- Participants will use the data they collect to explain how the temperature sensor works.
- Participants will learn how to change the time settings for other sensor experiments in the DataQuest application.

TI-Nspire Navigator™ Features

- Class Capture
- Live Presenter
- Quick Poll

TI-Nspire™ Technology Skills:

- Collect data with a temperature sensor
- Use tab to move within the DataQuest app

Lesson Materials:

- Vernier Stainless Steel temperature sensor
- Vernier EasyLink® USB sensor interface

Exploring DataQuest Using the Temperature Sensor

1. In this activity you will perform a 30-second experiment to determine the effectiveness of the heat exchange in three different regions of the metal part of the temperature sensor. Your instructor will assign you to collect data using either method A or method B.

   Method A:

   1) Heat the **bottom** third of the metal part of the sensor for the first 10 seconds.

   2) Heat the **middle** third of the metal part of the sensor for the next 10 seconds.

   3) Heat the **top** third of the metal part of the sensor for the last 10 seconds.

   Method B:

   1) Heat the **top** third of the metal part of the sensor for the first 10 seconds.

   2) Heat the **middle** third of the metal part of the sensor for the next 10 seconds.

   3) Heat the **bottom** third of the metal part of the sensor for the last 10 seconds.

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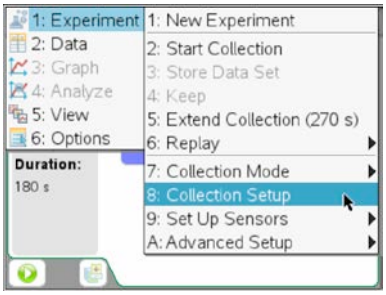
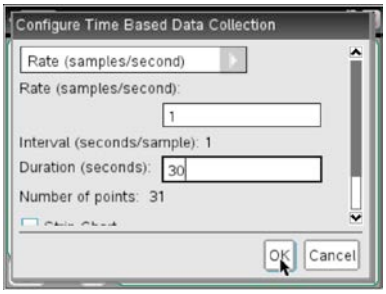
2. Turn on the TI-Nspire CX handheld by pressing [on].
3. Plug the temperature sensor into an Easy Link cable. Plug the Easy Link cable into the top of the handheld. (The DataQuest app should start automatically. Note the information in the graph details box (the gray box at the left of the screen).)
4. Select **Menu > Experiment > Collection Setup.** Press [tab] to move through the field cells.
5. Set the **Rate (samples/second)** to 1 and the **Duration (seconds)** to 30 s, and press [enter].





- How many temperature readings will the system collect? Why does the number of data points vary from the duration of the experiment?

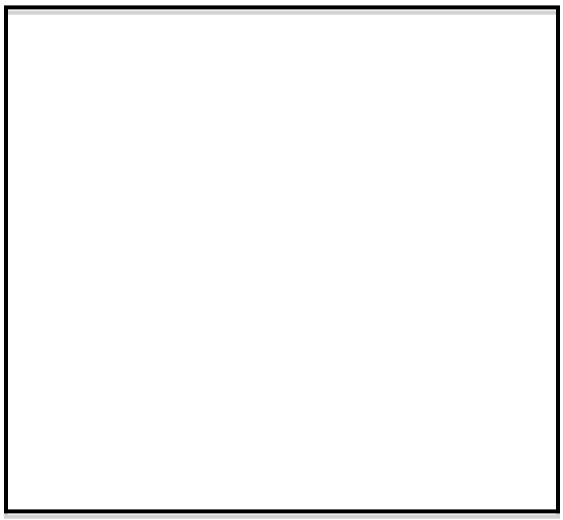
6. Take a moment to sketch in the space below what you think the graph of temperature vs. time will look like ***for your assigned group***. Label some key points.

7. When instructed to do so, click the Start button and heat the three segments of the metal sensor ***as outlined for your group***. (A: Bottom→Middle→Top B: Top→Middle→Bottom) Watch the graph develop as you go. The experiment will end automatically.

- Does your graph look like your predicted sketch? Consider some of your labeled key points.
- After collecting the data, use the Touchpad or [tab] to move around the window and investigate the meter, the graph, and the table tabs at the top left of the screen.

8. Share your graph with someone of the same group, and develop an explanation for the shape of the graph.

9. Knowing what the other group's procedure was, and having an explanation for your data, predict what you think the graphs from the other group will look like. Sketch your prediction here.



10. Share your data graph with participants from the other group. Based on the results for groups A and B, determine the effectiveness of the heat exchange in each range (top third, middle third, bottom third) of the temperature sensor. (What implications does this have for doing experiments with the temperature sensor?)

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TI-Nspire™ Navigator™ Performance Reflection

TI PROFESSIONAL DEVELOPMENT

Objective

- Reflect on actual student data accessible with the TI-Nspire™ Navigator™ System.

Lesson Materials:

TI-Nspire document

- Navigator_Performance_Reflection_Science.tns

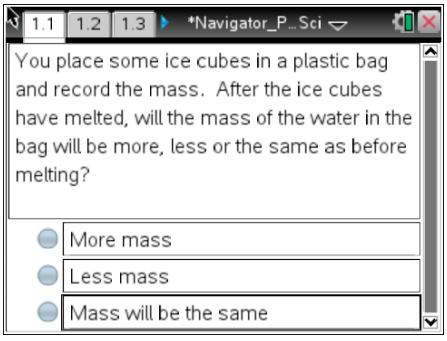
About the Lesson

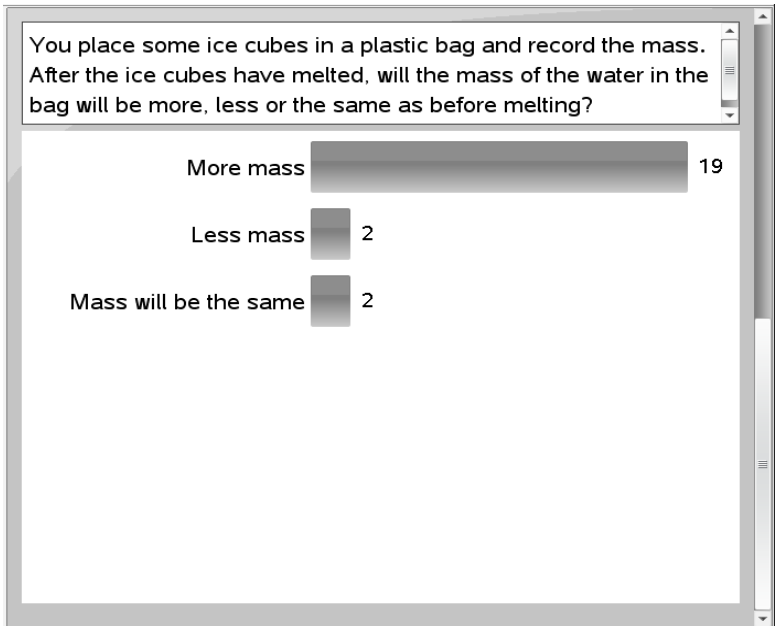
- Participants will examine student data collected using the TI-Nspire Navigator System.
- Participants will reflect on the results and attempt to identify misconceptions and determine remediation steps.

Purpose of this Activity Reflection

Participants will consider questions posed to a class and the answers provided by the class to discuss the course of action the teacher could take based on this real-time data of student understanding.

Sample Student Response: Using Misconceptions to Engage Students



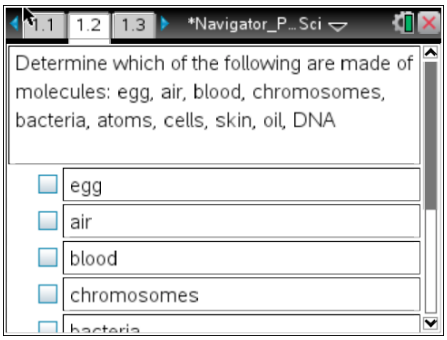


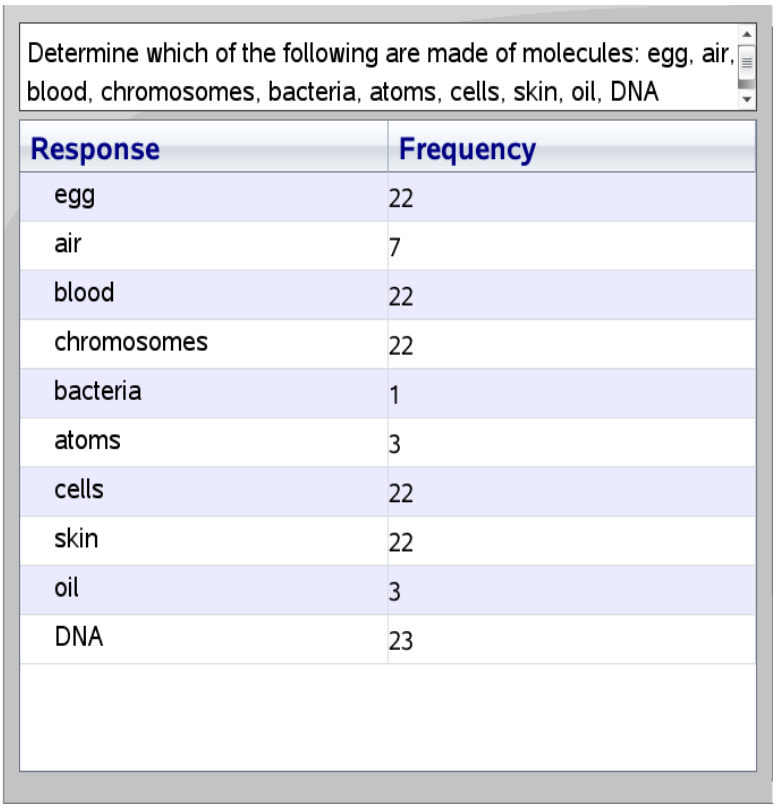
Answer: Mass will be the same.

What does this data tell the teacher about students' understanding of conservation of mass?

How might the data from the student responses be used by the teacher?

Sample Student Response: Remediation Questioning





Response	Frequency
egg	22
air	7
blood	22
chromosomes	22
bacteria	1
atoms	3
cells	22
skin	22
oil	3
DNA	23

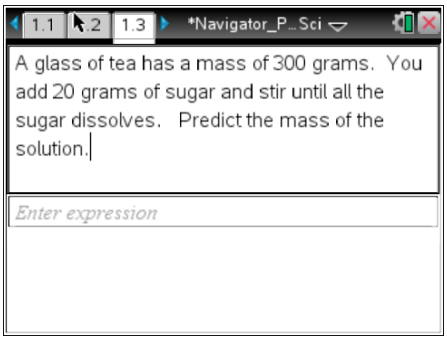
Answer: All should be checked except for atoms.

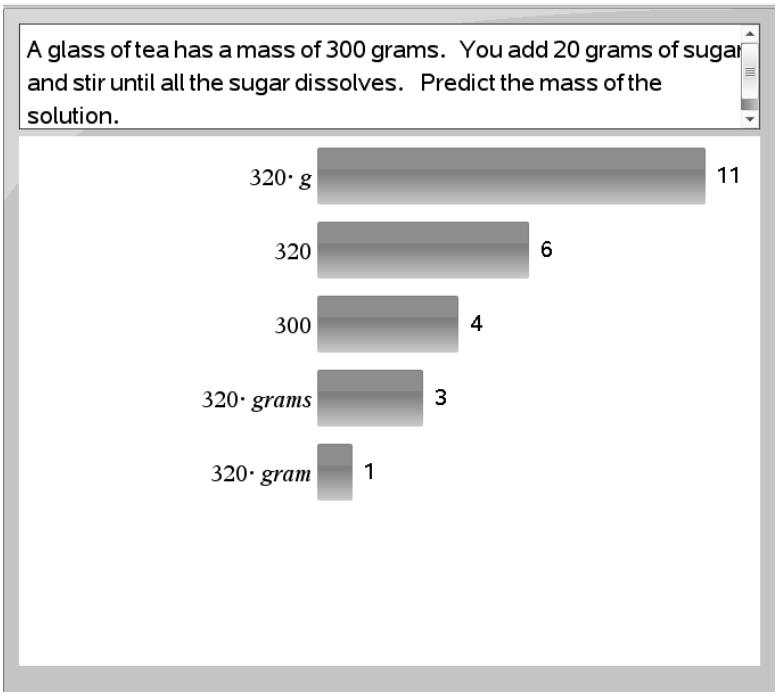
Note: You are able to mark more than one answer correct in the class results, which can then be saved to the Portfolio.

During a discussion with the class, which responses would the teacher “mark correct” and why?

What discussion should happen around the incorrect responses?

Sample Student Response: Pre-Lab Questioning





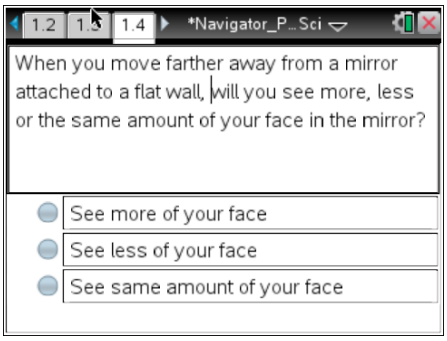
Answer: All with 320 are correct.

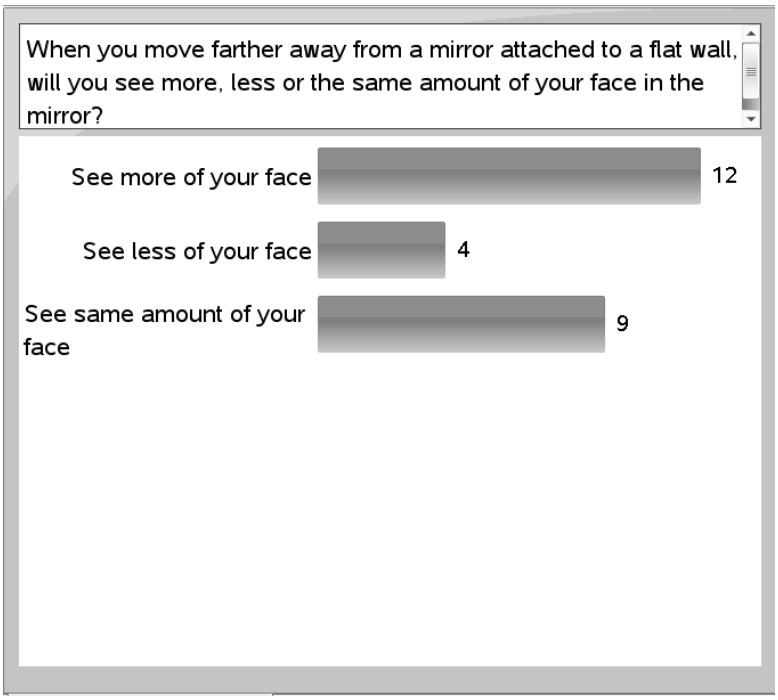
Are there any student responses that surprised you?

What are the advantages and disadvantages to not providing choices for this question?

How could the teacher use TI-Nspire to formatively assess after a lesson over conservation of mass?

Sample Student Response: Pre-Lab Questioning





Answer: You would see more of your face.

Should the teacher have included any additional possible responses?

Are there any student responses that surprised you?

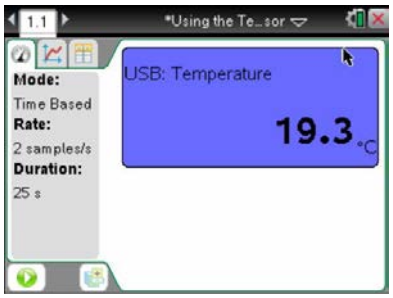
How might the data from the student responses be used by the teacher?

Linking Data from the Vernier DataQuest™ Application

TI PROFESSIONAL DEVELOPMENT

Objective

- To practice using the Vernier® DataQuest™ application and linking the data to Lists & Spreadsheet and Data & Statistics applications.



About the Lesson

- Participants will complete an open-ended temperature activity to practice changing the settings in the Vernier DataQuest app.
- Participants will learn how to link data from the Vernier DataQuest app to a Lists & Spreadsheet page and then create a Data & Statistics page to display their data.
- Class Capture will be highlighted as a means to monitor progress and share data.

TI-Nspire™ Technology Skills:

- Collect data with a temperature sensor
- Link data between apps
- Set up a Lists & Spreadsheets page
- Set up a Data & Statistics page.

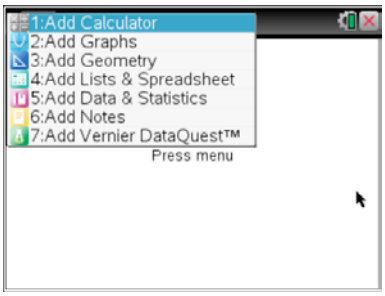
TI-Nspire Navigator™ Features

- Class Capture
- Live Presenter
- Quick Poll

Lesson Materials:

- Vernier Stainless Steel temperature sensor
- Vernier® EasyLink® USB sensor interface

Linking Data



1. Turn on the TI-Nspire handheld.
2. Open a new document, and add a Notes page.
   - The Notes page will serve as the title page for your lab in this activity.
3. Using the keypad, title this lab “Linking Data”
4. Plug in the temperature sensor.
5. Select **Menu > Experiment > New Experiment.**
6. Now, think of ways that you can appropriately increase and decrease the temperature in a 2-minute time period. Perhaps you want to use hot and cold water. Maybe you want to collect data in the sun and then in the shade. Think about how often you want to collect data points; every second, one-tenth of a second, every 2 seconds?
7. Set up your time graph by selecting **MENU > Experiment > Collection Setup.** Now go collect your data!

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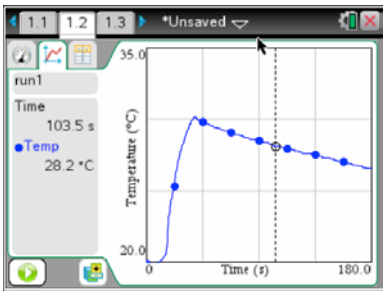
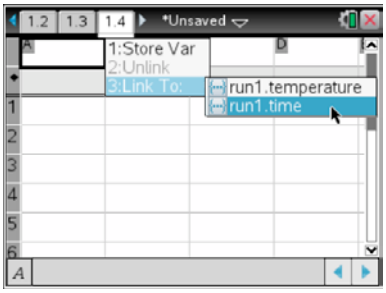
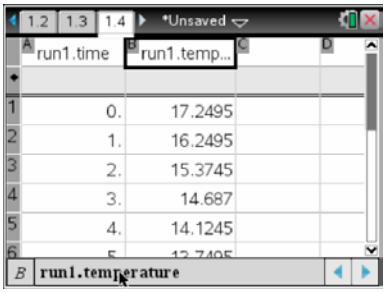


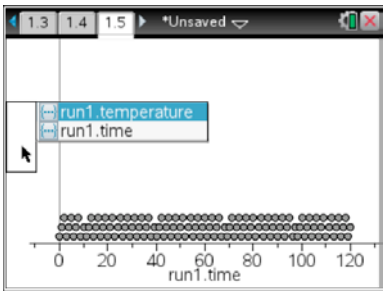
8. After you have collected the data, use the touchpad to click on the data line. A dotted, vertical line will appear.
9. Use the arrow keys (◀ ▶) to scroll along the line and observe what happens to the data in the graph details box (gray box on the left containing the time and temp)
10. Press ctrl doc to insert another Notes page. Type in a question you might ask your students about the data.
11. The instructor will use the Live Presenter feature to share your data with the group. Be prepared to share how you collected your data.

The data collected in the Vernier DataQuest app can be linked to the other apps in the TI-Nspire handheld. Follow along with your instructor to learn about how Lists & Spreadsheets and Data & Statistics pages can be linked with your data.



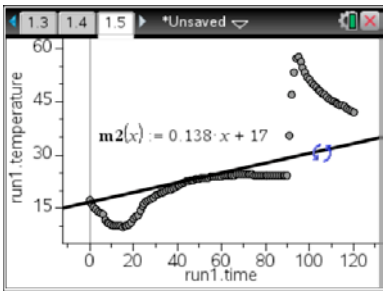


12. Add a Lists & Spreadsheet page by pressing ctrl doc.
13. To link the data in the Vernier DataQuest app to this page, press ▲ on the Touchpad to move to the top of Column A. Be sure to move to the top of the column.
14. Press var and select **Link to** > **run1.time**.
15. Repeat in Column B only select **run1.temperature**.
    - This Lists & Spreadsheet page is not in the DataQuest app and can be used to analyze your data outside of the app.
    - The data can now be collected and aggregated using the TI-Nspire TI-Navigator System.



16. Add a Data & Statistics page by pressing ctrl doc.
17. To choose the variable for the horizontal axis, move the cursor to the **"Click to add variable"** message at the bottom of the screen. Press to display the variables.
18. Select **time** for the X and **temperature** for the Y.

19. To add a moveable line to part of the scatterplot, press **Menu > 4: Analyze > 2: Add Moveable Line.** The regression equation will appear.



20. Use the Touchpad and hand to drag and drop the line to the segment of data you want to analyze. Click and grab in the middle of the line to change the *y*-intercept. Grabbing near an end allows you to change the slope.
    - What happens to the regression equation as you move the line from the middle? From the end?

Note: The moveable line feature is not available in the Vernier DataQuest app.

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Demonstration – Travel Distance

TI PROFESSIONAL DEVELOPMENT

Objective

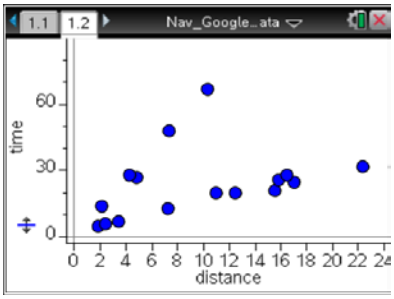
- Model an inquiry-based lesson that integrates math and science using many features of the TI-Nspire™ Navigator™ System.

About the Lesson

- Participants will take on the roles of students to experience an inquiry lesson on travel distance using the TI-Nspire Navigator System.
- Participants will be exposed to the various components of the TI-Nspire Navigator System as directed by the instructor.

TI-Nspire™ Navigator™ Features

- Sending a Document
- Class Capture
- Sending Quick Poll questions
- Student Data
- Review Workspace
- Aggregating student generated data



TI-Nspire™ Technology Skills:

- Opening a TI-Nspire document
- Navigating a TI-Nspire document
- Collaboratively building a list of data to plot
- Creating a scatter plot

Travel Distance Activity

This is a demonstration activity, but the steps are included here for later use by the participants in their own classrooms.

1. Open the TI-Nspire document *Travel_Distance_QP.tns*.
2. Start the Poll, and ask students to enter their estimated travel distance and time from their home to their place of work.
3. After students submit their data, display the data in the List view. Right-click on the data, and select **Send Table to new Document**.
4. Send the TI-Nspire document with the aggregated data to the participants.
5. Ask a few Quick Poll questions:
   - Who traveled the farthest?
   - Who spent the most time en route?
6. Ask students to set up a scatter plot using a Data & Statistics page. Use Class Capture to monitor their progress.
7. Ask a Quick Poll question: What did you choose for the independent variable?

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8. Have students find a line of best fit for the data or part of the data. Monitor progress with Class Capture.
   - It is possible that there will be one line that will fit the data; it is also possible that there will be more than one line that fits the data.
   - If all students drive, then there is probably one line to fit this data. If some students drive while others bike, it is possible to have different lines because of the different rates based on transportation.
9. Ask some Quick Poll questions:
   - What method did you use for finding the equation?
10. Challenge students to use a different method to find a line of best fit.
11. Use a Quick Poll question to collect their equations and display their responses.
12. Facilitate a discussion about the meaning of the slope and the *y*-intercept in the context of this problem.

Notes for Today's Activity

Inserting an Image into a TI-Nspire™ Document

TI PROFESSIONAL DEVELOPMENT

Activity Overview

In this activity, you will learn how to use the TI-Nspire™ family of Teacher Software to insert images into the Graphs and Geometry applications. You will also learn how to move, resize, compress, and stretch an image, as well as make it appear more transparent.

Materials

- TI-Nspire™ Teacher Software

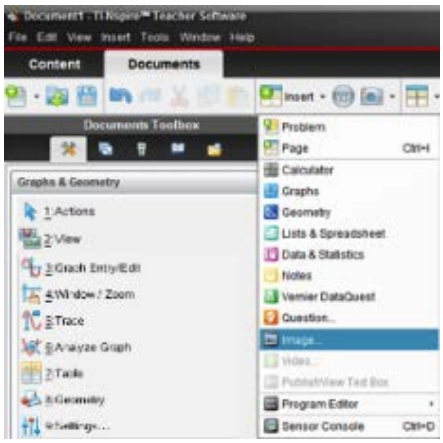
Step 1:

Open the Teacher Software. If the Welcome Screen appears when the software is opened, click to create a new document with a Graphs application as its first page. Otherwise, insert a Graphs application by selecting **Insert > Graphs**.

Note: Images can be inserted into Graphs, Geometry, Data & Statistics, Notes, and Question applications.

Step 2:

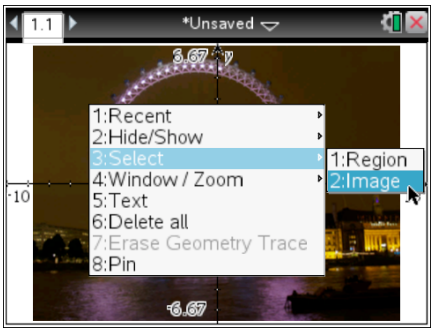
Insert an image into the Graphs application by selecting **Insert > Image**. A selection of images is preloaded in the **My Documents >TI-Nspire > Images** folder. Select **Ferris Wheel.jpg** and click Open.



Note: Although the Teacher Software comes with a selection of preloaded images, all jpg, jpeg, bmp, and png images are supported. The optimal format is .jpeg 560 × 240. Larger images may take the document longer to load on the handheld. Images appear in grayscale for TI-Nspire™ handhelds with Touchpads and Clickpads.

Step 3:

Images can be moved, resized, and vertically or horizontally stretched or compressed. To select an image in the Graphs, Geometry, or Question application, right-click on the image and choose **Select > Image**. To select an image in the Notes application, click the image. To move the image, grab and move the image. To resize the image, grab and move a corner. To vertically stretch or compress the image, grab and move the top or bottom edge. To horizontally stretch or compress the image, grab and move the left or right edge.



Inserting an Image into a TI-Nspire™ Document

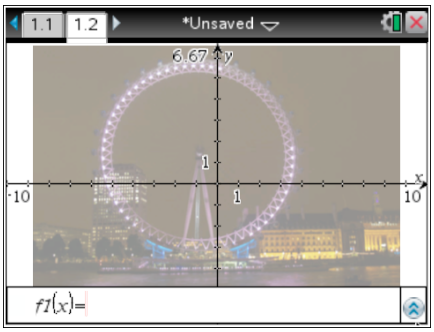
TI PROFESSIONAL DEVELOPMENT

Note: To right-click an object on a handheld, press ctrl menu. To grab an object, press ctrl . To let go of an object, press esc.

Step 4:

To make an image appear more transparent, insert the image in a Geometry application, and then change the page to a Graphs application.

Select **Insert > Geometry**. Then insert an image by selecting **Insert > Image**. Again, choose **Ferris Wheel.jpg.** To change the Geometry application to a Graphs application, select **View > Graphing**.



Practice Creating an Assessment Document

TI PROFESSIONAL DEVELOPMENT

Objectives

- Practice creating Custom Choice, Chemistry, and Open Response questions with TI-Nspire™ Navigator™ Teacher Software.
- Practice saving TI-Nspire™ documents.
- Practice sending, collecting, and saving documents to the Student Portfolio.
- Practice opening and reviewing results in the Review Workspace.

About the Lesson

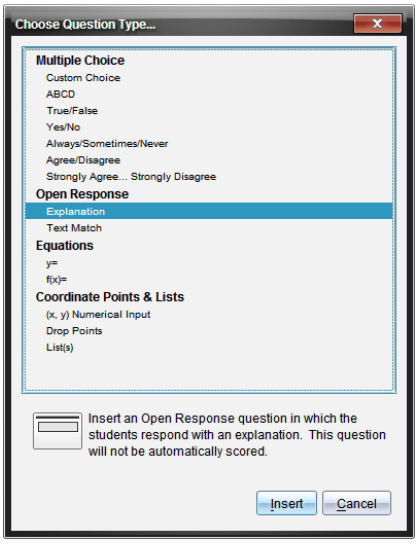
- Individually participants will use TI-Nspire Teacher Software to develop five assessment questions (simple multiple choice and open response) related to a solubility curve diagram.
- Once questions are created, participants role-play the beginning classroom implementation of TI-Nspire Navigator in the assessment process through the use of TI-Nspire documents.

TI-Nspire™ Teacher Software Features

- Creating question pages in a document

TI-Nspire Navigator™ Features

- Sending, collecting, and saving documents to the Student Portfolio.
- Displaying question results in the Review Workspace.



TI-Nspire™ Technology Skills:

- Creating a document containing assessment questions
- Sending, collecting, and saving documents to the Student Portfolio
- Showing Review Workspace results from an assessment question

Tech Tips:

- Save often while creating documents

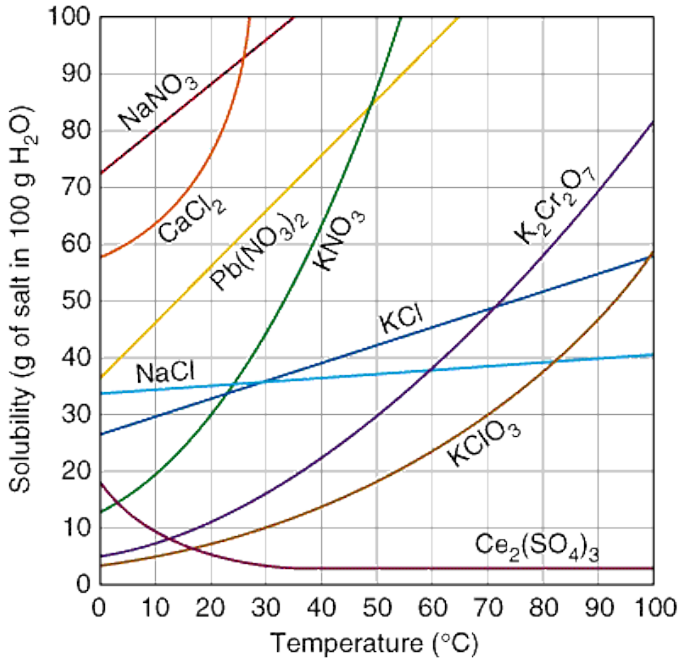
Lesson Materials:

TI-Nspire document

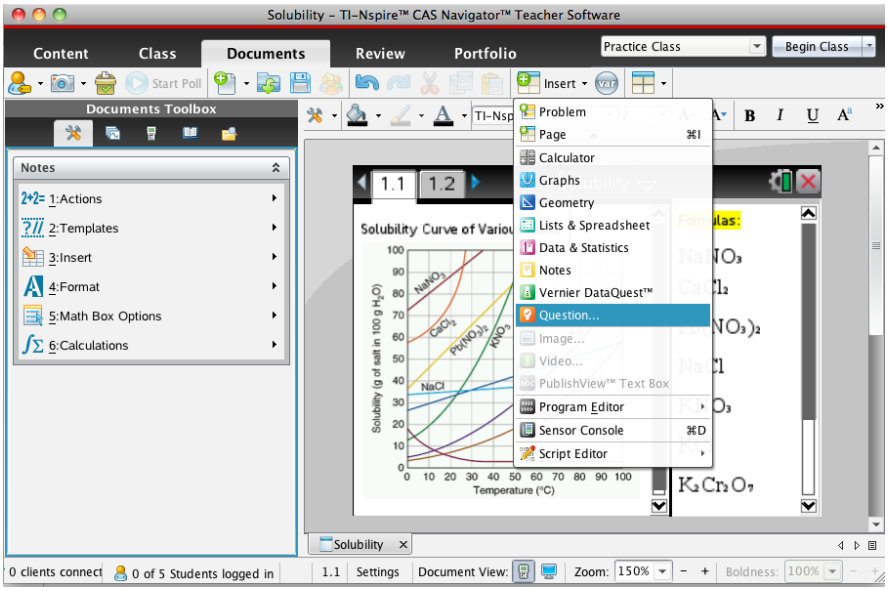
- *Solubility.tns*

Create the Assessment Document

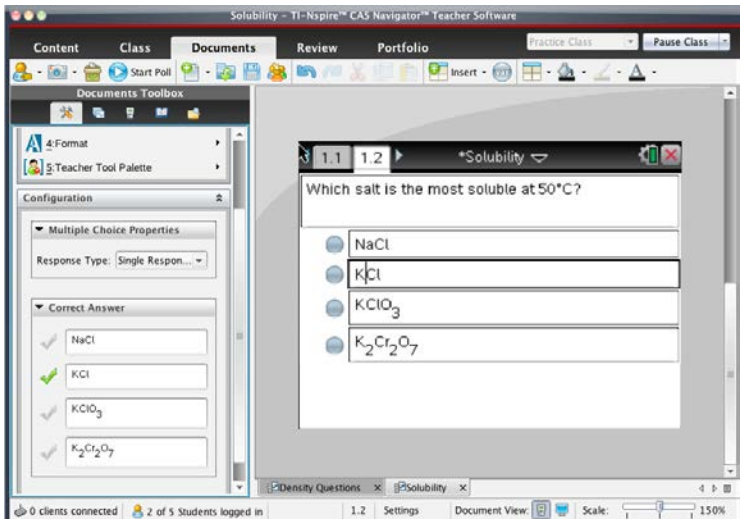
Participants should use the Teacher software to create five assessment questions in the document *Solubility.tns*. Participants may choose any of the question types highlighted in the last lesson. The assessment questions will focus on the following diagram:



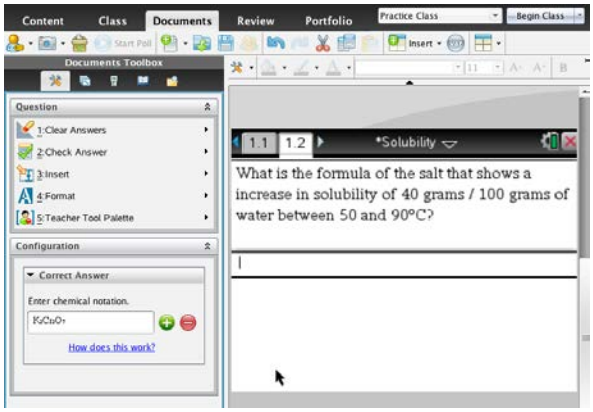
1. Open the document *Solubility.tns* using the TI-Nspire Teacher Software.
2. Choose “Insert Question” from the toolbar.



3. Choose a question type, and click “Insert.”
4. Type in the question.
   - Be sure to provide the correct answer in the toolbar to the left.
   - To insert the degree symbol, click on the Utilities button in the Documents Toolbox, select the Symbols tab, and double-click on the degree symbol.



5. Choose “Insert Question” from the toolbar. Select “Chemistry.” Type in the question.



***Question**: What is the formula of the salt that shows an increase in solubility of 40 grams / 100 grams of water between 50 and 90˚C?*
***Answer**: $K_2Cr_2O_7$*

6. Create three more questions related to the solubility graph so that you have a total of five assessment questions. Be sure to create at least one multiple choice question and one open ended (explanation) question. You might also want to add a Notes page at the end of the assessment that gives your students directions about what to do next. Your instructor will help you should you have any questions as you create your assessment document. Don’t forget to save your document once you are finished.

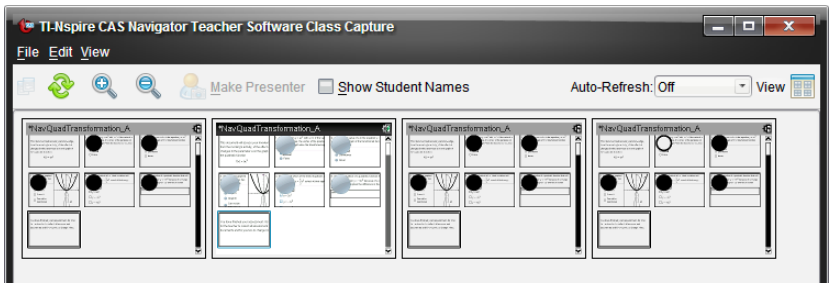
Practice Creating an Assessment Document

Roles

Participants will continue the activity by working in pairs. The **Teacher** will only operate the computer, and the **Student** will only operate the TI-Nspire handhelds. Each participant will get an opportunity to switch and experience both roles. To create a more authentic classroom environment, the student should operate 2-4 handhelds. Another option is for the teacher to assist by operating a few handhelds.

The Send/Collect/Save/Display Cycle

1. **Teacher:** Start the class, and send the assessment document.
2. **Student:** Log in to the class.
3. **Teacher:** Instruct the students to open the appropriate assessment document and monitor progress using Class Capture.
4. **Student:** Answer the questions in the assessment document.
5. **Teacher:** Instruct the students to press ctrl ▲ when they have finished the assessment.
6. **Teacher:** Monitor student progress using the auto-refresh feature of Class Capture. When all student handhelds look like the screens below, you know the students are finished.



7. **Student:** After all questions have been answered, press ctrl ▲ and wait for the teacher.
8. **Teacher:** Collect the document, and store to the Student Portfolio.
9. **Teacher:** Open the results in the Review Workspace, and review the class results.
10. **Both**: Switch roles, and repeat steps 1–9.

Resources

TI PROFESSIONAL DEVELOPMENT

Objectives

- Gain comfort with the Content Workspace of the TI-Nspire™ Navigator™ Teacher Software.
- Investigate resources to support the use of the TI-Nspire™ Navigator™ System in the classroom.

TI-Nspire™ Technology Skills:

- Preview lessons and documents using the TI-Nspire Navigator Teacher Software
- Download a TI-Nspire lesson and document

About the Lesson

- Participants will visit websites containing resources supporting their TI-Nspire Navigator use in the classroom including:
  - Support for the TI-Nspire Student Software;
  - Support for the TI-Nspire Navigator System; and
  - Classroom-ready lessons.

Lesson Materials:

- Computer with Internet access and TI-Nspire Navigator Software

TI-Nspire™ Navigator™ Teacher Software Features

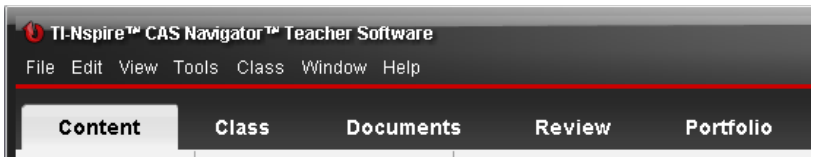
- Browse for lessons at Math Nspired, Science Nspired, and TI Math
- Preview and download lessons and documents
- Send a document to the class or to an individual handheld through the Content Workspace

Overview of Workspaces

There are five different workspaces in the TI-Nspire Navigator Teacher Software:

1. Content
2. Class
3. Documents
4. Review
5. Portfolio

To move between the workspaces, click on the appropriate tab.



Each workspace has a specific purpose, but they work together to create a complete package for the TI-Nspire Navigator classroom. Depending on the selected workspace, the menus, options, and icons will change appropriately.

The focus of this activity will be the Content Workspace. Here, we will identify activities for the classroom, with brief use of the Documents Workspace, to interact with a downloaded activity.

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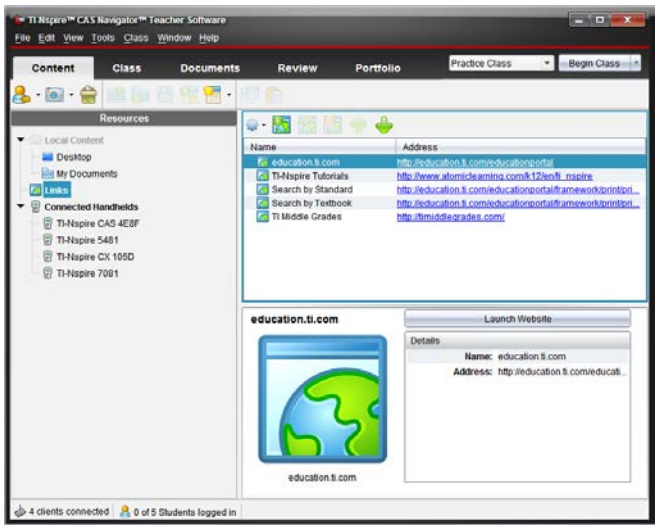
Accessing Resources using the Software

Access many online resources from within the TI-Nspire Navigator Software.

1. Open the TI-Nspire Navigator Teacher Software.
   - If necessary, close the “Welcome Screen” by clicking the red X in the upper right hand corner.

The software usually opens in the Documents Workspace, but we want to view locations for various content. Click on **Content** to open the Content Workspace.



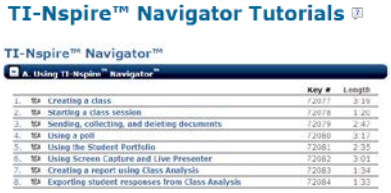
2. The Resources column on the left side of the window contains various resources broken down into three categories: Local Content, Links and Web Resources, and Connected Handhelds.
   - Local Content: Browse your computer, and create shortcuts to folders on your computer for easy access to your files.
   - Links (and Web Resources): Links to TI resource material and personalized links can be added and removed.
   - Connected Handhelds: Browse the documents of connected handhelds (This will not appear if no handhelds are connected.)

Video Tutorials for the TI-Nspire Handheld, Software, and Navigator System

1. Visit the **Atomic Learning** website by clicking **Links** in the Resources column, and then clicking the “TI-Nspire Tutorials” pre-loaded web address in the right-hand window (www.atomiclearning.com/k12/ti_nspire).

2. Upon arriving at the Atomic Learning website, you can view short video tutorials that highlight skills for the TI-Nspire handheld and computer software, including:
    - Creating and saving a new document
    - Finding and opening a document
    - Tracing a graph

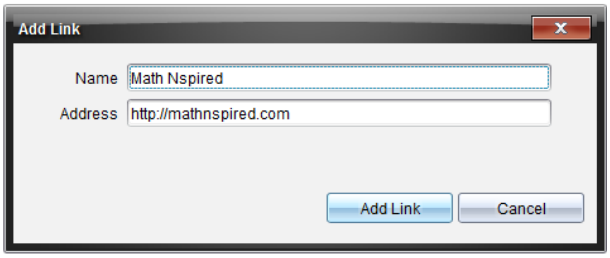
3. To view the available tutorials for TI-Nspire Navigator, click on the "TI-Nspire Navigator" link on the Atomic Learning website.
4. You will be directed to a list of short video tutorials on TI-Nspire Navigator skills, including:
    - Creating a class
    - Starting a class session
    - Sending, collecting, and deleting documents
    - Using a Quick Poll
    - Using the Portfolio
    - Using Class Capture and Live Presenter



Add a Personal Web Link

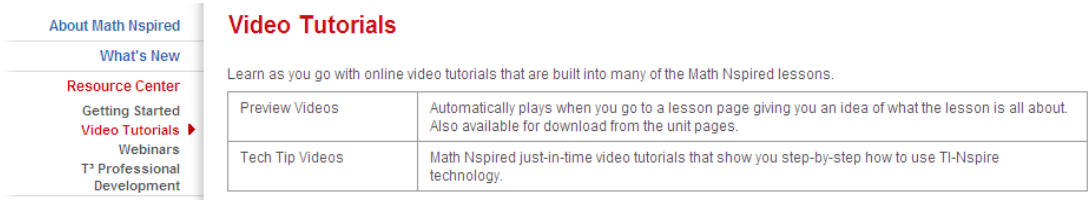
1. While viewing the pre-loaded web links, click on the "Add Link" icon above the existing links.

2. Type one of the following names and web addresses and click **Add Link**.
    - For Math Nspired, and web address is http://mathnspired.com.
    - For Science Nspired, the web address is http://sciencenspired.com.



3. A new link is added to your list of web links.

    One of the reasons to add this website to your personal list of links is to easily gain access to additional video tutorials on TI-Nspire technology. By visiting the Resource Center selecting Video Tutorials, you will be directed to a multitude of videos related to interacting with TI-Nspire documents.



Pre-Made Lessons for Classroom Use

1. Visit Math Nspired or Science Nspired using the link that was just created, and select a subject.

Math Nspired — Middle Grades Math, Algebra 1, Geometry, Algebra 2, Precalculus, Calculus, Statistics

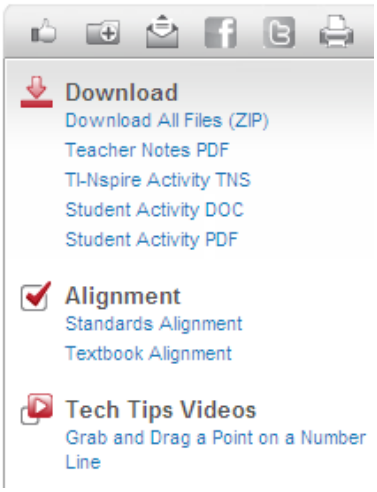
Science Nspired — Life Science, Earth Science, Physical Science, Biology, Chemistry, Physics

2. Select a unit from the list. A table appears with an image from each activity. The table contains links to download, recommend, and save each activity. It also identifies each activity type:

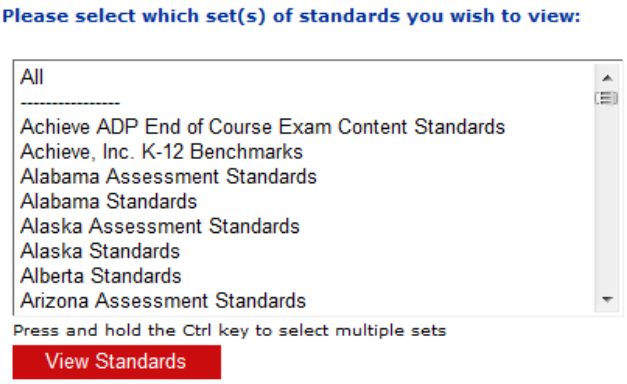
Icon	Type	Description
	Bell Ringer	Bell ringers are short lessons designed to help transition quickly into class after the bell rings.
	Action Consequence Simulation	Interactive, engaging lessons allow students to perform actions on a mathematical object or scientific simulation, observe consequences, and make conjectures. Each lesson contains a pre-made TI-Nspire™ document, a Student Activity, and Teacher Notes.
	Create Your Own	In addition to the Student Activity and Teacher Notes, the lesson also includes step-by-step instructions on how to create the TI-Nspire document.
	Data Collection with Probes	Data Collection Labs give students the opportunity to collect and analyze real-world data with more than 50 data collection sensors from Vernier Software and Technology™.
	TI-Nspire™ Navigator™ Compatible	The Teacher Notes identify opportunities to use the TI-Nspire Navigator System, including opportunities for Quick Polls, Class Captures, and Live Presenter.

3. Select an activity from the table. Each activity page shows objectives, relevant vocabulary, and additional information about the lesson. A video offers a preview of the lesson, and related lessons are recommended.

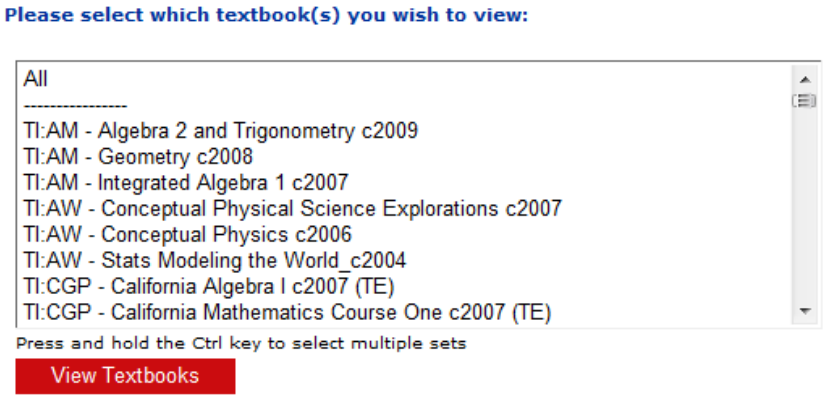
   Icons above the Download section allow you to recommend, save, email, and print an activity. Links to Facebook and Twitter are also available. The Download section contains links to activity files. Links for Standards and Textbook Alignment and relevant Tech Tip Videos are also available.



4. Select the Standards Alignment link on the left. Select a set of standards from the drop-down box, and click **View Standards**. A list of performance/content standards appears for each grade, along with a list of the relevant strands and performance indicators.



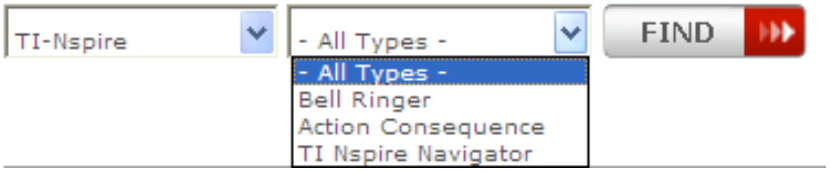
5. Select the Textbook Alignment link on the left. Select a textbook from the drop-down box, and click **View Textbooks**. A portion of the textbook's table of contents appears, which identifies the relevant chapter, section, lesson, and page numbers for the selected Math Nspired lesson.



6. If you visited Math Nspired, visit TI Math at http://timath.com. Additional lessons are available for Algebra 1, Geometry, Algebra 2, Precalculus, Calculus, and Statistics.

   Each activity has step-by-step instructions, a student handout, a TI-Nspire document, and a see-it-in-action video of the TI-Nspire document.

   After you have decided on a subject area, be sure to change the device type to "TI-Nspire" and press **FIND**.



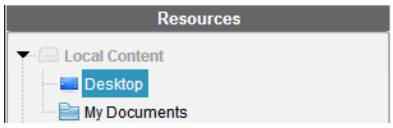
Note: You might want to add this link to your software links for easy access.

Downloading and Previewing a Lesson

To make a decision on the value of a lesson, the lesson must be previewed by the teacher. The Student Activity and Teacher Notes, as well as the TI-Nspire document, can be downloaded to the teacher computer. The Student Activity and Teacher Notes can be previewed at the website. However, to preview a TI-Nspire document (.tns file) beyond a video clip provided on the website, the file must be downloaded to the teacher computer.

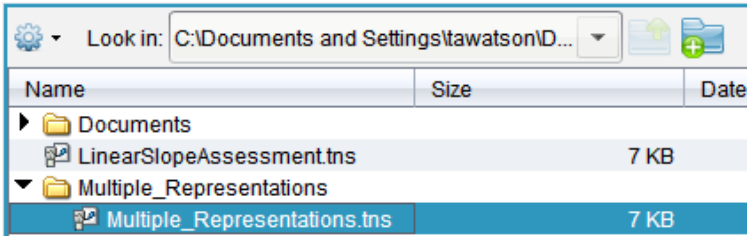
1. Select a lesson from the Math Nspired or Science Nspired website; and download the TI-Nspire document, Student Activity, and Teacher Notes separately. Save the documents to a location specified by your instructor.

2. After the documents have been downloaded, go to the Content Workspace. Browse your computer using the Local Content area of the Resources panel to locate the lesson files.

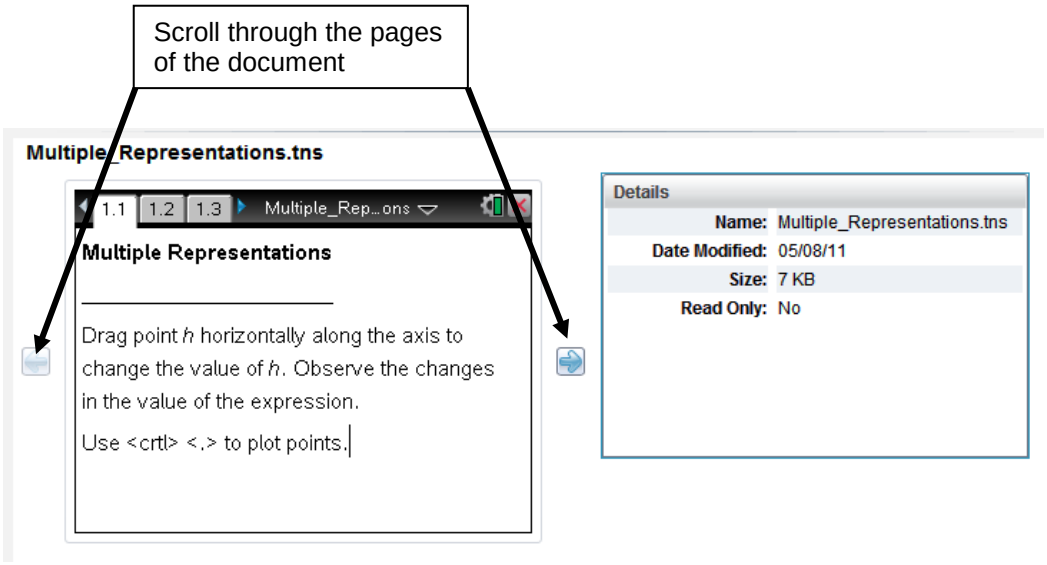


Note: Lesson files can be downloaded as one zip file. However, the files would need to be unzipped to be accessed in the Resources panel.

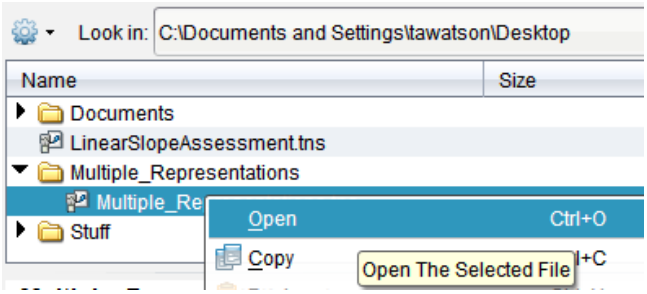
3. Select the TI-Nspire document for the activity.



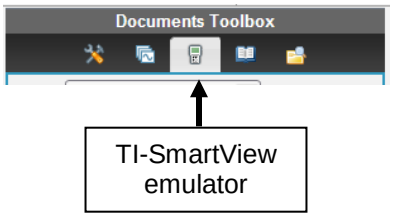
4. From within the Content Workspace, you will be able to preview the document using the arrows to scroll through the pages.



5. To interact with the document, you will need to open the document. Right-click on the file, and select **Open**.
   - The document will open in the Documents Workspace.



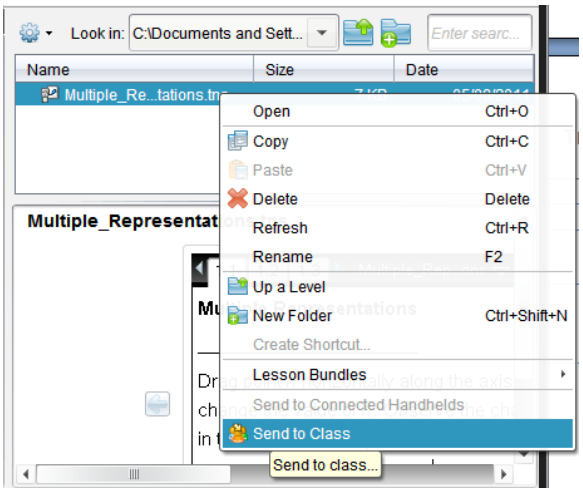
6. Using the TI-SmartView™ emulator in the Documents Toolbox, you can interact with the document as if you were viewing it on a handheld.



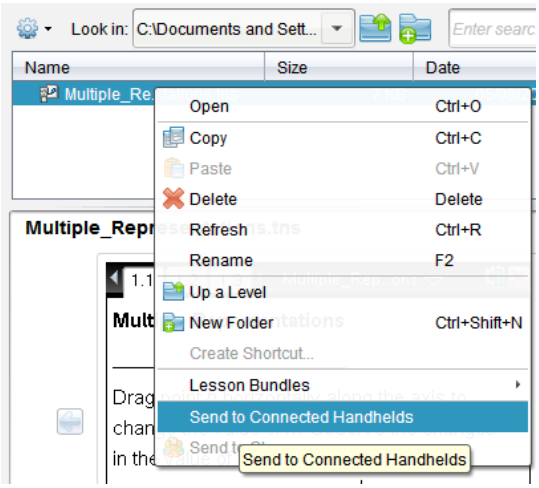
Sending a Document From the Content Workspace

1. Right-click on the document that is to be sent, then select **Send to Class**.

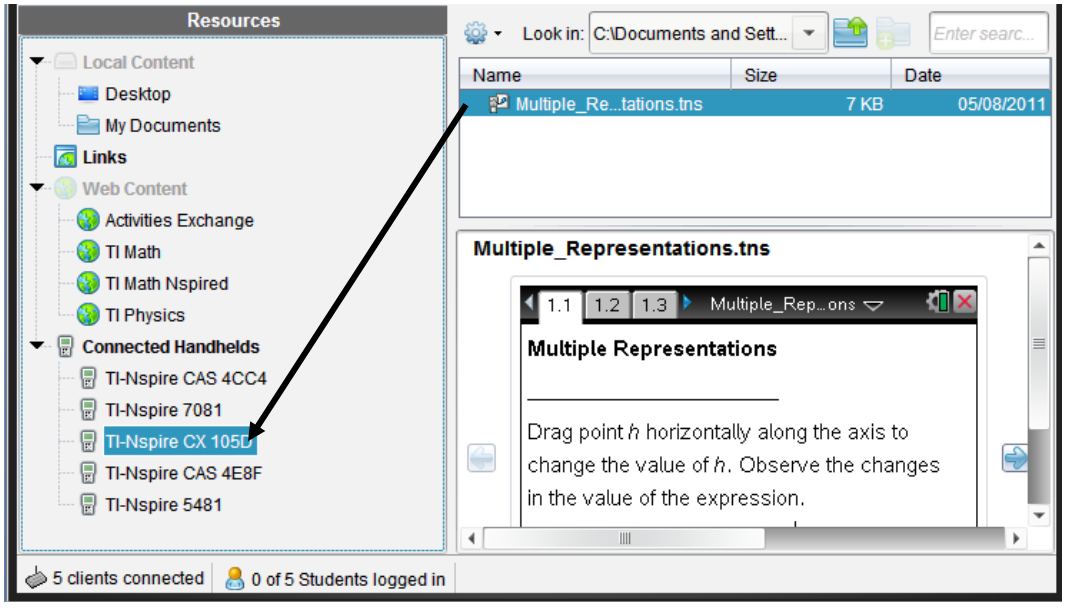
If the Navigator class is running, the option **Send to Class** will be available.



If the Navigator class is NOT running, the option **Send to Connected Handhelds** will be available.



If you would like to send a document to one particular connected handheld, drag the file to the connected handheld listed in the Resources pane.



The Portfolio Workspace

TI PROFESSIONAL DEVELOPMENT

Objectives

- Participants practice additional features of the Portfolio Workspace: modifying the answer key, changing student scores, sorting according to scores, excluding questions, previewing documents, and exporting the data.
- Participants practice sending and collecting missing work for a student through the Portfolio Workspace.

About the Lesson

- In this lesson, participants learn about various features of the portfolio. In order to learn about these features, all participants will play the roles of Teacher and Student.
- Pairs of participants will complete three simple assessments per student.

TI-Nspire™ Technology Skills:

- Sending, collecting, and adding a missing student's document to the Student Portfolio
- Editing items in the Portfolio Workspace
- Exporting data

Lesson Materials:

TI-Nspire documents

- *Element_Quiz_1.tns*
- *Element_Quiz_2.tns*
- *Lab_Safety_Quiz.tns*
- *Density_of_Water.tns*

TI-Nspire™ Navigator™ Features

- Sending missing documents
- Collecting missing documents
- Editing Portfolio Workspace data
- Exporting Portfolio Workspace data

Preparing the Portfolio Workspace

Work with a partner to share the handhelds for this section.

1. Begin the class, and log in the two students Jon Smith and Deb Jones. Connect a handheld to your computer, and log in as Jon Smith. Have your partner connect a second handheld to your computer, and login as Deb Jones. Send the document *Lab_Safety_Quiz.tns* to the class and complete the quiz as stated below.

Student	Page 1.1	Page 1.2	Page 1.3	Page 1.4	Page 1.5
Jon	C	C	D	B	A
Deb	D	B	C	D	A

2. Once the students have entered their answers for the quiz, collect the files from the class, delete the files from the handhelds, and save the results to the Portfolio.

3. Now send the document *Element_Quiz_1.tns* to the class. Have Jon and Deb complete the quiz as noted below.

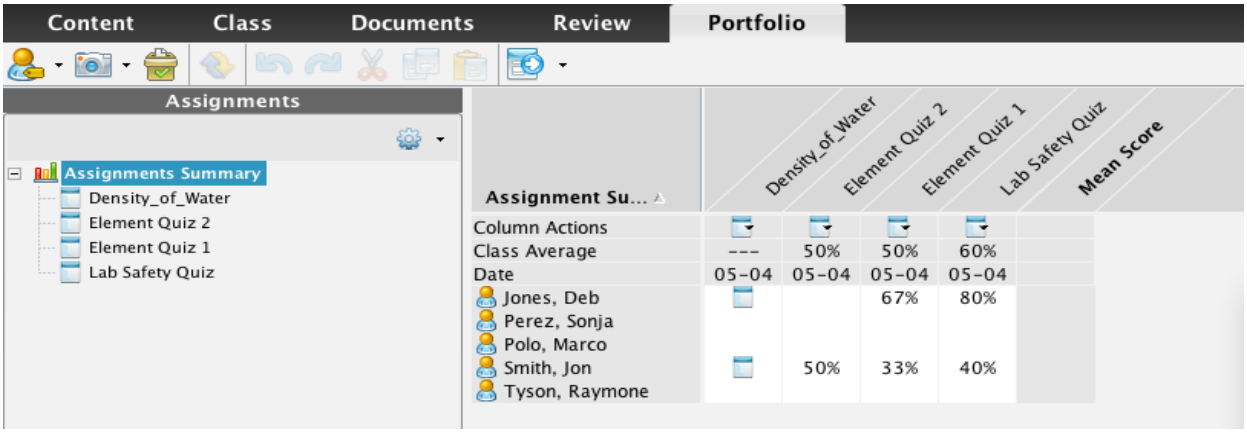
Student	Page 1.1	Page 1.2	Page 1.3
Jon	P	So	Tn
Deb	K	Na	Sn

4. As the teacher, collect the files from the class, delete the files from the handhelds, and save the results to the Portfolio.
5. Send the *Element_Quiz_2.tns* document only to Jon Smith. Complete Jon's quiz as noted below.

Student	Page 1.1	Page 1.2	Page 1.3	Page 1.4
Jon	Au	P	Mg	Tu

6. As the teacher, collect the file from the class, delete the file from the handheld, and save the results to the portfolio.
7. Finally, send the file *Density_of_Water.tns* to each student. On Page 1.2, have Jon graph volume (y-axis) vs. mass (x-axis) and have Deb graph mass (y-axis) vs. volume (x-axis).
8. Once finished, collect the file from the class, delete the file from the handheld, and save the results to the portfolio.
9. End the class.

You are now ready to learn about some of the features of the Portfolio Workspace.

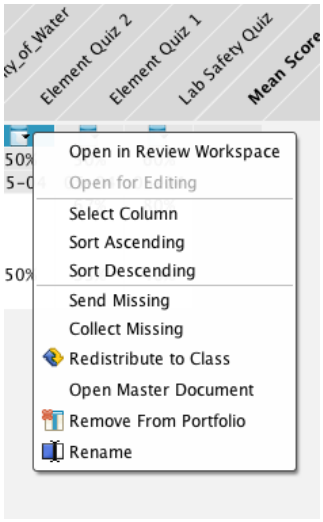


Adding a Missing Document to the Portfolio Workspace

It is not unusual for a student to miss an assignment. If you are using the Portfolio Workspace as a location to store grades and monitor progress, you will want to add missing assignments.

Deb Jones did not receive the Element_Quiz_2 assignment. Follow the steps below to send her the document, have her complete the assignment, and collect the document to include her grade in the portfolio.

1. Begin the class and have Deb log in to the class.
2. In the Portfolio Workspace, click on the Column Actions drop-down menu for the missing assignment, and select **Send Missing**.
3. Have Deb complete the document as noted below:



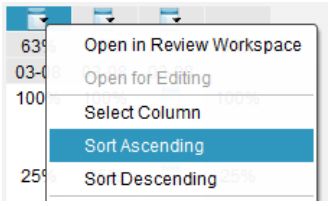
	Page 1.1	Page 1.2	Page 1.3	Page 1.4
Deb	Hg	P	Mn	W

4. When Deb has completed the assignment, in the Portfolio Workspace, right-click on the name of the document, and select **Collect Missing**.

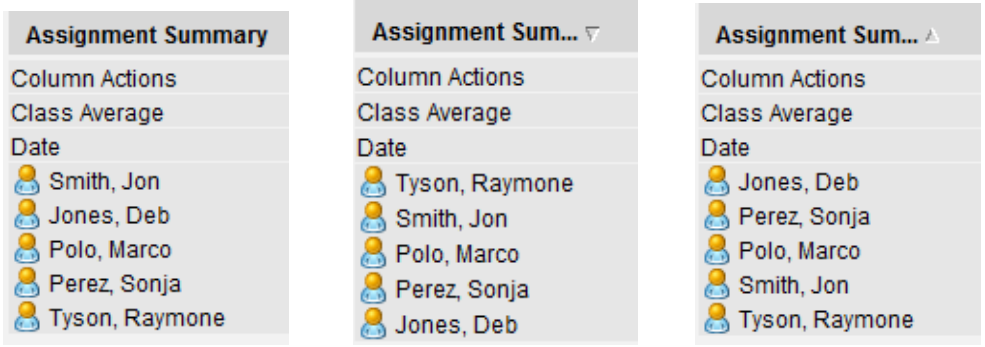
Sorting Scores

If you have a class size of 25 to 32, it can be difficult to quickly determine who is struggling and who is excelling on a particular assignment. In the Portfolio Workspace, you can sort the scores from high to low or from low to high in order to quickly observe patterns in student scores.

1. Determine the assignment to be sorted in ascending or descending order.
2. Click on the Column Actions cell for the selected assignment.
3. Select **Sort Ascending** or **Sort Descending**.
4. Select other assignments and practice this skill.



5. To sort by the Display Name, click on the **Assignment Summary** label.
   - By repeatedly clicking on the **Assignment Summary** label, the ordering will rotate between alphabetical, reverse alphabetical, and alphabetical by last name.

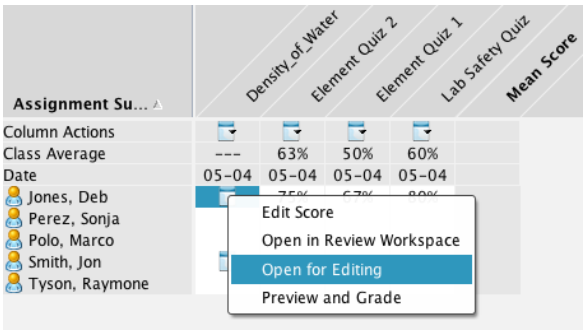


6. To sort by the Mean Score column, right-click on **Mean Score**, and select **Sort Ascending/ Descending**.

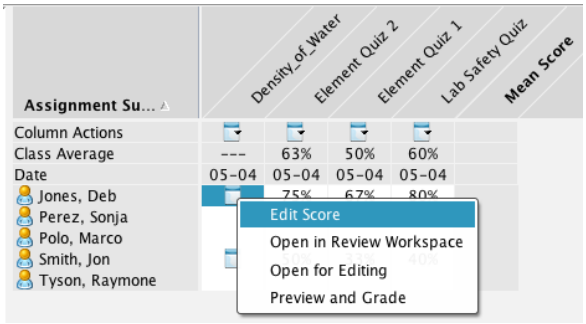
Grading a Document in the Portfolio

A teacher can save a document in the portfolio for which some or all of the grading is based on non-question pages. Perhaps the students were required to construct an object or graph and analyze data.

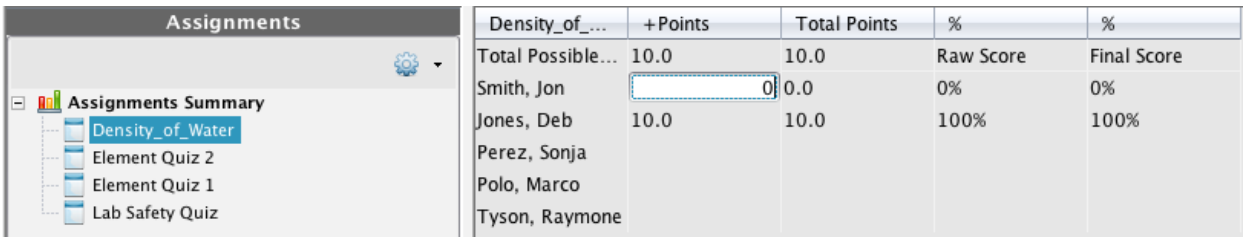
In the Portfolio Workspace, the icon in the cells for “Density_of_Water” indicates that a document was saved by the teacher that did not contain any *Question* pages.



1. To preview and grade the document for each student, right-click on the icon, and select **Open for Editing**.
2. The student’s document will open in the Documents Workspace.
3. After reviewing the student document and determining a grade, return to the Portfolio Workspace to enter a grade for the student work using one of the following two methods.
4. To enter a final percentage only: Right-click on the icon and select **Edit Score**. Enter the final percentage number for the assignment.



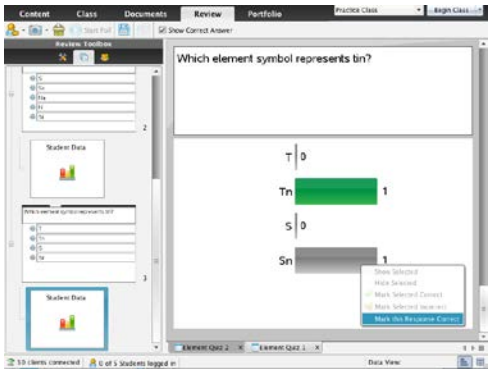
5. To enter a grade based on points for the assignment: Select the assignment “Density_of_Water” from the Assignments pane. Click on the cell under “+Points,” and enter the Total Possible Points for the assignment. Then click on the cell for each student, and enter the points earned for the assignment.



Changing the Answer Key

Follow the steps below to change an answer response that has been scored incorrectly.

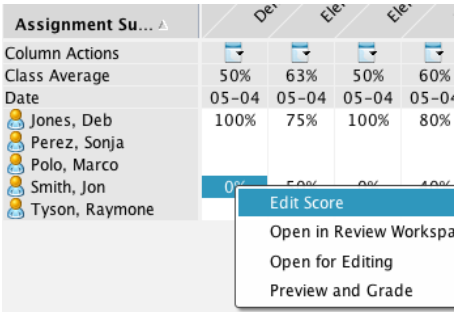
1. In the Portfolio Workspace from the Assignments Summary, click on the Column Actions cell for the “Element_Quiz_2” assignment.
2. Select **Open in Review Workspace**.
3. In the Page Sorter pane of the Review Workspace, scroll down to the question to be adjusted (Question Page 1.3), and click on its Student Data icon.
4. Make the adjustments to the correct answer. (The correct answer, of course, is Sn not Tn.)
   - Right-click on the bars representing the correct answer, and select “Mark this Response Correct.”
   - The portfolio scores are automatically updated.
5. Close the Review Workspace document.

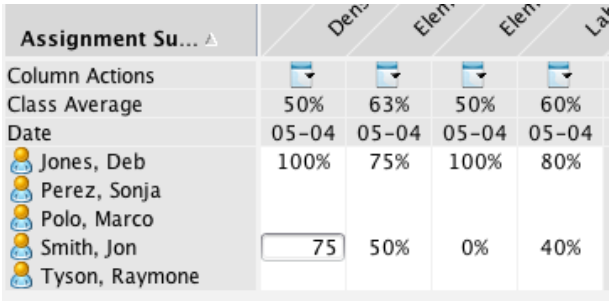


Editing a Student’s Score for an Entire Assignment

Follow the steps below if you realize that a student’s score for an entire assignment is incorrect.

1. In the Portfolio Workspace, right-click on the score to be changed, and select **Edit Score**.
2. Type the new score, and press **Enter**.

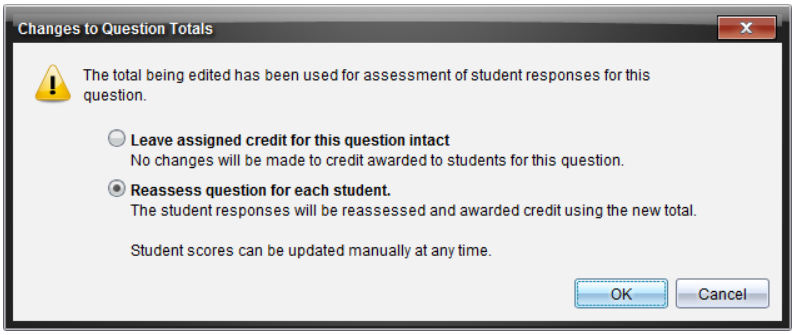




Changing the Total Possible Points for a Question

Follow the steps below if you decide that a question is worth more than the standard one point.

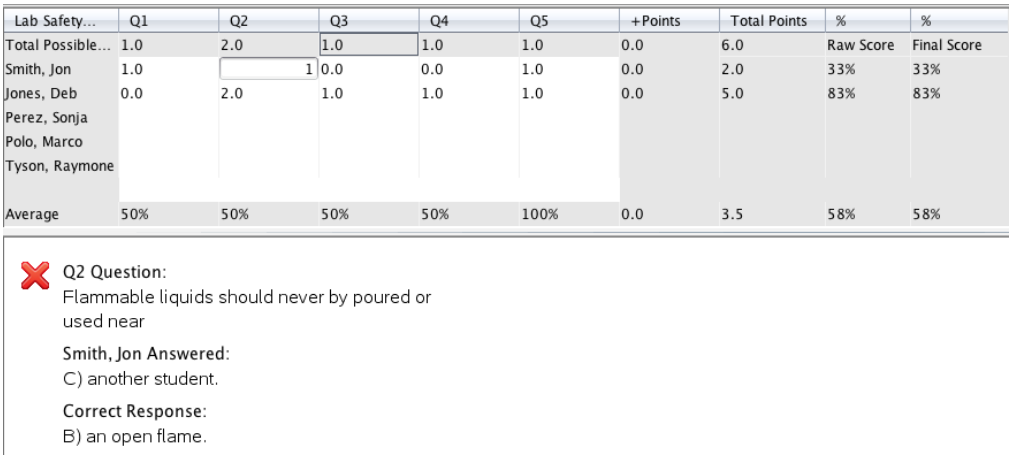
1. Select the assignment “Lab_Safety_Quiz” in the Assignments pane.
2. Click in the cell immediately below a question column (such as Q2), type 2, and press **Enter**.
3. Select the appropriate option for the change, and click **OK**.



Grading Student Responses from the Portfolio

Follow the steps below to award credit for an open response question or to award partial-credit for student responses.

1. Select the assignment “Lab_Safety_Quiz” in the Assignments pane.
2. Click in the cell for a particular student for a question. The student’s response and correct answer will be displayed in the lower portion of the window.
3. Give Jon Smith a partial score for his response to Q2, and press **Enter**.

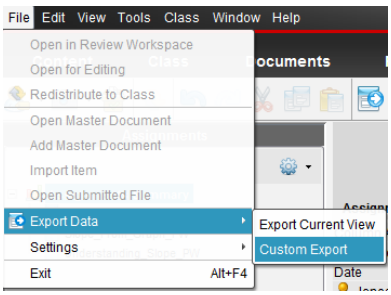


Lab Safety...	Q1	Q2	Q3	Q4	Q5	+Points	Total Points	%	%
Total Possible...	1.0	2.0	1.0	1.0	1.0	0.0	6.0	Raw Score	Final Score
Smith, Jon	1.0	1	0.0	0.0	1.0	0.0	2.0	33%	33%
Jones, Deb	0.0	2.0	1.0	1.0	1.0	0.0	5.0	83%	83%
Perez, Sonja									
Polo, Marco									
Tyson, Raymone									
Average	50%	50%	50%	50%	100%	0.0	3.5	58%	58%

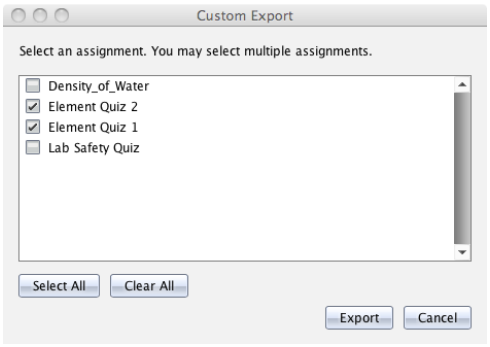
Exporting Data from the Portfolio

Some school grading programs accept data imported in CSV format. Follow the steps below to export portfolio data to a CSV file.

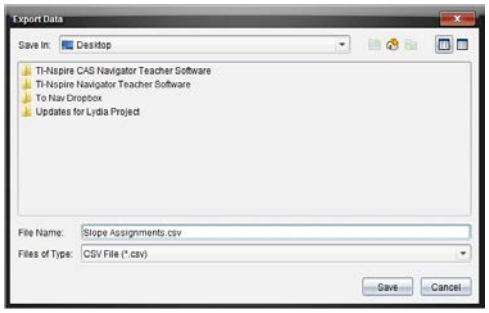
1. From the Portfolio Workspace, go to **File > Export Data > Custom Export**.
   - If **Export Current View** is selected, the data displayed to the right of the Assignments pane will be exported.



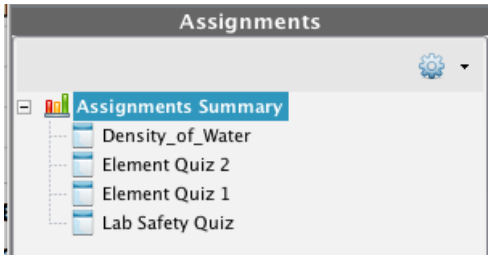
2. Select the assignment(s) data to be exported, and click Export.



3. Determine an appropriate name and convenient location for the file. Click **Save**.

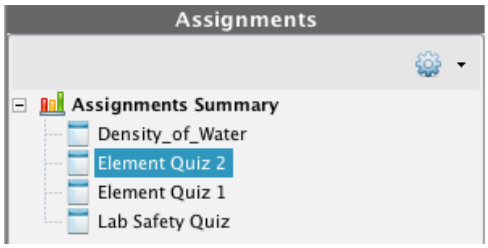


- Exporting when **Assignments Summary** is selected will result in a CSV file that contains final percentage scores only.



	A	B	C	D	E
1	Last Name	First Name	Student ID	Element Quiz	Element Quiz 1
2				5/4/12	5/4/12
3	Smith	Jon		50	0
4	Jones	Deb		75	100
5	Perez	Sonja			
6	Polo	Marco			
7	Tyson	Raymone			

- Selecting **Export Current View** when an individual assignment is selected will result in a CSV file that contains question details, total points, and final percentages.



	A	B	C	D	E	F	G	H	I
1	Element Quiz	Q1	Q2	Q3	Q4	Additional Poir	Total Points	%	%
2	Total Possible	1	1	1	1	0	4	Raw Score	Final Score
3	Smith, Jon	0	1	1	0	0	2	50%	50%
4	Jones, Deb	1	1	0	1	0	3	75%	75%
5	Perez, Sonja								
6	Polo, Marco								
7	Tyson, Raymone								
8	Average	50%	100%	50%	50%	0	2.5	63%	63%
9									

Reflection:

- What makes the Portfolio Workspace more robust than a typical grade book?

Data Aggregation in the Science Classroom

TI PROFESSIONAL DEVELOPMENT

Objective

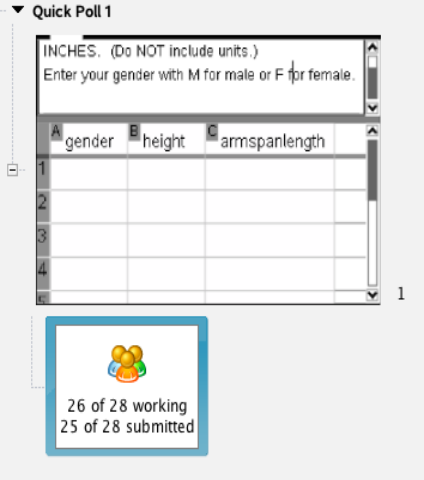
- Become familiar with the Data Aggregation with Lists technique using the TI-Nspire™ Navigator™ System.

About the Lesson

- Two activities will be conducted to explore the data aggregation technique.
- The first activity will be instructor-led. The second will be hands-on with participants playing teacher and student roles.

TI-Nspire Navigator Features

- Quick Poll
- Class Results
- Lists & Spreadsheet



TI-Nspire™ Technology Skills:

- Answering questions related to length data
- Submitting a Quick Poll response

Tech Tips:

- Data aggregation is accomplished by collecting data through a question page.
- Aggregated data is sent back to the students through a document.

Lesson Materials:

- Computer with TI-Nspire Navigator Teacher Software
- TI-Nspire Navigator access point
- One TI-Nspire handheld per participant
- One meter stick / tape measure for every 2-4 participants
- *Data_Aggregation.tns*

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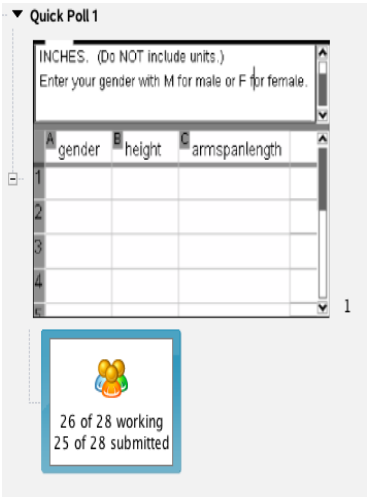
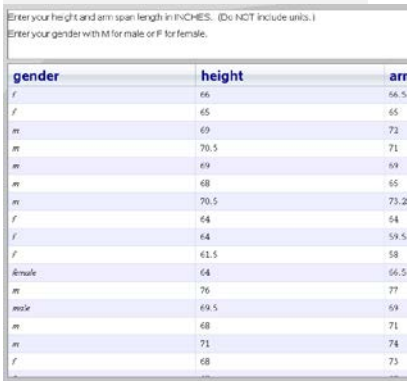
Part 1 Activity

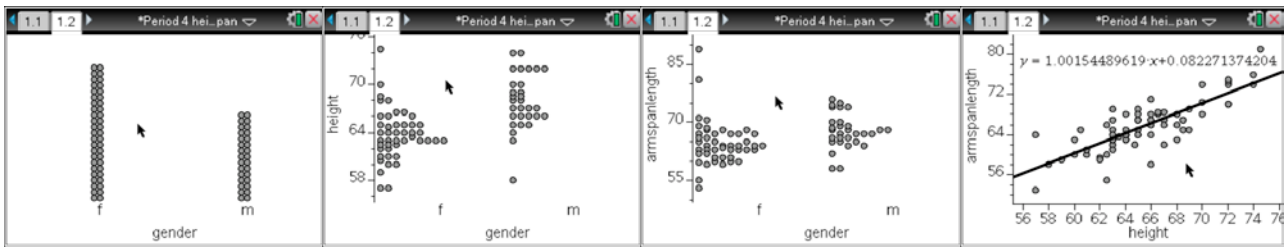
The instructor will demonstrate how to use a TI-Nspire Navigator technique to collect, aggregate, and disseminate data. **These directions are written from the instructor's viewpoint as the 'teacher'.**

1. Open the document *Data_Aggregation.tns*.
   - This file contains a LIST question that asks participants to record their gender, height (in inches), and arm span length (in inches) in Row 1.
   - Be sure to have enough meter sticks and/or tape measures for participants to use to measure their arm span length from the longest finger on their left hand to the longest finger on their right hand.
2. Click START POLL.
3. Click on the "working/submitted" box in the REVIEW tab to show the data table.
4. Click STOP POLL. Right-click on the data table, and select "Copy Entire Table".
5. In the DOCUMENT tab, open a new TI-Nspire document, and add a spreadsheet.
6. With box A1 highlighted, paste your data into the spreadsheet.
7. Label the columns with appropriate names. Clean up the spreadsheet. (Remove rows with dashes. Make sure that data is correct and uniform.)
8. Save the document.
9. Send the document to the students. Now they have a full set of class data ready to be analyzed!
10. Instruct participants to add a Data & Statistics page to the document just sent to them and lead a discussion of trends in the data comparing different sets of variables.



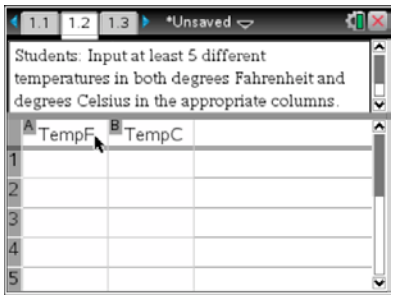


The following graphs are examples of ones that can be created and used for discussion:



Part 2 Activity

Participants should work in pairs. One participant will act as 'Teacher' and the other one will act as 'Student' using temperature data. The Student will operate two different handhelds connected to the Teacher's computer.



1. **Teacher:** Start the class. Create a poll question in which you ask the students to enter data in two columns labeled **TempF** and **TempC**. Send them the Quick Poll question.
2. **Student:** Connect two different handhelds to the Teacher's computer and log in. Enter the data below. Submit your data when you are finished entering it by pressing the DOC button on the handheld.

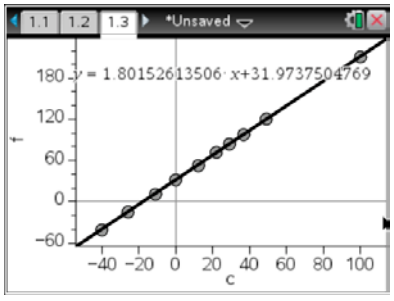
Handheld #1

Temp (˚F)	72	98.6	32	12	-40
Temp (˚C)	22	37	0	-11	-40

Handheld #2

Temp (˚F)	212	85	53	120	-15
Temp (˚C)	100	29	12	49	-26

3. **Teacher:** When both student data sets have been entered, stop the poll, right-click on the data table, and select "Copy Entire Table".
4. **Teacher:** In the DOCUMENT tab, open a new TI-Nspire document, and add a spreadsheet.
5. **Teacher:** With box A1 highlighted, paste your data into the spreadsheet.
6. **Teacher:** Label the columns with appropriate names. Clean up the spreadsheet if needed. (Remove rows with dashes. Make sure that data is correct and uniform.)
7. **Teacher:** Save the document.
8. **Teacher:** Send the document to the students. Now they have a full set of class data ready to be analyzed!

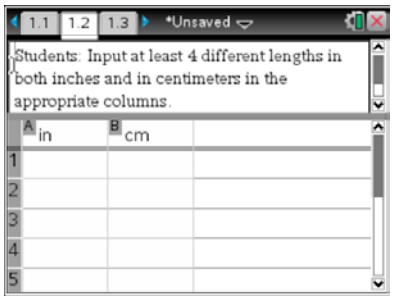


9. **Teacher:** Instruct the student (the other participant) to add a Data & Statistics page to look for the relationship between the temperature data.
10. **Student:** Open the document that was just sent on one of the handhelds. Add a Data & Statistics page to look for the relationship between the temperature data. HINT: Use the MENU button and the ANALYZE feature.

SWITCH ROLES.

The Teacher will now become the Student and the Student will become the Teacher. The two handhelds should now be disconnected from the computer and connected to the new Teacher computer.

11. **Teacher:** Start the class. Create a poll question in which you ask the students to enter data in two columns labeled **Inches** and **Centimeters**. Send them the Quick Poll question.



12. **Student:** Connect two different handhelds to the Teacher's computer and log in. Enter the data below. Submit your data when you are finished entering it by pressing the DOC button on the handheld.

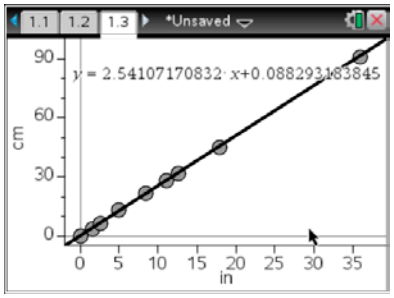
Handheld #1

Inches	1+1/2	4+15/16	8+1/2	17+7/8
Centimeters	3.85	13.00	21.63	45.3

Handheld #2

Inches	2+5/8	11	12+1/2	35+7/8
Centimeters	6.68	28.01	31.95	91.30

13. **Teacher:** When both student data sets have been entered, stop the poll, right-click on the data table, and select "Copy Entire Table".
14. **Teacher:** In the DOCUMENT tab, open a new Nspire document, and add a spreadsheet.
15. **Teacher:** With box A1 highlighted, paste your data into the spreadsheet.
16. **Teacher:** Label the columns with appropriate names. Clean up the spreadsheet if needed. (Remove rows with dashes. Make sure that data is correct and uniform.)
17. **Teacher:** Save the document.
18. **Teacher:** Send the document to the students. Now they have a full set of class data ready to be analyzed!
19. **Teacher:** Instruct the student (the other participant) to add a Data & Statistics page to look for the relationship between the length data.
20. **Student:** Open the document that was just sent on one of the handhelds. Add a Data & Statistics page to look for the relationship between the length data. HINT: Use the MENU button and the ANALYZE feature.



Create Your Own Assessment

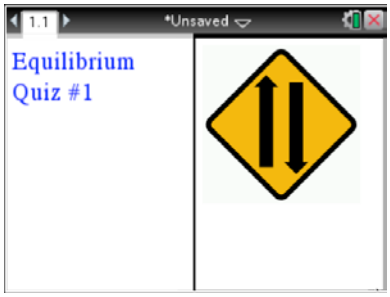
TI PROFESSIONAL DEVELOPMENT

Activity Overview

In this activity, you will create an assessment document using the Question application of the TI-Nspire™ Navigator™ Teacher Software based on your own subject matter. You should try to incorporate as many of the question types as possible. Some hints will be provided for various question types. When you are finished, you might be asked to share your document with the rest of the group.

Creating a Title Screen with an Image

1. Open a new TI-Nspire document, and insert a Notes page.
2. Click on the Page Layout icon and choose the second layout.
3. Click on the right side of the screen, and add another Notes page.
4. Now, to finish off the title page, click on the left side, and type in a title for your assessment.
5. Click on the right side and then click **Insert > Image**.
   - A sample page is shown to the right but you should create a title screen that relates to the subject matter that you teach.



Creating Questions

1. Add a question page by clicking **Insert >** **Question**. Choose the type of question that you would like to create for your students. When choosing a question type, consider:
   - *What type of assessment document is this?*
   - *Are you trying to uncover student misconceptions at the beginning of a unit?*
   - *Is this a summative assessment at the end of a unit?*
   - *Is this an assessment that focuses on a single topic or a broad range of topics?*
2. Try to choose as many of the question types as possible.
3. Continue this approach until you are finished with your assessment.
   - Be ready to share your work with others and explain the rationale for the types of questions in your document.

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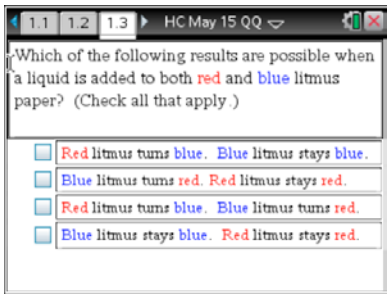
Hints about Various Question Types

Multiple Choice

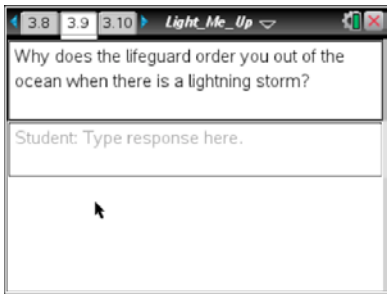
There are two main types of multiple choice questions – single response and multiple response.



- Multiple response questions pose more of a challenge to students but the results are more interesting and more revealing about student understanding. Even though the button shape changes from a circle (single response) to a square (multiple response), it is still best to flag this type of question for students. Consider adding a statement like "Check all answers that apply" to your question text.

Open Response - Explanation

Open Response (Explanation) questions are great for getting an understanding of what students are really thinking since you're giving them a blank canvas to "paint" their thoughts about a scientific concept.

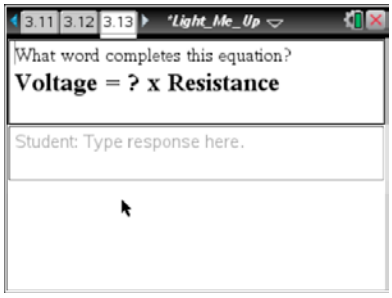


However, be aware that the students will need to type their responses using small buttons and a non-QWERTY keyboard. Try to narrow the focus of your question so that students need not write a lengthy essay to answer your question.

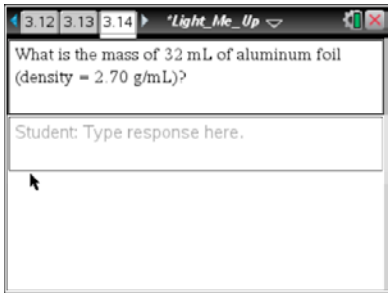
With this type of question, you will be able to mark more than one response as correct during the Review session by right-clicking on the answers.

Open Response -Text Match

Open Response (Text Match) questions can be used in a variety of ways.



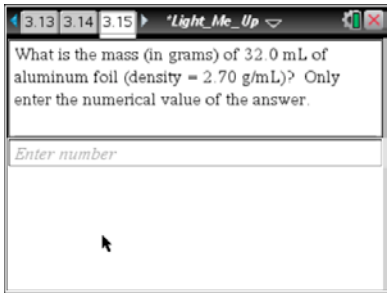
- First, consider using this question type to determine your students' ability to recall important *vocabulary*.
- Text Match questions are also good for *quantitative problem solving*.



For example, if you asked students to find the mass of 32 mL of aluminum foil given a density of 2.70 g/mL, you could mark 86 g as the correct answer. You then have the option of marking multiple versions of that answer as correct.

If you want to emphasize the importance of units and/or significant figures in an answer, then only 86 g (or possibly 86g) would be considered as correct.

Expression - Numeric

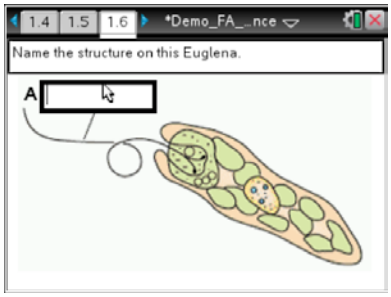


The Expression question type can be used in a similar manner as the Text Match question to determine if students can find the numerical value of an answer in a quantitative problem. The advantage to this question type is that you have the ability to set a tolerance range of numerical values that are acceptable.

For example, if you are just trying to find out whether or not students know that they need to multiply volume by density for the problem at the right, you might set the correct answer as 86.4 but input a tolerance of +/- 0.5.

Note: For this question type, be sure to select Number as the Response Type.

Image Label

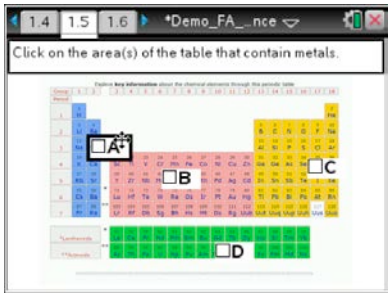


This question type is a version of Text Match but gives you the option to include an image and move the answers to different locations on the screen.

Once you have chosen this question type, insert an image, and move the answer boxes to the appropriate positions on the screen.

Note: To move an answer box, hover over it with the cursor until it turns into the white arrow as shown to the right. The white arrow might also change into the cursor that looks like a plus sign with four arrows.

Image Point on



This question type is a version of Multiple Choice but gives you the option to include an image and move the answers to different locations on the screen.

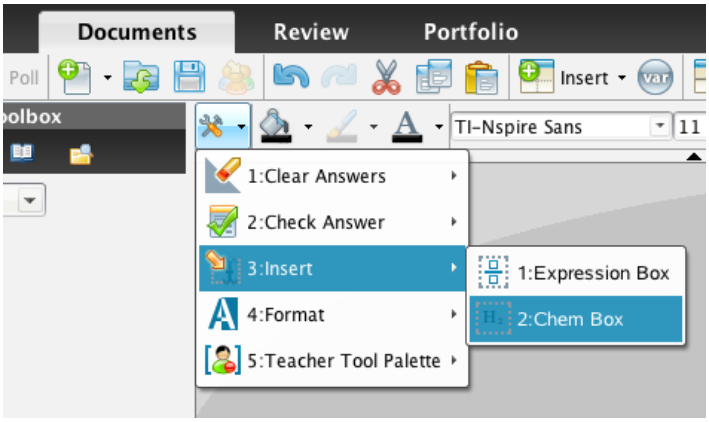
Once you have chosen this question type, insert an image and then move the answer box to the appropriate positions on the screen.

Note: To move an answer box, hover over it with the cursor as shown to the right.

Chemistry

This question type makes it easy for students to input subscripts and superscripts and element symbols with the correct case in chemical formulas with little effort. Here are a few hints for students to be successful with this question type:

- Most chemical formulas can be typed "as is." However, students might need to use the shift button to capitalize some element symbols. For example, cobalt is Co yet carbon monoxide is CO. Simply typing the letters **c** and **o** will result in the formula for cobalt. To type the formula for carbon monoxide, type [C] [shift] [O].
- Superscripts are needed for ion formulas. Using the **^** button will allow the input of superscripts. For example, the symbol for the sulfate ion, SO_4^{2-}, can be entered by pressing [S] [shift] [O] [4] [^] [2] [(−)].
- The arrow indicating chemical change in a reaction can be entered by pressing the **=** button.
- If you are using this question type to see if students are able to write a balanced equation for a chemical reaction you will need to enter all possible answers. For example, to write the balanced equation for the reaction of hydrogen gas with oxygen gas to produce water, you would need to enter both $2H_2+O_2 \rightarrow 2H_2O$ and $O_2+2H_2 \rightarrow 2H_2O$ as answers.
- A Chem Box is a special text box that allows chemical formulas and equations to be easily entered into a Notes or Question application. A Chem Box uses a simple set of rules to adjust the formatting of subscripts and superscripts more easily.
- To insert a Chem Box, select **Document Tools > Insert > Chem Box**. Alternatively, a Chem Box can be inserted using CONTROL+E (Windows) or COMMAND+E (Macintosh).



Your Turn – Create Your Own Assessment

Again, the purpose of this lesson is to give you some time to create an assessment that you might use in your classroom. Your instructor is here as a coach to help when you get stuck. Try to create a formative assessment, using as many of the question types as possible, that you could use with your students in your subject matter. Remember that you might be asked to share your work with others when you are finished. Have fun!!!

Weaving in TI-Nspire™ Navigator™

TI PROFESSIONAL DEVELOPMENT

Objectives

- Use the TI-Nspire™ Navigator™ System and explore how it can administer and enhance a classroom lesson.

About the Lesson

- Plan a TI-Nspire™ lesson that incorporates TI-Nspire Navigator features.

TI-Nspire™ Technology Skills:

- Opening a TI-Nspire document
- Navigating a TI-Nspire document

Tech Tips:

- When you download an activity from the Content Workspace, the activity is downloaded as a lesson bundle with file extension .TILB.

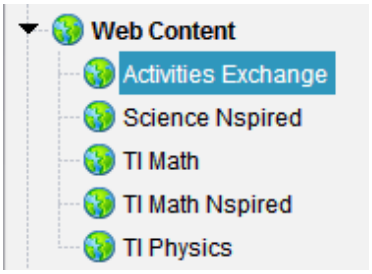
Lesson Materials:

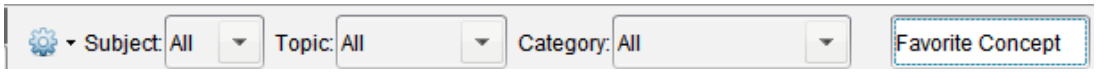
Equipment for each participant

- Computer with TI-Nspire™ Navigator™ Teacher Software and Internet connectivity

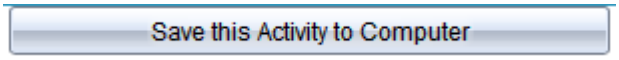
Select an Activity

1. Use the Content Workspace to search through the available Web Content for an activity related to any concept you choose.
   - If Internet access is not available, browse the collection of activities in the folder for the workshop.





2. Save the activity files to your computer.



Review the Activity

3. Familiarize yourself with the activity. Record any notes you have about the activity below.

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Pre-test Considerations

4. What specific questions are appropriate to activate prior learning?

TI-Nspire Navigator Enhancements

Think about some of the TI-Navigator functionality you have learned:

- Sending and Collecting Documents
- Screen Capture
- Live Presenter
- Quick Poll
- Portfolio

5. What TI-Nspire Navigator features could you use to improve this lesson?

6. How can the use of TI-Nspire Navigator enhance your understanding of your students' learning?

Post-test Considerations

7. What specific questions are appropriate to assess whether the primary learning goals have been achieved?

Wrap-Up with a Large Group Share

Your instructor will guide a discussion related to the following questions. Be prepared to discuss your thoughts.

8. How easy was it to weave TI-Nspire Navigator into this activity?

9. What gave you the most difficulty/challenge?

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Tip Sheet: Overview of Workspaces

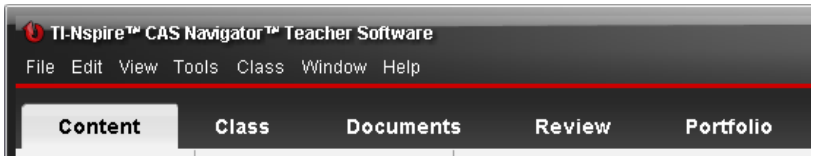
TI PROFESSIONAL DEVELOPMENT

TI-Nspire™ Navigator™ Objective

- Differentiate between the different workspaces in the TI-Nspire™ Navigator™ Teacher Software.

Overview of Workspaces

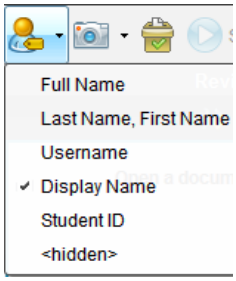
There are five different workspaces in the TI-Nspire Navigator Teacher Software: Content, Class, Documents, Review, and Portfolio. To move between the workspaces, click on the appropriate tab.

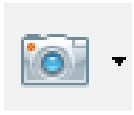


Each workspace has a specific purpose, but they work together to create a complete package for the TI-Nspire Navigator classroom. Depending on the selected workspace, the menus options and icons will change appropriately.

Icons Available in All Workspaces

The **Student Name Format** icon allows the teacher to change the displayed format of the students in a TI-Navigator class. The change will be reflected in all workspaces, including the Portfolio Workspace.

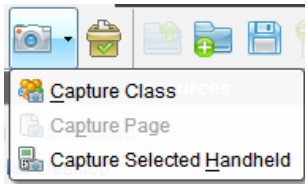




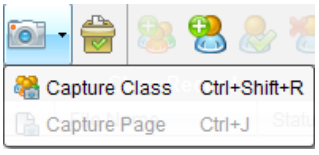
Clicking the **Take Screen Capture** icon allows the teacher to take a class capture, capture a page of a document in the Documents Workspace, or take a screen capture of a connected handheld. The availability of the options depends on the state of the software and workspace.

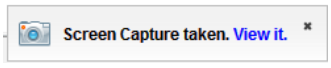
When **Capture Page** or **Capture Selected Handheld** is selected, a pop-up window appears in the lower right-hand corner allowing you to view the capture in the Screen Capture Window. The screen capture is also automatically placed into the computer's clipboard and can be immediately pasted into other software, such as a word processing document.

TI-Nspire™ Navigator System:



TI-Nspire™ Navigator™ NC:

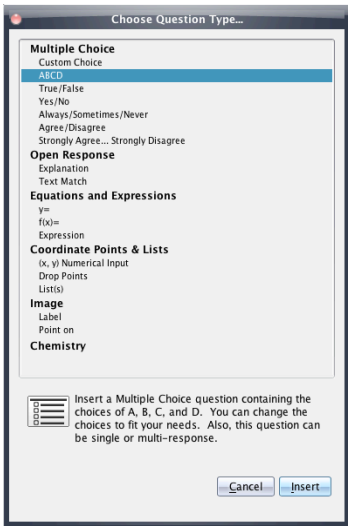




Tip Sheet: Overview of Workspaces

TI PROFESSIONAL DEVELOPMENT

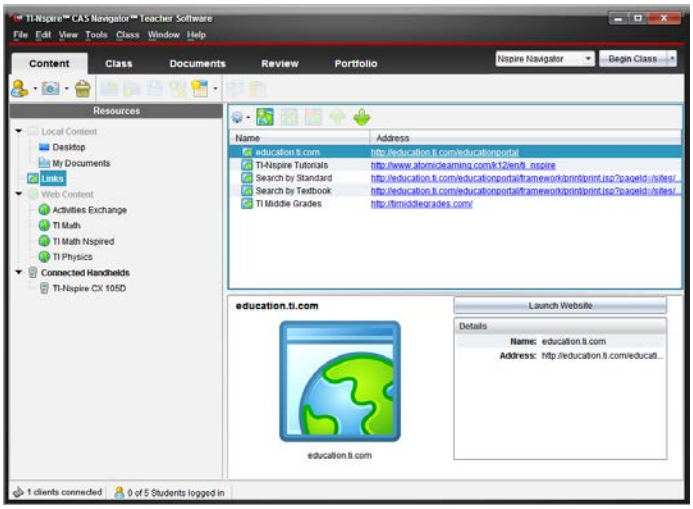
Clicking the **Quick Poll** icon allows teachers to create a new Quick Poll question at any time. The TI-Navigator Class does not have to be started, so a teacher can prepare questions before the class begins. It will be tagged with the name of the class that is displaying in the Class drop-down menu.



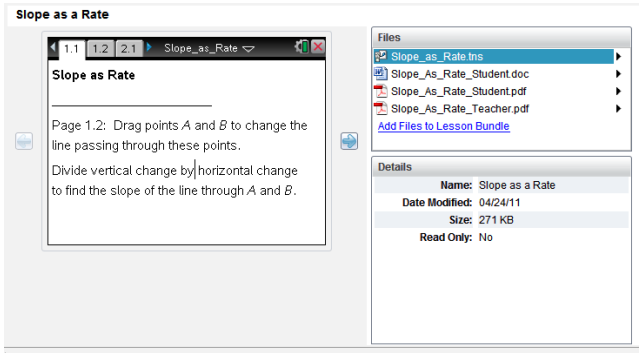
The Content Workspace

The Content Workspace is used for transferring TI-Nspire documents to/from the connected handhelds and the computer, for previewing documents, and for accessing documents on TI websites.

Note: When using the TI-Nspire™ Navigator™ NC Teacher Software, , the list of Connected Handhelds is not available in the Resources panel.



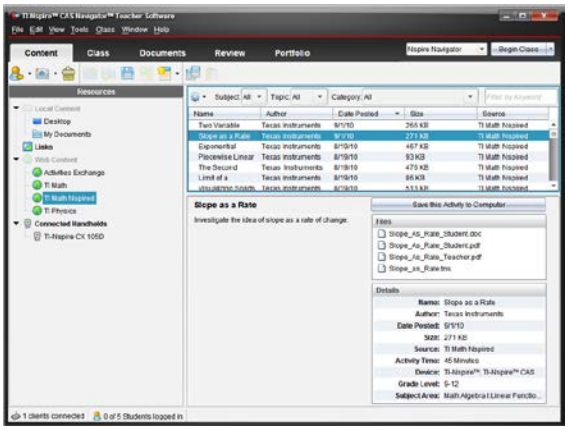
The Content Workspace allows the teacher to browse online TI activities without launching a web browser, to see an overview of the activity, to preview the TI-Nspire documents, and to save all the activity files to the computer.



Tip Sheet: Overview of Workspaces

TI PROFESSIONAL DEVELOPMENT

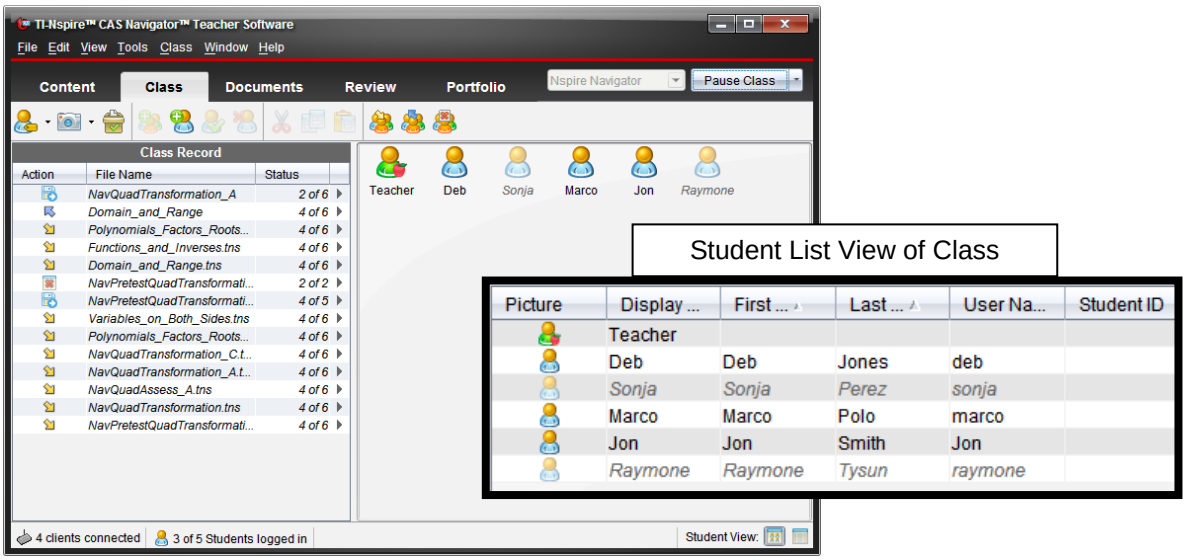
With this functionality, the TI-Nspire documents can be sent directly to the class or any connected handhelds without opening any other software.



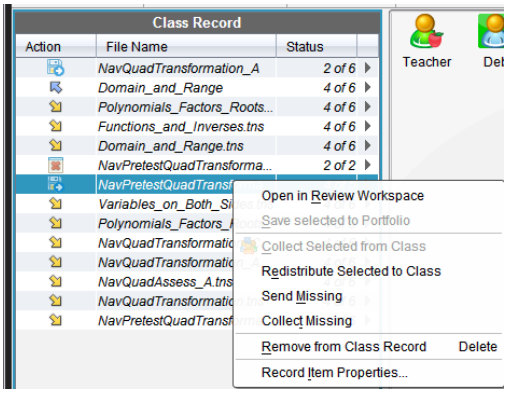
Note: When using the TI-Nspire™ Navigator™ NC System, any type of document can be sent to students' computers. However, only TI-Nspire and PublishView™ documents can be opened using the TI-Nspire™ Student Software.

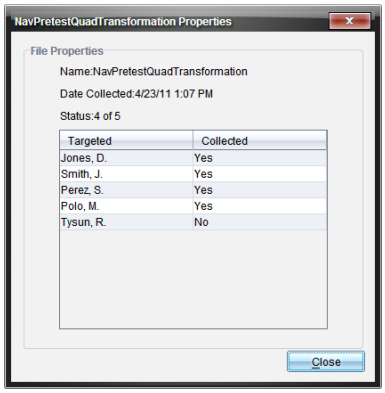
The Class Workspace

The Class Workspace allows the teacher to see which students are logged in to the classroom network and to see which documents have been transferred to/from the handhelds/computer via TI-Nspire Navigator. The teacher can also send/collect/delete documents to the class through the Class Workspace. Both the Seating Chart View and Student List View of the Class are shown below.



The Class Record is a listing of document transfers. The teacher can also access individual student information regarding a specific transfer.



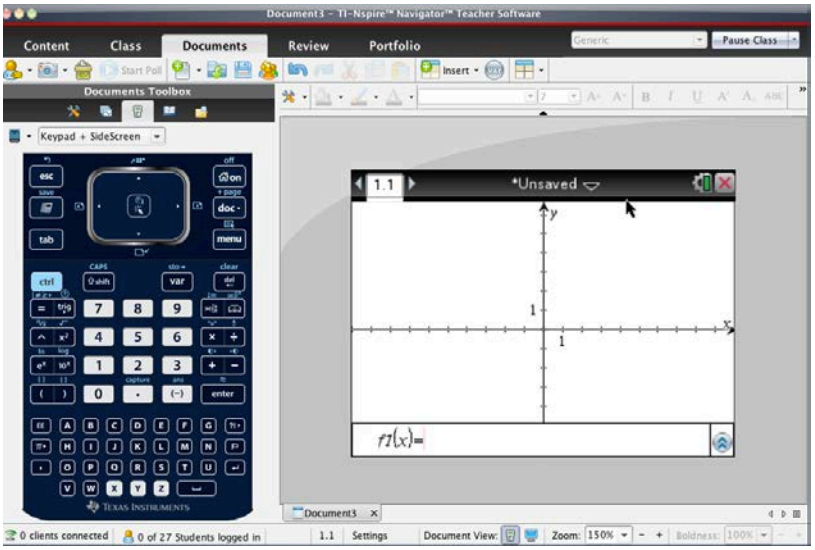


Tip Sheet: Overview of Workspaces

TI PROFESSIONAL DEVELOPMENT

The Documents Workspace

The Documents Workspace is used to create new TI-Nspire documents and to edit or view pre-created documents. When working in the classroom with TI-Nspire™ Teacher Software or TI-Nspire Navigator Teacher Software, most teachers click on the TI-SmartView™ tab (Tab 3) in the Documents Toolbox (left column).

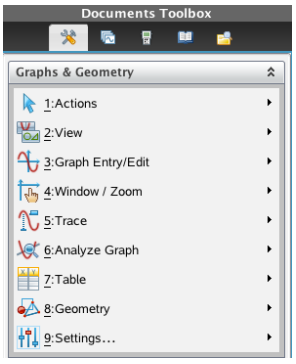


The Documents Toolbox also contains:

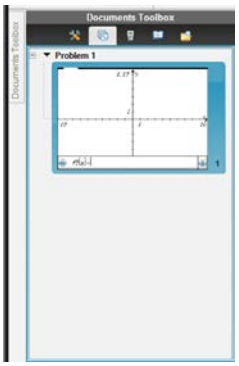
- (Tab 1) Menu items unique for each application in a TI-Nspire document and question properties tools;
- (Tab 2) Page sorter;
- (Tab 4) Utilities such as math and symbol templates;
- (Tab 5) Content Explorer file transfer tool that allows the user to transfer documents to/from the handhelds that are connected to the computer with a USB cable.

  Note: When using the TI-Nspire™ Navigator™ NC Teacher Software, the Connected Handhelds list is not available in the Content Explorer.

Document Tools

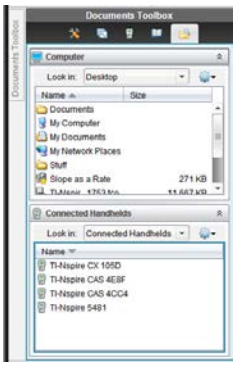


Page Sorter



Utilities

Content Explorer



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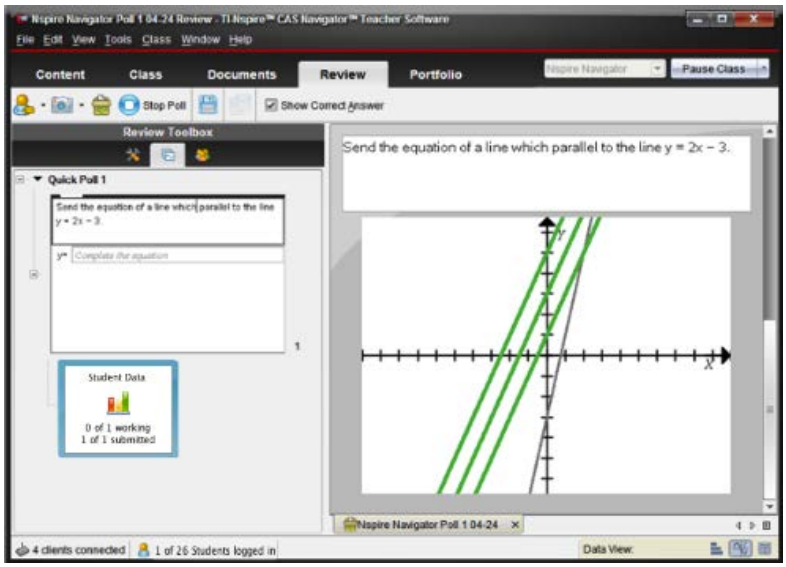
Tip Sheet: Overview of Workspaces

TI PROFESSIONAL DEVELOPMENT

The Review Workspace

The Review Workspace is used after a Quick Poll is sent or a TI-Nspire document containing questions is collected using the TI-Nspire Navigator system. The Review Workspace allows the teacher to analyze the results of a Quick Poll question or the document question by changing the Data View between a bar chart, graph, student work, and/or lists, depending on the configuration and Question Type.

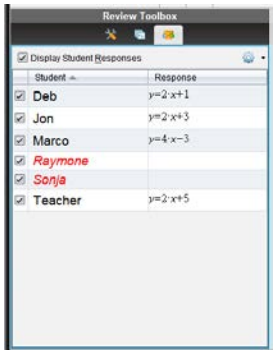


The Review Toolbox contains:

- (Tab 1) Menu action items unique for each type of question;
- (Tab 2) Page sorter view to browse through the Quick Polls (or document with questions);
- (Tab 3) Individual student details for each question.

Review Tools

Students

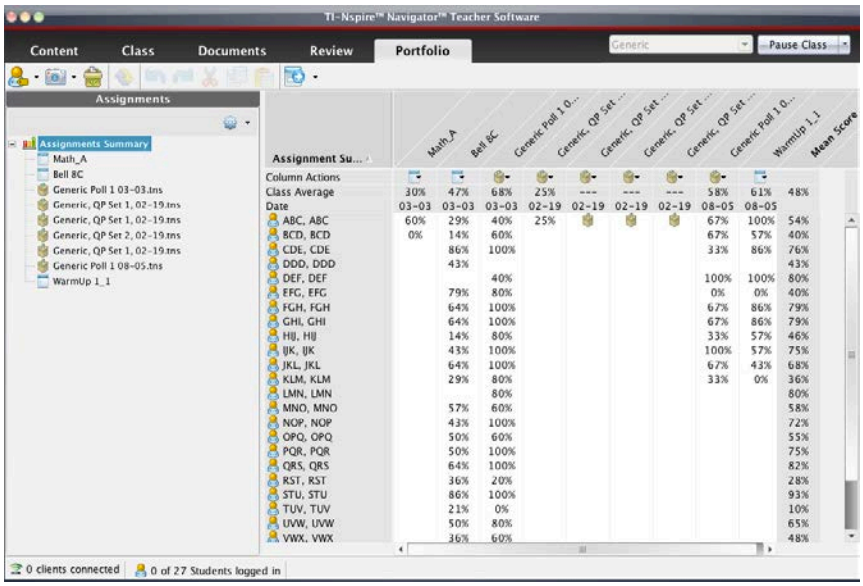


Tip Sheet: Overview of Workspaces

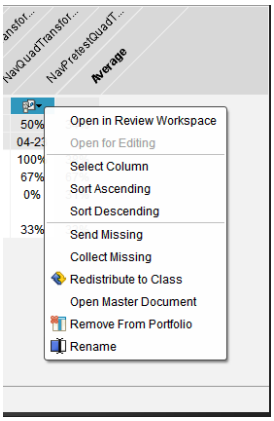
TI PROFESSIONAL DEVELOPMENT

The Portfolio Workspace

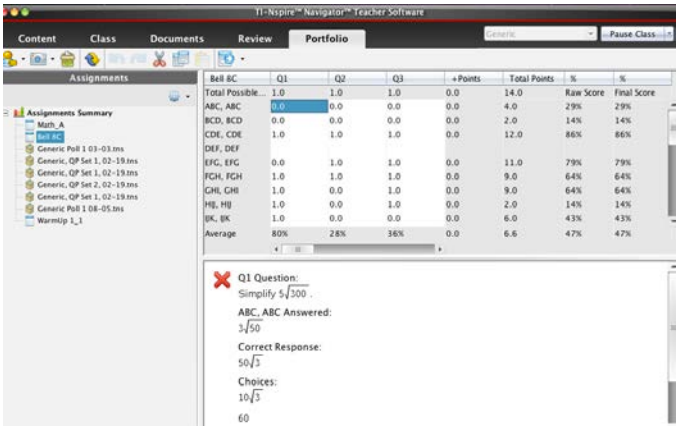
The Portfolio Workspace is used to view previously saved Quick Polls and TI-Nspire document results. The teacher can view the summary of scores by student, by question, and by class.



The Assignments Summary allows the teacher to manage the scores and files collected using the TI-Navigator System. A teacher has the option to review the class results in the Review Workspace, to send missing documents, to collect missing documents, to redistribute documents to students for further work, and/or to open the master document.



A detailed summary of the assignment results and student results is available by selecting the assignment from the list.



Tip Sheet: Adding Classes

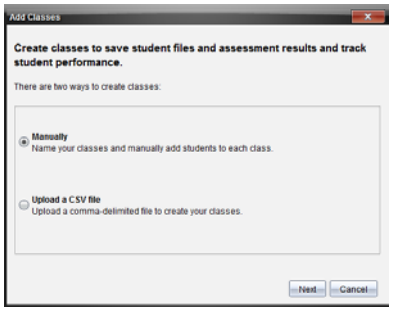
TI PROFESSIONAL DEVELOPMENT

TI-Nspire™ Navigator™ Objective

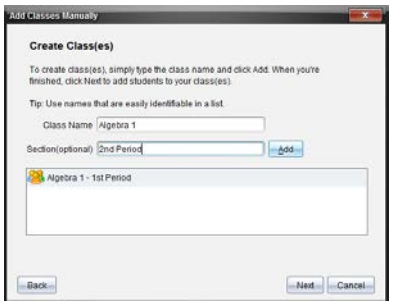
- Create classes in the TI-Nspire™ Navigator™ System.

Manually Adding Classes

1. Click the Add Classes icon . Select **Manually**, and click **Next**.



2. Fill in the field for Class Name as desired. You can have multiple sections of the same class name. For example, you can have Algebra 1 – 1st Period and Algebra 1 – 2nd Period. Click **Add** after entering each class name. Click **Next** after all the classes have been added.



3. Click **Add Student** to manually create student accounts at this time.
   - Clicking **Finish** will create an empty class with the desired name.
4. To create student accounts, you must fill in the First Name, Last Name, and User Name fields. Students can be assigned passwords, or you can allow them to choose their own upon their first login.
   - Students can be assigned a Display Name to allow for personalization or privacy, and/or Student ID's can be included as necessary. The Display Name defaults to the student's First Name if none is specified.
   - Students can be assigned to multiple classes or moved from one class to another by clicking **Assign Classes** and checking the desired class location(s).

5. Click **Add Next Student** when finished with the first student. Click **Finish** when you are done adding students to the class.

Importing Classes and Students Automatically from CSV File

1. Store student information in a spreadsheet application such as Excel and save the file in CSV format. You must have a column for the **Class Name**, **Student First Name**, **Student Last Name**, and **Student User Name**. You can also include optional columns for *Section*, *Student ID*, and *Password*. The data may be exported from a grade book program or typed manually. The workshop instructor will have a sample CSV file.

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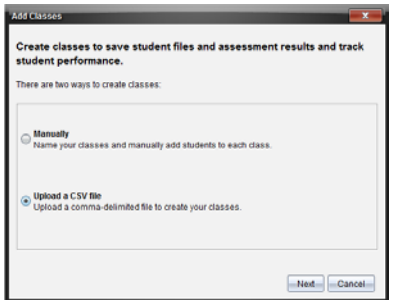
Tip Sheet: Adding Classes

TI PROFESSIONAL DEVELOPMENT

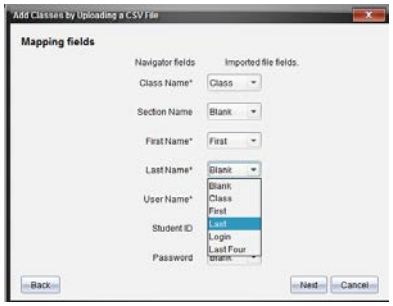
H9

	A	B	C	D	E
1	Class	First	Last	Login	Last Four
2	Algebra1	Anna	Allen	ANN	9523
3	Geometry	Andrew	Anderson	AND	1008
4	Algebra2	Beth	Black	BET	5157
5	Algebra1	Bob	Brady	BOB	4051
6	Geometry	Blaise	Pascal	BLA	9851
7	Algebra2	Chris	Chambers	CHR	2230
8	Algebra1	Doug	Davis	DOU	5468

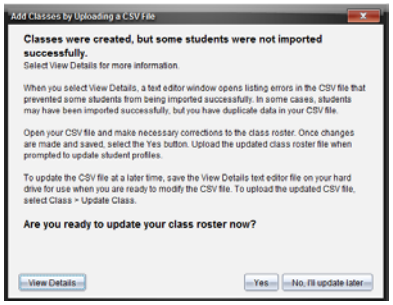
2. Click the Add Classes icon . Select **Upload a CSV file**, and click **Next**.



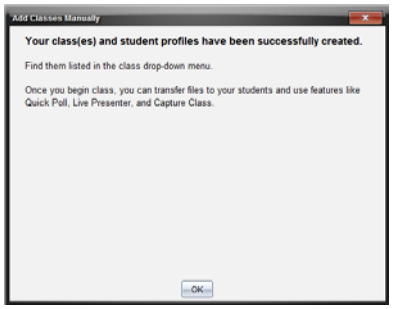
3. Click **Browse**, navigate to the location of the saved CSV file, and click **Next**.
4. Use the drop-down menus to match up the columns in the CSV file to the TI-Navigator fields in the Add Classes by Uploading a CSV File dialog box.
5. Click **Next** when finished mapping fields.



- If any import errors occur, they will be listed in the details on the next screen. The most common error is a duplicate username.
- The CSV file can be modified and uploaded again to correct any errors or import new students added to your classes at a later date. Alternatively, add the students manually.



6. When the CSV file is successfully uploaded, you will receive a message that the classes and student profiles have been successfully created.



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Tip Sheet: Managing Classes

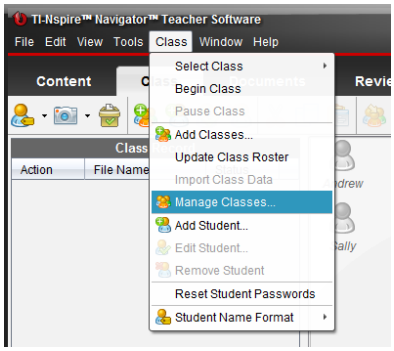
TI PROFESSIONAL DEVELOPMENT

TI-Nspire™ Navigator™ Objective

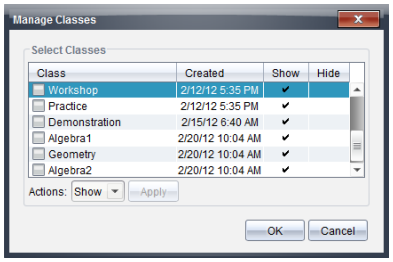
- Manage classes using the TI-Nspire™ Navigator™ System.

Managing Classes (Hide/show and Delete)

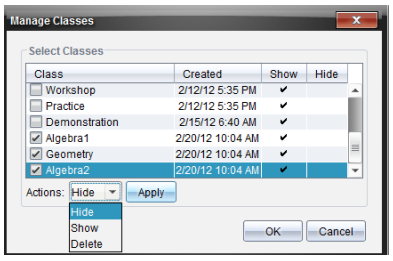
1. Click **Class > Manage Classes** to open the Manage Classes dialog box.
   - All the classes that have been created on that computer will be displayed in the window.



2. Check the box for any class that you would like to hide.
   - Select **Actions > Hide**, and click **Apply**.
   - Hidden classes can be retrieved later by returning to Manage Classes and changing their status to **Show**.

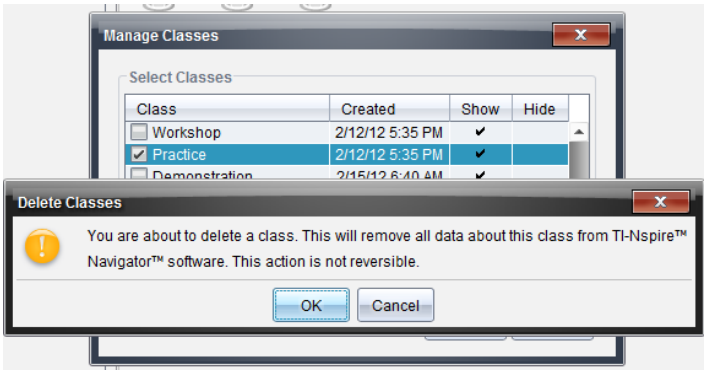


Note: Hiding a class will keep the student data attached with that class for future record keeping, but will keep that class from appearing in the list of active classes. This is helpful for schools that require teachers to maintain student records for past years.



3. To delete a class, select the check box next to the class, select **Actions > Delete**, and click **Apply**.

Note: Be aware that the delete action is not reversible. **Deleted classes and student data associated with them will be permanently lost.**



4. Click **OK** to exit the Manage Classes dialog box.

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Tip Sheet: Basic TI-Nspire™ Handheld Skills

TI PROFESSIONAL DEVELOPMENT

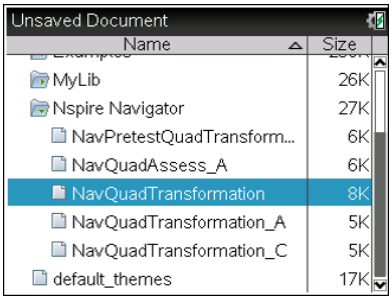
TI-Nspire™ Navigator™ Objective

- Review the basic skills needed to use a TI-Nspire™ learning handheld.

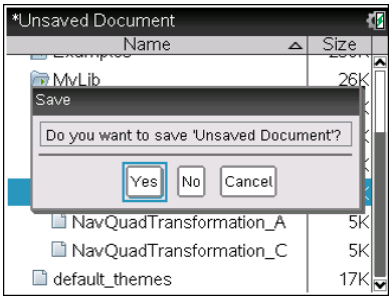
Opening a Document

1. Power on the TI-Nspire™ handheld, and press [on].

2. Go to **My Documents**.
3. Scroll to the appropriate file using the arrow keys (▼▲).
4. To open a folder, scroll to it, and press [enter].
5. Scroll to the desired document, and press [enter] or [ctrl] to open the document.



- If the handheld already has a document open, you will have to choose whether or not to save changes to the prior document. Select Yes or No using the arrow keys (or [tab]), and press [ctrl].
- The desired document is now open.

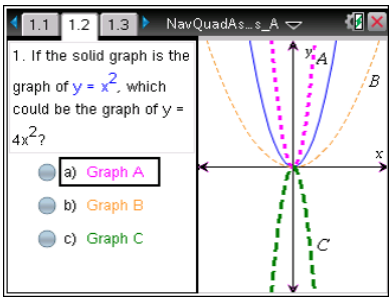


Selecting Answer Choices

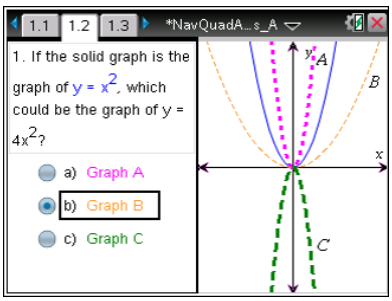
1. To move from the question area to the answer area of a question, press [tab].

Note: The arrows keys can be used, but the cursor will scroll through each line of the question area until it reaches the bottom.

2. Press [tab] repeatedly to move between the answer choices.
   - The arrow keys can be used here as well.



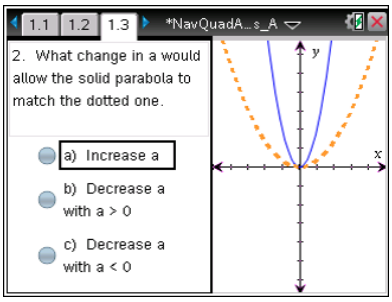
3. When the desired answer choice is highlighted, press ⏺ (or enter) to mark the answer.



Moving between Pages

The tabs at the top of the handheld screen indicate that the document contains multiple pages.

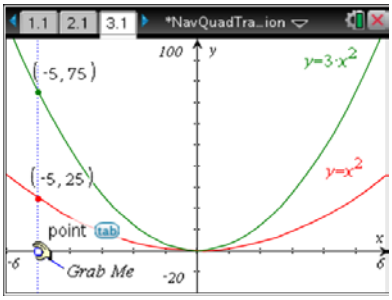
For example, in the open document shown to the right, the arrow to the right of tab 1.3 indicates that there are more than three pages in this document.



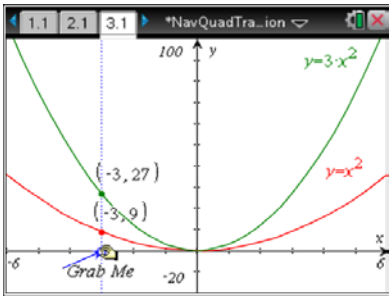
1. To move to the next page in a document, press ctrl ▶.
2. To move to the previous page in a document, press ctrl ◀.

Grabbing an Object

1. Move the cursor to the graph until the cursor changes to an open hand icon (✋).
2. Press ctrl ⏺ to close the hand (✊).

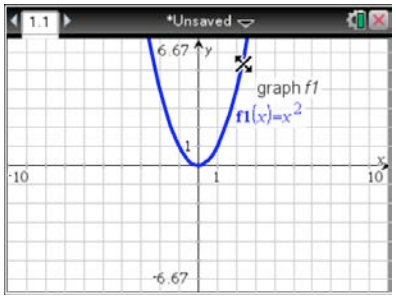


3. Use the arrow keys and/or the touchpad to move the object.
4. Press ⏺ to "drop" the object in the desired location.

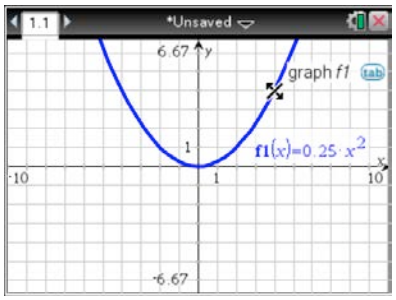


Grabbing and Manipulating a Graph

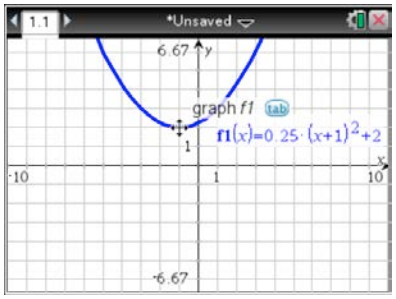
1. Move the cursor to the graph until the cursor changes to the dilation symbol .



2. Press ctrl to grab the graph.
3. Use the arrow keys and/or the touchpad to manipulate the graph.
4. Press to "drop" the graph in place.



5. To translate the graph of a quadratic function, move the cursor to the center of the graph near the vertex. When the translation symbol appears, press ctrl to grab the graph.
6. Use the arrow keys and/or the Touchpad to translate the graph.
7. Press to "drop" the graph in place.



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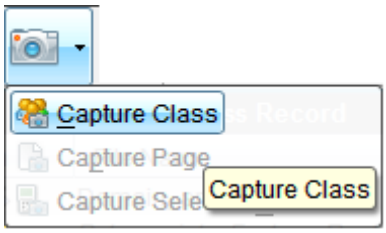
Tip Sheet: Live Presenter

TI PROFESSIONAL DEVELOPMENT

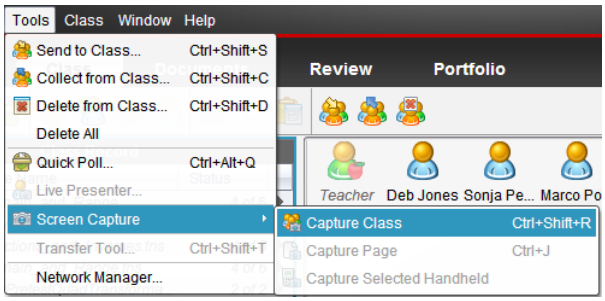
TI-Nspire™ Navigator™ Objective

- Use the Live Presenter feature to direct instruction and check for student understanding.

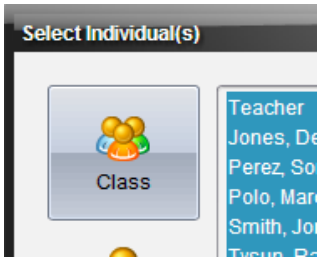
Live Presenter from Class Capture



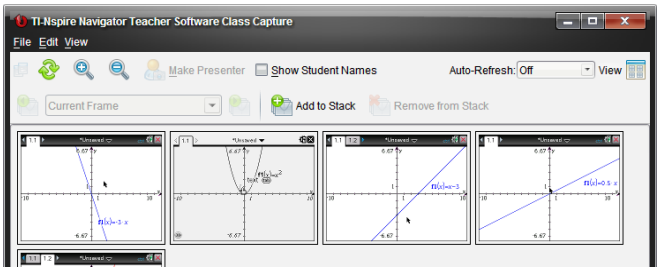
1. Open the TI-Nspire™ Navigator™ Teacher Software, and start your LCD projector.
2. Begin Class, and have the students log in to the TI-Nspire Navigator class.
3. Select the **Capture** icon from the tool bar.
   - Alternatively select **Tools > Class Capture**, or use the computer keyboard shortcut **Ctrl+Shift+R**.



4. Select the **Class** icon to take a screen capture of the entire class.



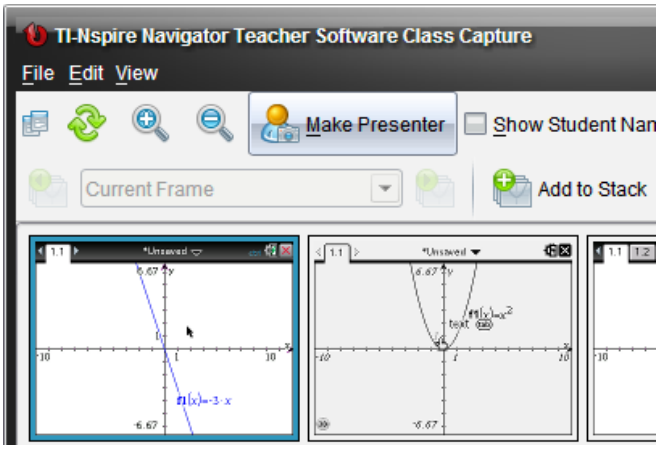
5. Click **OK**.
   - You will see screen captures of the class (and they will be projected to the class).



Tip Sheet: Live Presenter

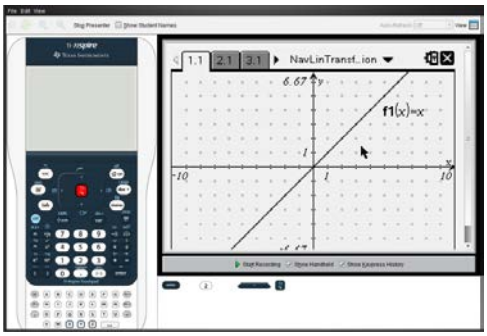
TI PROFESSIONAL DEVELOPMENT

6. Select a screen capture. The screen will have a blue border around it showing that it has been selected.
7. Click **Make Presenter**.
   - The screen and handheld of the selected student only is projected to the class as the Live Presenter (as shown below).

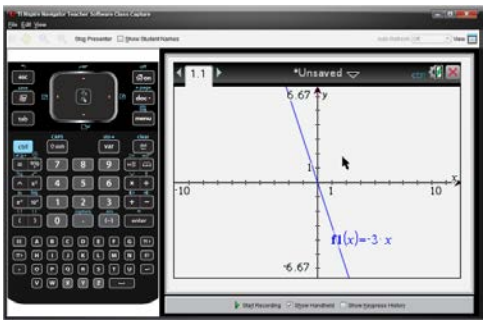


8. Everything the student does on the handheld is displayed to the class.
   - Rather than the teacher pushing the buttons, he or she can give guided directions to the student and have the student go through the motions of the activity.
   - Rotating the Live Presenter during a class period keeps students on task and allows the teacher to monitor student progress and understanding.

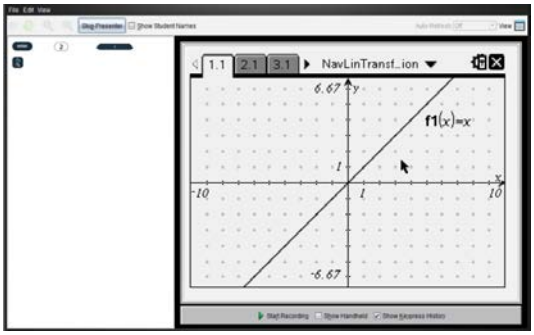
Note: The teacher can customize the layout of the presenter. Currently, the default is to show the Handheld and Key Press History. You can turn off either or both of these views to customize the Live Presenter. You will see the Key Press History and the screen changing in real time. Notice on the Teacher Software that you will see each specific button the student presses identified by a red outline.



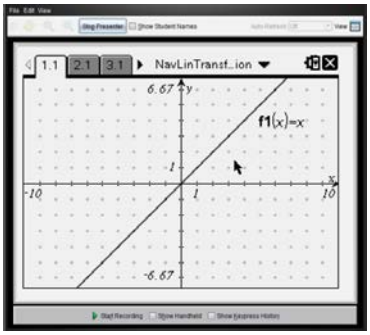
Show Handheld and Key Press History



Show Handheld Only



Show Key Press View Only



Neither Handheld Nor Key Press History

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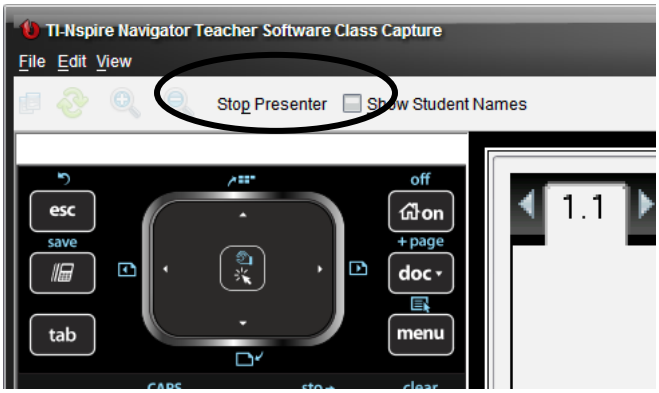
Tip Sheet: Live Presenter

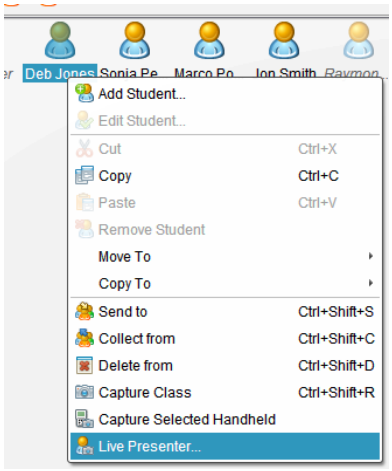
TI PROFESSIONAL DEVELOPMENT

9. Click **Stop Presenter** when a particular student is finished as the Live Presenter.
10. You will be taken back to the Class Capture Screen. At this time you can refresh screens and select a new student to become the Live Presenter.



Live Presenter from Classroom View

1. Open the TI-Nspire™ Navigator™ Teacher Software.
2. Begin Class, and have the students log in to the TI-Nspire Navigator class.
3. Right-click on a student icon, and select **Live Presenter.**
   - The student is automatically projected to the class as the Live Presenter.



Additional Features of Live Presenter

1. When the Live Presenter presses a button on the handheld, the button on the picture of the handheld is highlighted in RED to show the class which key has been pressed.
2. The teacher has the following options:
   - **Show Keypress History**. When selected, the class sees a list of keys the Live Presenter has pressed.
   - **Show Handheld**. Show/hide the graphic of the handheld on the left side of the window.
   - **Start Recording**. Select to start a video recording of what the Live Presenter is doing on the handheld. If desired, name the file, and save it on the computer. The video is saved as an .AVI file.

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Tip Sheet: Class Capture

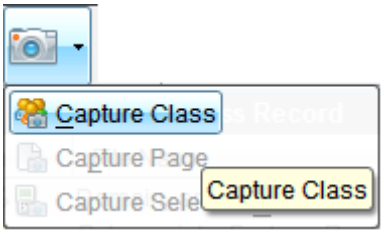
TI PROFESSIONAL DEVELOPMENT

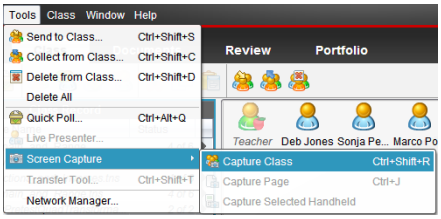
TI-Nspire™ Navigator™ Objective

- Use the TI-Nspire Navigator Class Capture feature to check for student understanding.

Viewing Class Screen Captures

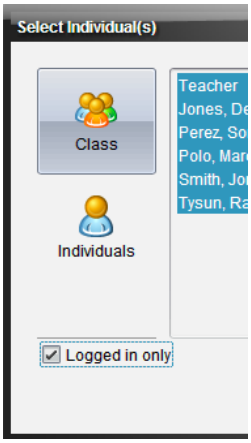
1. Open the TI-Nspire™ Navigator™ Teacher Software.
2. Begin Class, and have students log in to the TI-Nspire Navigator class.
3. Select the **Capture** icon from the tool bar, and choose **Capture Class**.
   - OR select **Tools** > **Capture Class.**
   - OR use the computer keyboard shortcut **Ctrl+Shift+R**.

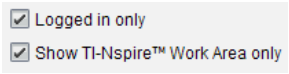




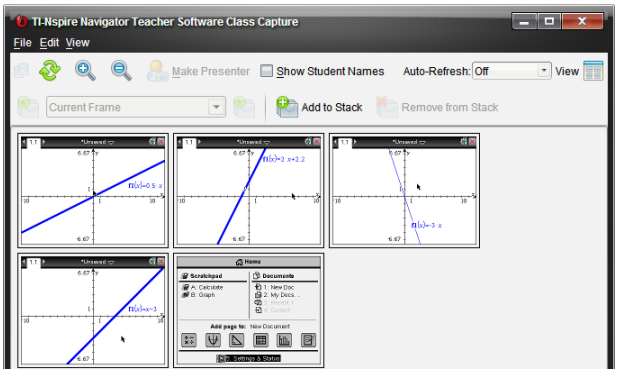
Note: When using the TI-Nspire™ Navigator™ NC System, only the Capture Class and Capture Page options are available.

4. Select the **Class** icon to take a class capture of the entire class, or select the **Individuals** icon to take a screen capture of individual students.
   - When using the Individuals option, hold down the **Ctrl** key to select any number of non-consecutive students, or hold down the **Shift** key to select any number of consecutive students from the list.
   - When you select the “logged in only” option, only the students logged in to TI-Nspire™ Navigator™ System will be displayed.
   - The TI-Nspire™ Navigator™ NC Teacher Software has the additional option to “Show TI-Nspire™ Work Area only.” When this option is selected, only students’ work areas in the TI-Nspire™ Student Software will appear in the class capture. Otherwise, students’ entire desktops will be shown.





5. Click **OK**.
   - The student screens will be tiled alphabetically according to Display Name.
   - The teacher screen will be identified by a blue border (unless the Teacher Preferences have been adjusted).



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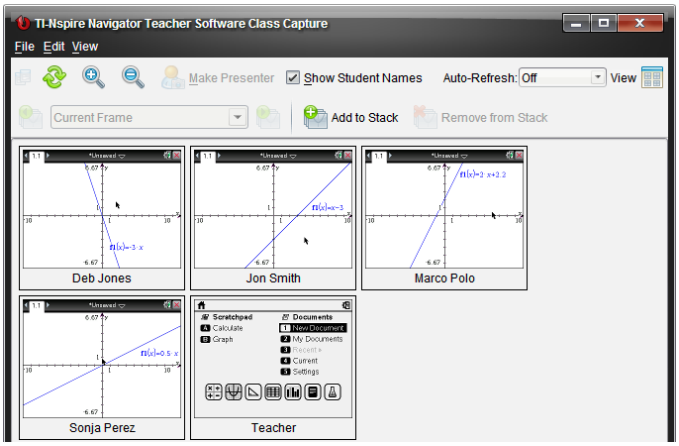
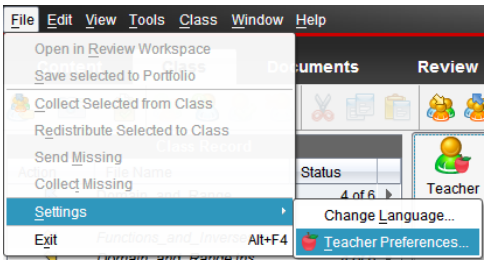
6. To refresh the Class Capture, press the **Refresh** icon. Otherwise, the screens are in the same state as when you initialized the Class Capture.

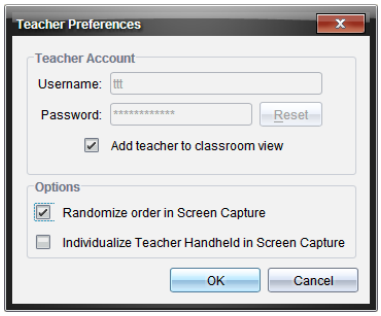
7. The teacher has the option of choosing whether the student names are displayed with the screen captures.
   - Select **Show Student Names** as desired.
   - Use caution when showing student names in front of the class. The anonymity of the screen captures can very important to avoid potential student embarrassment.



Class Capture Teacher Preferences

In the Class Workspace, select **File > Settings > Teacher Preferences**.





   - Toggle the student screen display between alphabetical by display name and random distribution with the option “Randomize order in Screen Capture.”
   - Hide/show the Teacher handheld screen with the student screens using the option “Individualize Teacher Handheld in Screen Capture.”

Note: When using the TI-Nspire Navigator NC Teacher Software, Login information and Network Settings are shown instead of the Teacher Account information. The only Class Capture option available is “Randomize order in Screen Capture.”

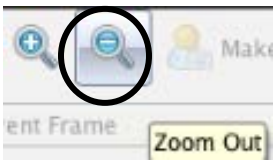
Tip Sheet: Class Capture

TI PROFESSIONAL DEVELOPMENT

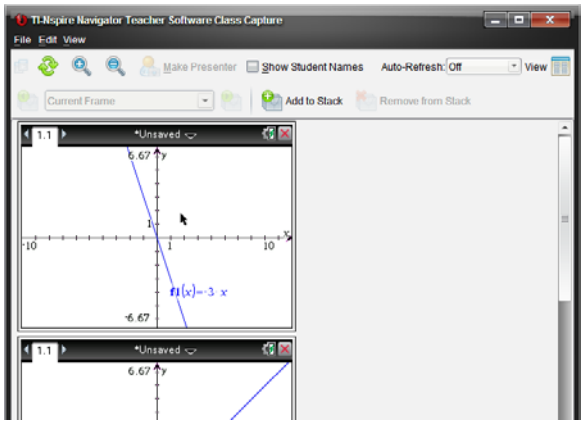
Class Capture Features

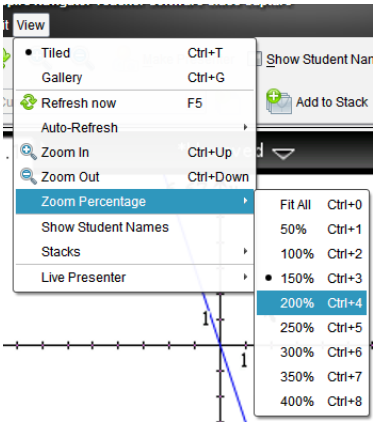
Zooming

- Pressing the **Zoom In** button enlarges the screens displayed on the teacher's computer.

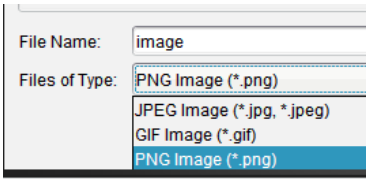


- Pressing the **Zoom Out** button shrinks the screens displayed on the teacher's computer. It can be used to return the screens to the normal display size.
- From the **View** menu, you can select a fixed screen size on the teacher's computer.

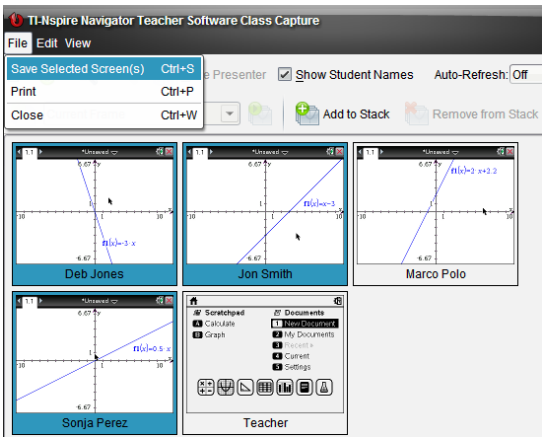




Saving Screen Captures



1. Select a screen in the **Class Capture** window to save. To save multiple screens, use the **Ctrl** key.
2. Select **File > Save Selected Screen(s)** to save one or more screen captures as a .JPG, .PNG, or .GIF image file (all images will be saved in the same format).
   - Student screens that have been selected will be highlighted with a blue shaded border.
   - Only students who are logged in will be saved. Even if the Class Capture is showing the "Not Logged In" screen, the handheld screens will not be saved.
   - The screens will be saved as individual files without a student identifier (Image1, Image2, etc.). If the purpose for saving is for grading, the best option is to print the screen captures.

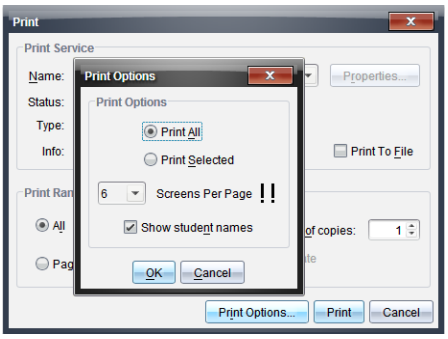


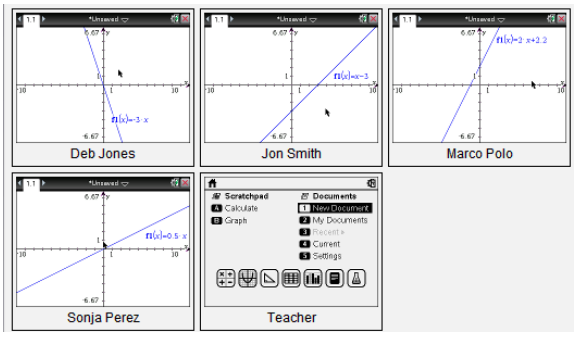
Tip Sheet: Class Capture

TI PROFESSIONAL DEVELOPMENT

Printing Screen Captures

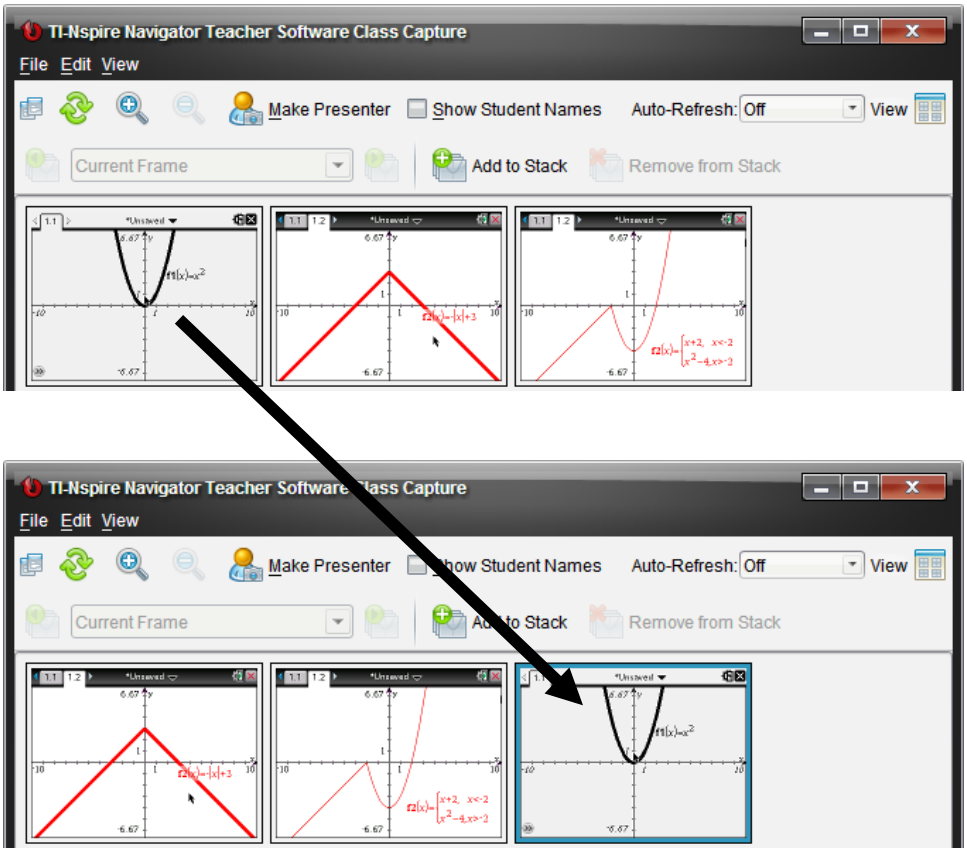
- Class screen captures can be printed with the screen identifiers by selecting **File > Print**. The Print Options dialog box allows you to tailor such options as the number of screens per page.





Reordering Screen Captures

- Click to drag and drop student screens to new positions within the Class Capture window.
- Note the difference between the two groups of three screen captures below .

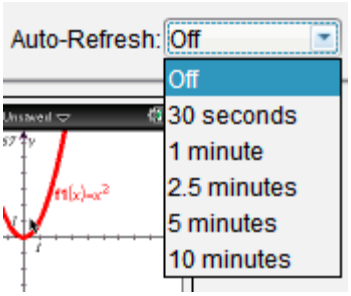


Tip Sheet: Class Capture

TI PROFESSIONAL DEVELOPMENT

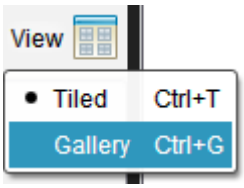
Auto-Refresh

- Once you have taken a Class Capture, click on the Auto-Refresh drop-down menu to select how often to automatically refresh student screens.
- You can use this feature to monitor student progress by setting it to refresh in several time intervals from 30 seconds to 10 minutes.

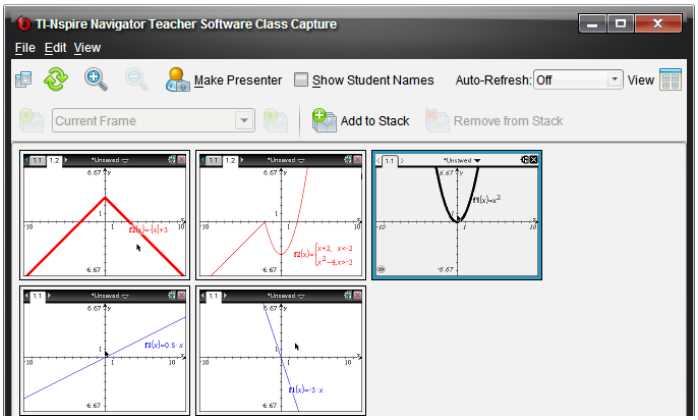


Changing the View

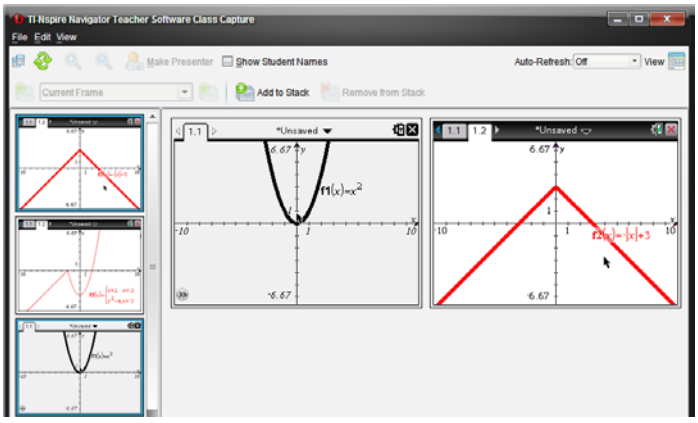
- By default, the class capture is in Tiled view.
- To change to Gallery view, click the **View** icon and select **Gallery** (or use the computer keyboard shortcut **CTRL+G**).



- Tiled View allows easy access to a full class set of screen captures.



- Gallery View allows easy comparison of a few screens by selecting them in the gallery list on the left using the **Ctrl** key.



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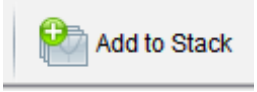
Tip Sheet: Class Capture

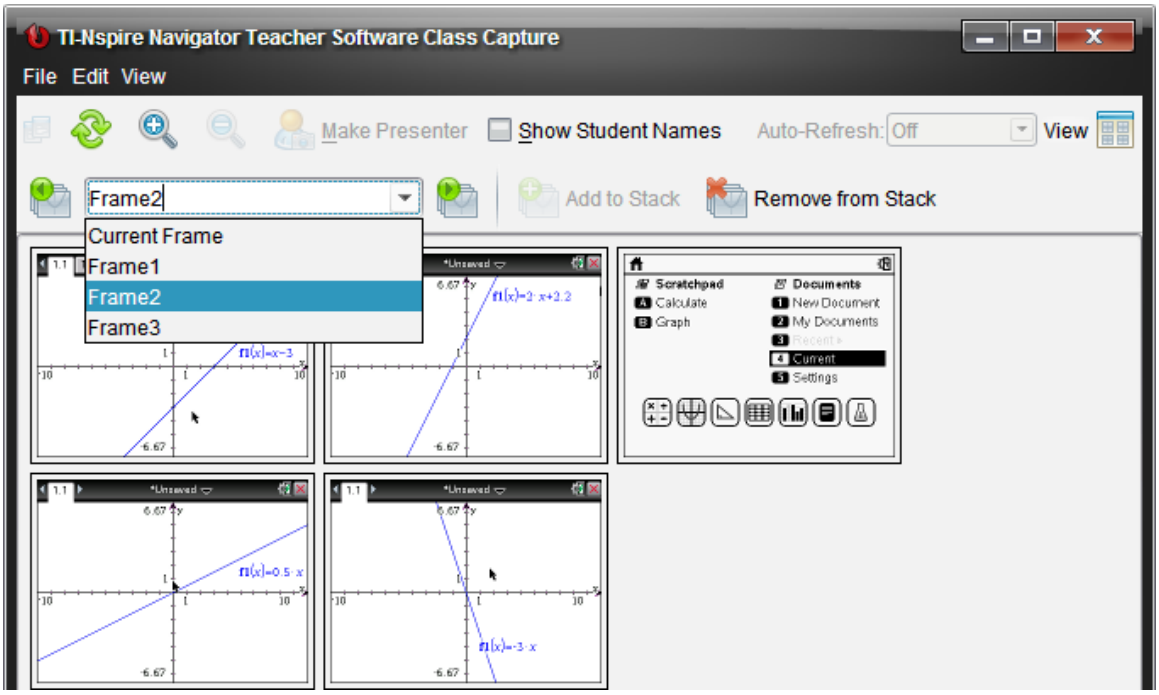
TI PROFESSIONAL DEVELOPMENT

Using Screen Stacks

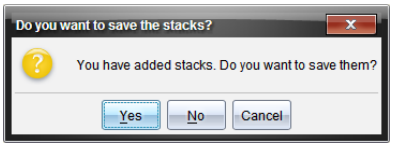


Teachers might not have time to save individual student screens during class. To help with this, a set of Class Captures can be stored as **stacks** of **frames** as if they are stored on multiple clipboards. A frame is one set of class captures. A stack holds multiple frames of class captures.

1. Click the **Add to Stack** icon to store the current set of Class Captures.
2. The teacher can **Add to Stack** multiple times throughout a class session for later review or analysis.
3. The stacks can be reviewed by clicking the Frame drop-down menu or the **Previous Frame** or **Next Frame** icons on either side of the drop-down menu.



4. Unwanted stacks can be deleted by clicking the **Remove from Stack** icon.
5. Save individual screens from any frame as image files. Select the screen(s) to save, and choose **File > Save Selected Screen(s)**.
6. When the Class Capture window is closed, you will be asked whether you want to save the stacks. Click **Yes** if you want to save the stacks of Class Captures.



   - Later, you can go through the stacks of frames for a class and save individual Class Capture images.

Tip Sheet: Quick Poll

TI PROFESSIONAL DEVELOPMENT

TI-Nspire™ Navigator™ Objective

- Use the various features of Quick Poll, such as sending, collecting, and reviewing a Quick Poll.

What is Quick Poll?

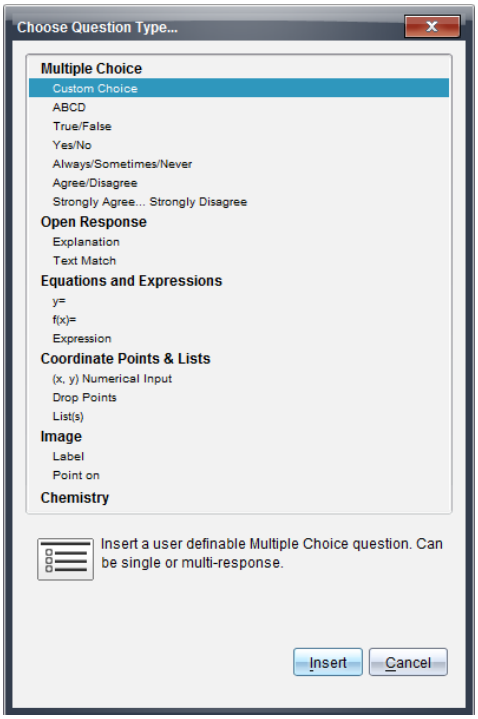
An important teaching technique is *questioning students* during class to gauge their understanding of the topics and to ensure that the class discussion is on pace with the students understanding.

The Quick Poll feature of the TI-Nspire™ Navigator™ System enhances the questioning technique by allowing ALL students to answer the posed questions and allowing the teacher to see ALL student responses in real time. Then the teacher can make the appropriate reactions/adjustments to the class based on the snapshot of student understanding.

Question Types

There are various types of Quick Poll questions:

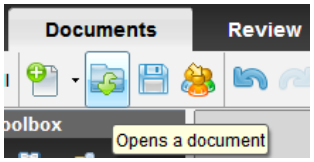
- Custom Multiple Choice
- Standard Multiple Choice (A-B, A-C, etc.)
- True/False
- Yes/No
- Always/Sometimes/Never
- Agree/Disagree (5, 3, or 2 selections)
- Open Response – Explanation
- Open Response – Text Match
- Equations (y= and f(x)=)
- Expressions
- (x,y) Numerical Input
- Drop Points on a Coordinate System
- List(s)
- Image (Label, Point on)
- Chemistry



Sending Pre-Made Quick Poll Questions to the Class

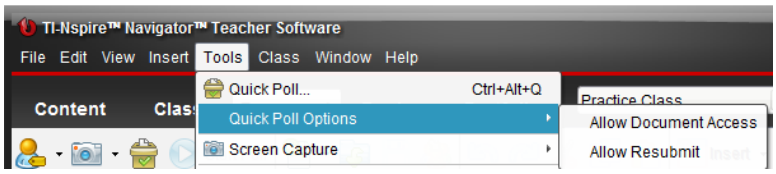
Any question page can be sent as a Quick Poll question. The teacher can create a document ahead of class time with questions they anticipate might be helpful to ask students to gauge their understanding of a concept. Teachers can decide during class which ones are appropriate to help guide the lesson.

1. Open the document containing questions for potential Quick Poll questions in the Documents Workspace.

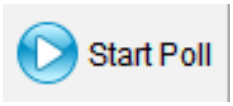


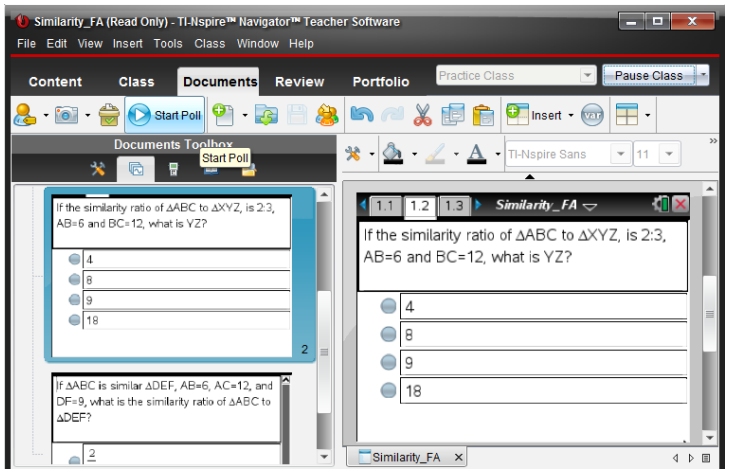
2. (Optional) Modify the Quick Poll Options.

   - Allow students access to documents on their handheld. This option is not available when using the TI-Nspire™ Navigator™ NC Teacher Software.
   - Allow students to resubmit their Quick Poll answers.

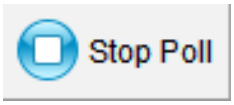


3. After the TI-Navigator class has been started and students have logged in to class, the current question being viewed in the Documents Workspace can be sent as a Quick Poll by clicking the **Start Poll** icon.





4. When all students have answered the question, click the **Stop Poll** icon.

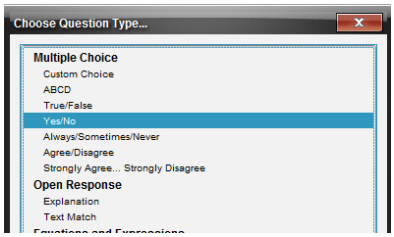


Sending "On-The-Fly" Quick Poll Questions to the Class

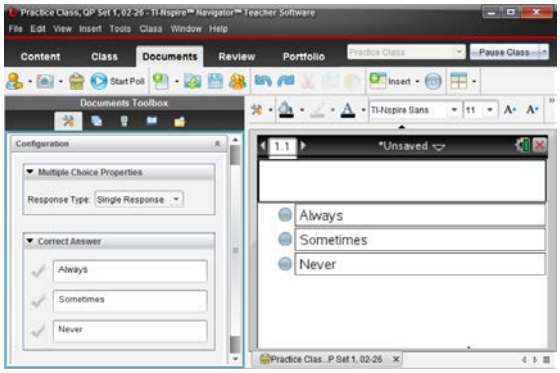
1. After the TI-Navigator class has been started and students have logged in to class, click the **Quick Poll** icon.

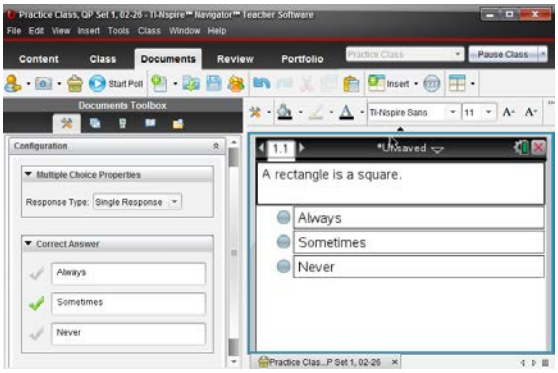
2. Select a Question Type, and press **Insert**.

   - If this is the first Quick Poll question of the TI-Navigator session, a new document will open in the Documents Workspace titled "*Class Name* – QP Set # – *Date*".

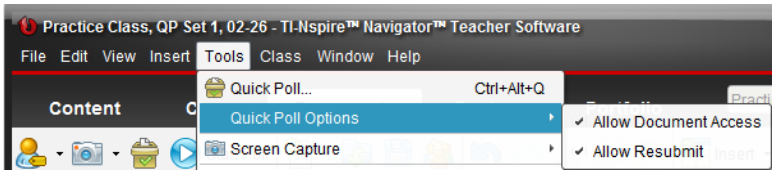


3. (Optional) Enter the question into the text box, and select/enter answers when appropriate.

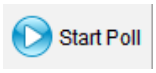




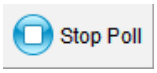
4. (Optional) Modify the Quick Poll Options.
   - Allow students access to documents on their handheld.
   - Allow students to resubmit their Quick Poll answers.



5. Send the question to the class by clicking the **Start Poll** icon.

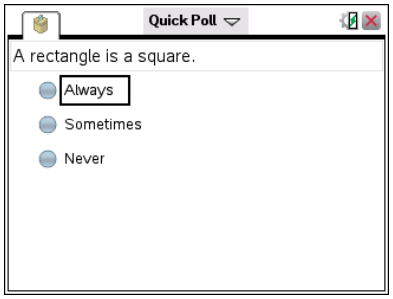


6. When all students have answered the question, click the **Stop Poll** icon.



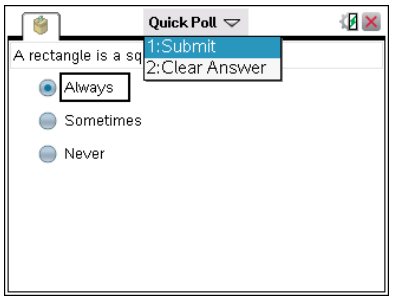
Responding to Quick Poll Questions as a Student

1. After the teacher has started the Quick Poll question, all students who are logged in to the class will automatically receive the question on their calculators as a pop-up window.
   - If a student logs into the class after the poll has been sent, they will receive the poll as long as the teacher hasn't click the **Stop Poll** icon.



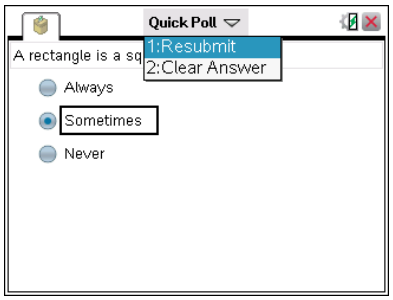
2. For multiple choice questions, students move through the answer choices by pressing tab (or ▼). To select an answer, they press ⬚ or enter.
3. For other types of questions, students enter the answer using the appropriate keys and templates on the handheld.

4. To send the answer response to the teacher's computer, students press doc▾ **> Submit**.



5. If the Allow Resubmit option was selected by the teacher, students can change their answers and resubmit by pressing doc▾ **> Resubmit**.

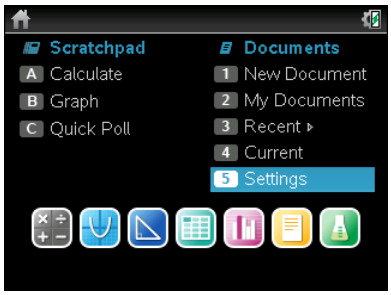
Note: If the resubmit option is not selected, the question will disappear from the handheld once the answer has been submitted.



6. If the Allow Document Access option was selected by the teacher, students can temporarily exit the Quick Poll to look at a document by pressing on or .

   - To return to the Quick Poll question, select Quick Poll from the Home screen.

Note: When using the TI-Nspire Navigator NC Teacher Software, the "Allow Document Access" option is not available. By default, students will have access to all documents and applications on their computers during a Quick Poll.

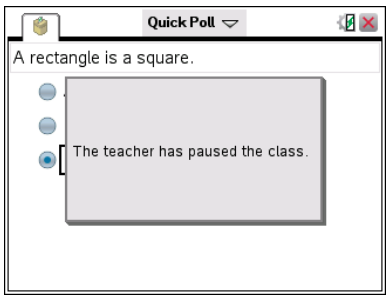


Pausing/Resuming Class

When students are having trouble with a Quick Poll question, the teacher might find it useful to gain the students attention by preventing them from interacting with their handheld, i.e., pausing the class. The **Pause Class** option will prevent any interaction with the handhelds.

1. To pause the class, click the **Pause Class** icon, which is located by the class drop-down menu.

   - When a class is paused, the students receive a message on their handhelds.



2. To resume the class, click the **Resume Class** icon.

   - Students are once again able to interact with their handhelds.

Tip Sheet: Quick Poll

TI PROFESSIONAL DEVELOPMENT

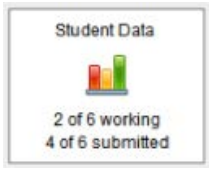
Viewing Quick Poll Results

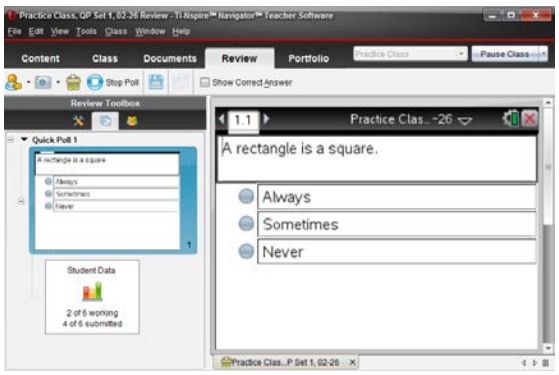
The teacher can view the results of a Quick Poll while students are submitting their responses or after the Quick Poll has been stopped.

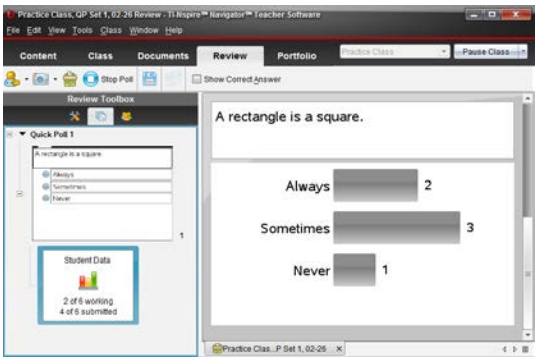
1. As soon as the Quick Poll is sent to the class, the software automatically changes to the Review Workspace and displays the Quick Poll question that was sent to the class.

Note: The first 15 Quick Poll questions of the class session will be stored in a single Review document. After the 15th question, a new Review document will start for the next 15 Quick Poll questions.

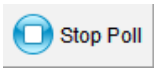
2. To view the class results for the Quick Poll questions, click on the **Student Data** icon underneath the Question page in the Page Sorter view. Alternatively, scroll down using the scroll bar to the right of the large view of the Quick Poll question (see below right).



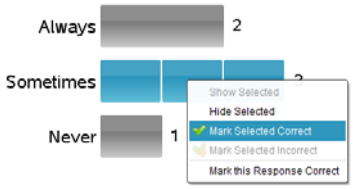




3. When all students have answered the question (or you are satisfied that a sufficient amount of time has passed), click the **Stop Poll** icon.

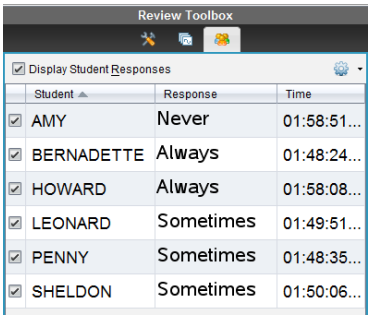


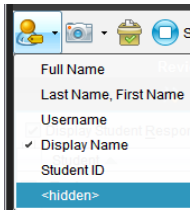
4. If you did not select the correct answer in the Question page prior to starting the poll, right-click on the correct response, and select **Mark this Response Correct**.



- The bar next to the correct answer will turn green, indicating that it is the correct answer.

- To view the student-submitted answers in detail, click on the Students icon in the Review Toolbox.
- The display name and response are shown in a table.
- The poll details can be sorted by display name, by response, or by time. Click the top of the desired column to sort.
- To hide the student names, click the **Student Name Format** icon and select **<hidden>.**





Tip Sheet: Quick Poll

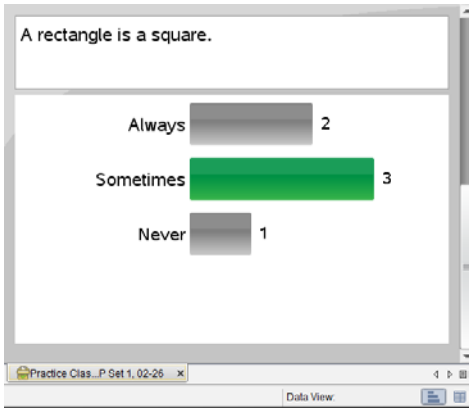
TI PROFESSIONAL DEVELOPMENT

Additional Data Views for Quick Poll Results

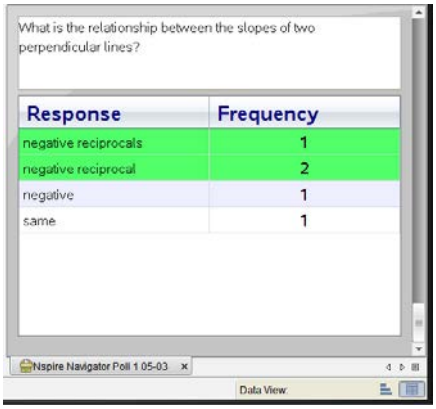
When the Student Data icon is selected, most of the results are displayed as a bar chart by default. Depending on the type of Quick Poll question, the results can be displayed in a variety of data views.

Data Views for Multiple Choice and Open Response Questions

Bar Chart

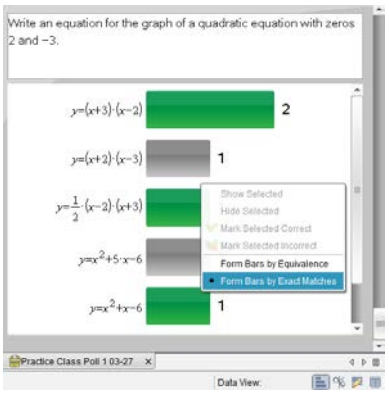


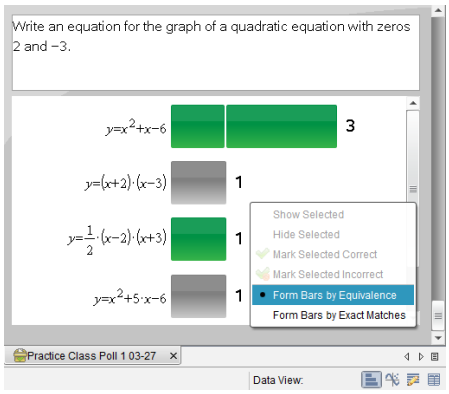
Frequency Table



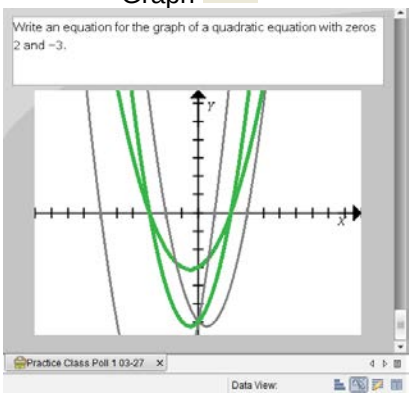
Data Views for Equation Questions

Bar Chart

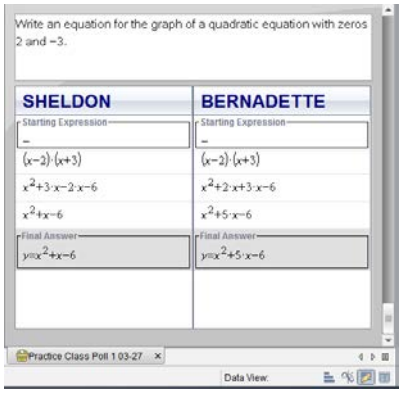




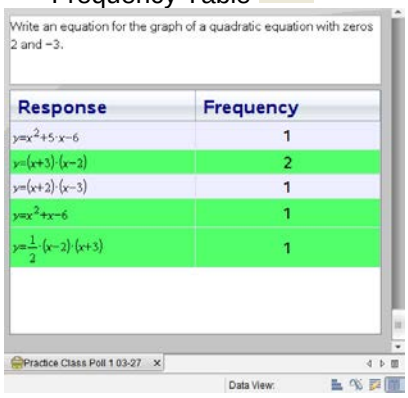
Graph



Show Work



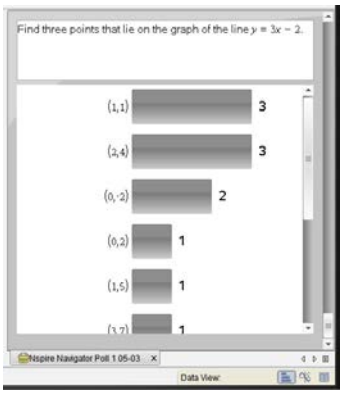
Frequency Table



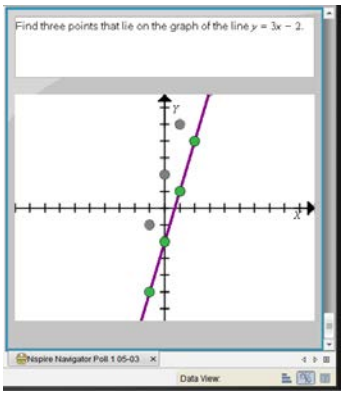
- The Show Work Data View is available when **Allow students to show their work** is selected before sending the Quick Poll.

Data Views for Coordinate Points & List(s) Questions

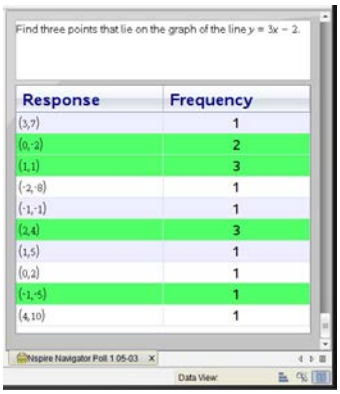
Bar Chart



Graph

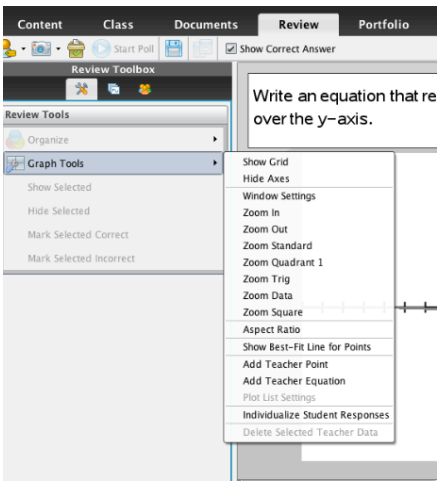


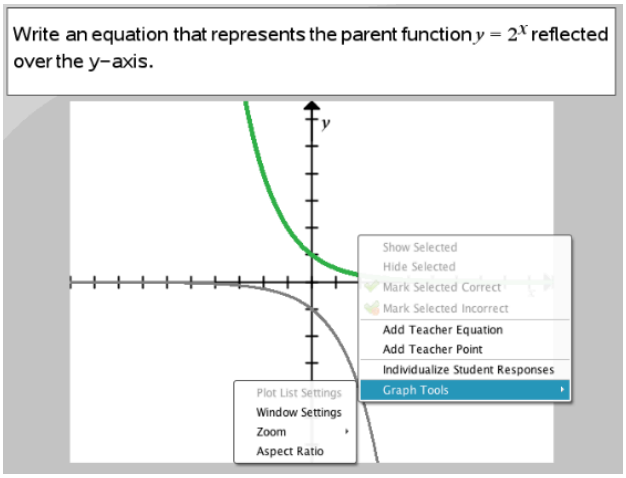
Frequency Table



Graph Data View Options

The Graph Data View can be modified using the options in the Review Tools pane of the Review Toolbox (the left column). Options include, but are not limited to, changing the window settings, adding a teacher point/equation, and individualizing student responses. Some of the options are available by right-clicking on the graph.

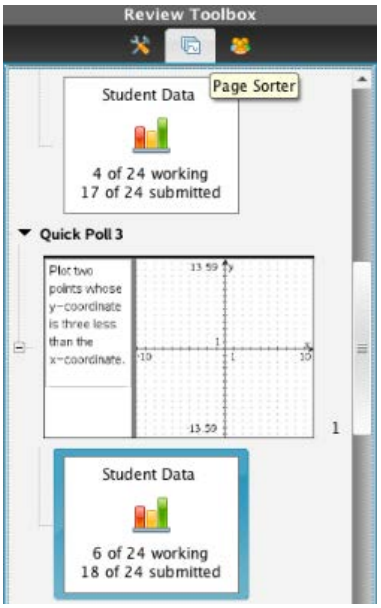




Tip Sheet: Quick Poll

TI PROFESSIONAL DEVELOPMENT

Viewing Previous Quick Poll Questions

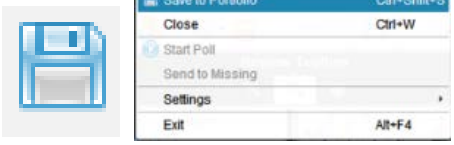


The Page Sorter view in the Review Toolbox allows the teacher to re-display previous Quick Poll questions for discussion.

1. Click on the Page Sorter pane in the Review Toolbox.
2. Scroll to the Student Data icon below the Quick Poll question you want, and click to view the student responses.

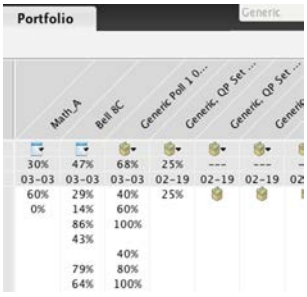
Saving Poll Results

The results from all Quick Poll questions sent during a class session are compiled in a Review Document and can be saved for review at a later time. The results will be placed in the Portfolio for the class.



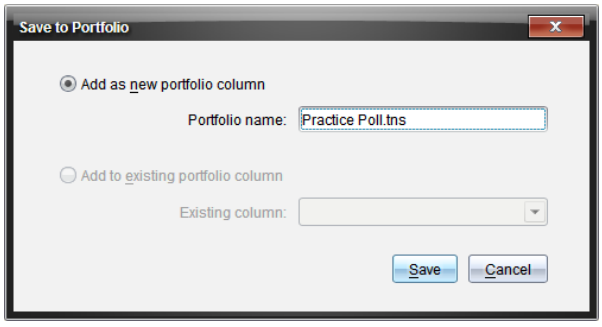
1. Click the **Save** icon.

   Alternatively, select **File > Save to Portfolio**.



2. If desired, enter a name to identify the Quick Poll results other than the default name, or add the results to an existing portfolio column (see the Portfolio Workspace capture to the right; each column is a Quick Poll or Collected Assignment).

Note: The first 15 Quick Poll questions of the class session will be stored in a single Review document, even if polls are sent after saving the Review document to the Portfolio. After the 15th question, a new Review document will start for the next 15 Quick Poll questions.



3. If the Review document is not saved before ending the class, the teacher will be prompted to save when the software is closed.

Tip Sheet: Sending Documents

TI PROFESSIONAL DEVELOPMENT

TI-Nspire™ Navigator™ Objective

- Send documents to students using the TI-Nspire™ Navigator™ System.

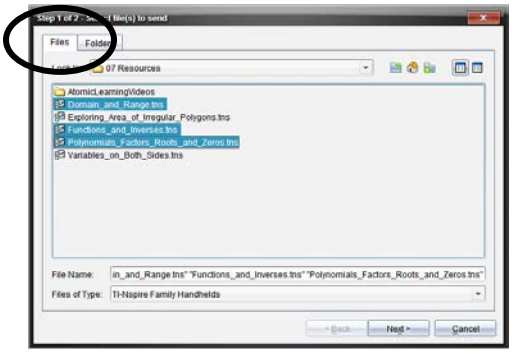
TI-Nspire™ Navigator™ Features

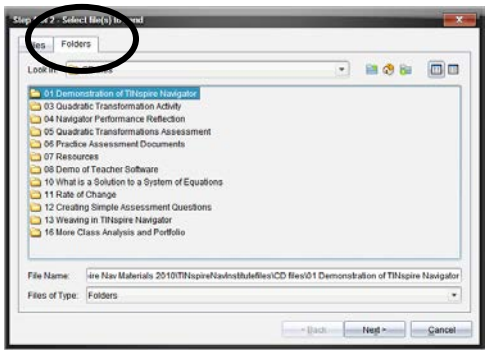
- Sending Documents
- Student Retrieval of Documents
- Verifying Transfer of Documents to Students

Sending Documents

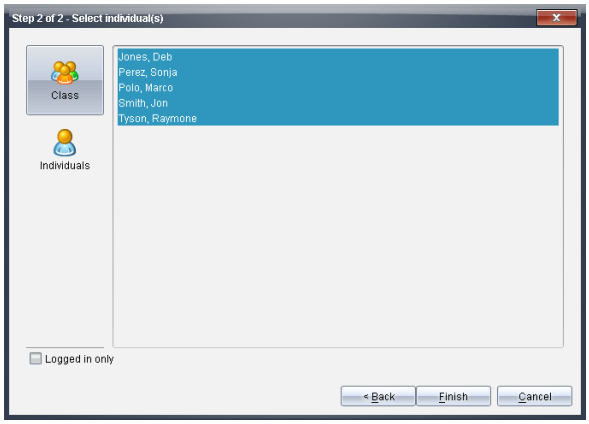
1. Open the TI-Nspire™ Navigator™ Teacher Software.
2. Begin Class, and have the students log in to the TI-Nspire Navigator class.
3. Click on the Send to Class icon.

4. Locate and select the documents you want to send to the class.
   - Use the **Ctrl** key on your keyboard to select nonconsecutive documents from a list.
   - If you would like to send an entire folder, click on the Folders tab, and select the folder to be sent to the students.





5. Click **Next**.
6. Select Class Send or Individual Student(s) Send.
   - If you would like to send to a subset of students only, highlight all of the desired students by holding the **Ctrl** key and clicking their names with your mouse.



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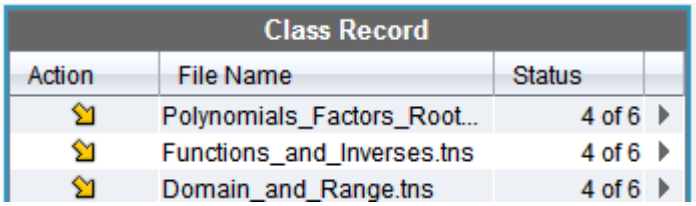
7. The selected folder or document(s) will be sent to the student devices.
   - The default folder to which the document will be sent is **My Documents > TI-Nspire > *Class Name*** *{the name of the class you created in TI-Navigator}*.
8. Click **Finish**.
   - You will see the sent document(s) listed in the Class Record. This line will also show how many students have received the documents.



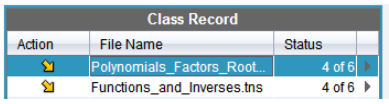
Student Retrieval of Sent Documents

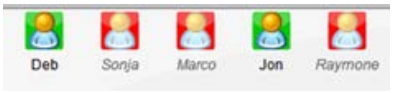
The students will receive the documents automatically upon log in.

- All students who are already logged in to the TI-Nspire Navigator classroom when your send the documents will automatically receive the documents.
- Students who have not yet logged in to the TI-Nspire Navigator class will receive the documents as soon as they log in to the class.

Verifying Transfer of Documents to Students

1. Select the document to be verified in the Class Record.
2. A color code system the Student View of the class indicates whether a student has successfully received the document(s).
   - If the document(s) was successfully received by the student, then the box will be green.
   - If the document(s) was not received by the student, then the box will be red.





Sending Documents Using the TI-Nspire™ Navigator™ NC System

Any type of document can be sent to students' computers using the TI-Nspire™ Navigator™ NC Teacher Software, even though students can only open TI-Nspire™ documents and PublishView™ documents in the TI-Nspire™ Teacher Software.
All other documents can be opened in their native applications.

All documents sent using the TI-Nspire Navigator NC Teacher Software will be located in the TI-Nspire class folder on students' computers.

Tip Sheet: Collecting Documents

TI PROFESSIONAL DEVELOPMENT

TI-Nspire™ Navigator™ Objective

- Collect document from students using the TI-Nspire™ Navigator™ System.

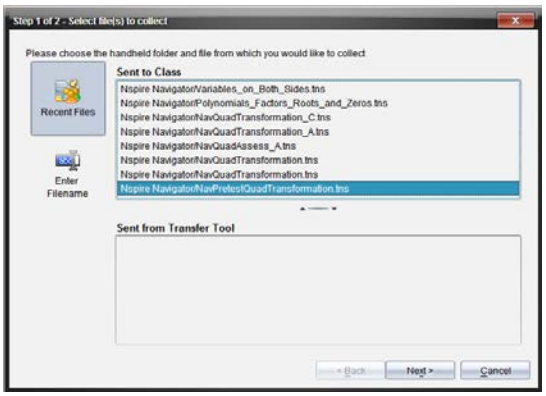
TI-Nspire™ Navigator™ Features

- Collecting Documents
- Student Transfer of Documents
- Verifying Transfer of Documents from Students

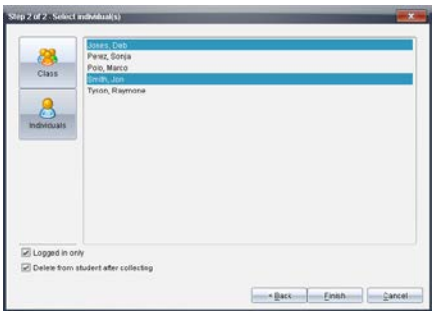
Collecting Documents from Students

1. Click the **Collect from Class** icon.

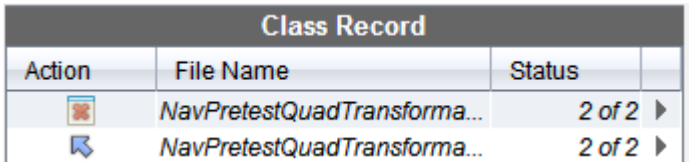
2. Select the file(s) to be collected, and click **Next**.
   - If you want to collect more than one file from the students, use the **Ctrl** key on your keyboard as you click the files in the list.
   - If you want to collect a file you recently sent to the class, click **Recent Files**, and the files that have been recently sent will be listed for your convenience.



3. Select **Class**, or select individual student(s) by clicking **Individuals**, using the **Ctrl** key to select nonconsecutive students from the list.
   - By choosing to collect from the entire class with the "Logged in only" option selected, you will only collect the file(s) from students who are currently logged in to the class.
4. If you want to delete the file from the student device, select the "Delete from student after collecting" option.
5. Click **Finish**.

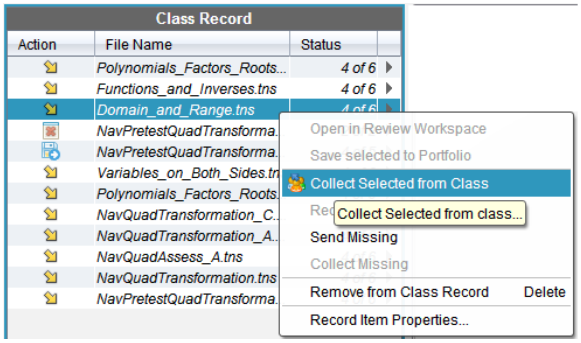


- You will see the collected and deleted file(s) listed in the Class Record list on the TI-Nspire Navigator Home Screen.
- This line will also show how many of the students' files have been received.



Collecting Documents Alternative

1. From the Class Record, right-click on the document to be collected.
2. Select **Collect Selected from class**.



- The documents will automatically be collected from the class.

Note: There is no option to delete documents at the time of collection using this method. The teacher could use **Delete from Class** at a later time during the class session.

Verifying Collection of Documents from Student Computers

From the Class Record, select the file to be verified. The Student View of the class will indicate whether a document has been collected successfully.

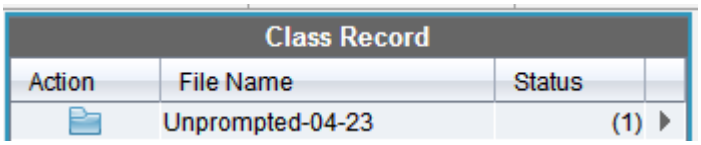
- If the document was collected successfully, then the box will be green.
- If the document has not been collected, then the box will be red. This might be because the student is not logged in to the TI-Nspire Navigator class.
- If the document was not in the student's class folder, then the box will be yellow.

Collecting Documents Using the TI-Nspire™ Navigator™ NC Teacher Software

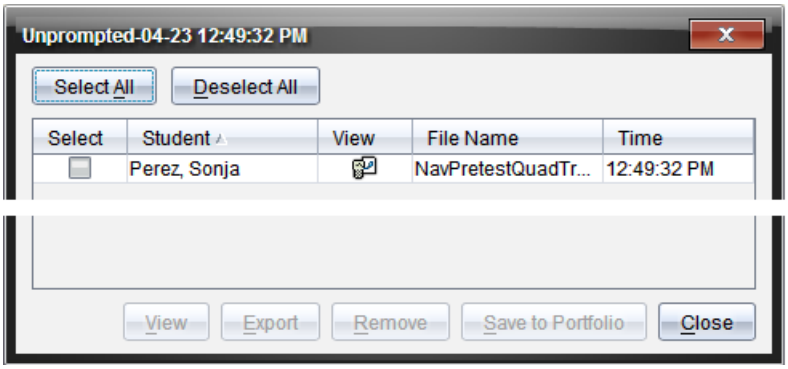
Any type of document can be collected and saved to the Portfolio using the TI-Nspire Navigator NC Teacher Software. For a non-TI-Nspire document, students must save their work before the teacher collects the document. Once a non-TI-Nspire document has been collected, it can be viewed or edited in its native application by going to the Portfolio Workspace, right-clicking the document, and selecting "Open for Editing."

Unprompted Documents from Class

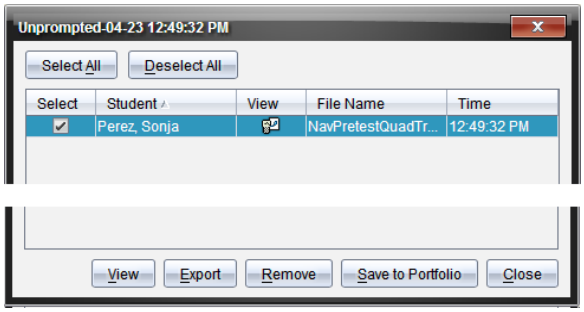
Students can send documents to the teacher without the teacher collecting from the class. When this happens, an unprompted file folder with the sent date will appear in the class record.



- The number in the status column tells the teacher how many documents have been sent to the Unprompted folder.
- Double-clicking on the Unprompted folder will open a window.



- The teacher can select all the document of an individual student by clicking the checkbox in front of the document.
- Once you have selected the documents from the Unprompted folder, options at the bottom of the window become active.



View: This option opens the document(s) in the Teacher Software.
Export: This option allows the teacher to save the document to any location on the computer.
Remove: This option deletes the document from the Unprompted folder.
Save to Portfolio: This option allows the teacher to create a new column in the Student Portfolio or add the document(s) to a current column.

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Tip Sheet: Sending Documents via the Transfer Tool

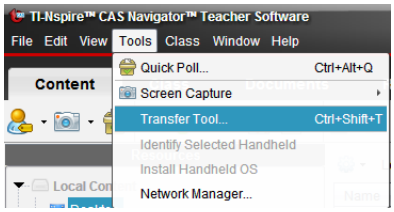
TI PROFESSIONAL DEVELOPMENT

TI-Nspire™ Navigator™ Objectives

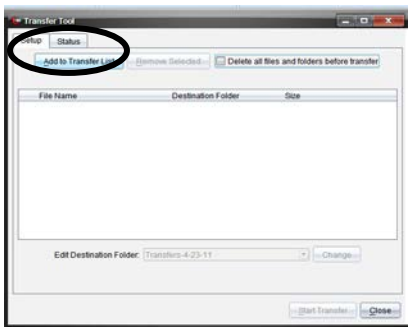
- Send documents to handhelds using the Transfer Tool.
- Delete all folders on connected handheld(s).

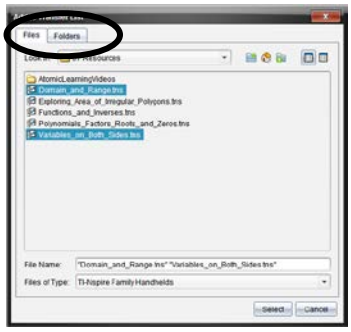
Send Documents to Connected Handhelds

1. Open the TI-Nspire™ Navigator™ Teacher Software.
2. Select **Tools > Transfer Tool** (or use the keyboard shortcut **Ctrl+Shift+T**).
   - The Transfer tool is not available when a class is in session.

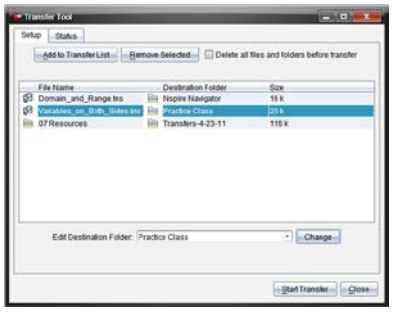


3. Click the **Add to Transfer List** button, and browse on your computer for the documents(s) to be transferred.
   - You can send an entire folder by clicking on the Folders tab and selecting the folder to be sent to the students.

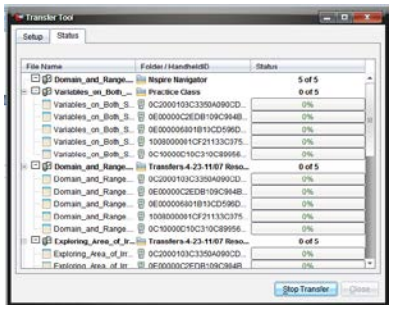




4. You can change the folder to which the document(s) will be sent on the handheld.
   - The default folder is “Transfers-Date”.
   - Edit the destination folder by clicking on the Destination Folder name and entering the name of the new Destination Folder.
   - Click **Change**.



5. Click **Start Transfer**.
   - The Transfer Tool Status window will indicate the status of the document(s) being transferred to individual handhelds.
6. When the file transfer is complete, click **Stop Transfer** and **Close**.



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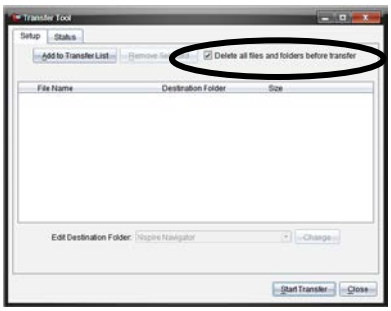
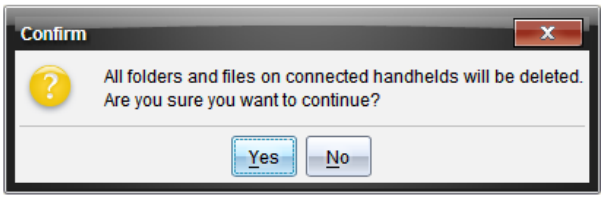
Tip Sheet: Sending Documents via the Transfer Tool

TI PROFESSIONAL DEVELOPMENT

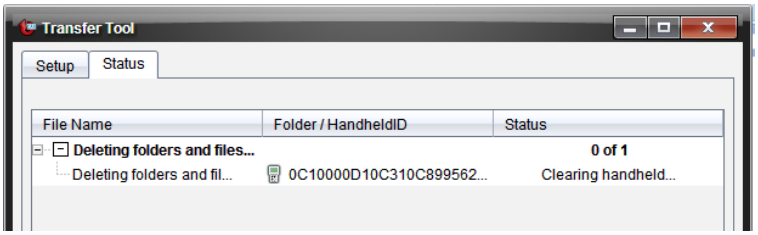
Delete All Documents and Folders on Handheld



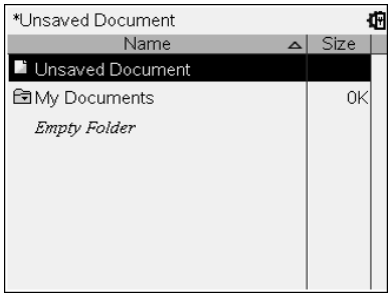
1. Open the TI-Nspire Navigator Teacher Software.
2. Select **Tools > Transfer Tool** (or use the keyboard shortcut **Ctrl+Shift+T**).
   - The Transfer tool is not available when a class is in session.
3. Check the box to select "Delete all files and folders before transfer."
   - If desired, add files to send to the handheld using the steps above. The files will be transferred to the handheld after all files and folders have been deleted.
4. Click **Start Transfer**.
   - A confirmation message will appear. Click **Yes** to continue with the delete.



   - The Transfer Tool Status window will indicate the status of the folders and files being deleted to individual handhelds.



5. When the file transfer is complete, click **Stop Transfer** and **Close**.
6. The connected handhelds will contain no documents or folders except the My Documents folder.



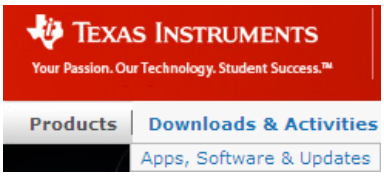
Tip Sheet: Sending the Operating System via the Transfer Tool

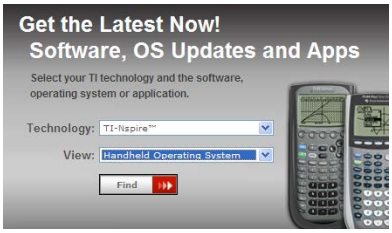
TI PROFESSIONAL DEVELOPMENT

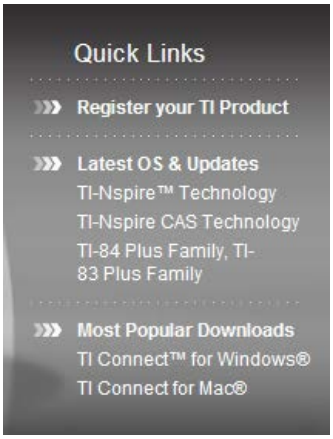
TI-Nspire™ Navigator™ Objective

- Send an Operating System (OS) to handhelds using TI-Nspire™ Navigator™ Teacher Software.

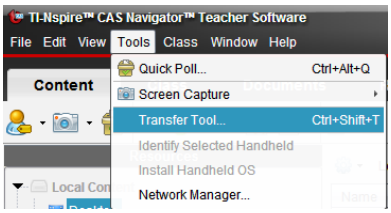
1. Download the current OS to your computer.
   - Visit www.education.ti.com to download the latest OS for TI-Nspire CX, TI-Nspire, TI-Nspire CAS CX, and/or TI-Nspire CAS.
   - Select **Downloads & Activities > Apps, Software & Updates**.
   - From the drop-down menus, select the appropriate technology and Handheld Operating System. Then click **Find**.
   - Select the name of the appropriate handheld.
   - Select **Save**, and browse to a convenient download location on your computer, such as your Desktop.
   - Alternatively, use **Quick Links** to access and save the latest OS.







2. Open the TI-Nspire Navigator Teacher Software.
3. Select **Tools > Transfer Tool** (or use the keyboard shortcut **Ctrl+Shift+T**).
   - The Transfer tool is not available when a class is in session.



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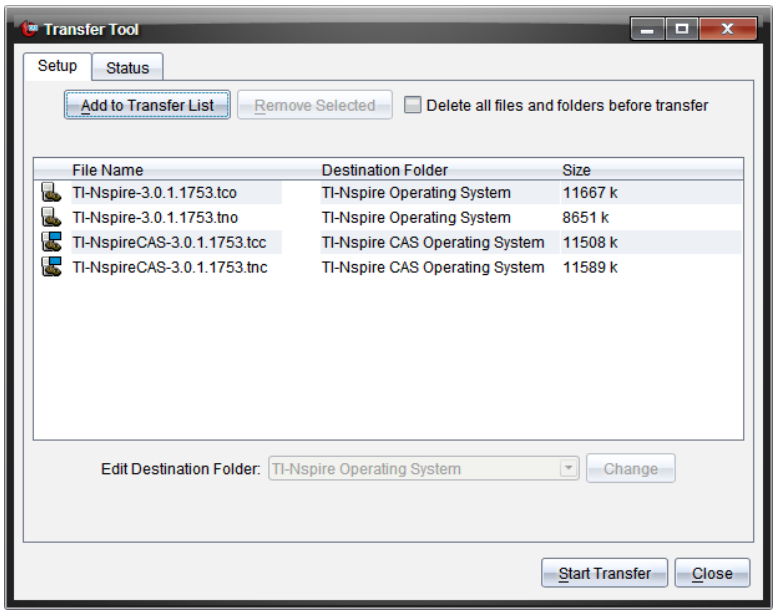
4. Click **Add to Transfer List,** and browse on your computer for the OS file to be transferred.
   - You can select Operating Systems for each type of handheld.
   - If your class has more than one type of handheld, the Transfer Tool will update each handheld with the proper OS.



5. Click **Start Transfer**.
   - The Transfer Tool Status window will indicate the OS being transferred to individual handhelds.
6. When the file transfer is complete, click **Stop Transfer** and **Close**.

Tip Sheet: Modifying TI-Nspire™ Assessment Documents

TI PROFESSIONAL DEVELOPMENT

Activity Overview

Create a custom TI-Nspire question document from pre-made State assessment documents found online.

Materials

- Internet access

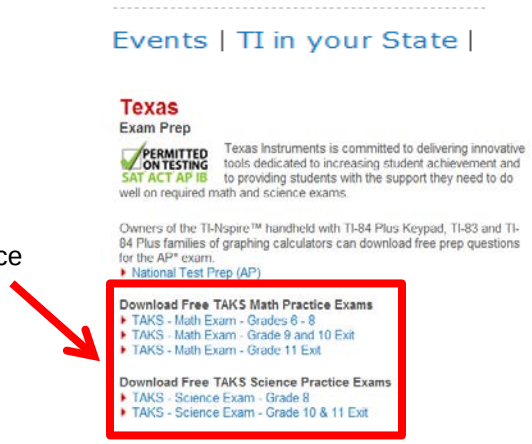
Downloading State Assessment TI-Nspire Documents

Released State Assessment questions are available online for many States, already formatted as questions in TI-Nspire documents. Teachers might want to use some of these Question pages from a large State assessment document for formative assessment or for student practice.

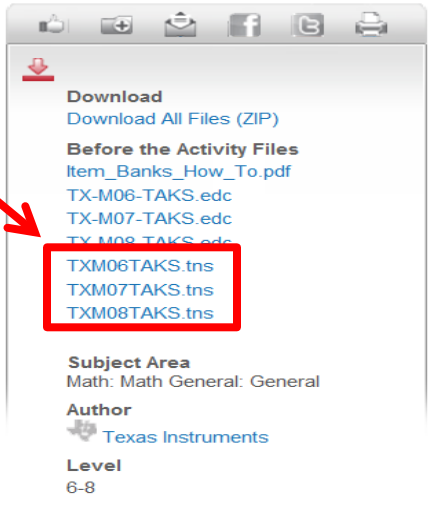
1. Open the web site **education.ti.com**.
2. At the bottom of the page, click on **TI in your State**.
3. Click on the desired location on the map.

Note: This example uses a document with practice exam questions from Texas.

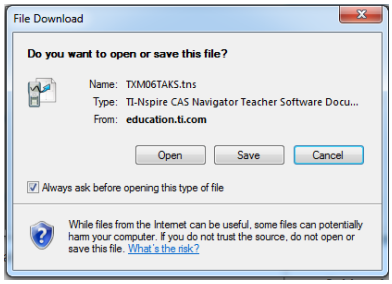
4. Under the Download section, click on one of the Practice Exam links.



5. Select a document to download, and click on that document.
   - TI-Nspire documents have the extension **.tns**.



6. When the File Download dialog box appears, click **Save** to save the document.
7. Select the Desktop as the location to which the document should be saved.

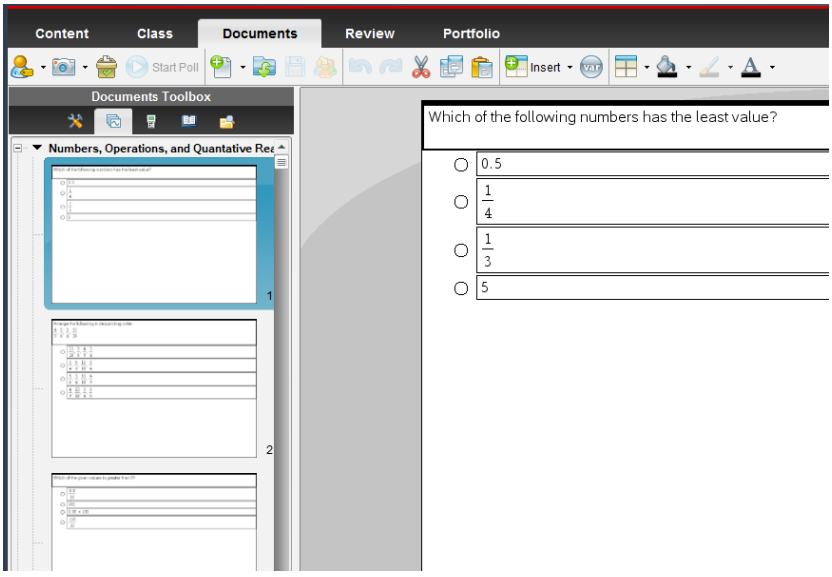


- The TI-Nspire document icon with the file name will be located on the desktop.

Opening State Assessment Document

1. In the Documents Workspace, click on the **Open a document** icon .
   - Alternatively, select **File > Open Document**.
2. In the Open dialog box, click the Home icon to access the computer Desktop.
3. Click on the TI-Nspire document you just downloaded, and then click **Open**.

Note: If the **Page Sorter** pane in the Documents Toolbox is not displayed, select it.



4. Use the scroll bar in the Page Sorter view to scroll through and preview the questions in the document.
   - Alternatively, click on a page in the Page Sorter view and arrow up or down to preview questions.

Tip Sheet: Modifying TI-Nspire™ Assessment Documents

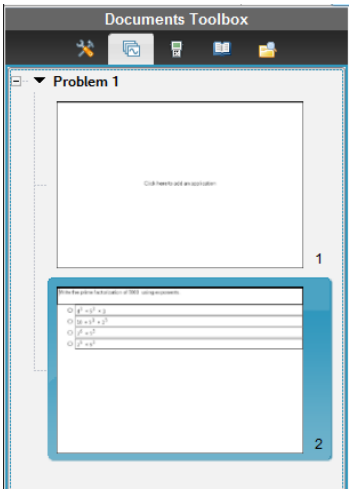
TI PROFESSIONAL DEVELOPMENT

Copy/Paste Questions to a New Document

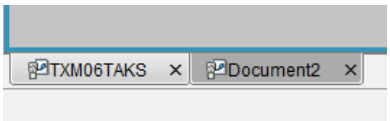
1. To select a question to be included in your custom assessment document, right-click on the question page in the Page Sorter view, and select **Copy**.
   - Alternatively, click on the question page in the Page Sorter view, and press **Ctrl+C** on your keyboard.

2. Select **File > New TI-Nspire Document**.
   - A new document will open in the Page Sorter view.
3. Right-click on the page in the Page Sorter view, and select **Paste**.
   - Alternatively, click on the page in the Page Sorter view and press **Ctrl+V** on your keyboard.

   - The pasted question page is inserted after the first, blank page of the new document. The first page can be used to provide directions for the students, or it can be deleted.



4. Return to the state assessment document by clicking on the document name at the bottom of the screen.

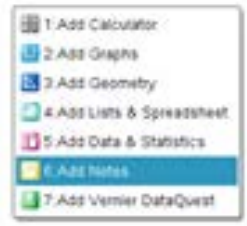


5. Select another question page in the Page Sorter view of the state assessment document. Right-click on that page, and select **Copy**.
6. Click on the tab for the new document - Document2, in this example. In the Page Sorter view of the new document, right-click on the last page, and select **Paste**.
7. Repeat steps 4 through 6 to copy as many questions to the new document as desired.

Note: The order of the questions can be changed by dragging and dropping the question pages in the Page Sorter view.

8. When finished, press **Ctrl+S** to save the new document. Enter a name, and choose a location for the new document.

Adding Instructions to the New Document



1. To make the first page of the new document a Notes application page to provide directions, click on that page in the Page Sorter view.
2. Click in the large version of the page in the right work area.
3. From the list of applications, select **Add Notes**.
4. Enter the desired text.

Note: To delete the first page of the new document, right-click on the page in the Page Sorter view. Select **Cut** or **Delete**.

The Press-to-Test Feature

TI PROFESSIONAL DEVELOPMENT

Activity Overview

The Press-to-Test feature enables you to quickly prepare student handhelds for exams by temporarily disabling folders, documents, and select features and commands. This activity enables Press-to-Test. To disable Press-to-Test, you will need to follow Steps 8-9 using either an additional TI-Nspire handheld or a computer with the TI-Nspire Teacher Software.

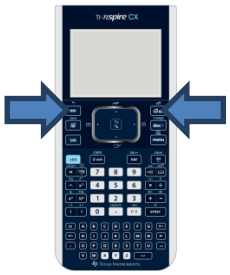
Materials

- TI-Nspire™ handheld-to-handheld or handheld-to-computer USB connection cable

Step 1:

To enable Press-to-Test on the TI-Nspire™ with Touchpad and TI-Nspire CX™, first ensure that the handheld is turned off. Press and hold esc and on until the Press-to-Test screen appears.

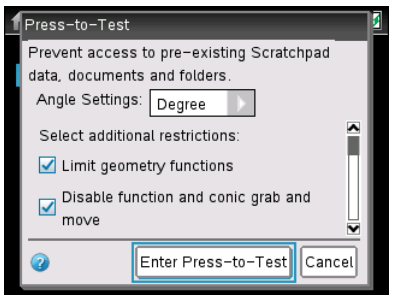
Note: To enable Press-to-Test on TI-Nspire™ with Clickpad, press and hold esc, on, and off on.



Step 2:

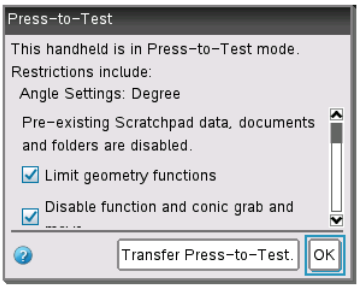
By default, Press-to-Test disables 3D graphing and pre-existing Scratchpad data, documents, and folders. The angle settings can be changed by pressing ▶, selecting the appropriate setting, and pressing ▶ or enter.

By default, all of the commands and features listed are disabled. To enable a feature or command, uncheck its box. Keep all boxes checked. Enter Press-to-Test by clicking **Enter Press-to-Test**.



Step 3:

Once the handheld is in Press-to-Test mode, the handheld reboots. A dialog box confirms that the handheld is in Press-to-Test mode and the restrictions are listed. Click OK.



Step 4:

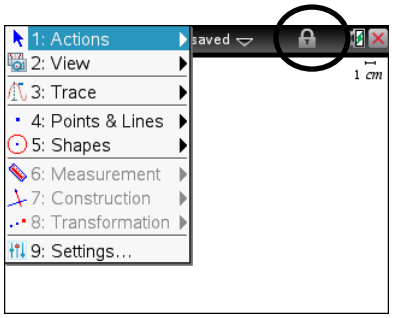
When in Press-to-Test mode, the LED at the top of the handheld begins blinking. Green indicates that all restrictions are selected (default), while yellow indicates that one or more restrictions are unselected. During the initial reboot, the LED alternates between red and, depending on the restrictions, either green or yellow.

The Press-to-Test Feature

TI PROFESSIONAL DEVELOPMENT

Step 5:

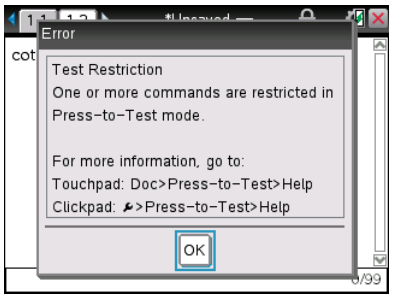
Create a new document, add a Geometry page, and press menu. Since geometry functions are limited, observe that the **Measurement**, **Construction**, and **Transformation** menus are not accessible.



Note: The lock icon at the top of the screen indicates that the handheld is in Press-to-Test mode.

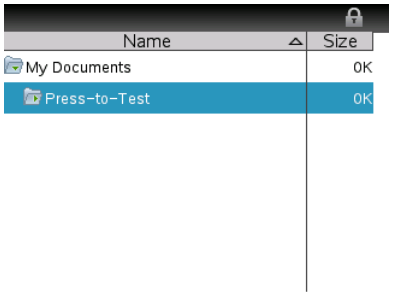
Step 6:

Add a Calculator application by selecting doc **> Insert > Calculator**. Type **cot(*π*/2)** and press enter. Since trigonometric functions are limited, an error message appears. The dialog box tells students how to access additional information about the restrictions. Click on OK.



Step 7:

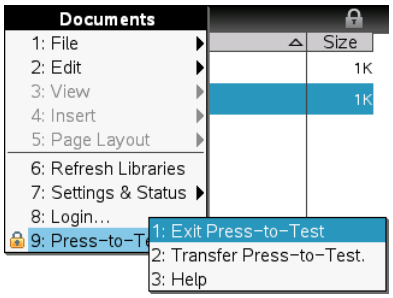
Select on **> My Documents.** While in Press-to-Test mode, a Press-to-Test folder appears in My Documents. All other folders and documents present on the handheld before Press-to-Test mode was entered are inaccessible.



Step 8:

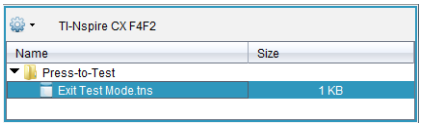
To exit Press-to-Test mode, connect two handhelds using the handheld-to-handheld USB connection cable. Then select doc **> Press-to-Test > Exit Press-to-Test**. The Exit Press-to-Test option appears regardless of whether the other handheld is in Press-to-Test mode.

Press-to-Test can also be exited with the TI-Nspire™ Navigator™ Teacher Software. Once a class has been started, students can select doc **> Press-to-Test > Exit Press-to-Test**.



Step 9:

Press-to-Test can also be exited with TI-Nspire Teacher Software or TI-Nspire Navigator Teacher Software by creating a document named ***Exit Test Mode.tns*** and transferring it to connected handhelds.



Note: The name of the TI-Nspire document must be spelled exactly as it is above.

Go to the Tools menu and select **Transfer Tool**. Click **Add to Transfer List** and select *Exit Test Mode.tns*. In the Edit Destination Folder, select the Press-to-Test folder and click Change. Then, click **Start Transfer.**

TI-Nspire™ Navigator™ Skills Rating

TI PROFESSIONAL DEVELOPMENT

Rating Scale: 0 – Not covered yet
1 – Uncertain – need more instruction
2 – Moderate – need more practice
3 – Average – comfortable
4 – Good – competent

TI-Nspire™ Navigator™ Skill	Day 1	Day 2	Day 3
Class Workspace:			
• Create a Class			
• Add/Modify Students			
• Teacher Preferences			
Class Capture:			
• Auto-Refresh Class Capture			
• Zoom In/Out			
• Reordering Screen Captures			
• Saving Screen Captures			
• Screen Stacks			
Live Presenter			
Document Management:			
• Send to Class			
• Collect from Class			
• Delete from Class			
• View files collected from class			
• Save to Portfolio			

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Quick Poll:			
• Multiple Choice			
• Open Response			
• Equations			
• Coordinate Points & Lists			
• Image			
• Chemistry			
• Review Student Data			
Review Workspace:			
• Mark Correct Answer(s)			
• Change Data View for appropriate question types			
• Data Aggregation			
Portfolio Workspace:			
• Edit Scores			
• Send Missing Documents			
• Collect Missing Documents			
• Redistribute Documents			

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T^3 Ticket Outta Here

2.71828

What went well today?

What caused you difficulty?

More of ?

Less of ?

2.71828

T^3 Ticket Outta Here

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T^3 Ticket Outta Here

2.71828

I have learned …

My question is …

2.71828

T^3 Ticket Outta Here

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I have learned …

My question is …

My next steps are …

2.71828

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