



Topics in Algebra 1

**Software Application
for the
TI-83 Plus and the TI-73**

**Student and Teacher
Classroom Materials**

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Introduction to Topics in Algebra 1

Note to Teachers

Welcome to the Topics in Algebra 1 software application for the TI-83 Plus and TI-73 graphing calculators. The application and Classroom Materials were designed to help students review and reinforce selected concepts taught at the Algebra 1 level. Topics in Algebra 1 is easy to use, even for inexperienced calculator users, and it encourages students to explore concepts on their own.

Navigating Topics in Algebra 1 (pages vi–ix) explains how to move around the application. You may wish to copy these pages for your students.

We hope Topics in Algebra 1 proves useful to you and your students. All of your comments and suggestions are appreciated. You can contact TI:

- Phone 1-800-TI-CARES (1-800-842-2737)
- E-mail ti-cares@ti.com
- TI website <http://www.ti.com/calc>

Organization of Topics in Algebra 1

Topics in Algebra 1 is organized in textbook fashion with chapters and sections arranged in table-of-contents form.


| Chapters | Sections |
|------------------------------------|--|
| 1: Number Sense | 1: Integers 2: Rational Numbers 3: Real Numbers |
| 2: Linear Equations | 1: Using Graphs & Tables 2: Using Algebra |
| 3: Linear Functions | 1: Slope with Grid 2: Slope Using Coordinates 3: Slope Rate of Change 4: Slope-Intercept Form |
| 4: Linear Inequalities: 1-Variable | 1: Using Graphs & Tables 2: Using Algebra |


Note: Chapters can be installed and deleted individually. This provides flexibility, allowing calculators to have only the applications students currently need.




Each section in the application contains three subsections.




- The **Overview** presents definitions and concepts for teachers to use in class discussions and for students to use for study and review. They contain animation and real-world examples.
- The **Observations** show concepts or examples, followed by **Write An Observation** screens. Students are asked to write in the space provided on the Student Worksheet their observations about the content presented. Screens entitled **Did you know** display additional information and facts about the current concept.
- The **Activities** include interactive activities that reinforce the concepts covered in the section. Many of the activities are in the form of games. Students can practice calculating equations with integers, rational numbers, and real numbers, or they can find the equation of a line. The application checks answers, gives a score, and provides students with the correct answer if they are unable to answer a question correctly. In the Linear Functions chapter, students can play a game called Screen Cross where they link to each other's calculators and race to see who finishes first.


Classroom Materials


The Topics in Algebra 1 Classroom Materials include Student Worksheets, Teacher Notes (with answers), and  Tips™.

- Student Worksheets provide explanations and instructions to students about using the application to review the concepts in the section. Each worksheet is divided into four parts—**Overview, Observations, Activities** (which correspond to the subsections of the application), and  **Try-It!™ on Your TI-83 Plus or TI-73.**

 Try-It!™ activities let students investigate specific features on the calculator related to the section concepts. This includes step-by-step instructions with the exact keys to press to complete each step and corresponding screen pictures. The screens shown in the  **Try-It!** activities are for the TI-83 Plus. Usually, the TI-73 display varies only slightly, and the students should have no problems following the instructions. However, in the cases where the two calculators vary, the  Try-It! activities contain two separate exercises, one for each of the two calculators. Therefore, you only need to copy the section appropriate for the calculator that you use in your classroom.

- Teacher Notes give a brief explanation of the concepts covered in the section, some of the common student errors that might be encountered, and answers to the questions on the Student Worksheets. There are Teacher Notes for each Student Worksheet.
-  Tips™ provide keystroke examples for some of the more common tasks that you and your students need for Algebra 1 and beyond. The  Tips are intended to help students learn how to use the features of the calculator. The  Tips topics are:

 Tip 1: *Resetting Your Calculator*


 Tip 2: *Adjusting Your Calculator Settings*

 Tip 3: *Graphing a Function in the Standard Window*


 Tip 4: *Creating a Table*


 Tip 5: *Adjusting the Viewing Window*


 Tip 6: *Using Lists*

 Tip 7: *Creating a Statistical Plot*

 Tip 8: *Finding the Best Line of Fit for a Set of Data*

 Tip 9: *Sending and Receiving Data between Calculators*

 Tip 10: *Managing Your Calculator's Memory*

When students need to learn how to use the feature being covered, you can distribute the  Tips to them to make sure they are prepared for the lesson.

NCTM Principles and Standards for School Mathematics

The Topics in Algebra 1 application and the Classroom Materials were written with the guidelines of the NCTM *Principles and Standards for School Mathematics* in mind. Attention was paid to the expectations laid out for the Algebra Content Standard for the Algebra 1 level that crosses the 6–8 and 9–12 grade bands.

Some examples include:

| NCTM Standards and Expectations | On the Application |
|--|--|
| To understand patterns, relations, and functions. | Students see how battery voltage values in a series can be represented by a linear function. |
| To model and solve contextualized problems using various representations, such as graphs, tables, and equations. | Students experience how to work with tables of values, graphs, and linear equations to see the multiple approaches to problem solving. |
| To analyze the nature of changes in quantities in linear relationships. | Students determine the constant rate of change of a diving submarine along each segment of its dive. |

In addition, scored, interactive activities at the end of each section help reinforce the concepts reviewed in the **Overview** and **Observations** subsections.

You can find the complete expectations for the Algebra Content Standard and for the various grade bands set out by the NCTM at:

<http://standards.nctm.org/document/appendix/alg.htm>

You can view the NCTM *Principles and Standards for School Mathematics* online at:

<http://standards.nctm.org/>

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Installing This Application

Students may install all four chapters as a unit (**ALG1PRT1**) or one or more of the chapters individually (**ALG1CH1**, **ALG1CH2**, **ALG1CH3**, **ALG1CH4**). This provides flexibility, allowing calculators to have only the applications students currently need. When two or more chapters are installed separately, they each must be accessed directly from the **APPS** menu.

Installing this application requires TI-GRAPH LINK™ software and link cable. A link cable can be purchased from the online store:

<http://epsstore.ti.com>

If an **Archive Full** error message appears while installing Algebra 1 or one of the chapters, the calculator does not have sufficient memory for the application. Applications and/or archived variables must be deleted to make room (see below).

Deleting an Application

Deleting an application completely removes the application from the calculator. The space then becomes available for a different application. The deleted application may be reloaded at a later date. Before deleting an application from the calculator, it can be backed up to a PC using the **Link > Receive Flash Application** menu in TI-GRAPH LINK. You can reload it to the calculator later using the **Link > Send Flash Software** menu in TI-GRAPH LINK.

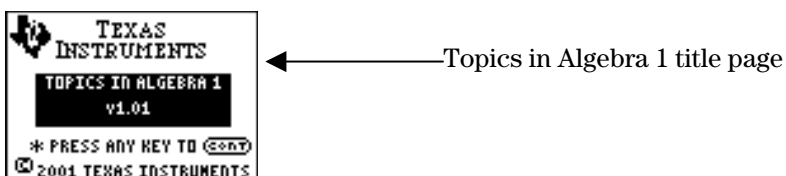
To delete an application or archived variable:

1. Press **2nd** [**MEM**] to display the **MEMORY** menu.
2. Select **2:Mem Mgmt/Del** (**4:Delete...** on the TI-73).
3. Select **A:Apps...** or **B:AppVars...** (**8:Apps...** or **9:AppVars...** on the TI-73).
4. Press **▾** until the **▶** indicator is next to the item you wish to delete.
5. Press **DEL** (**ENTER** on the TI-73).
6. Select **2:Yes** when asked **Are You Sure?**
7. Press **2nd** [**QUIT**] to return to the Home screen.

Navigating Topics in Algebra 1

Starting the Application

1. Press **[APPS]** to display the **APPLICATIONS** menu.
2. Press **[↓]** until **ALG1PRT1** (or a chapter such as **ALG1CH1**) is highlighted, and then press **[ENTER]** to select it. The application title page is displayed.

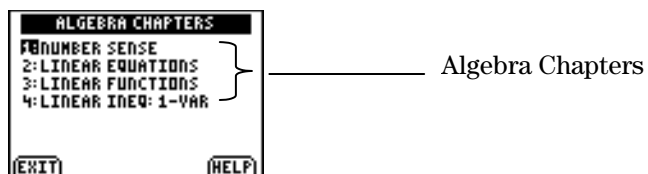


3. Press any key to start the application.

A Table of Contents page is displayed. It is the Table of Contents from which you last exited Algebra 1. You may select one of the items on the menu or press **[UP]** as often as necessary to go to the Table of Contents screen that you need.

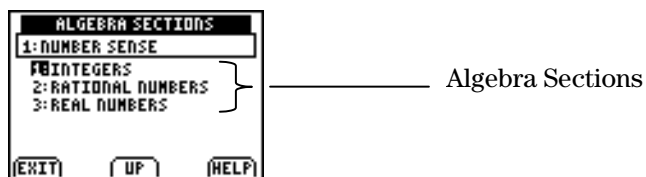
Table of Contents Screens

There are three types of Table of Contents screens—chapters, sections, and subsections.

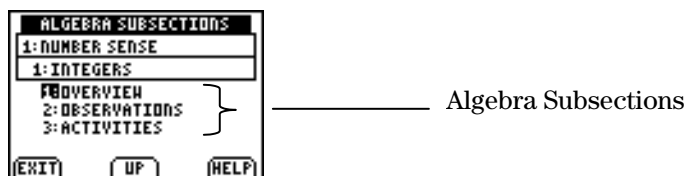


Note: If you have installed the chapters individually, only the current chapter is shown on this screen. Press **[ENTER]** to select the chapter.

When you select a chapter, the **Algebra Sections** screen is displayed. The number of sections listed varies according to chapter.



When you select a section, the **Algebra Subsections** screen is displayed. The items listed are always the same—**Overview**, **Observations**, and **Activities**.

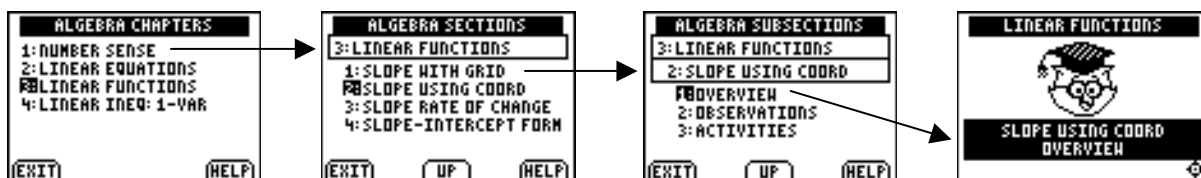


Note: When you exit and re-enter Topics in Algebra 1, you return to the Table of Contents screen from which you exited.

Navigating Topics in Algebra 1 (continued)

Selecting the Chapter, Section, and Subsection You Want

To select from a Table of Contents screen, press \downarrow if necessary to highlight the name of the chapter, section, or subsection, and then press ENTER .



When the **Overview, Observations, or Activities** opening screen appears, press \rightarrow to begin.

Returning to the Table of Contents

From most **Overview, Observations, or Activities** screens, you can press 2nd [QUIT] as many times as necessary to return to the Table of Contents. You may then select one of the items on the menu or press UP to go to higher levels of the Table of Contents.

Note: If you see (CONT) on the current screen, you must first press any key to continue.

Leaving the Application

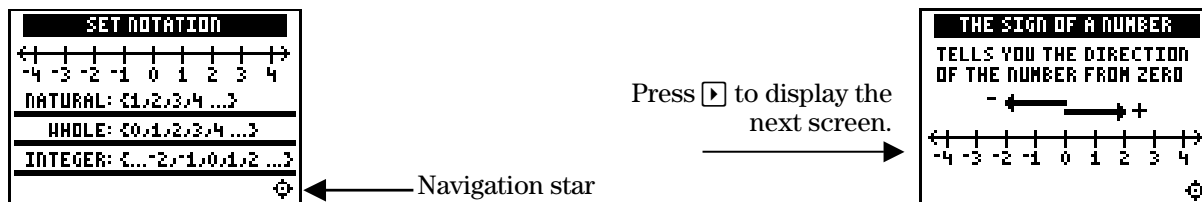
To leave the application, press 2nd [QUIT] as many times as needed to return to a Table of Contents screen, and then press EXIT . When you re-enter the application, you return to this Table of Contents screen.

Navigating Topics in Algebra 1 (continued)

Navigation Star

The navigation star is located on the bottom right of most **Overview** and **Observations** screens.

When the right and left arrows of the navigation star are flashing, press \leftarrow and \rightarrow on the calculator to page back and forward between screens. When the up and down arrows are flashing, \uparrow and \downarrow are used to navigate vertical menus (see below).

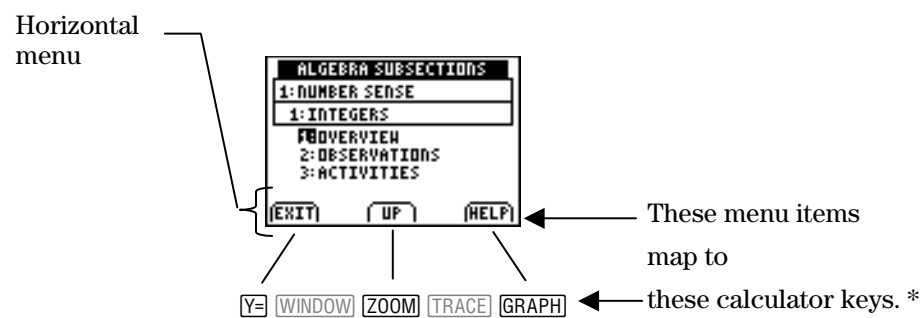


Horizontal Menus

A horizontal menu may be displayed at the bottom of the screen. The menu items help you move between screens in the application. The menu items change from one screen to another. The following are the most frequently displayed menu items.

| Menu Item | Press | To Do This |
|--------------------------|------------------|---|
| \langle EXIT \rangle | $\boxed{Y=}$ | Exit the application. |
| \langle UP \rangle | \boxed{ZOOM} | Move up a level in the menu structure. |
| \langle HELP \rangle | \boxed{GRAPH} | Display the HELP MENU . |
| \langle MAIN \rangle | $\boxed{Y=}$ | Return to the previous screen from the HELP MENU . |
| \langle BACK \rangle | \boxed{WINDOW} | Return to the HELP MENU from a HELP explanation screen. |
| \langle MENU \rangle | $\boxed{Y=}$ | Return to the previous menu screen. |
| \langle QUIT \rangle | $\boxed{Y=}$ | Quit an activity. |

To select a menu item, press the calculator key that corresponds to the menu item on the screen.



* In these materials, the items in the horizontal menus are shown in angle brackets; for example \langle EXIT \rangle , \langle UP \rangle , and \langle HELP \rangle .

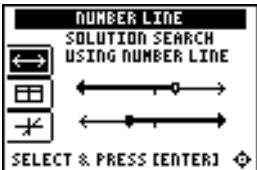
The menu items change from one screen to another. On some screens, different menu items are mapped to the calculator keys.

Navigating Topics in Algebra 1 (continued)

Vertical Menus

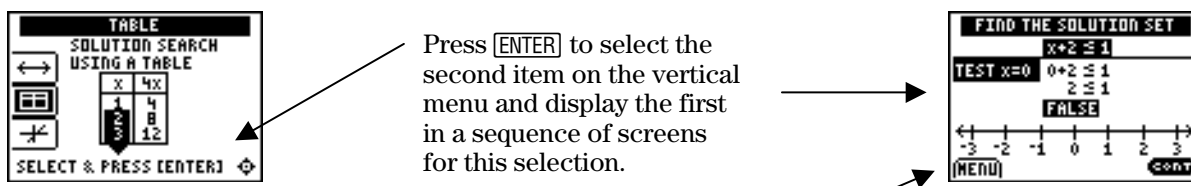
When the up and down arrows of the navigation star are flashing, press \downarrow and \uparrow on the calculator to highlight an item in a vertical menu.

Vertical menu
First item is highlighted.



As you press \downarrow and \uparrow to move through the menu, additional information is displayed to the right of the menu.

Some vertical menus only provide information. Other vertical menus are used for navigation. If **Select** or **Select & Press [Enter]** is displayed, you can press [ENTER] to select an item or to see more information.

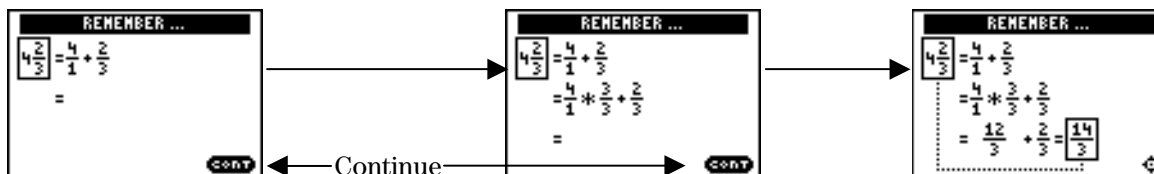


Press [ENTER] to select the second item on the vertical menu and display the first in a sequence of screens for this selection.

Press $\langle \text{MENU} \rangle$ ([Y=]) to return to the menu screen.

$\langle \text{CONT} \rangle$

When you see $\langle \text{CONT} \rangle$ (continue), you can press any key to go to the next screen.



Continue

HELP

From a Table of Contents screen, press $\langle \text{HELP} \rangle$ to view information about features of the application. To select an item, press \downarrow to highlight it, and then press [ENTER] .

