TI-10

A Guide for Teachers

Developed by
Texas Instruments Incorporated

Activities developed by
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About the Author

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About the Teacher Guide

How the Teacher Guide Is Organized

This guide consists of two sections: *Activities* and *How to Use the TI-10*. The *Activities* section is a collection of activities for integrating the TI-10 into mathematics instruction. The *How To Use the TI-10* section is designed to help you teach students how to use the TI-10 features.

- ***Activities* Section**

  The activities are designed to be teacher-directed. They are intended to help develop mathematical concepts while incorporating the TI-10 as a teaching tool. Each activity is self-contained and includes the following:

  - An overview of the mathematical purpose of the activity.
  - The mathematical concepts being developed.
  - The materials needed to perform the activity.
  - A student activity sheet.

- ***How to Use the TI-10* Section**

  This section contains examples on transparency masters. Chapters are numbered and include:

  - An introductory page describing the TI-10 keys presented in the examples, the location of those keys on the TI-10 keyboard, and pertinent notes about the functions of those keys.
  - The transparency masters following the introductory page provide examples of practical applications of the keys being discussed. The keys being discussed are shown in black on an illustration of the TI-10 keyboard.

Things to Keep in Mind

- While many of the examples on the transparency masters may be used to develop mathematical concepts, they were not designed specifically for that purpose.
- For maximum flexibility, each example and activity is independent of the others. Select the transparency master for the key your students need to use to develop the mathematical concepts you are teaching. Then select an appropriate activity for the mathematical concept you are teaching.
- If an example does not seem appropriate for your curriculum or grade level, use it to teach the function of the key(s), and then provide relevant examples of your own.
- To ensure that students start at the same point, have them press AC to clear the TI-10, and then press Clear to clear the display.

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About the TI-10

Two-Line Display

The first line displays an entry of up to 11 characters. Entries begin on the top left. If the entry does not fit on the first line, it wraps to the second line. When space permits, both the entry and the result appear on the first line.

The second line displays up to 11 characters. If the entry is too long to fit on the first line, it wraps to the second line. If both entry and result do not fit on the first line, the result is displayed right-justified on the second line. Results longer than 10 digits are displayed in scientific notation.

If an entry does not fit on two lines, it continues to wrap, so that you always see the last two lines of the entry. You can view the beginning of the entry by scrolling up. In this case, only the result appears when you press Enter.

Display Indicators

Refer to Appendix B for a list of the display indicators.

Error Messages

Refer to Appendix D for a listing of the error messages.

Order of Operations

The TI-10 uses the Equation Operating System (EOS™) to evaluate expressions. The operation priorities are listed on the *Display, Scrolling, Order of Operations, and Parentheses* transparency master in the *How to Use the TI-10* Section.

Because operations inside parentheses are performed first, you can use (and) to change the order of operations and, therefore, change the result.

Menus

The Mode key displays menus.

- To move up or down through the menus, press ▲ or ▼.
- To move the cursor and underline a menu item, press ◀ or ▶.
- To return to the previous screen without selecting the menu item, press Mode or Clear.
- To select a menu item, press Enter while the item is underlined.
- To return to the previous screen, press Mode or Clear.

Refer to Appendix C for more information about menus.

Previous Entries (History)

After an expression is evaluated, use ▲ and ▼ to scroll through previous entries and results, which are stored in the TI-10 history.

Problem Solving (◈)

The Problem Solving tool has three features that students can use to challenge themselves with basic math operations and place value.

- Problem Solving Automatic mode provides a set of exercises to challenge the students' skills in addition, subtraction, multiplication, and division.

  Problem Solving Automatic mode lets students select the level of difficulty (1, 2, or 3) and the type of operation (+, –, x, ÷ , or ?).
- Problem Solving Manual mode lets students compose their own problems, which may include missing elements or inequalities.

About the TI-10 (Continued)

- Problem Solving Place Value has three options that let students:
  - Find the place value of a given digit.
  - Find how many ones, tens, hundreds, thousands, tenths, or hundredths are in a given number.
  - Find the digit in the ones, tens, hundreds, thousands, tenths, or hundredths place of a given number.

Resetting the TI-10

You can reset the TI-10 in any of the following ways:

- Press AC.
- Press On/Off and Clear simultaneously.
- Press Mode, select the **RESET** menu, select **Y** (yes), and then press Enter.

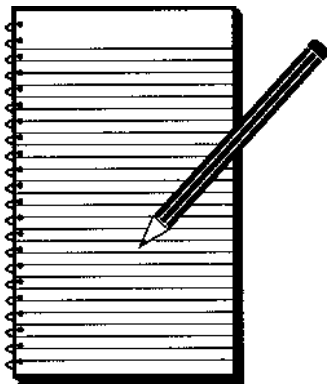
When you reset the TI-10, **MEM CLEARED** is displayed. Press Clear to clear the display.

Resetting the TI-10:

- Returns settings to their defaults:
  - Standard notation (floating decimal)
  - Problem Solving **AUTO** mode
  - Quotient and Remainder results for division
  - Difficulty Level 1 (addition) in Problem Solving tool
  - Type of Operation — addition
- Clears:
  - Pending operations
  - Entries in history
  - The constant (stored operation)
  - Any error condition

Automatic Power Down™ (APD™)

If the TI-10 remains inactive for about five minutes, Automatic Power Down (APD) turns it off automatically. To turn the TI-10 on again after APD, press On/Off. The display, pending operations, settings, and memory are retained.



Activities

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What's the Problem?	7
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The Value of Place Value

Overview

Students will build their flexibility in using numbers by exploring the connections between the number symbols and their representations with base-ten materials.

Math Concepts

Grades 2 - 4

- whole number place value (through thousands)
- money

Grades 4 - 6

- decimal place value (through hundredths)
- metric units (meters, decimeters, centimeters)

Materials

- TI-10
- pencil
- *Counting on Frank* by Rod Clement
- base-ten materials
- student activity (pages 5 and 6)

Introduction

1. Read *Counting On Frank* by Rod Clement. Discuss other kinds of questions that a person could ask about how many objects fit in or on other objects.

2. Divide students into several groups. Give each group a large pile of units (over 300) from the base-ten materials. Tell them that this is how many jelly beans fit into a jar that you filled. Ask them to count the "jelly beans." Observe the techniques they use to count (counting one at a time, making groups of 10, etc.).

3. Tell students you have run out of unit pieces and then ask:

   How many rods (groups of 10) would I need to use to make a pile of "jelly beans" the same size as yours?

4. Have students explore the answer to this problem with their units, or they can apply their knowledge of place value. Then show them how to explore the answer using the TI-10.

5. Have students compare their solutions with the base-ten materials to the TI-10 display. (They can make 31 tens rods from the 314 units, with 4 units left over.)

To use the Place Value feature for this activity:

1. Press ◈ (Mode).
2. Press ➔ [Enter] to select **MAN** (manual) mode, if necessary.
3. Press ➔ [Enter] to set the Place Value feature to **11 –.** This lets you find out how many ones, tens, hundreds, etc., there are in a number.

   Note: You can use the **– 1 –.** Place Value feature to find what digit is in the ones, tens, hundreds, etc., place.
4. Press (Mode) to return to the entry screen.

To explore answers to this problem on the TI-10:

1. If necessary, press ◈ to enter the Problem Solving tool.
2. Enter 314, the number of units.
3. Press [■.] [10.] to see how many tens there are in 314. The display shows **31…**, indicating there are 31 tens in 314.

Collecting and Organizing Data

Have students use their base-ten materials and TI-10s to continue exploring other numbers and identifying how many units, tens, hundreds, and thousands those numbers contain. Older students can find how many tenths and hundredths are in the numbers. Encourage exploration with questions such as:

- *How many hundreds are in 120? 2478? 3056?*
- *How many tens are in 120? 2478? 3056?*
- *How many units (ones) are in 120? 2478? 3056?*
- *What numbers can you find that have 12 units? 12 tens? 12 hundreds?*
- *What numbers can you find that have 60 units? 60 tens? 60 hundreds?*

Analyzing Data and Drawing Conclusions

Have students use the tables on *The Value of Place Value* Student Activity pages to record their findings and identify the patterns they see. To help them focus on the patterns, ask questions such as:

- *How does the number of tens in 1314 compare to the number 1314? How about 567? 2457? 4089, etc.?*

  If you cover the digit in the units place, you see how many tens are in a number.

- *How does the number of hundreds in 1314 compare to the number 1314? How about 567? in 2457? in 4089, etc.?*

  If you cover the digits to the right of the hundreds place, you see how many hundreds are in a number.

- *How does the display on the TI-10 compare to what you can do with the base-ten materials?*

  If the TI-10 displays **31**_, for 316, you should be able to make 31 tens rods out of 316 units.

In ◈ (Problem Solving) **MAN** (manual) mode, students can use the **11 –.** Place Value feature to test their conjectures. For example, if they think 1602 has 160 hundreds, they enter **1602**, press [■.] [100.], and see **16…..**. They can then use base-ten materials to see why there are only 16 hundreds in 1602.

Note: Students can use the **– 1 –.** place value feature to find what digit is in the hundreds place. They enter **1602**, press [■.] [100.], and see **…6…..**. This result means that *6* is the digit in the hundreds place.

Continuing the Investigation

Connect the place-value patterns to money. For example, ask students:

- *If each one of your "jelly beans" costs a penny, how many pennies would you spend for 1,314 jelly beans?*

  1,314 pennies

- *How many dimes (tens) would you spend?*

  131 dimes and 4 more pennies

- *How many dollars (hundreds)?*

  13 dollars, plus 14 more pennies, or 1 dime and 4 pennies

Older students can record the money and enter it into the TI-10 in decimal form, 13.14. Then, they can use the TI-10 to connect dimes to 1/10 (0.1) of a dollar ($13.14 has 131 dimes or tenths). They can also connect pennies to 1/100 (0.01) of a dollar ($13.14 has 1314 pennies or hundredths).

Older students can also connect the place-value patterns to conversions between metric units. For example, a measurement of 324 centimeters can also be recorded as 32.4 decimeters (or rounded to 32 dm) because 1 dm = 10 cm, or it can be recorded as 3.25 meters (or rounded to 3 m) because 1 m = 100 cm.

The Value of Place Value, Part A

Name _____

Date _____

Collecting and Organizing Data

1. Use your base-ten materials and your TI-10 to explore how many tens, hundreds, and thousands are in a number. Record your observations in the table.

Number	Number of Thousands	Number of Hundreds	Number of Tens

2. What patterns do you see?

Analyzing Data and Drawing Conclusions: Patterns

1. Write 5 numbers that have 15 tens.

_____

2. Write 5 numbers that have 32 hundreds.

_____

3. Write 5 numbers that have 120 tens.

_____

The Value of Place Value, Part B

Name _____

Date _____

Collecting and Organizing Data

1. Use your base-ten materials and your TI-10 to explore how many tenths and hundredths are in a number. Record your observations in the table. What patterns do you see?

Number	Number of Tenths	Number of Hundredths

2. What patterns do you see?

Analyzing Data and Drawing Conclusions: Patterns

1. Write 5 numbers that have 15 tenths.

_____

2. Write 5 numbers that have 32 hundredths.

_____

3. Write 5 numbers that have 120 tenths.

_____

What's the Problem?

Overview

Students will connect number sentences to problem situations and use addition, subtraction, multiplication, and division to solve the problems.

Math Concepts

Grades 1 - 5

- addition, subtraction
- number sentences (equations)

Grades 3 - 5

- multiplication, division
- inequalities

Materials

- TI-10
- counters
- pencil
- student activity (page 10)

Introduction

1. On a sentence strip or on the overhead, display a number sentence, such as **8 + 2 = ?**. Have students brainstorm situations and related questions that this number sentence could represent and then ask:

   If I bought eight postcards on my vacation, and I had two postcards already at home, how many postcards do I have now?

2. If necessary, have students act out the situation with counters and determine that the value of **?** is 10.

3. Demonstrate how to display this equation on the TI-10 and how to tell the TI-10 what the value of **?** is.

4. Now display an equation such as **? - 10 = 4**. Have students brainstorm situations and related questions that this number sentence could represent.

   I had some money in my pocket, and I spent 10 cents of it. I only have 4 cents left. How much money did I have in my pocket to begin with?

   Have students practice the keystrokes necessary to display this equation and test the value they determine for **?**.

5. Over a period of time, continue to introduce students to different types of number sentences to explore. For example, **? x ? = 24** (which has 8 solutions of whole number factor pairs) and **? x 4 = 2** (which has no whole number solution).

To display **8 + 2 = ?**:

1. Press ◈ (Mode) ➔ [Enter] to put the TI-10 in Problem Solving **MAN** (manual) mode.
2. Press (Mode) to exit the menu.
3. Press **8** [+] **2** [=] [?] [Enter]. The TI-10 displays **1 SOL** (one whole number solution).
4. Enter **10** and press [Enter] to test the solution. The TI-10 displays the equation and **YES**.

If an incorrect value is tested for **?**, the TI-10 displays **no** and provides a hint. For example, if a student tests 15 for the equation **? - 10 = 4**, the TI-10 displays **no**, shows **15 - 10 > 4**, and then returns to the original equation.

Note: After three incorrect answers, the TI-10 displays the correct answer.

Collecting and Organizing Data

As an ongoing activity, have students work in pairs and use the *What's the Problem?* Student Activity page to create problem-solving cards. One partner is responsible for the calculations on the TI-10, and the other partner is responsible for writing number sentences.

1. Have the partner responsible for writing number sentences create an addition, subtraction, multiplication, or division number sentence, using the **?**, and then, record the number sentence in the top box on Page 10.

2. Have the partner responsible for the TI-10 enter the number sentence into the calculator.

3. Have the partner responsible for writing number sentences create a situation and question to go with the number sentence and then record this information in the bottom box.

The partners can work together to glue or tape the two boxes to opposite sides of an index card.

Have students work together using the TI-10 to explore how many whole number solutions the equation has and test those solutions. Provide ideas for exploration by asking questions such as:

- *What actions could be happening in your story to go with addition (subtraction, multiplication, or division)?*
- *How could you use the counters to act out this number sentence?*
- *What could this number in the number sentence represent in your story?*
- *What could the question mark in the number sentence represent in your story?*
- *Can you make a story for a number sentence that begins with a question mark?*

Analyzing Data and Drawing Conclusions

To help student focus on thinking about the relationships between their stories and the numbers and operations in their number sentences, ask questions such as:

- *How would using a different number here change your story?*
- *How would using a greater than or less than symbol instead of an equal sign in the number sentence change your story?*
- *How would using a different operation in your number sentence change your story?*

Continuing the Investigation

- Have partners create stories and trade them. Each partner can then write a number sentence to go with the other partner's story.
- Have students sort their number sentences into categories. For example, those with no whole number solutions, those with 1 whole number solution, those with 2 whole number solutions, and those with infinite whole number solutions.
- Have students try to find an equation or inequality with exactly no whole number solutions, exactly 1 whole number solution, exactly 2 whole number solutions, more than 5 whole number solutions, etc.

What's the Problem?

Name _____

Date _____

1. Write a number sentence using an operation and the **?**.

2. Write a story that describes a situation and asks a question that can be represented by the number sentence.

Comparing Costs

Overview

Students will solve a problem using division with an integer quotient and remainder, solve the same problem using division with the quotient in decimal form, and then compare the results.

Math Concepts

- division
- multiplication
- fractions
- decimals

Materials

- TI-10
- pencil
- student activity (page 14)

Introduction

1. Introduce this problem.

   The maintenance department has determined that it will cost $.40 per square yard to maintain the district's soccer field each year. The soccer field is 80 yards wide and 110 yards long. The six schools that play on the field have decided to split the cost evenly. How much should each school contribute to the soccer field maintenance fund this year?

2. Have students use the TI-10 to solve this problem in two ways:
   - Find the integer quotient and remainder.
   - Find the quotient in decimal form.

The TI-10 default division setting (**QR**) displays an integer quotient with a remainder.

Collecting and Organizing Data

Students should record their procedures and results on the *Comparing Costs* Student Activity page. To help them focus on their thinking, ask questions such as:

- *What did you enter into the TI-10 to solve the problem?*
  - **80** [×] **110** [=] to determine the area of the soccer field.
  - [×] **0.40** [=] to find the total maintenance cost.
  - [÷] **6** [=] to find the cost for each school in decimal form.

To display a quotient in decimal form:

1. Press [AC] [Clear] to reset the TI-10.
2. Press [Mode] → to underline . (decimal format).
3. Press [Enter] to select the decimal setting.
4. Press [Mode] to exit the ÷ (division) menu and return to the previous screen.

- *Could you have solved the problem more efficiently? How?*

  80 x 110 can be calculated mentally, and the key presses can be simplified to **8800** [×] **.4** [÷] **6** [=].

- *How are your procedures alike for each type of solution?*

  The procedures all involve finding how many square yards in the soccer field; they all involve multiplication and division.

- *How are they different?*

  You use different keys to tell the TI-10 in what form you want the answer displayed.

Analyzing Data and Drawing Conclusions

To guide students in the analysis of their data, ask questions such as:

- *How are your solutions in the two forms alike?*

  The solutions all have a whole number component of 586.

- *How are your two solutions different?*

  The remainder form just tells how many dollars are left over. The decimal form tells how much more than $586 each school has to pay.

- *What happens if you multiply each solution by 6 to check it?*

  For the quotient and remainder form, when you multiply 586 by 6, you get 3516, so you must then add the remainder, 4, to get the total cost of $3520.

  If you multiply the decimal result 586.6666667 by 6 (**586.6666667** [×] **6** [=]), you get 3520. However, this result does not make sense because 6 x 7 does not end in a 0!

  Because we are referring to money calculations, you can fix the decimal result, 586.6666667, to 2 decimal places (**586.6666667** [Fix] [0.01] [Enter]). When you multiply the rounded number 586.67 by 6 (**586.67** [×] **6** [=]), you get 3520.00. This result still does not make sense because 6 x 7 = 42.

  If you reset and clear the TI-10, and then multiply 586.67 by 6 ([AC] [Clear] **586.67** [×] **6** [=]), you get 3520.02. This calculation does make sense.

- *As a school, which form of the quotient would you want to use?*

  Responses may vary. Some students may want to use the decimal form, since it is the closest to the representation of money. Some students may want to use the integer quotient and remainder form and suggest that the Central Office pay the $4.00 remainder.

For an integer division (with quotient and remainder), the TI-10 uses only the quotient of the result in subsequent calculations. The remainder is always droped.

The TI-10 only rounds the displayed result. The internally stored value is *not* rounded. When you fix 586.6666667 to 2 decimal places (586.67), and then multiply by 6, the TI-10 *remembers* the original number (586.6666667), and uses it as the factor. But when you enter the rounded number, 586.67, the TI-10 uses the number you entered for the factor, calculating a product of 3520.02.

Comparing Costs

Name _____

Date _____

Collecting and Organizing Data

The Maintenance department has determined that it will cost $4.00 per square yard to maintain the district's soccer field each year. The soccer field is 80 yards wide and 110 yards long. The 6 schools that play on the field have decided to split the cost evenly. How much should each school contribute to the soccer field maintenance fund this year?

1. Use division with an integer quotient and remainder to find the answer.

2. Use division with a quotient in decimal form to find the answer.

Analyzing Data and Drawing Conclusions

Write a short paragraph comparing the two solutions.

How to Use the TI-10

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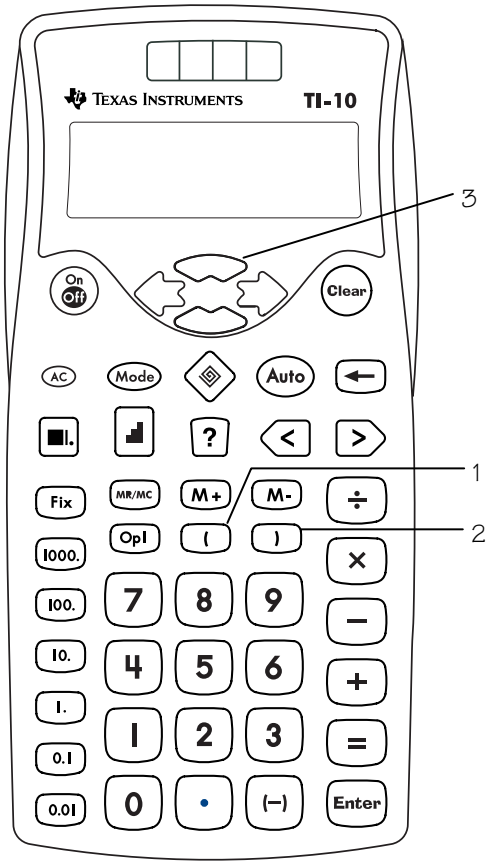
Display, Scrolling, Order of Operations, and Parentheses

1

Keys

1. (opens a parenthetical expression. You can have as many as eight parentheses at one time.
2.) closes a parenthetical expression.
3. ◄ and ► move the cursor left and right.

   ▲ and ▼ move the cursor up and down through previous entries/results and menus.



Notes

- The examples on the transparency masters assume all default settings. Press AC Clear to reset the TI-10 to the default settings and clear the display.
- The EOS™ transparency master shows the order in which the TI-10 completes calculations.
- When using parentheses, if you press = before pressing), **Syn Error** is displayed. Press Clear to return to the previous display.
- Operations inside parentheses are performed first. Use (and) to change the order of operations and, therefore, change the result.

  Example: 1 + 2 x 3 = 7
  (1 + 2) x 3 = 9
- The first and second lines display entries up to 11 characters. Entries begin on the left and scroll to the right. An entry always wraps at the operator.
- Results are displayed right-justified. If a complete problem does not fit on the first line, the result displays on the second line.
- If an entry does not fit on two lines, it continues to wrap. You can view the beginning of the entry by using ▲ to scroll.

Equation Operating System (EOS™)

Priority	Functions
1 (first)	Expressions inside parentheses ( ).
2	Functions that require a closing parenthesis) and precede the argument.
3	Negation (−).
4	Multiplication, implied multiplication, division (× ÷).
5	Addition and subtraction (+ −).
6 (last)	= completes all operations.

Because operations inside parentheses are performed first, you can use parentheses to change the order of operations and, therefore, change the result.

Order of Operations

$1 + 2 \times 3 =$

Press	Display
AC Clear	4
1 + 2 × 3 =	1+2×3= 7

$(1 + 2) \times 3 =$

Press	Display
(1 + 2) × 3 =	(1+2)×3= 9

Add

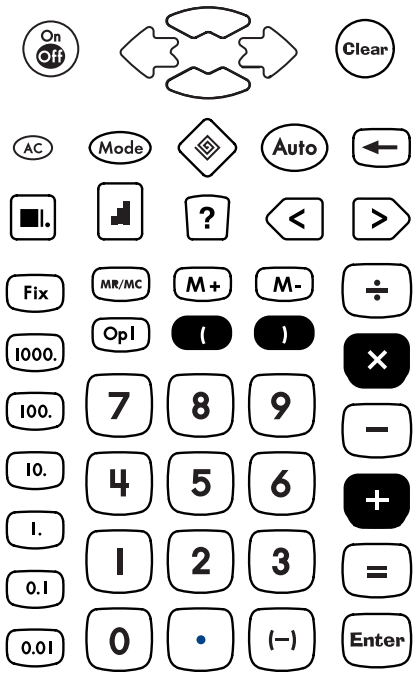
+

Multiply

×

Parentheses

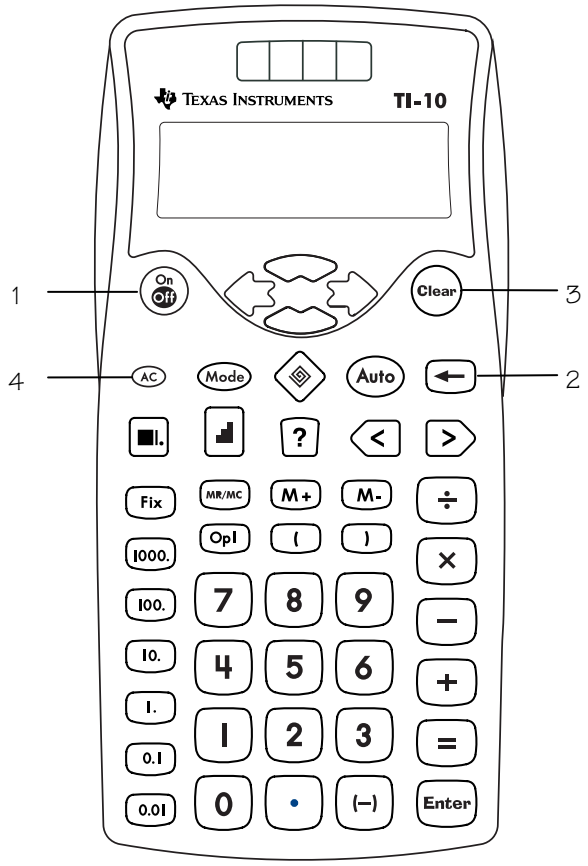
( )



Clearing and Correcting 2

Keys

1. (On/Off) turns the TI-10 on and off.
2. (←) clears the last digit you entered, allowing you to correct an entry without re-entering the entire number.
3. In the Calculator tool, (Clear) clears the last entry, all pending operations, and any error conditions. You can then enter a new problem and continue your calculation.
4. (AC) resets the TI-10.



Notes

- The examples on the transparency masters assume all default settings. Press (AC) (Clear) to reset the TI-10 and clear the display.
- You can reset the TI-10 in any of the following ways:
  - Press (AC).
  - Press (On/Off) and (Clear) simultaneously.
  - Press (Mode), select the **RESET** menu, select **Y** (Yes), and then press [Enter].
- When you reset the TI-10, the message **MEM CLEARED** is displayed. Press (Clear) to clear the display.
- Resetting the TI-10 returns settings to their defaults:
  - Standard notation (floating decimal)
  - Problem Solving Auto mode
  - Quotient and Remainder result for division
  - Difficulty Level 1 (addition) in Problem Solving
  - Addition as the Type of Operation
- Clears:
  - Pending operations
  - Entries in history
  - The constant (stored operation)
  - Any error condition

Notes (continued)

- Pressing Clear alone does not affect the mode settings, memory, history, or constant.
- In ◈ (Problem Solving) **AUTO** (automatic) mode, pressing Clear lets you clear your answer from the display before you press Enter.
- In ◈ (Problem Solving) **MAN** (manual) mode, pressing Clear lets you clear your problem before you press Enter or it lets you clear your answer before you press Enter.

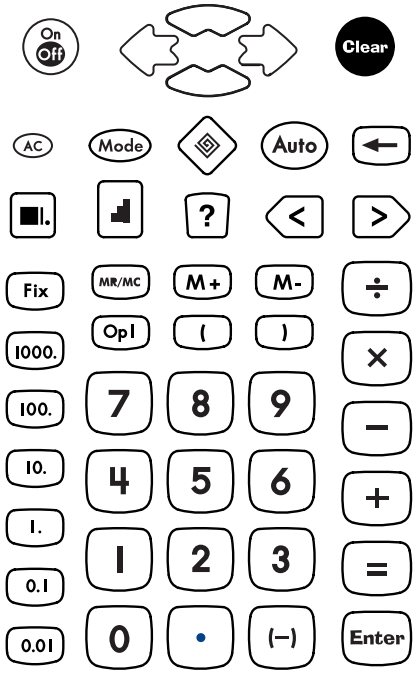
Clearing entries

1. Enter 35 + 10.
2. Clear the entry and pending operation.
3. Enter 35 – 9.
4. Complete the calculation.

Press	Display
AC Clear	4
35 + 10	35+10
Clear	4
35 – 9	35-9
=	35-9= 26

Clear

Clear



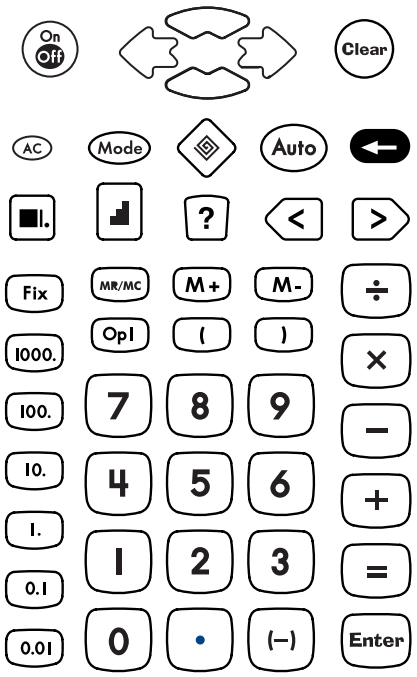
Correcting entry errors using ←

1. Enter 69 + 3.
2. Change the 9 to an 8.
3. Add 3.
4. Complete the calculation.

Press	Display
AC Clear	4
69 + 3	69+34
← ← ← 8	684
+ 3	68+34
=	68+3= 71

Backspace

←

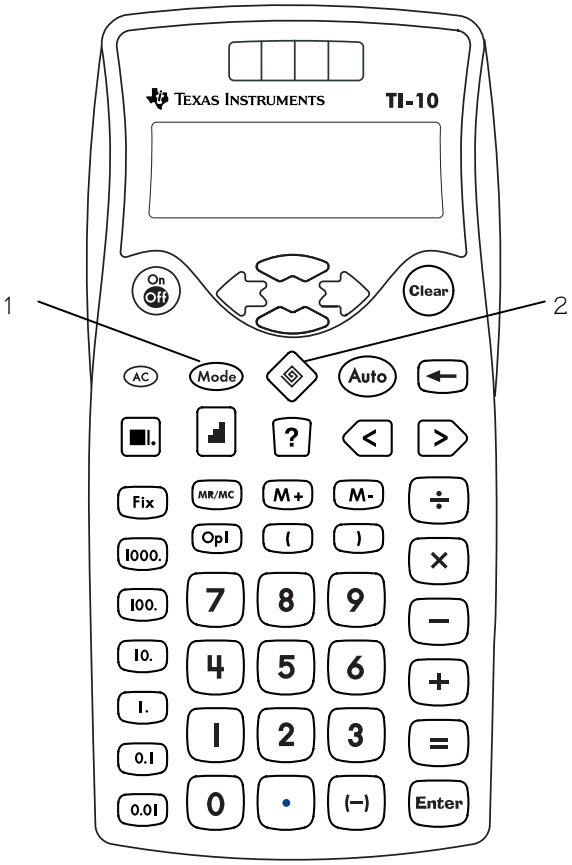


Menus

3

Keys

1. Mode displays the Calculator tool menus (See page 24).
2. ◈ Mode displays the Problem Solving tool menus (See page 25).



Notes

- The examples on the transparency masters assume all default settings. Press AC Clear to reset the TI-10 and clear the display.
- The Calculator tool is active when you turn the TI-10 on. When the Calculator tool is active, press Mode to access the Calculator menus. See page 24 for all the Calculator menu options.
- Press ◈ to access the Problem Solving tool. When the Problem Solving tool is active, the ◈ indicator shows on the top line of the TI-10 display. While the Problem Solving tool is active, press Mode to access the Problem Solving menus. See page 25 for all the Problem Solving menu options.
- See Appendix C for a complete menu map.
- To select an option from any menu, highlight the item you want and press Enter. To exit the menu, press Mode again.
- Press Auto to toggle between the **AUTO** (automatic) and **MAN** (manual) modes in the Problem Solving tool.
- Press ◪ to change the level of difficulty, while you're in the Problem Solving **AUTO** mode. After reaching Level 3, the TI-10 cycles back to Level 1.

Calculator Tool

Press	Menu	Option	Explanation	Example
AC Clear Mode	÷ (Division)	**QR**	Displays division results as a quotient and remainder.	2 r 1
		.	Displays division results as a decimal.	2.25
AC Clear Mode ▸	**OP** (Constant Operation)	**+ 1**	Shows the constant operation on the display.	1 x 5 1 5
		?	Hides the constant operation.	1 5
AC Clear Mode ▸ ▸	**CLEAR OP1**	**Y** (Yes)	Clears the operation and value stored in OP1.	Y n CLEAR OP1
		n (No)	Retains the value and operation stored in OP1.	Y n CLEAR OP1
AC Clear Mode ▸ ▸ ▸	**RESET**	**n** (No)	Does not reset the calculator.	n Y RESET
		Y (Yes)	Resets the calculator.	n Y RESET

Problem Solving Tool

Press	Menu	Option	Explanation	Example
AC Clear ◈ Mode	(Mode)	**AUTO** (automatic)	Default. Presents problems with one element missing.	◈ Auto 5 + 2 = ?
		MAN (manual)	Lets you compose your own problems with missing elements.	◈ 5 + ?= 7

Problem Solving AUTO (automatic) Mode

Press	Menu	Option	Explanation	Example
AC Clear ◈ Mode ◂▸ OR ▟	▪ ▪▪ ▪▪▪ (Level of Difficulty)	**1 2 3**	After Level 3 the TI-10 cycles back to Level 1.	◈ Auto 4 + ? = 10
AC Clear ◈ Mode ◂▸ ◂▸	(Type of Operation)	**+ − × ÷ ?**	Add, subtract, multiply, divide, find the operation.	◈ Auto 10 - ? = 4

Problem Solving MAN (manual) Mode

Display options for Problem Solving Place Value only.

Press	Menu	Option	Explanation	Example
AC Clear ◈ Auto Mode ◂▸	▪▪▪ ▪. .▪ (Place Value)	**11 -.**	Lets you find out how many ones, hundreds, thousands, tenths, or hundredths a number contains.	Press 1234 ▪. 100. ◈ ▪. 1234 12_ _
		- 1 -.	Lets you find out what digit of a number is in a specified place.	Press 1234 ▪. 100. ◈ ▪. 1234 _2_ _

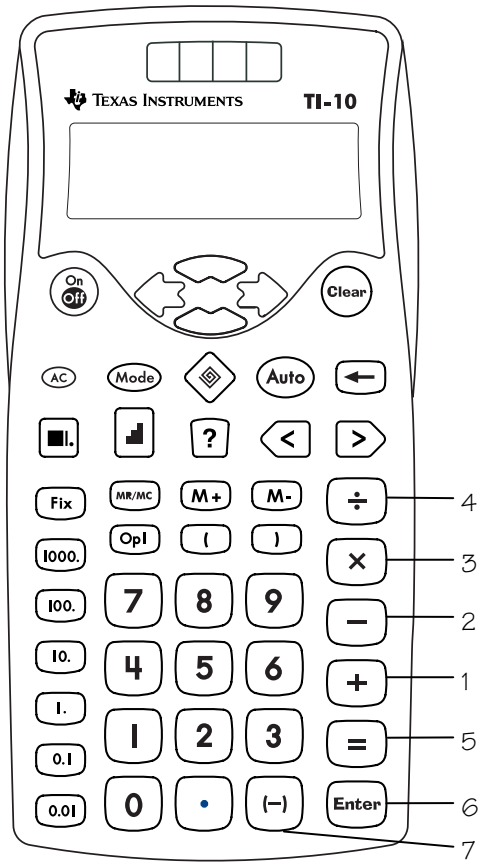
Basic Operations 4

Keys

1. [+] adds.
2. [−] subtracts.
3. [×] multiplies.
4. [÷] divides.
5. [=] completes the operation.
6. [Enter] completes the entry.
7. [(−)] lets you enter a negative number.

Notes

- The examples on the transparency masters assume all default settings. Press [AC] [Clear] to reset the TI-10 and clear the display.



- There are two options for displaying division results.
  - When the **QR** setting is selected, the result of division appears as quotient and remainder (__ **r** __). **QR** is the default setting.
  - When the decimal (**.**) setting is selected, the result of division is displayed as a decimal.
- If you use the result of division in a subsequent calculation, only the quotient is used. The remainder is dropped.
- The maximum number of digits for quotient and remainder is 5. The quotient, remainder, and the **r** character together can total up to 11 characters.
- When the **QR** setting is selected for division all numbers must be positive whole numbers.
- If you attempt to divide by 0, a ***÷ 0 ERROR*** message is displayed.
- [+], [−], [×], [÷], [Enter], and [=] work with the built-in constants.
- The negative symbol (-) will appear smaller than the minus sign(−) in the display.

Basic operations

$2 + 5 - 6 =$

Press	Display
AC Clear	4
2 + 5 − 6 =	2+5-6= 1

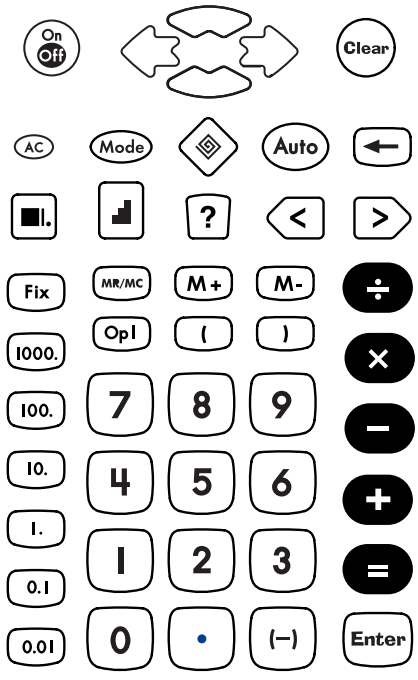
$3 \times 4 \div 2 =$

Press	Display
AC Clear	4
3 × 4 ÷ 2 =	3×4÷2= brO

Add, Subtract

Multiply, Divide

Equals



Finding patterns in previous problems

Enter the problems.

1 + 1 =

1 + 2 =

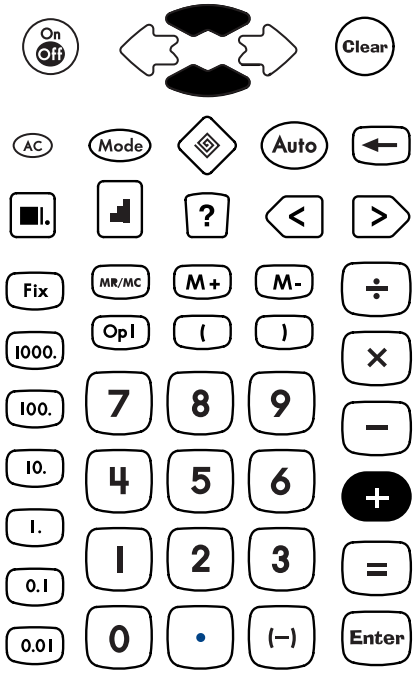
1 + 3 =

Review history (previous problems) to determine the pattern.

Add

History

Press	Display
AC Clear	4
1 + 1 =	1+1 = 2
1 + 2 =	1+2 = 3
1 + 3 =	1+3 = 4
▲ ▲	1+1 = 2 1+2 = 3
▲	1+2 = 3 1+3 = 4



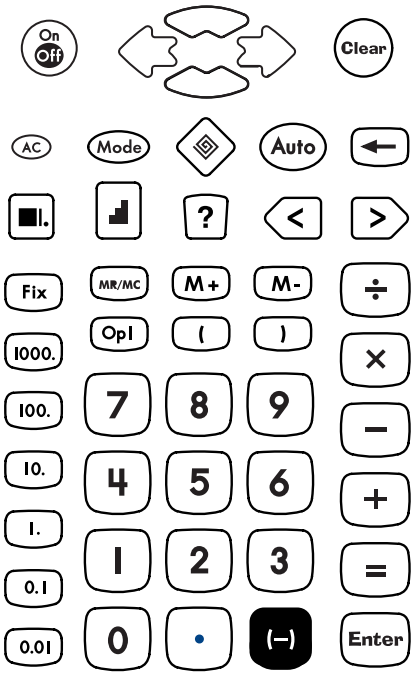
Entering negative numbers

The temperature in Utah was -3° C at 6:00 A.M. By 10:00 A.M., the temperature had risen 12° C. What was the temperature at 10:00 A.M.?

Press	Display
AC Clear	4
(–) 3 + 12 =	-3+12= 9

Negative

(–)



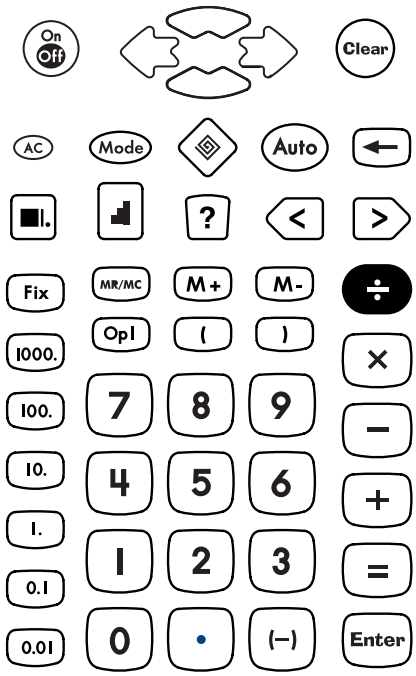
Division with remainders

Chris has 27 pieces of gum.
He wants to share the pieces evenly among himself and 5 friends. How many pieces will each person get? How many pieces will be left over?

Press	Display
AC Clear	4
27 ÷ 6 =	27÷6= 4r3

Divide

÷



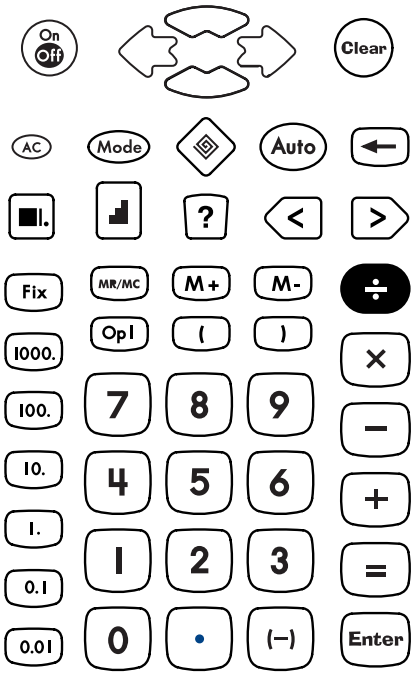
Division with decimal result

Set the division display option to decimal and divide 27 by 6.

Press	Display
AC Clear	4
Mode ➡ Enter	. ÷ OK ÷
Mode	. ÷ 4
27 ÷ 6 =	. ÷ 27÷6= 4.5

Divide

÷



Calculating equivalent units of time

Sara ran 2 kilometers in 450 seconds. Convert her time to minutes and seconds.

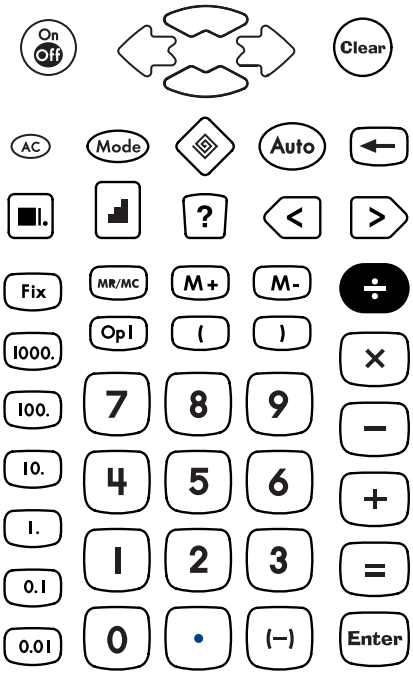
450 seconds = ? minutes
? seconds

Press	Display
AC Clear	4
450 ÷ 60 =	450÷60= 7r30

(7 minutes, 30 seconds)

Divide

÷



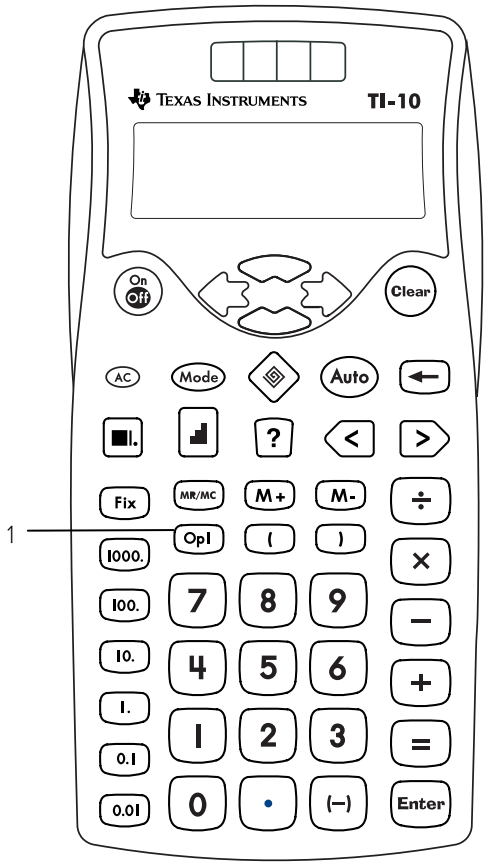
Constant Operation 5

Keys

1. Opl lets you store an operator (+ − × ÷) and a number as a constant for repeated use.

Notes

- The examples on the transparency masters assume all default settings. Press AC Clear to reset the TI-10 and clear the display.
- The constant operation is set in conjunction with Opl when you perform a calculation that uses the +, −, ×, or ÷ key.

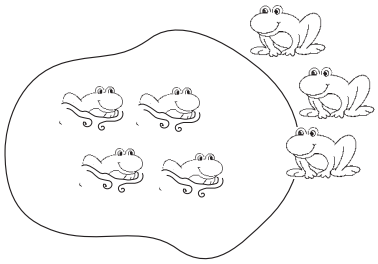


- The constant operation works with whole numbers and decimals.
- When you use the constant operation (Opl), a counter appears on the left side of the display and the result appears on the right side of the display. The counter shows how many times the constant has been repeated. If the number at the right exceeds 6 digits, the counter will not be shown. The counter returns to 0 after it reaches 99.
- When you use division as the operation for a constant, you can choose either division format setting - quotient with a remainder (**QR**) or decimal (**.**). For **QR** format, only the quotient is used in subsequent calculations; the remainder is dropped.
- To clear a stored constant operation:
  - Press AC to reset the TI-10. (Press Clear to return to the previous screen.)
  - Press Mode ▸ ▸ to scroll to the **CLEAR OP1** menu, select **Y**, and then press Enter. Then press Mode to return to the previous screen.

    Note: Pressing Clear by itself does not clear the constant.

Addition as "counting on"

There are 4 frogs in a pond. If 3 more frogs jump into the pond one at a time, how many frogs will be in the pond?



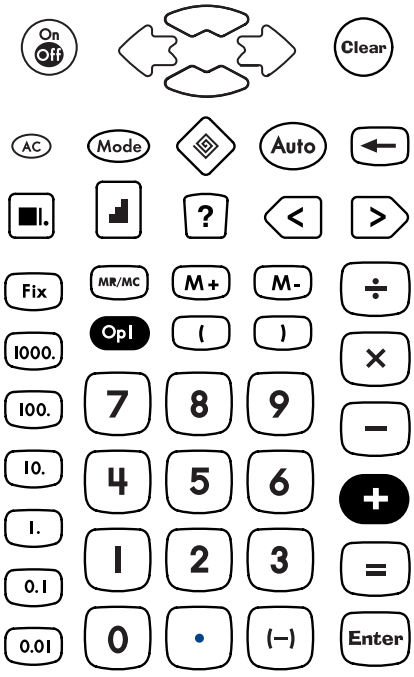
Constant operation

Opl

Add

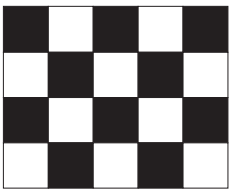
+

Press	Display
AC Clear	4
Opl + 1 Opl (store operation)	Op1 + 1
4 (initialize using 4)	Op1 4 4
Opl (add 1, one at a time)	Op1 4 + 1 1 5
Opl	Op1 5 + 1 2 6
Opl	Op1 6 + 1 3 7



Multiplication as "repeated addition"

Maria put new tile in her kitchen. She made 4 rows with 5 tiles in each row. Use repeated addition to find how many tiles she used. Before you begin, set the TI-10 to hide the constant operation.



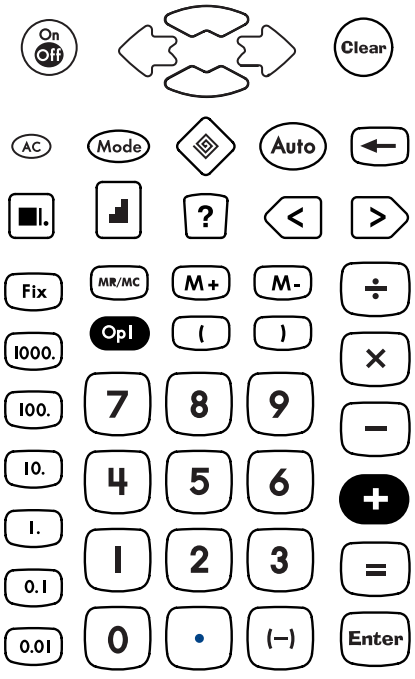
Constant operation

Opl

Add

+

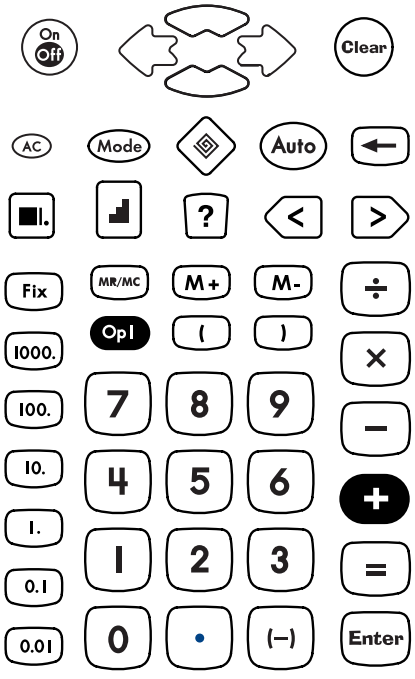
Press	Display
AC Clear	4
Mode → → Enter (hide constant operation)	+1 ? OP ----
Mode (clear the menu)	4
Opl + 5 Opl (store the constant operation)	Op1 +5
0 (initialize using 0)	Op1 04



(Continued)

Multiplication as "repeated addition" (Continued)

Press	Display
Opl	Op1 1 5
Opl	Op1 2 10
Opl	Op1 3 15
Opl	Op1 4 20



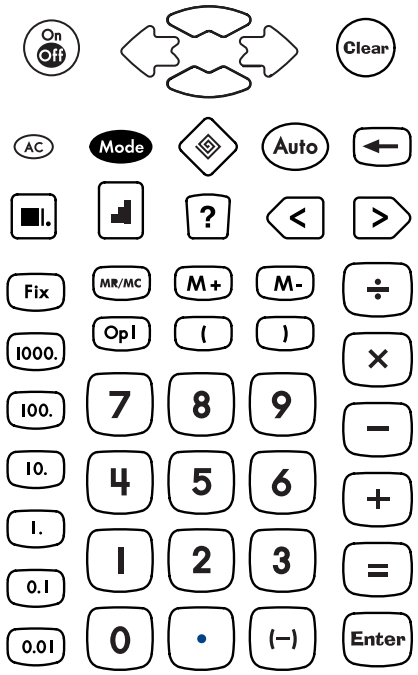
Clearing the constant operation

Before entering a new operation in OP1, you must clear the current values.

Mode menu

Mode

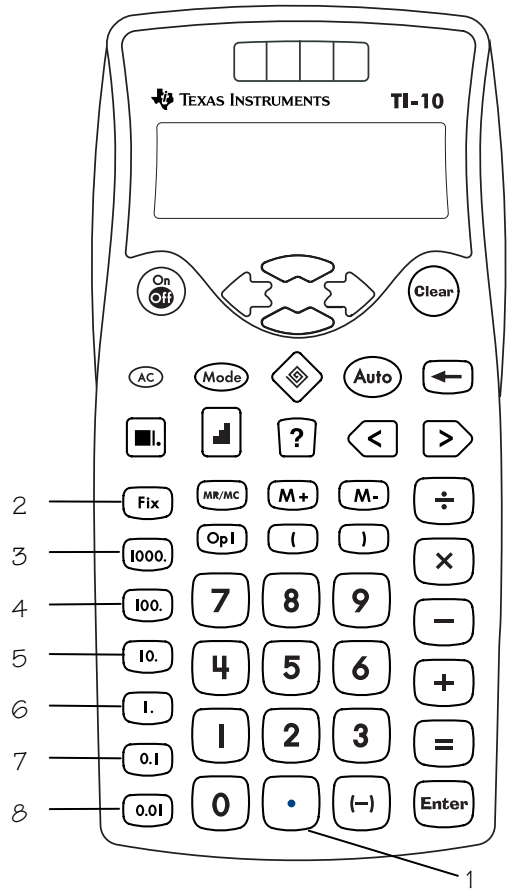
Press	Display
AC Clear	4
Mode	Op1 0 R ÷
◄ ►	Op1 Y n CLEAR OP1
Enter (clear OP1)	Op1 Y n CLEAR OP1
Mode (exit mode menu)	4



Whole Numbers and Decimals 6

Keys

1. [•] enters a decimal point.
2. [Fix] sets the number of decimal places in conjunction with the Place Value keys.
3. [Fix] [1000.] rounds results to the nearest thousand.
4. [Fix] [100.] rounds results to the nearest hundred.
5. [Fix] [10.] rounds results to the nearest ten.
6. [Fix] [1.] rounds results to the nearest one (unit).
7. [Fix] [0.1] rounds results to the nearest tenth.
8. [Fix] [0.01] rounds results to the nearest hundredth.



Notes

- The examples on the transparency masters assume all default settings. Press AC Clear to reset the TI-10 and clear the display.
- The TI-10 automatically rounds the result to the number of decimal places selected. Only the displayed value is rounded. The internally stored value is not rounded. The calculated value is padded with trailing zeros if needed.
- To remove the fixed decimal setting, press [Fix] [•].
- You must press [Fix] before you press a Place Value key each time you want to change the number of places for rounding.

Notes (Continued)

- All results are displayed to the fixed setting until you either clear the setting by pressing Fix . or reset the TI-10.
- You can use . to enter a decimal with any number of places, regardless of the fixed decimal setting.
- You can apply the Fix setting to an individual number that you entered, or to a result.

Setting the number of decimal places

Round 12.345 to the hundredths place, the tenths place, and the tens place. Then cancel the Fix setting.

Press	Display
AC Clear	4
12 • 345 Enter	12.345= 12.345
Fix 0.01	Fix 12.345= 12.35
Fix 0.1	Fix 12.345= 12.3
Fix 10.	Fix 12.345= 10.
Fix • (cancel Fix)	12.345= 12.345

Fix decimal

Fix

Hundredths

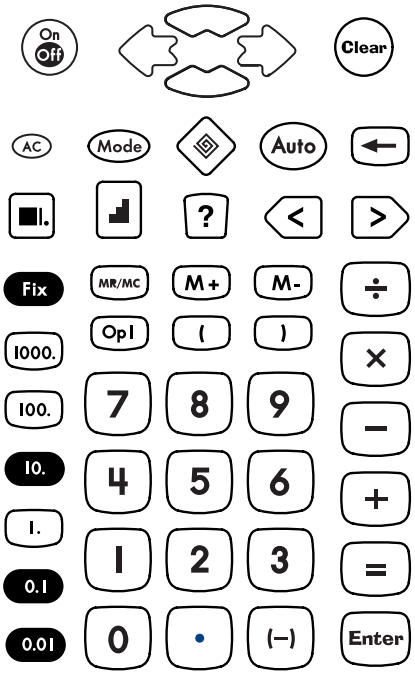
0.01

Tenths

0.1

Tens

10.



Addition with money

José bought ice cream for $3.50, cookies for $2.75, and a large soda for $.99. How much did he spend?

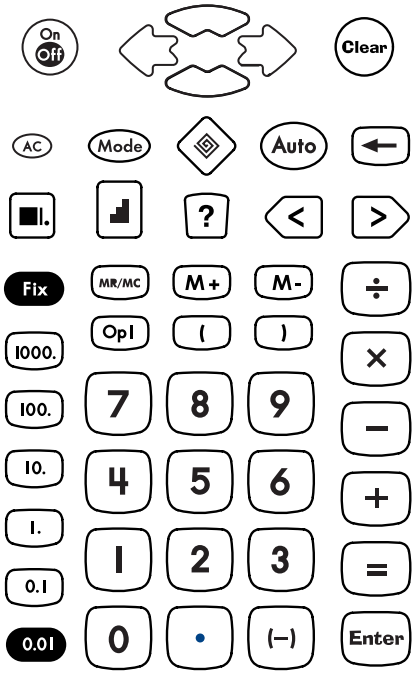
Press	Display
AC Clear	4
Fix 0.01	Fix
3 • 50 + 2 • 75 + • 99 =	Fix 3.50+2.75 +.99= 7.24

Fix decimal

Fix

Hundredths

0.01



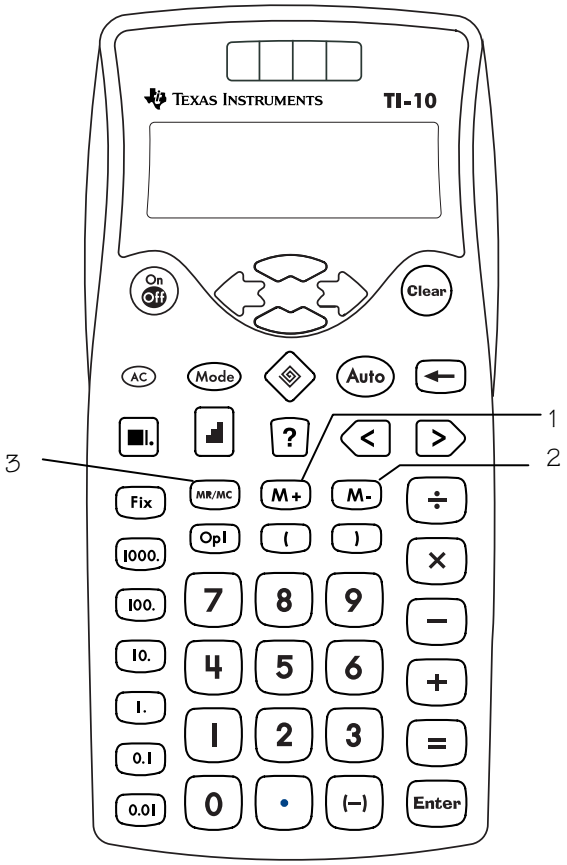
Memory 7

Keys

1. M+ adds the displayed result to the memory.
2. M− subtracts the displayed result from the value in memory.
3. MR/MC recalls the contents of memory to the display. When pressed twice, it clears the memory.

Notes

- The examples on the transparency masters assume all default settings. Press AC Clear to reset the TI-10 and clear the display.
- You can store integers and decimals in memory.
- **M** is displayed anytime a value other than 0 is in memory.
- To clear the memory, press MR/MC twice.
- You must press = to complete an operation before the result can be entered into memory.



Using memory to add products

Hamburgers	2	$1.19	=
Milk shakes	3	$1.25	=
Coupon for each milk shake	3	$.20	=
		Total cost	=

Press	Display
AC Clear	0.
Fix 0.01	Fix 0.00
2 × 1 • 19 =	Fix 2×1.19= 2.38
M+ (add hamburgers to memory)	Fix M 2×1.19= 2.38
3 × 1 • 25 =	Fix M 3×1.25= 3.75
M+ (add milk shakes to memory)	Fix M 3×1.25= 3.75
3 × • 20 = (compute discount)	Fix M 3×.20= 0.60

Add to Memory

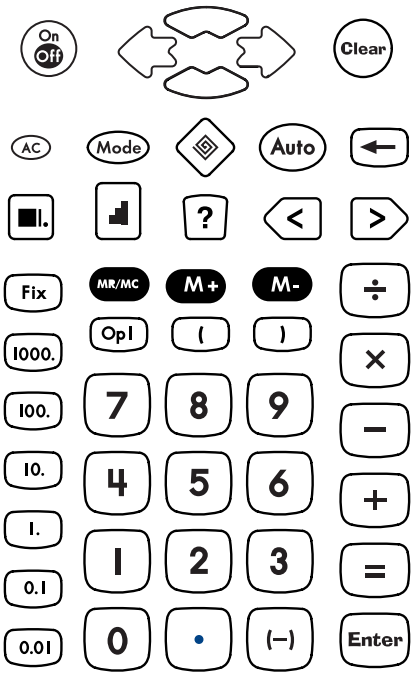
M+

Subtract from Memory

M−

Memory Recall

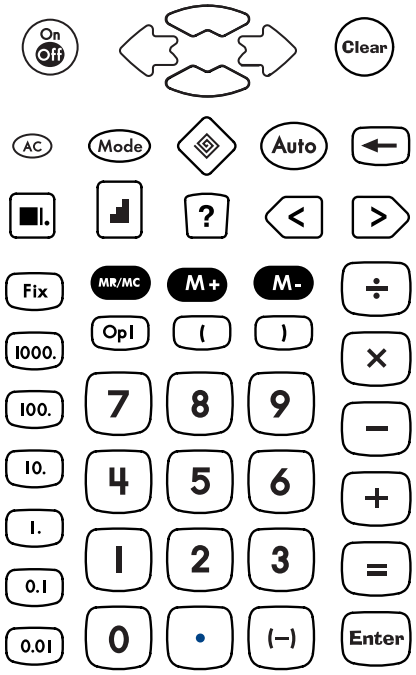
MR/MC



(Continued)

Using memory to add products (Continued)

Press	Display
M−	Fix M 3 × .20 = 0.60
(deduct coupon from memory)	
MR/MC	Fix M 5.53
(recall total cost)	
MR/MC	Fix 5.53
(clear the memory)	



Using memory to find averages

Dai has test scores of 96 and 85. He has weekly scores of 87 and 98. Find the average for each group of scores and then find the average of his two averages together in decimal form.

Press	Display
AC Clear	0
Mode ➡ Enter	DR ÷
Mode 96 + 85 =	96+85= 181
÷ 2 =	181÷2= 90.5
M+	M 181÷2= 90.5
87 + 98 =	M 87+98= 185

(Continued)

Add to memory

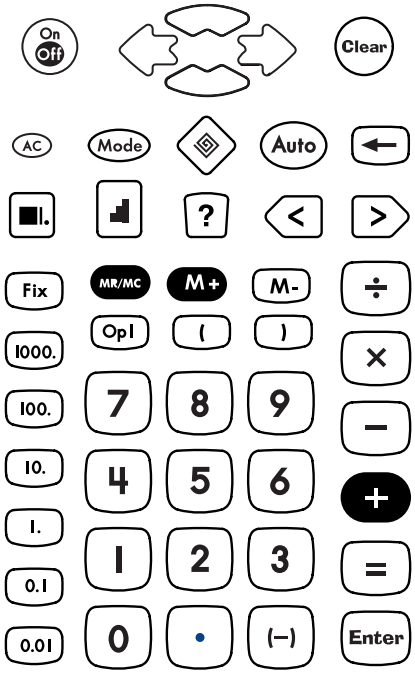
M+

Add

+

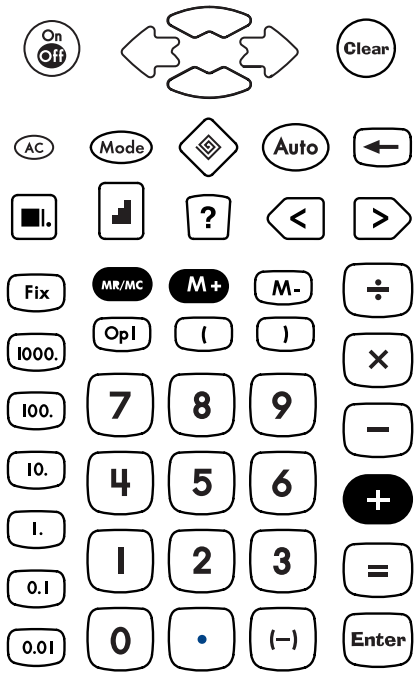
Memory recall

MR/MC



Using memory to find averages (Continued)

Press	Display
÷ 2 =	M .÷ 185÷2= 92.5
+ MR =	M .÷ 92.5+90.5= 183
÷ 2 =	M .÷ 183÷2= 91.5



Problem Solving: Auto Mode 8

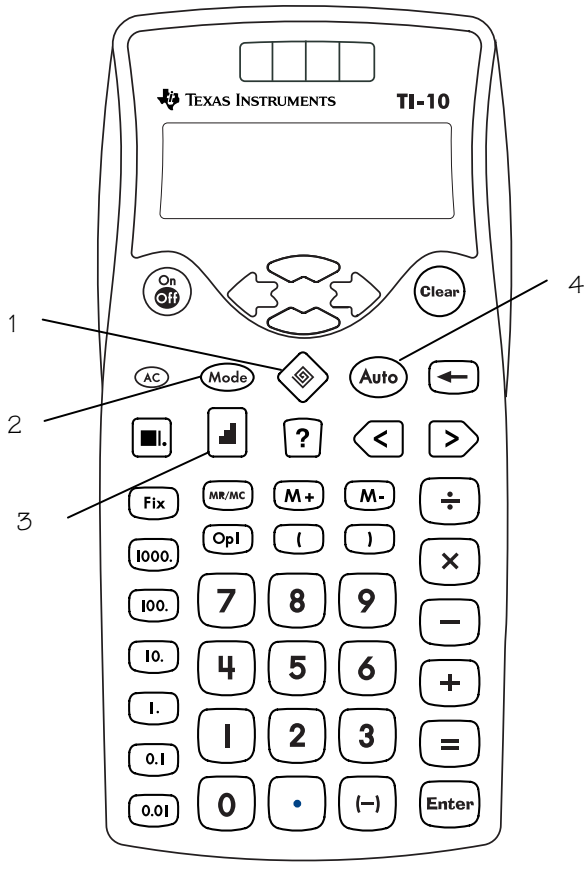
Keys

1. ◈ activates the Problem Solving tool. In **AUTO** mode, Problem Solving displays exercises in addition, subtraction, multiplication, and division.

2. (Mode) lets you access the mode menu to change between Automatic (**AUTO**) and Manual (**MAN**) modes. In **AUTO** mode, you can access the Level of Difficulty, and the Type of Operation menus.

   Note: Auto, Level 1 , and Addition are the default settings.

3. ▟ changes to the next level of difficulty. After Level 3, it cycles back to Level



4. (Auto) toggles between **MAN** and **AUTO** modes in the Problem Solving tool.

Notes

- The examples on the transparency masters assume all default settings. Press (AC) (Clear) to reset the TI-10 and clear the display.
- In **AUTO** mode (default), the TI-10 presents problems with one element missing (for example, 5+2=? or 5+?=7 or 5?2=7).
- If the answer entered by the student is not correct, the TI-10 displays **no** and gives a hint in the form of **<** or **>**.
- After three incorrect answers, the TI-10 provides the correct answer.
- After every fifth problem, the TI-10 displays a Scoreboard that tallies the correct and incorrect answers.
- You can check progress at any time by pressing (Mode), which displays the Scoreboard momentarily. Press ↶ to review previous problems.
- In Problem Solving, you can view the history, but you cannot edit.
- To exit Problem Solving, press ◈ again. The Scoreboard and previous entries are cleared when you exit.

Select level of difficulty

Choose the level of difficulty.

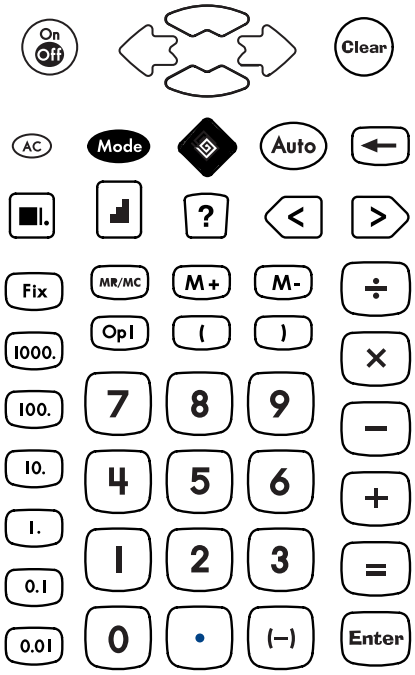
Problem Solving

Mode

Mode

Press	Display
AC Clear	4
◆ Mode	Auto AUTO MAN
▼	Auto 1 2 3
▶ Enter	Auto 1 2 3
Mode (to exit)	Auto 8+?=808

(Problems will vary from the example shown here.)



Select level of difficulty using

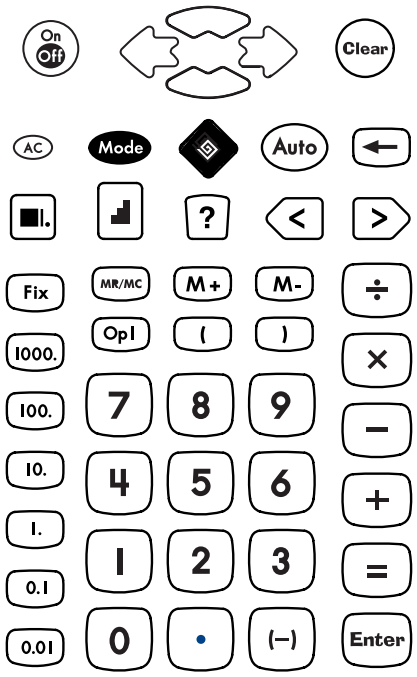
Choose the level of difficulty.

Problem Solving

Mode

Mode

Press	Display
AC Clear	4
(default to Level 1)	Auto 3+20=? 4
(change to Level 2)	Auto 2+70=? 4
Mode (view level of difficulty setting)	Auto 1 2 3
Mode (return to problem)	Auto 2+70=? 4



Select type of operation

Choose the type of operation:

- addition (+)
- subtraction (−)
- multiplication (×)
- division (÷)
- find the operator (?)

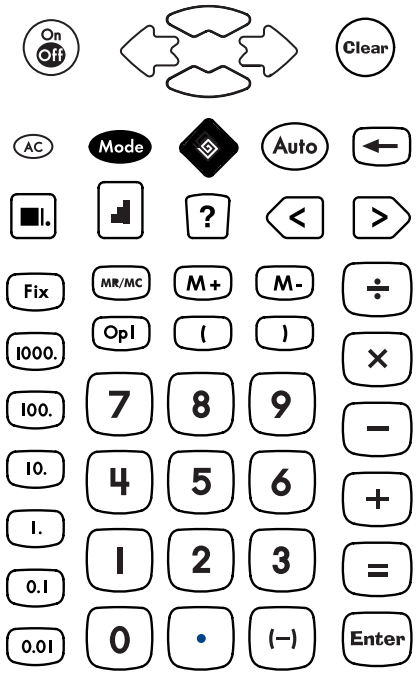
Press	Display
AC Clear	4
◈ Mode	Auto AUTO MAN
➘	Auto 1 2 3
➘	Auto + − × ÷ ?
➡ Enter	Auto + − × ÷ ?
Mode (to exit)	Auto 4−1= ?

Problem Solving

◈

Mode

Mode



Test your skills

Enter solutions to the problems that the TI-10 presents.

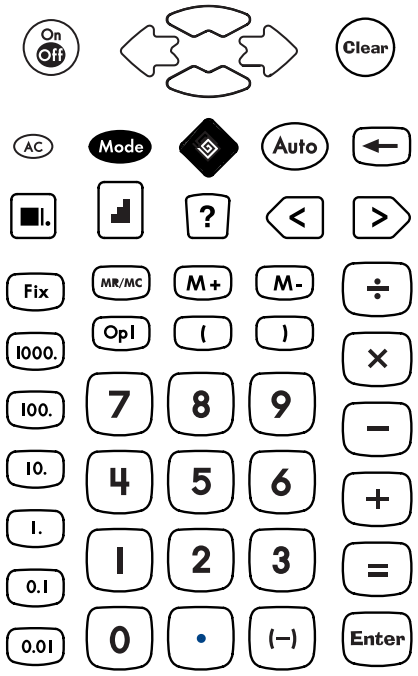
Press	Display
AC Clear	4
◈ Mode	Auto AUTO MAN
Mode (problem is displayed)	Auto 8+3= ? 4
11 Enter	Auto 8+3=11 YES
(next problem; problems are random)	Auto 2+?=7 4
4 Enter	Auto 2+4<7 NO
(problem is displayed again)	Auto 2+?=7 4
5 Enter	Auto 2+5=7 YES

Problem solving

◈

Mode

Mode



View the Scoreboard

After every fifth problem, the TI-10 displays a scoreboard that tallies your correct and incorrect solutions.

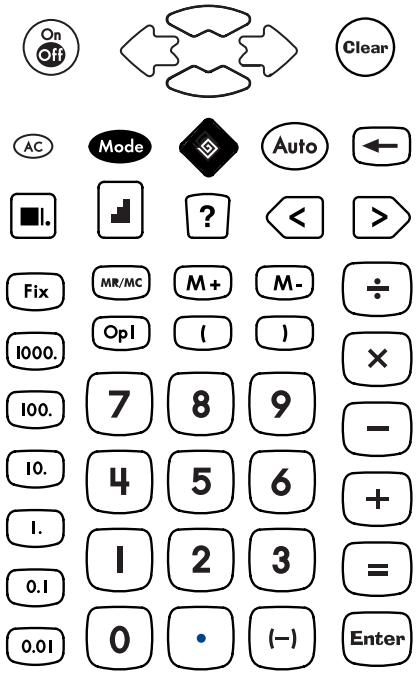
You can also display the Scoreboard momentarily at any time by pressing Mode.

Problem solving

Mode

Mode

Press	Display
 (problem is displayed)	Auto 7+?=9
Mode (Scoreboard is displayed momentarily)	Auto YES NO 5 0
	Auto AUTO MAN
Mode (exit menu; return to problem)	Auto 7+?=9



Find the operator

Change the type of operation to "find the operator" (?) and solve the problems the TI-10 presents.

Press	Display
AC Clear	4
◈ Mode	Auto YES nO 0 0
◂ ◂	Auto + − × ÷ ?
▸ ▸ ▸ ▸ Enter	Auto + − × ÷ ?
Mode	Auto 8?6=48
× Enter	Auto 8×6=48 YES

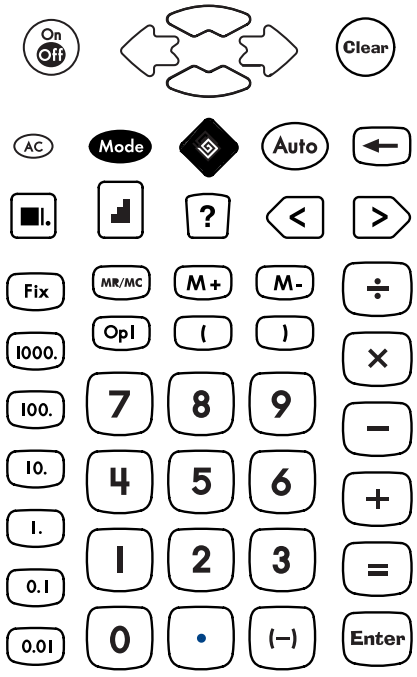
(Problems will vary from example shown here.)

Problem solving

◈

Mode

Mode

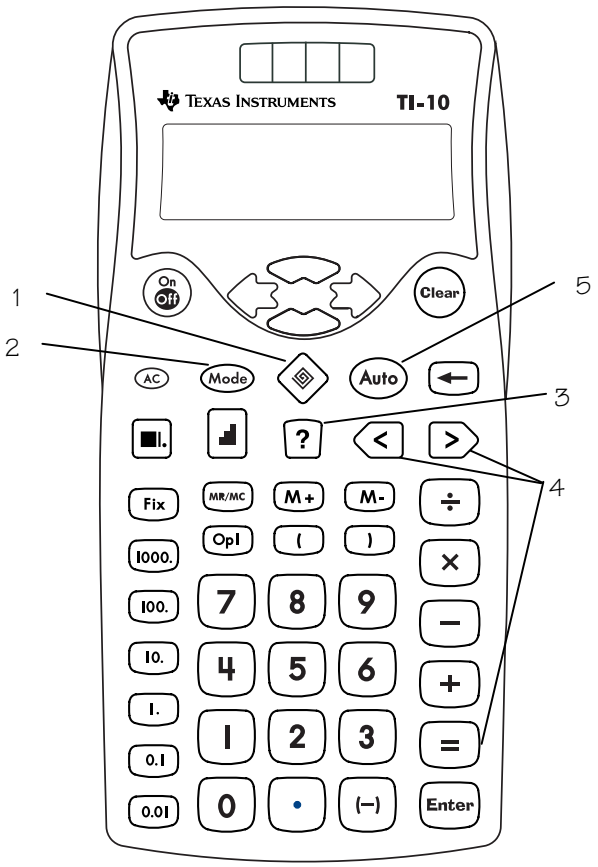


Problem Solving: Manual Mode 9

Keys

1. ◈ activates the Problem Solving tool.
2. (Mode) lets you access the mode menu to change between Automatic (**AUTO**) and Manual (**MAN**) modes. In **MAN** mode, you can access the Place Value menu.

   Note: 11-. is the default Place Value setting.
3. [?] lets the student indicate a missing element in **MAN** (manual) mode.
4. [<], [>], and [=] let the student test inequalities and equalities.



5. (Auto) toggles between **MAN** and **AUTO** modes in the Problem Solving tool.

Notes

- The examples on the transparency masters assume all default settings. Press (AC) (Clear) to reset the TI-10 and clear the display.
- In **MAN** mode, the student composes his or her own problems.
- In **MAN** mode, for all operations except inequalities, the TI-10 accepts only integers.
- You can enter no more than 11 characters into the display.
- You can enter a problem that has one solution, multiple solutions, or no solution. For example:
  - 1 solution: 2+5=?, 2+?=7, 2?5=7
  - Multiple solutions: ?+?=1, ?+?=6
  - 0 solutions: 3÷2=?
    (There is no positive, whole number solution.)
- When a problem has no solution, the TI-10 displays **no** and continues to present the problem until you press (Clear).
- Problem Solving Manual mode was designed to deal with positive whole numbers. In some cases, the equality/inequality feature allows you to enter decimals.

Notes (Continued)

- Problems with two missing elements may have multiple solutions. (?x?=24 has eight solutions.) These problems must be in the form of ?operator?=number.
- You can check progress by pressing Mode to display the Scoreboard. Press ↶ to review previous problems.
- When you first press Mode, the display shows the Scoreboard for a moment before showing the menu.
- For tests of inequalities, when the TI-10 returns a **no**, the correct response is displayed immediately.
- In Problem Solving, you can view the history, but you cannot edit.
- To exit Problem Solving, press ◈.

Problems with one solution

Problems with one solution are equations with one missing element (for example 7+2=? or 7+?=9). Enter a problem and find a solution.

Press	Display
AC Clear	4
◆ Mode ➡ Enter	◆ AUTO MAN
Mode	◆ 4
5 − 3 = ? Enter	◆ 5-3=? 1 SOL
2 Enter	◆ 5-3=2 YES
5 + ? = 9 Enter	◆ 5+?=9 1 SOL

(Continued)

Problem solving

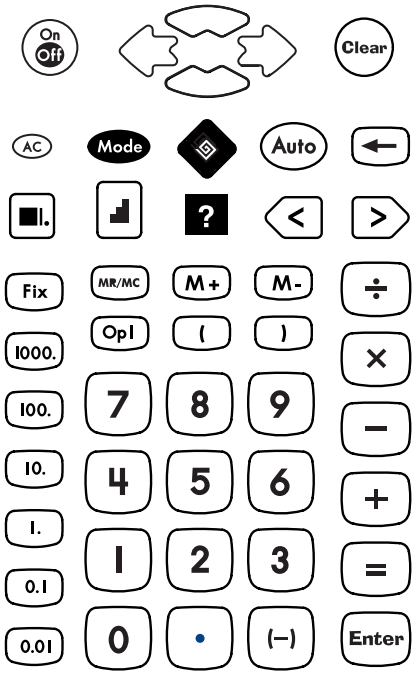
◆

Mode

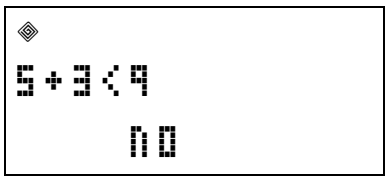
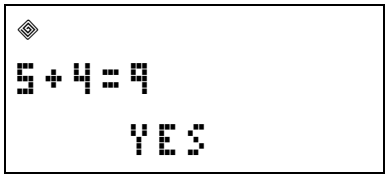
Mode

Missing element

?



Problems with one solution (Continued)

Press	Display
3 Enter	
4 Enter	

Problems with more than one solution

Problems with two missing elements may have more than one solution. Enter a problem, find the number of solutions, and then find a solution.

Press	Display
AC Clear	4
◆ Mode ➡ Enter	◆ AUTO MAN
Mode	◆ 4
? + ? = 3 Enter	◆ ?+?=3 4 SOL
2 Enter	◆ 2+?=3
1 Enter	◆ 2+1=3 YES

(Try another solution, or press Clear to enter a new problem.)

Problem solving

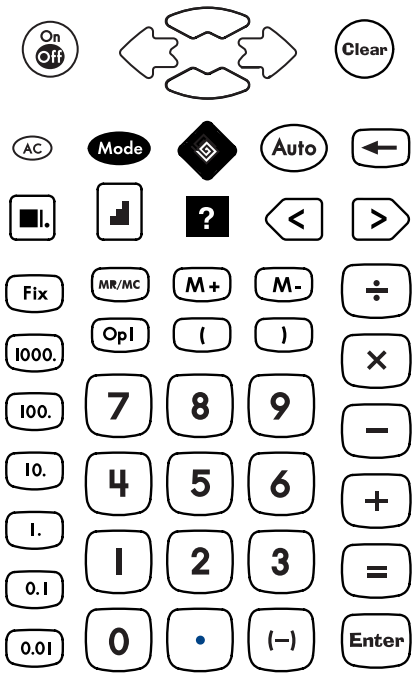
◆

Mode

Mode

Missing element

?



Problems with no solution

The TI-10 is not designed to handle certain types of problems. These will result in a **0 SOL** (no solution) response from the TI-10.

Press	Display
AC Clear	4
◆ Mode ➡ Enter	◆ AUTO MAN
Mode	◆ 4
1 − 2 = ? Enter	◆ 1-2=? 0 SOL
Clear	◆ 4

Problem solving

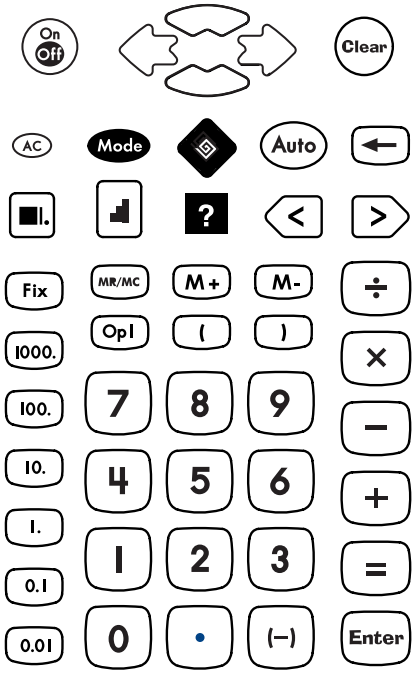
◆

Mode

Mode

Missing element

?



Less than, greater than, equal to

You can test inequalities and equalities using the Problem Solving tool.

Press	Display
AC Clear	4
◈ Mode ➡ Enter	◈ AUTO MAN
Mode	◈ 4
2 + 1 = 1 + 2 Enter	◈ 2+1=1+2 YES
5 + 4 < 10 Enter	◈ 5+4<10 YES
. 5 > . 5 0 Enter	◈ .5>.50 NO
	◈ .5=.50 YES

Problem solving

◈

Mode

Mode

Equals

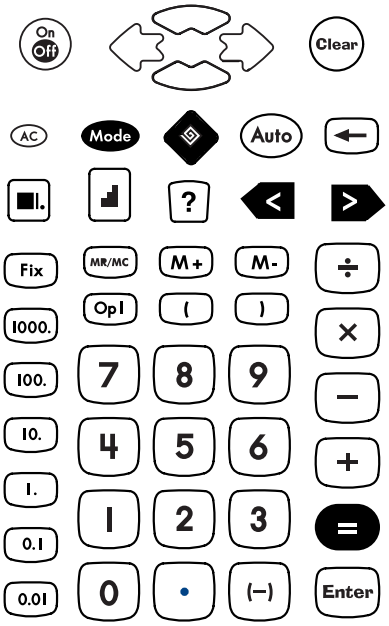
=

Greater Than

>

Less Than

<



View the Scoreboard

After every fifth problem, the TI-10 displays a scoreboard that tallies your correct and incorrect solutions.

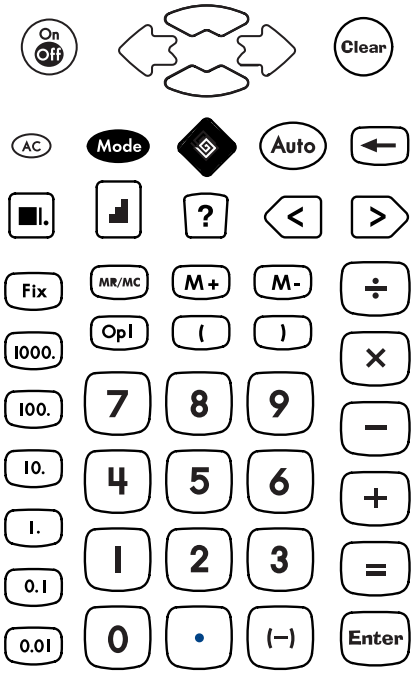
You can also display the Scoreboard momentarily at any time by pressing Mode.

Problem solving

Mode

Mode

Press	Display
(problem is displayed)	Auto 7+?=9
Mode (Scoreboard is displayed momentarily)	Auto YES NO 5 0
	Auto AUTO MAN
Mode (exit menu; return to problem)	Auto 7+?=9



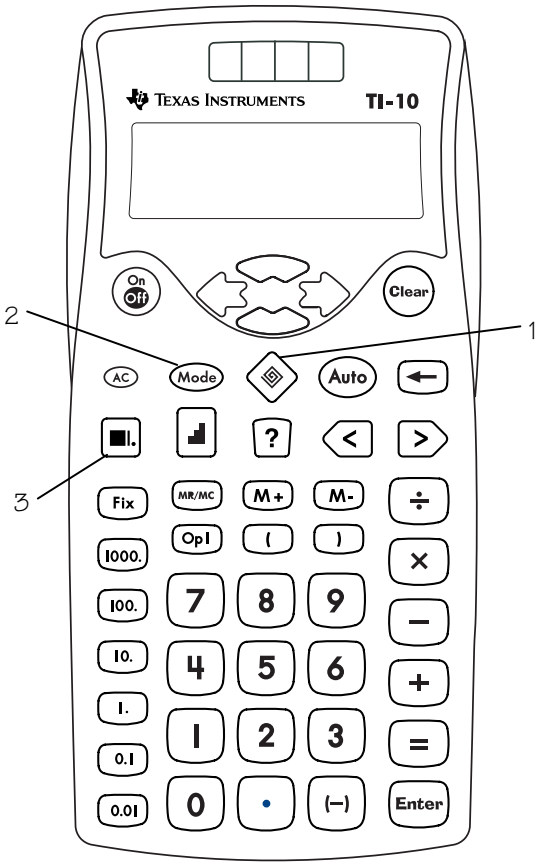
Place Value

10

Keys

1. ◈ activates the Problem Solving tool.
2. Mode lets you access the mode menu to change between Automatic (**AUTO**) and Manual (**MAN**) modes. In **MAN** mode, you can access the Place Value menu.

   Note: 11-. is the default Place Value setting.



3. ■I. activates the Place Value feature when the TI-10 is in Problem Solving **MAN** mode. It also works in conjunction with these keys:

Key	Displays
1000.	Number of thousands
100.	Number of hundreds
10.	Number of tens
1.	Number of ones
0.1	Number of tenths
0.01	Number of hundredths

Notes

- The examples on the transparency masters assume all default settings. Press AC Clear to reset the TI-10 and clear the display.
- The Place Value feature works only if you are in the Problem Solving **MAN** (manual) mode.
- When the TI-10 Place Value feature is active, the ■I. indicator shows on the top line of the display.
- To exit Place Value, press Clear. The TI-10 returns to Problem Solving **MAN** mode.
- To exit Problem Solving completely, press ◈.

What is the Place Value of a Given Digit?

The ◈ (Problem Solving) mode setting must be **MAN** (manual).

Follow these steps (See example on page 65).

1. Press AC Clear to reset the TI-10 and clear the display.
2. Press ◈ Mode ➡ Enter to select Problem Solving **MAN** mode.
3. Press Mode to exit the menu and then enter 1234.56.
4. Press ■I.
5. Press the desired digit.

   If you enter 6, the TI-10 will display ____._6 briefly showing the location of the 6 and then displaying its value, 6 –> 0.01, meaning that the 6 is in the hundredths place.

Once Place Value is active, it is not necessary to press ■I. before each digit you want to test. To test a new number; however, you must press Clear, enter the new number, and then press ■I. again.

How Many Ones, Tens, Hundreds, Thousands, Tenths, or Hundredths are in a Given Number?

The ◈ (Problem Solving) mode setting must be **MAN** (manual) and the display option must be set to **11 –.**

Follow these steps (See example on page 67).

1. Press AC Clear to reset the TI-10 and clear the display.
2. Press ◈ Mode ➡ Enter to select Problem Solving **MAN** mode.
3. Press ➡.
4. Underline **11 –.** and press Enter.
5. Press Mode to exit the menu and then enter 1234.56.
6. Press ■I.
7. Press I., I0., I00., I000., 0.I, or 0.0I.

   If you press I00., the TI-10 will display 12__.__, meaning that there are 12 hundreds in the number. When you press 0.0I, the TI-10 displays 123456 meaning that there are 123,456 hundredths in the number.

When a number includes a repeated digit, the TI-10 first analyzes its occurrence in the right-most position. To find the place value of other instances of the same digit, press the digit twice for the second occurrence, three times for the third occurrence, etc. Each time you press the given digit in succession, the displays shifts to next occurrence to the left of the original occurrence. (See page 66 for an example.)

To exit Place Value, press Clear and the TI-10 returns to Problem Solving, **MAN** (manual) mode.

What Digit of a Number is in a Given Place?

The ◈ (Problem Solving) mode setting must be **MAN** (manual) and the display option set to **– 1 –.**

Follow these steps (See example on page 68).

1. Press AC Clear to reset the TI-10 and clear the display.
2. Press ◈ Mode ➡ Enter to select Problem Solving **MAN** mode.
3. Press ➡ .
4. Underline **– 1 –.** and press Enter.
5. Press Mode to exit the menu and then enter 1234.56.
6. Press ■I.
7. Press I., I0., I00., I000., 0.I, or 0.0I.

If you press I00., the TI-10 displays _2__.__ briefly showing that the location of the 2 is in the hundreds place. The answer then clears so you can press another digit or place value key.

Press Clear to exit Place Value. The TI-10 returns to Problem Solving, **MAN** mode.

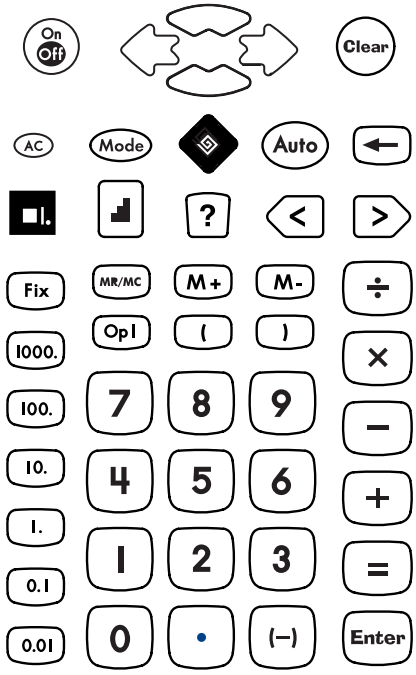
Determine place value

Enter 1234.56. Determine the place value of 6 and 4.

Problem Solving

Place Value

Press	Display
AC Clear	4
◆ Mode ➡ Enter	◆ AUTO MAN
Mode	◆ 4
1234 • 56 ■.	◆ ■. 1234.56 4
6	◆ ■. 1234.56 ____._6
	◆ ■. 1234.56 6->0.01
4	◆ ■. 1234.56 ___4.__
	◆ ■. 1234.56 4->1



Repeated digits

Enter 123.43. Determine the place value of each 3.

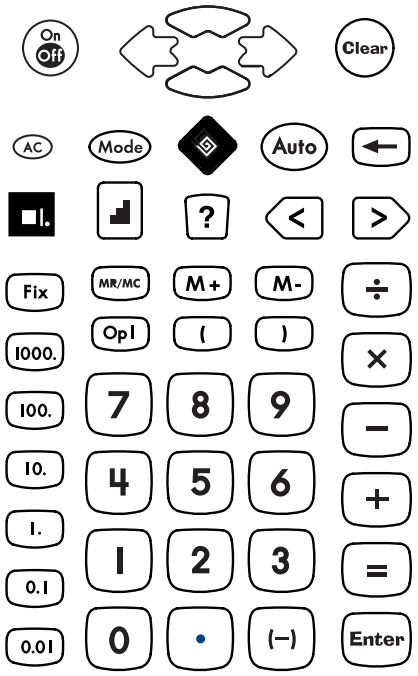
Press	Display
AC Clear	4
◆ Mode ➡ Enter	◆ AUTO MAN
Mode	◆ 4
123 • 43 ■.	◆ ■. 123.43 4
3	◆ ■. 123.43 ___.__3
	◆ ■. 123.43 3->0.01
33	◆ ■. 123.43 __3.__
	◆ ■. 123.43 3->1

Problem solving

◆

Place value

■.



How many?

How many hundreds are in 1234.56?
How many hundredths?

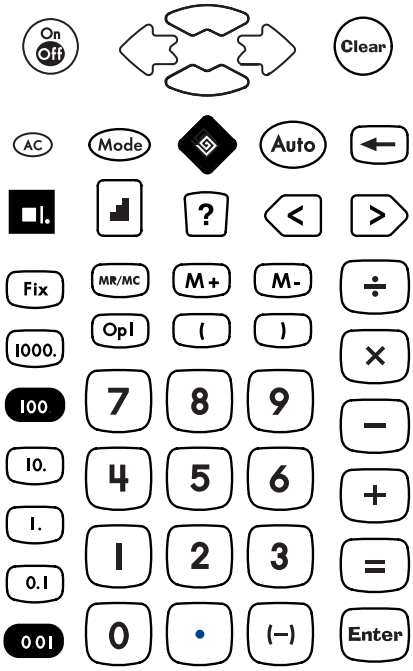
Problem solving

Place value

Hundreds

Hundredths

Press	Display
AC Clear	4
◈ Mode ➡ Enter	◈ AUTO MAN
Mode	◈ 4
1234 • 56 ■.	◈ ■. 1234.56
100.	◈ ■. 1234.56 12__.__
0.01	◈ ■. 1234.56 123456



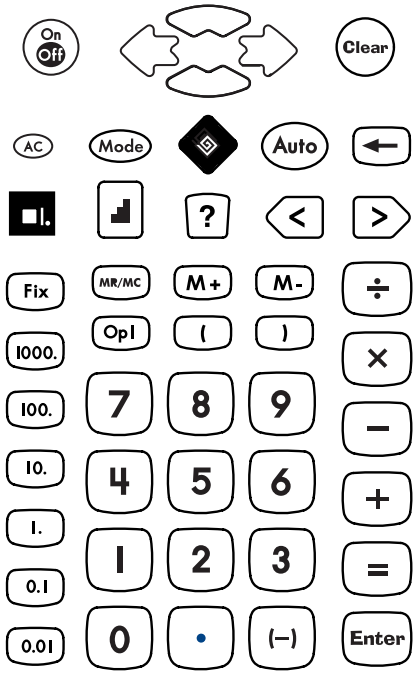
What's the digit?

What digit is in the hundreds place in 1234.56?

Problem solving

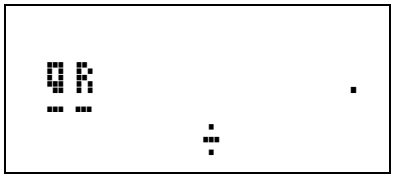
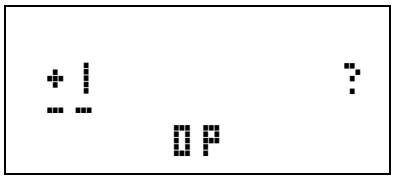
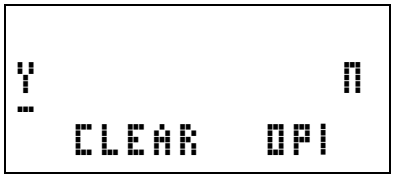
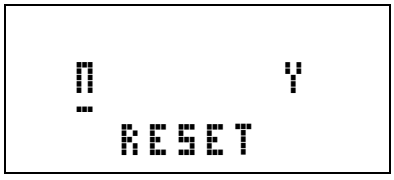
Place value

Press	Display
AC Clear	4
◆ Mode ➡ Enter	◆ AUTO MAN
⬅ ➡ Enter	◆ 11-. -1-.
Mode	◆ 4
1234 • 56 ■l.	◆ ■l. 1234.56
100.	◆ ■l. 1234.56 _2_._

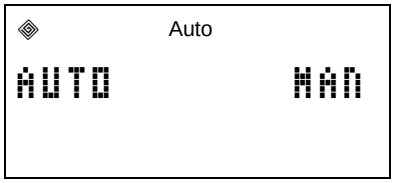
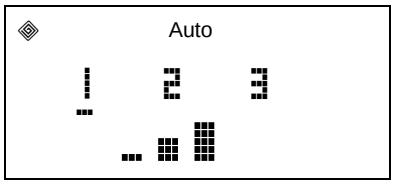
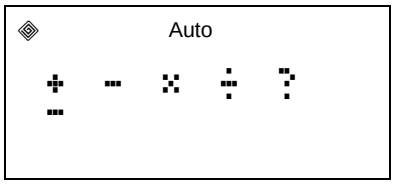
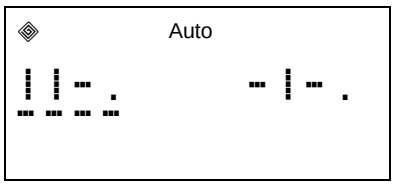


Quick Reference to Keys

A

Key	Function
On/Off	Turns the calculator on. If already on, turns the calculator off.
Clear	Clears the display and error condition.
AC	Resets the TI-10. **MEM CLEARED** shows in the display.
On/Off Clear	Resets the TI-10. Hold down On/Off and Clear simultaneously for a few seconds and then release. **MEM CLEARED** shows on the display. **Note:** Resetting the TI-10 completely clears the calculator, including all menu settings, all entries in history, all values in memory, and the display. All default settings are restored.
➡ ⬅	Moves the cursor right and left, respectively, so you can scroll the entry line or select a menu item.
⬆ ⬇	Moves the cursor up and down, respectively, so you can see previous entries and results or access menu lists.
←	Deletes the character to the left of the cursor before Enter is pressed.
	In the Calculator tool, displays menus that let you:
Mode	Select the format for results of division. Choose Quotient with Remainder (**QR**) or decimal (**.**). 
Mode ⬇	Show (**+1**) or hide (**?**) the constant operator and operand in **OP1**. 
Mode ⬇ ⬇	Clear the constant operation (**OP1**). 
Mode ⬇ ⬇ ⬇	Reset the TI-10. 

Quick Reference to Keys

Key	Function
◈	Toggles between the Calculator and Problem Solving tool. In the Problem Solving tool, displays menus that let you:
◈ Mode	Select **AUTO** (automatic) or **MAN** (manual) mode. 
◈ Mode ⬅	Select Level of Difficulty. 
◈ Mode ⬅ ⬅	Select Type of Operation. 
◈ Mode (**MAN**) ⬅	Select display options for Place Value feature. (This option is available only if **MAN** mode is selected.) 
Auto	Toggles between the **AUTO** and **MAN** mode in Problem Solving.
◢	Moves to the next Level of Difficulty. After reaching Level 3, the TI-10 cycles back to Level 1. Level 1: basic facts Level 2: one digit numeral or two digit numeral with zeros in the ones place Level 3: up to three digit numerals
?	While in ◈ (Problem Solving) **MAN** (manual) mode, lets you indicate a missing element in an equation.
<	While in ◈ (Problem Solving) **MAN** (manual) mode, lets you test inequalities.
>	While in ◈ (Problem Solving) **MAN** (manual) mode, lets you test inequalities.

Quick Reference to Keys

Key	Function
[■.]	While in ◈ (Problem Solving) **MAN** (manual) mode, you can determine the place value of a particular digit of a given number or, in conjunction with place value keys, you can determine how many thousands, hundreds, etc., a number contains or what digit is in a given place.
[■.] *d*	Determines the place value of the digit *d* (0 - 9) of a given number.
[■.] [1000.]	Tells how many thousands a given number contains or what digit is in the thousands place.
[■.] [100.]	Tells how many hundreds a given number contains or what digit is in the hundreds place.
[■.] [10.]	Tells how many tens a given number contains or what digit is in the tens place.
[■.] [1.]	Tells how many ones a given number contains or what digit is in the ones place.
[■.] [0.1]	Tells how many tenths a given number contains or what digit is in the tenths place.
[■.] [0.01]	Tells how many hundredths a given number contains or what digit is in the hundredths place.
[Fix]	Sets the number of decimal places in conjunction with the Place Value keys. Only the displayed result is rounded; the internally stored value is not rounded. The calculated value is padded with trailing zeros if needed.
[Fix] [1000.]	Rounds results to the nearest thousand.
[Fix] [100.]	Rounds results to the nearest hundred.
[Fix] [10.]	Rounds results to the nearest ten.
[Fix] [1.]	Rounds results to the nearest one.
[Fix] [0.1]	Rounds results to the nearest tenth.
[Fix] [0.01]	Rounds results to the nearest hundredth.
[Fix] [•]	Removes fixed decimal setting and returns to floating decimal.
[0] [1] [2] [3] [4] [5] [6] [7] [8] [9]	Enters the numerals 0 through 9.
[+]	Adds. Enters the addition symbol in Problem Solving mode.
[−]	Subtracts. Enters the subtraction symbol in Problem Solving mode.
[×]	Multiplies. Enters the multiplication symbol in Problem Solving mode.

Quick Reference to Keys

A

Key	Function
[÷]	Divides. Enters the division symbol in Problem Solving mode with the result displayed as a quotient and remainder or a decimal, as determined by the division menu setting.
[=]	Completes operations. While in ◈ (Problem Solving) **MAN** (manual) mode, lets you enter = to test equalities.
[Enter]	Tests a solution in the Problem Solving tool. Selects a menu item in either the Calculator or Problem Solving tool. Completes an operation.
[.]	Inserts a decimal point.
[(–)]	Enters a negative sign. Does not act as an operator.
[(]	Opens a parenthetical expression.
[)]	Closes a parenthetical expression.
[M+]	Adds displayed result to the value in memory.
[M–]	Subtracts displayed result from the value in memory.
[MR/MC]	Recalls the memory value for use in a calculation when pressed once. When pressed twice, clears memory.
[Opl]	Stores an operation with a constant value, which can be repeated by pressing the [Opl] key, as many times as desired. To store an operation to **OP1** and recall it: 1. Press [Opl], enter the operator and the value, and press [Opl] to save the operation. 2. Press [Opl] to recall the stored operation.
[Mode] ▲ ▲ [Enter]	To clear the contents of **OP1**, press [Mode] ▲ ▲, underline **Y**, and press [Enter]. New operations can now be stored for repeated use.

Display Indicators

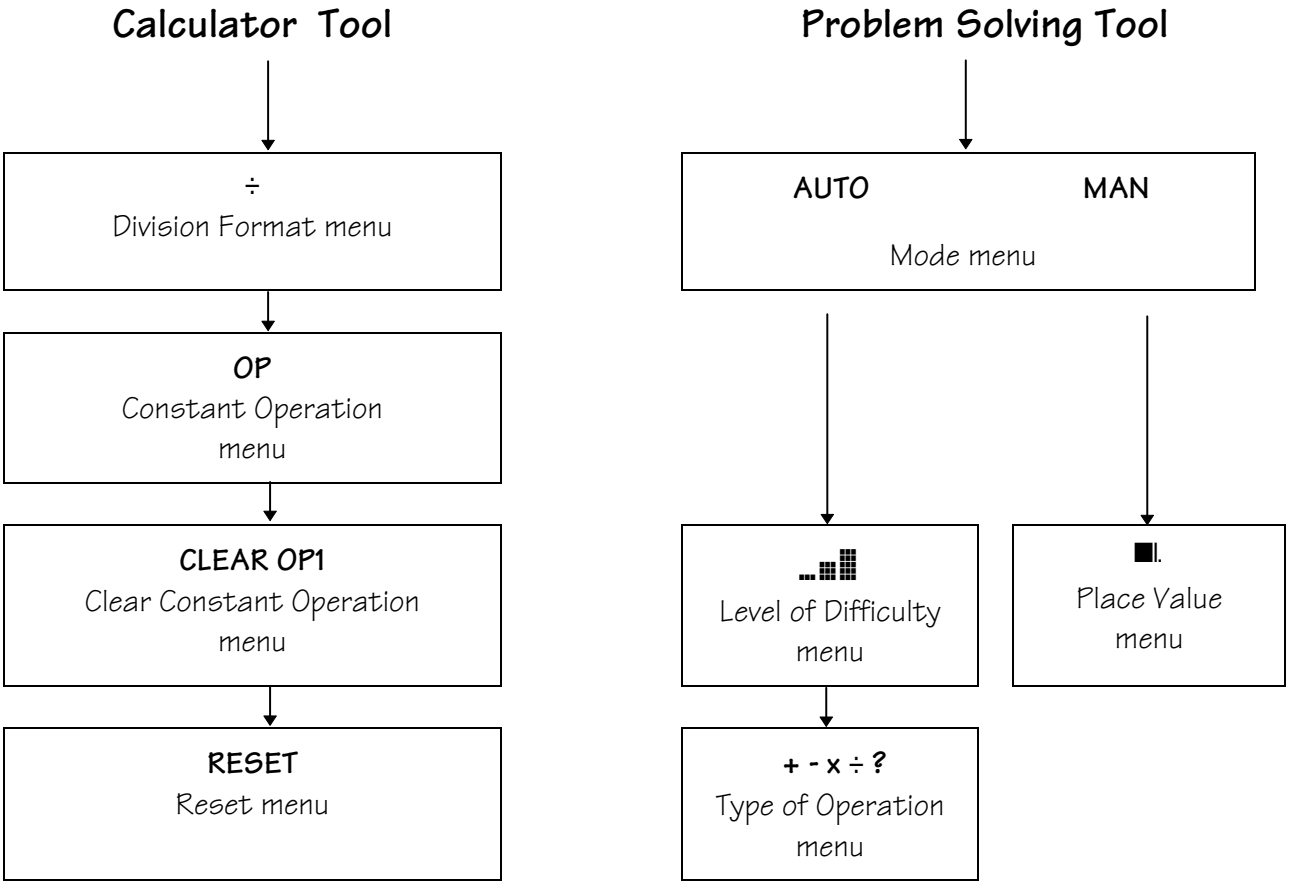
B

Indicator	Meaning
	TI-10 is in the Problem Solving tool.
	TI-10 is in the Place Value feature.
Fix	TI-10 is rounding to a specified place.
M	Indicates that a value other than zero is in memory.
Op1	An operator and a value is stored in **OP1**.
Auto	Indicates (Problem Solving) tool is in **AUTO** mode.
▪ ÷	Indicates that the result from the division feature will be displayed as a decimal.
▲ ▼	Previous entries are stored in history, or more menus are available. Press ▲ to access history. Press ▼ and ▲ to access additional menu lists.
◀ ▶	Press ◀ and ▶ to scroll and underline from a menu. You must press Enter to complete the selection.

Menu Map

C

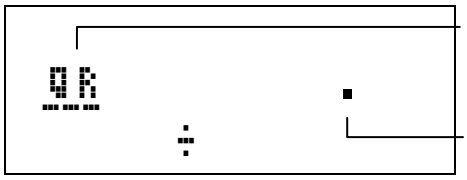
The TI-10 has two tools—the Calculator tool and the Problem Solving tool.



Calculator Tool

The calculator tool is active when you turn on the TI-10. When the Calculator tool is active, press Mode to access the Calculator tool menus. Below are the Calculator menu screens.

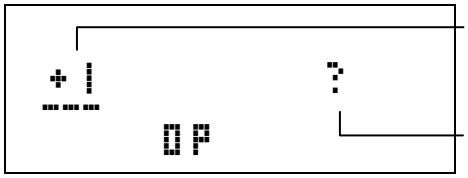
÷
Division Format
menu



Display division result as Quotient & Remainder format (default).

Display division result as Decimal format.

OP
Constant Operation
menu



Show the line containing the constant operation (default).

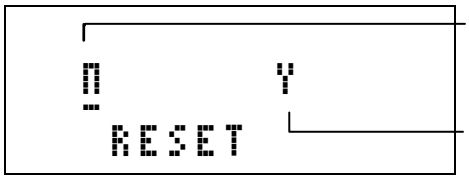
Hide the line containing the constant operation.

CLEAR OP1
Clear Constant Operation
menu

Yes. Clear the constant operation (default).

No. Do not clear the constant operation.

RESET
Reset
menu

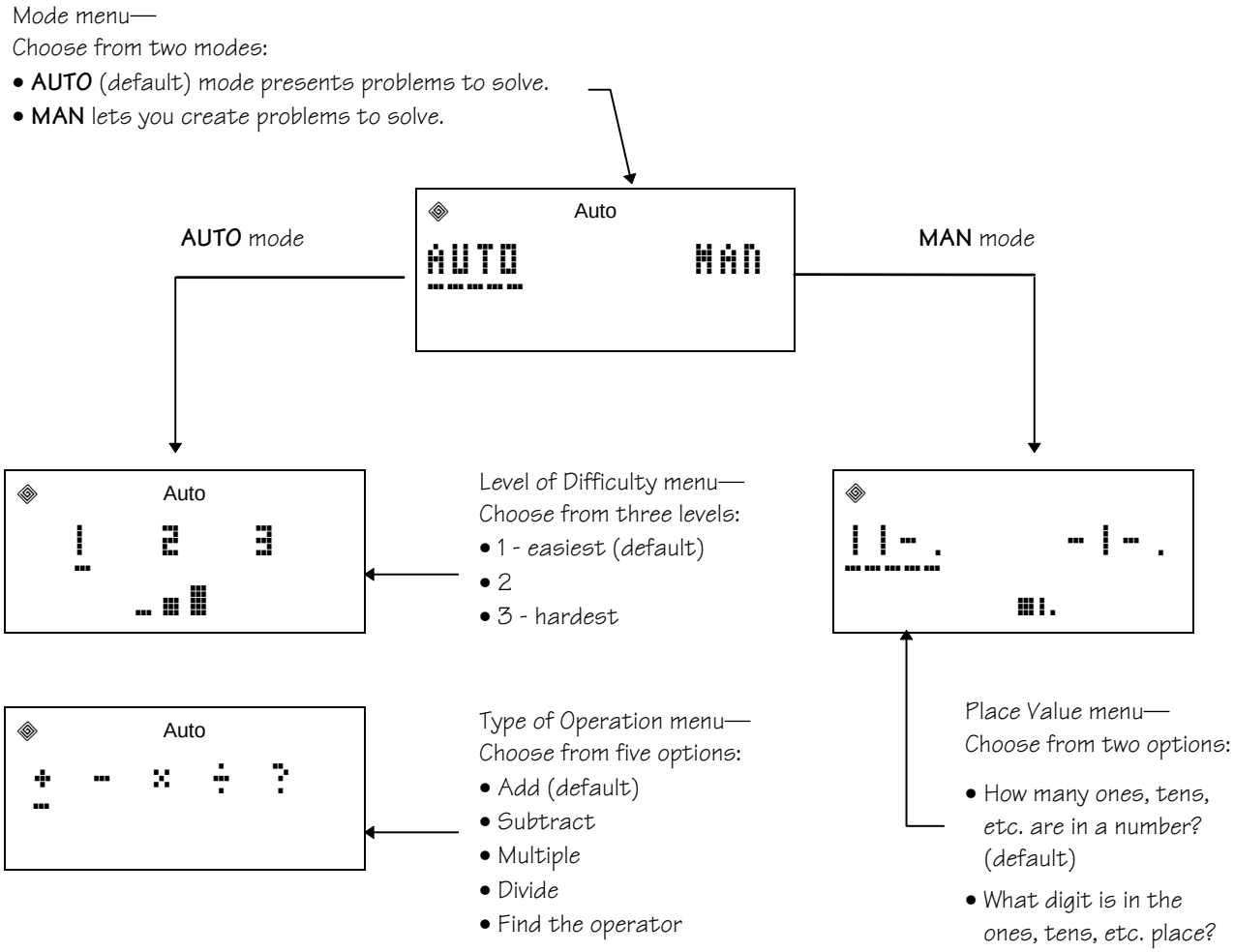


No. Do not reset the TI-10. (default).

Yes. Reset the TI-10 to default settings.

Problem Solving

The Problem Solving tool has two modes—**AUTO** (Automatic) and **MAN** (Manual). When you choose **AUTO** mode, you can access the Level of Difficulty menu and the Type of Operations menu. When you choose **MAN** mode, you can access the Place Value menu.



Error Messages

D

Message	Meaning
Arith Error	Arithmetical error. You entered an invalid entry or an invalid parameter.
Syn Error	Syntax error. You entered an invalid or incorrect equation; for example, **5++2** or **(5+2**.
÷ 0 Error	Divide by 0 error. You attempted to divide by 0.
Mem Error	Error in attempting to store an entry in memory.
Op Error	Error following steps for using **OP1**.
Overflow Error	Overflow. The result is too large to fit within the boundaries of the display.
Underflow Error	Underflow. The result is too small to fit within the boundaries of the display.

Support, Service, and Warranty

E

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