The TI-15 has two power sources—battery and solar. It operates in well-lit areas using solar cell, and it operates in other light settings on battery. APD™ (Automatic Power Down™) turns off the TI-15 if no key is pressed for about 5 minutes. If the calculator is on, press \( \text{APD} \), and \( \text{APD} \) simultaneously to help ensure that your displays are shown, because these problems are random.

Basic Operations
To turn the TI-15 on, press \( \text{APD} \). If the calculator is on, press \( \text{APD} \) to turn it off. APD™ (Automatic Power Down™) turns off the TI-15 automatically if no key is pressed for about 5 minutes. Press \( \text{APD} \) after APD to power up again; the display, pending operations, settings, and memory are retained.

Display and Scrolling
The TI-15 has a two-line display; each line has room for 11 characters. Entries that do not fit on the first line wrap to the second, and then scroll when the second line is filled. Exception: When computing fractions, the TI-15 displays only one line, which wraps when a problem exceeds the capacity of the line.

Entries can be up to 88 characters. Exceptions: In Stored Operations, the limit is 44 characters. In \( \text{Man} \) mode, entries do not wrap; entries cannot exceed 11 characters. When a result exceeds the capacity of the screen, it is displayed in scientific notation. However, if the result is greater than \( 10^{99} \) or less than \( 10^{-99} \), you will get an overflow error or underflow error, respectively. Scroll with \( \uparrow \) and \( \downarrow \) to scroll through entries or to move the underscore within a menu list.

Order of Operations
The TI-15 uses the Equation Operating System (EOS™) to evaluate expressions.

1st Expressions inside parentheses.

2nd Functions that need a ) and precede the argument.

3rd Fractions.

4th Exponentiation (\(^\) ) and roots (\( \sqrt{} \) ).

5th Negation (\( -\) ).

6th Multiplication, implied multiplication, division.

7th Addition and subtraction.

8th Conversions (U n/d \( \rightarrow \) n/d, F\( \rightarrow \) D, \( \%\) ).

9th \( \text{MR/MC} \) completes all operations.

Clearing, Correcting and Resetting

\( \text{CE/C} \) Deletes the character to the left of the cursor. In fractions, clears from right bottom to left top.

\( \text{CF/E} \) Clears display and error condition. (Does not clear value from memory.)

\( \text{MR/MC/CM} \) Clears value from memory.

\( \text{CE/C} \) and \( \text{CF/E} \) To reset, hold down \( \text{CE/C} \) and \( \text{CF/E} \) simultaneously for a few seconds and release. MEM CLEARED displays. This completely clears the calculator and restores all default settings. You can also reset using the Mode menu (see below).

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**Problem Solving (continued)**

When you first enter ✈ and when you press ✈, the display shows the Scoreboard for a moment before presenting problems or showing the menu. In ✈ Man (manual) mode, you compose your own problems. While in ✈, press ✈ to access the menu list, and press ✈ to select Man. Then press ✈, and the TI-15 is ready for you to enter your problem and your solution. It accepts only non-negative integers in this mode. You indicate a missing element with ✈.

In ✈ mode, it is possible to enter a problem that has one solution, multiple solutions, or no solution. The TI-15 tells you how many solutions the problem has.

- **Problems with one missing element generally have only one solution:** You get three tries. After three incorrect answers, the calculator displays the correct answer and then clears so you can enter a new problem.
- **Problems with two missing elements have multiple solutions:** For example, ?+?+? has 6 solutions; ?x?x? has 8 solutions. (In this type of problem, the question marks replace the operands; they may not appear in the place of the operator or the answer.) These problems are not cleared after a correct solution or after three incorrect answers; the problem remains so you can enter other solutions until you clear the problem manually by pressing ✈.
- **When the answer to a problem is not a positive integer (such as 5≤2), the TI-15 indicates that it has zero solutions.** But if you enter answers, it will tell whether they are greater than or less than the correct answer.

Inequalities: Instead of entering an equation, you can test an inequality using ✈. You get only one try, because the inequality statement is either true or false. With inequalities you can enter decimals. Press ✈ once for «, and press ✈ twice for ».

To exit Problem Solving, press ✈ again.

**Place Value**

While in ✈, Man mode, you can determine the place value of a digit; determine how many ones, tens, hundreds, thousands, tenths, hundredths and thousandths a number contains; or determine which digit of a given number is in a specified place.

- **Determine Place Value:** After entering a number, you can determine the whole number place or the decimal place of a given digit by pressing ✈ and then pressing the digit in question.
- **If you have a number with a repeated digit, when you press this digit the TI-15 analyzes its right-most occurrence. To find the place value of those to the left, press the given digit again before the answer appears.** Each time you press the given digit in succession, the display shifts to the next occurrence of this digit to the left and shows the place value for this occurrence.

While in ✈, Man mode, you can access a Place Value menu by pressing ✈.

- **Find out how many ones, tens, hundreds, thousands, tenths, hundredths, or thousandths a number contains (default):** If necessary, press ✈ to select the -1 setting, and press ✈ to analyze the given number, then press ✈ to select the desired type of problem (addition, subtraction, multiplication, division, or find the operator). Then press ✈ and ✈, and the TI-15 will present problems at the selected level.
- **Type of Problem:** While in ✈, press ✈ to access the menu list, and press ✈ or ✈ to select the desired type of problem (addition, subtraction, multiplication, division, or find the operator). Then press ✈ and ✈, and the TI-15 will present problems at the selected level.

**In Case of Difficulty**

Review instructions to be certain calculations were performed correctly. Press ✈ and ✈ simultaneously. This clears all memory and settings.

Check the battery to ensure that it is fresh and properly installed. Change the battery when:
- ✈ does not turn the unit on, or
- The screen goes blank, or
- You get unexpected results.

To continue using the TI-15 until you can change the battery:
1. Expose the solar panel to brighter light.
2. Press ✈ and ✈ simultaneously to reset the calculator.

**Error Conditions**

<table>
<thead>
<tr>
<th>Error Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arith Error</td>
<td>Arithmetical error.</td>
</tr>
<tr>
<td>Syn Error</td>
<td>Syntax error.</td>
</tr>
<tr>
<td>÷0 Error</td>
<td>Attempting to divide by zero.</td>
</tr>
<tr>
<td>Mem Error</td>
<td>Error in attempting to store entry in memory.</td>
</tr>
<tr>
<td>Op Error</td>
<td>Error following steps for using Op1 or Op2.</td>
</tr>
<tr>
<td>Overflow Error</td>
<td>Overflow.</td>
</tr>
<tr>
<td>Underflow Error</td>
<td>Underflow.</td>
</tr>
</tbody>
</table>

In some cases, ✈ restores the last display before the error message appeared. Errors appear in history as Error.

**Battery Replacement**

Place protective cover over the TI-15 and lay the calculator face down. Remove screws from back of case, using a small Phillips screwdriver. Carefully separate front from back, starting from the bottom. **Caution:** Be careful not to damage any internal parts.

Remove old battery, using a small Phillips screwdriver, if necessary. Replace with new battery. Replace back of case. **Caution:** Avoid contact with other TI-15 components while changing the battery. If necessary, press ✈ and ✈ at the same time to reset the TI-15 (clears memory and all settings). **Caution:** Dispose of old batteries properly. Do not incinerate batteries or leave where a child can find them.

**TI Product Service and Warranty Information**

**Product Support**

Customers in the U.S., Canada, Puerto Rico, and the Virgin Islands

For general questions, contact Texas Instruments Customer Support:

- Phone: 1-800-TI-CARES (1-800-842-2737)
- E-mail: ti-cares@ti.com

For technical questions, contact the Programming Assistance Group of Customer Support:

- Phone: 1-972-917-8324

Customers outside the U.S., Canada, Puerto Rico, and the Virgin Islands

Contact TI by e-mail or visit the TI calculator home page on the World Wide Web.

- E-mail: ti-cares@ti.com
- Internet: www.ti.com/calc
TI Product Service and Warranty Information (continued)

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