2020–2021 Calculator Information and Rules for Mathematics and Science Diploma Exams

Introduction

This document contains information on the rules that need to apply to the use of calculators when mathematics and science diploma exams are administered and written. For additional information, including an overview of the calculator policy; administration rules for the use of calculators; and permitted and prohibited calculator materials see the Diploma Examinations Program General Information Bulletin.
List of approved graphing calculators

Alberta Education has approved the use of the following graphing calculators, if properly cleared and configured, when writing diploma exams; this list is updated annually.

**Casio**
- fx-9750 GII
- fx-9750 GIII
- fx-9750 G Plus (no longer manufactured)
- fx-9860 GIIIs (no longer manufactured)

**Sharp** (no longer manufactured or supplied to Canada)
- EL-9600
- EL-9600C
- EL-9900

**Texas Instruments**
- TI-83 Plus
- TI-84 Plus
- TI-84 Plus CE
- TI-84 Plus Pocket SE (no longer supplied to Canada)
- TI-Nspire CX II
- TI-Nspire CX II CAS (CAS must be disabled)

The following Texas Instrument calculator models are approved, but are no longer manufactured.
- TI-83
- TI-83 Plus Silver
- TI-84 Plus Silver
- TI-84 Plus C Silver Edition
- TI-Nspire (with Touchpad or Clickpad)
- TI-Nspire CX Handheld
Scientific calculators

The following scientific calculators are not permitted when writing diploma exams due to their prohibited properties. This is not an exhaustive list as all scientific calculators must be checked and approved.

- Casio fx-115 ES Plus
- Casio fx-CG10 or fx-CG50
- Casio fx-991 ES Plus (ES Plus C or EX)
- Casio fx-300 ES (ES Plus)
- Casio fx-82 ES Plus
- Casio fx-85 ES Plus
- Casio fx-95 ES Plus
- Casio fx-350 ES Plus
- Sharp EL W516X Writeview
- Sharp EL W535X Writeview
- TI 36X Pro
- TI 30XS Multiview

When checking scientific calculators for prohibited properties, it is advisable to check both trigonometric and radical values. For example, the calculations $\sqrt{12}$ and $\cos(30^\circ)$ should result in decimal values and not exact values. With these calculations, the button that converts fractions to decimals, and vice versa, should also be tested.
Rules

The following rules apply to the use of calculators when diploma exams are administered and written.

Principals

1. Principals shall ensure that, at the beginning of any mathematics or science diploma exam course, teachers and students are advised of the types of calculators that are currently approved for use when writing a diploma exam.

2. Prior to each diploma exam administration, the principal of a school or designated writing centre shall
   2.1. establish appropriate procedures to ensure that only approved calculators are brought into the diploma exam writing room
   2.2. communicate to students and teachers the rules related to the use of approved calculators during diploma exams
   2.3. develop procedures for teachers to properly clear and configure approved graphing calculators to safeguard test security, validity and fairness to all students.

Diploma exam supervisors

1. Exam supervisors who supervise diploma exam administrations shall implement procedures to ensure that:
   1.1. only approved calculators are brought into the diploma exam writing room
   1.2. approved calculators have been appropriately cleared and configured by diploma exam supervisors before and after the official scheduled diploma exam administration.

2. Prior to the commencement of the diploma exam administration, diploma exam supervisors shall review with students the diploma exam calculator use rules and procedures, and students’ responsibilities for implementing them.
Students

1. Students who write mathematics and science diploma exams shall:
   1.1. understand all diploma exam calculator use rules and procedures, and their responsibilities for implementing them
   *NEW*
   1.2. only bring one approved and appropriately configured calculator to the diploma exam writing room for their exclusive use
   1.3. ensure that their calculator has been appropriately cleared and configured by the diploma exam supervisor before and after writing the diploma exam.

Calculator clearing and checking procedures

The instructions required to clear the memories of approved graphing calculators and appropriately configure them are presented in the following tables. The factory set memory values for certain approved graphing calculators are also presented in the tables.

For Casio models, the calculator's memory value should be checked after clearing to ensure that it reflects its factory settings. If the memory values do not reflect the factory settings, then the operating system version should also be checked.

For Texas Instrument models, the calculator’s remaining memory after clearing and resetting is dependent on the calculator's operating system. Because this calculator manufacturer uses various operating systems for the same calculator model, their memory values upon reset may vary slightly from those shown in the table. If, after clearing, the memory value in a calculator is not reasonably close to the value presented in the table, then the calculator should be turned off and reset a second time. If the value fails to change, the calculator should not be used when writing the diploma exam.

For further information about clearing calculators contact the Director, Diploma Programs.
Keystrokes to clear, configure, and check approved graphing calculators

### Casio

<table>
<thead>
<tr>
<th>Calculator Model</th>
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<th>Keystrokes and Information Regarding Cleared Calculator</th>
</tr>
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<tbody>
<tr>
<td>fx-9750 GII</td>
<td>Select <strong>Menu</strong>&lt;br&gt;Cursor to <strong>SYSTEM</strong>&lt;br&gt;<strong>EXE</strong>&lt;br&gt;F5: Reset&lt;br&gt;F2: Main Memories&lt;br&gt;F1: Yes “Reset main memories”&lt;br&gt;<strong>EXIT</strong></td>
<td>Select <strong>Menu</strong>&lt;br&gt;Cursor to <strong>MEM</strong>&lt;br&gt;<strong>EXE</strong>&lt;br&gt;<strong>Calculator will display:</strong>&lt;br&gt;61904 Bytes Free</td>
</tr>
<tr>
<td>fx-9750 G Plus</td>
<td>Select <strong>Menu</strong>&lt;br&gt;Cursor to <strong>MEM</strong>&lt;br&gt;<strong>EXE</strong>&lt;br&gt;F1: Yes-Reset</td>
<td>Select <strong>Menu</strong>&lt;br&gt;Cursor to <strong>MEM</strong>&lt;br&gt;<strong>EXE</strong>&lt;br&gt;<strong>Calculator will display:</strong>&lt;br&gt;28628 Bytes Free</td>
</tr>
<tr>
<td>fx-9860 GIIIs</td>
<td>Select <strong>Menu</strong>&lt;br&gt;Cursor to <strong>SYSTEM</strong>&lt;br&gt;<strong>EXE</strong>&lt;br&gt;F5: Reset&lt;br&gt;F6: Next Page&lt;br&gt;F1: Main &amp; Storage&lt;br&gt;F1: Yes “Reset main memories, storage memories”&lt;br&gt;<strong>EXITMENU</strong></td>
<td>Select <strong>Menu</strong>&lt;br&gt;Cursor to <strong>MEM</strong>&lt;br&gt;<strong>EXE</strong>&lt;br&gt;F1: <strong>Main Memory</strong>&lt;br&gt;<strong>Calculator will display:</strong>&lt;br&gt;61904 Bytes Free</td>
</tr>
</tbody>
</table>

**Note:** The fifth and sixth digits of the OS version **cannot** be 20 for the fx-9750 GII or fx-9860 GIIIs models, i.e., operating system version 2.0X.020X is **prohibited** on these models.
To prepare the CASIO fx-9750 GIII calculator for diploma exam writing purposes, the Examination Mode must be used. Examination Mode disables specific calculation functions, programs, and applications, and allows them to be restored after the diploma exam.

<table>
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<tr>
<td>fx-9750 GIII (OS:03.21.3200)</td>
<td>With the calculator off, hold down ( \text{MODE} ) and ( \text{7} ) keys and press the ( \text{ON} ) key until Examination Mode dialogue is displayed. Press ( \text{F1} ) (Continue?) Press ( \text{F2} )</td>
<td>Disables Math Input/Output mode setting and various other modes and functions such as e-ACT mode, MEMORY mode, PRGM mode, etc.</td>
</tr>
<tr>
<td></td>
<td>The icon ( \text{○} ) will flash on the screen display.</td>
<td>Calculator will display: 61860 Bytes Free</td>
</tr>
</tbody>
</table>

Note: For the CASIO fx-9750 GIII model
- Resetting the memory is not sufficient as it fails to disable prohibited features.
- Check that the calculator is in Examination Mode by watching for the flashing icon \( \text{○} \) on the top right of the screen display.
- Pressing \( \text{ALPHA} \) \( \text{EXIT} \) will show the elapsed time in the Examination Mode.
- The calculator will remain in Examination Mode for 12 hours; turning the calculator on after 12 hours will cause the calculator to exit Examination Mode automatically.
- Delete main memory data before the student leaves the examination room.

Select Menu
Curser to SYSTEM
EXE
F5: Reset
F2: Main Memory
F1: Yes “Reset Main Memory”
EXIT

- If the RESTART button is pressed or the batteries replaced before 12 hours has elapsed, any data input is erased and the calculator will re-enter Examination Mode when the calculator is turned on.
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<tr>
<td>EL-9600</td>
<td>2nd x̄TN (Option) Log 2 CL (Reset All Memory Clear all data)</td>
<td>2nd x̄TN (Option) ▼ Calculator will display: 18562 Bytes Free</td>
</tr>
<tr>
<td>EL-9600C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EL-9900</td>
<td>2nd x̌ (Option) Ln 2 CL (Reset All Memory Clear all data)</td>
<td>2nd x̌ (Option) ▼ Calculator will display: 47447 Bytes Free</td>
</tr>
</tbody>
</table>
Texas Instruments

To prepare Texas Instruments calculators for diploma exam writing purposes, we recommend referring to the step by step instructions for using TestGuard, Press-to-Test, or memory reset available at https://education.ti.com/en/resources/calculator-set-up. If this link is unavailable or you have questions, please contact 1-800-TI-CARES, ti-cares@ti.com, or your local representative.

Teachers should ensure that students are using the latest version of the calculator Operating System.

Students and teachers are encouraged to access the free updates to the OS as needed on the TI website http://education.ti.com. Mode settings may be altered when calculator memories are cleared. Students should check the mode settings on their calculators before proceeding to write their diploma exam.

To prepare Texas Instruments Nspire calculators (all approved Nspire models) for diploma exam writing purposes, the Press-to-Test feature must be used. Press-to-Test disables specific programs and apps and allows them to be restored after the diploma exam.

Note: When using the Press-to-Test feature, make sure to exit Press-to-Test so that all data and documents are cleared from the calculator after the diploma exam administration. Failure to exit Press-to-Test will allow all calculations and graphs to remain in the scratchpad.

To use the Transfer Press-to-Test Feature on TI-Nspire (recommended):

1. Teacher sets up one TI-Nspire unit in Press-to-Test. See the link above for more details on the initial set up. Ensure that Disable log template and summation functions line is unchecked and all other lines are checked. For TI-Nspire CAS units, ensure that CAS mode is also set to “Off”. This should be done for all Mathematics and Science diploma exams.

2. When the unit reboots there is an option to Transfer Press-to-Test on the Press-to-Test Page.

3. Using the mini unit-to-unit cable, connect the unit that has been configured to a student handheld unit and select the transfer option.

4. You can then unplug and move on to the next student. It is not necessary to wait until the student calculator completes processing. Using this method, each calculator will be configured to the Press-to-Test format determined by the teacher.
**NEW**

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<tr>
<td><strong>TI-Nspire (with Clickpad)</strong> (OS 3.9)</td>
<td>With handheld off, hold down the esc and on keys simultaneously until the Press-to-Test screen is displayed</td>
<td>Remaining memory may vary depending on the documents that are locked on the unit. These documents are inaccessible while in Press-to-Test.</td>
</tr>
<tr>
<td><strong>TI-Nspire (with Touchpad)</strong> (OS 3.9)</td>
<td>Uncheck only the line “Disable ( \log_{10} x ) template and summation functions” for all diploma exams</td>
<td></td>
</tr>
<tr>
<td><strong>TI-Nspire CX</strong> (OS 4.5.2 or higher)</td>
<td>* Set CAS Mode to “Off”</td>
<td></td>
</tr>
<tr>
<td><strong>TI-Nspire CX II</strong> (OS 5.1.3 or higher)</td>
<td>Select “Enter Press-to-Test”. The handheld will reboot and confirm restrictions. Select “OK”.</td>
<td></td>
</tr>
<tr>
<td><strong>TI-Nspire CX II CAS</strong> (OS 5.1.3 or higher)</td>
<td>The LED light will blink amber, and a ‘lock’ icon will appear beside the battery icon.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* “CAS OFF” will appear at the top of the Home screen.</td>
<td></td>
</tr>
</tbody>
</table>

**Notes: For TI-Nspire models**

- Resetting the memory on TI-Nspire models is not sufficient as it fails to disable prohibited features.

- Check that the calculator is in the correct Press-to-Test mode by watching for the flashing ‘amber’ LED on the top of the handheld unit.

- The presence of an amber light does not ensure that the calculator has been correctly set unless the calculator clearing instructions have been followed or transfer Press-to-Test has been performed. i.e., an amber light indicates that a function has been disabled, but not which function.

- A blinking green light indicates that the calculator is in Press-to-Test mode, but no features have been disabled.

- **To exit** Press-to-Test, the calculator must be connected to another TI-Nspire using a mini unit-to-unit cable. Use the following keystrokes:

  From the Home screen, press \[\text{Alt} \text{Enter} \] and then \[\text{doc} \]
  
  Select 9 (Press-to-Test)
  
  Select 1 (Exit Press-to-Test)

No light will be blinking once the calculator is out of Press-to-Test mode.
To prepare Texas Instruments calculators (TI-83 or TI-84 models) for diploma exam writing purposes, the APPS program Test Guard or the Press-to-Test feature can be used as indicated:

- Test Guard 4.3 for TI-83 Plus models (will clear calculator) and TI-84 Plus models (will disable or clear with setup)
- Test Guard 5.4 for TI-84 Plus CE models only (not compatible with older models of TI-84 Plus)
- Press-to-Test for TI-84 Plus models (with OS 2.55 or higher)

For TI-83 Plus and TI-84 Plus models, calculator memory can also be completely reset instead, using the steps outlined on the next page.
<table>
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</table>
| TI-83 (OS 1.19)                   | \(2^{nd} +\) (MEM) 5 (Reset) 1 (All Memory) 2 (Reset) | \(2^{nd} +\) (MEM) 1
Calculator will display: 61904 Bytes Free |
| TI-83 Plus (OS 1.19)              | \(2^{nd} +\) (MEM) 7 (Reset) \(\gg\) (All)** Enter 1 (All Memory) 2 (Reset) | Remaining memory may vary depending on the model, operating system and age of the calculator.
\(2^{nd} +\) (MEM) 2
Currently most operating systems will display:
RAM Free 24317 |
| TI-83 Plus Silver (OS 1.19)       | \(2^{nd} +\) (MEM) 7 (Reset) \(\gg\) (All)** Enter 1 (All Memory) 2 (Reset) | Remaining memory may vary depending on the model, operating system and age of the calculator.
\(2^{nd} +\) (MEM) 2
Currently most operating systems will display:
RAM Free 24317 |
| TI-84 Plus (OS 2.55)              | \(2^{nd} +\) (MEM) 7 (Reset) \(\gg\) (All)** Enter 1 (All Memory) 2 (Reset) | Remaining memory may vary depending on the model, operating system and age of the calculator.
\(2^{nd} +\) (MEM) 2
Currently most operating systems will display:
RAM Free 152891 |
| TI-84 Plus Silver (OS 2.55)       | \(2^{nd} +\) (MEM) 7 (Reset) \(\gg\) (All)** Enter 1 (All Memory) 2 (Reset) | Remaining memory may vary depending on the model, operating system and age of the calculator.
\(2^{nd} +\) (MEM) 2
Currently most operating systems will display:
RAM Free 21840 |
| **TI-84 Plus Pocket SE (OS 2.55)**|                                                          |                                                       |
| ¹Not available for purchase in North America |
| TI-84 Plus C Silver (OS 4.0)      | \(2^{nd} +\) (MEM) 7 (Reset) \(\gg\) (All)** Enter 1 (All Memory) 2 (Reset) | Remaining memory may vary depending on the model, operating system and age of the calculator.
\(2^{nd} +\) (MEM) 2
Currently most operating systems will display:
RAM Free 21840 |
| TI-84 Plus CE (OS 5.4 or higher)  | \(2^{nd} +\) (MEM) 7 (Reset) \(\gg\) (All)** Enter 1 (All Memory) 2 (Reset) | Remaining memory may vary depending on the model, operating system and age of the calculator.
\(2^{nd} +\) (MEM) 2
Currently most operating systems will display:
RAM Free 152891 |

*Additional notes for clearing these calculator models are on the next page.
Notes: For TI-83 and TI-84 models

**The ►► step indicated in the table is very important: If not followed, the memory may not be properly cleared.

- The application “Finance” is the only app that remains after following the clearing instructions.
- If, after clearing the calculator, the screen is blank, the contrast needs to be reset. To do this, use the 2nd and then ▲ repeatedly.
- Press-to-Test or Test Guard can be used rather than the directions provided in the table for some of these calculators in order to preserve stored programs, applications and other data if desired.
- On the TI-84 Plus models, Press-to-Test can also be enabled with the following keystrokes:
  - With the calculator Off, press the left arrow, right arrow, and On key simultaneously
  - Select NO disable logBASE
  - Select NO disable Σ(
  - Press ZOOM (OK)
- To exit Press-to-Test on TI-84 Plus models, the calculator must be connected to another TI-84 Plus model. Use the following keystrokes:
  - On the calculator that is in Press-to-Test mode, press 2nd (link), ► Receive, Enter
  - On the calculator you have connected it to, press 2nd (link), 4: List, Select L1, ► Transmit, Enter
  - On the calculator that is in Press-to-Test mode, press 2: Overwrite, Enter

Note: A calculator program called “FAKE” has been identified which, when initiated, facilitates student attempts to fake a calculator Reset. When the FAKE program is running, screens may appear normally, however, calculator key presses do not respond in typical fashion. Pressing the “on” key will cause the FAKE program to break. Continue with proper clearing or configuration procedures above. If you have questions, please contact 1-800-TI-CARES, ti-cares@ti.com, or your local representative.