

## Use of calculators in examinations 2014

**Note:** From May 2014, statistical tables are not allowed in mathematics examinations, rather candidates should be using the statistical features on their GDC.

### Calculator List

This document should be read in conjunction with the calculator section of the Handbook of Procedures and other information available on the Online Curriculum Centre. It provides examples of calculators which are recommended for use in IB examinations and those which are prohibited. This list will be updated as and when necessary. It should be noted that these are not definitive lists and teachers should check other models against the information in the Handbook of Procedures. Schools should also ensure that all calculators used in examinations comply with the regulations.

### Recommended calculators

The following models meet the minimum requirements for mathematics subjects and have updated and time-saving functionalities not found on other models.

<b>Texas Instruments</b>	TI 84 Plus silver edition	TI 83 Plus silver edition
	TI 84 Plus	TI 83 Plus
	TI 84 Plus C silver edition	
	TI Nspire (non-CAS), with 84 faceplate	
	TI Nspire (non-CAS) versions 1.3 or higher updated to the latest operating system in "Press to Test" mode, with the correct features blocked (see list below)	
<b>Casio</b>	FX 9750 G Plus or GII	Graph 35 Plus
	CFX 9850 Plus	Graph 65 Plus
	FX 9860 series	Graph 75
	CFX 9950 Plus	Graph 85 series
	CG series - FXCG10/20	FX 1.0 Plus

### Prohibited calculators

The following models are not allowed in examinations under any circumstances.

<b>Texas Instruments</b>	TI Voyage 200 (all versions)	TI 89 (all versions)
	TI 92 (all versions)	TI Nspire CAS (all versions)
	TI Nspire (non-CAS) version 1.1 or version 1.2 or any other version <b>not</b> updated to the latest operating system	
<b>Casio</b>	Classpad 300	Graph 100
	FX 2.0 (all versions)	FX 9970 (all versions)
<b>Hewlett Packard</b>	HP 38-95 (all versions)	HP Prime (all versions)*

\* The HP Prime is prohibited for examinations in 2014 but is currently under review.

#### Notes:

- Any devices with unrestricted/candidate accessible WiFi functionality are not permitted.
- Other calculators which have features that do not appear on any of the recommended models are not allowed.
- Candidates may not use or store data/notes, programs or flash (ROM) applications (Apps) in their calculators that may assist them in an examination by removing the need to recall facts or formulae.

## Extract from the Handbook of Procedures

Calculators of the types indicated as suitable are allowed only in the subjects listed in the table below.

Subjects	Calculators
Business and management Environmental systems and societies	A four-function calculator, scientific calculator or GDC is required for all examinations.
Economics HL Paper 3	While all questions requiring a calculator can be answered fully using a four function (plus, minus, multiply, divide) calculator, graphic display calculators (GDCs) are allowed during the examination. The graphing functions on these calculators may assist students and it is therefore recommended that all students are familiar with the use of GDCs.
Biology Chemistry Design technology Physics Sports, exercise and health science	Calculators are not allowed on paper 1.  On paper 2 and paper 3, a calculator with the following minimum functionalities is required (a GDC is recommended): <ul style="list-style-type: none"> <li>• decimal logarithms</li> <li>• values of <math>x^y</math> and <math>x^{1/y}</math></li> <li>• value of <math>\pi</math> (pi)</li> <li>• trigonometric functions</li> <li>• inverse trigonometric functions</li> <li>• natural logarithms</li> <li>• values of <math>e^x</math></li> <li>• scientific notation</li> </ul>

Subjects	Calculators
Mathematical studies SL Further mathematics HL	<p>A GDC with the following minimum functionalities is required on all papers:</p> <ul style="list-style-type: none"> <li>• draw graphs with any viewing window</li> <li>• solve equations numerically</li> <li>• find a numerical derivative at a point</li> <li>• find a numerical definite integral</li> <li>• financial package</li> <li>• add and multiply and find inverse matrices (further mathematics HL only)</li> <li>• find statistical values including:               <ul style="list-style-type: none"> <li>- normal distribution</li> <li>- binomial distribution</li> <li>- Poisson distribution</li> <li>- t-distribution</li> <li>- binomial coefficient <math>\binom{n}{r}</math>, nPr</li> <li>- 1 and 2 var stats</li> <li>- chi squared values (including <math>p</math> values)</li> </ul> </li> </ul> <p>Examiners will set questions assuming that all candidates have a GDC with the minimum functionalities listed here. Candidates using only four-function or scientific calculators, or using a less able GDC, will be at a disadvantage.</p>
Mathematics SL Mathematics HL	<p>Calculators are not allowed for paper 1.</p> <p>A GDC with the following minimum functionalities is required on all other papers:</p> <ul style="list-style-type: none"> <li>• draw graphs with any viewing window</li> <li>• solve equations numerically</li> <li>• find a numerical derivative at a point</li> <li>• find a numerical definite integral</li> <li>• financial package</li> <li>• find statistical values including:               <ul style="list-style-type: none"> <li>- normal distribution</li> <li>- binomial distribution</li> <li>- Poisson distribution</li> <li>- t-distribution</li> <li>- binomial coefficient <math>\binom{n}{r}</math>, nPr</li> <li>- 1 and 2 var stats</li> <li>- chi squared values (including <math>p</math> values)</li> </ul> </li> </ul> <p>Examiners will set questions assuming that all candidates have a GDC with the minimum functionalities listed here. Candidates using only four-function or scientific calculators, or using a less able GDC, will be at a disadvantage.</p>

## Necessary actions with recommended calculators

### TI Nspire “Press to Test” configurations

**Note:** Candidates must upgrade their Nspire to the latest operating system to use the “Press to Test” properly. Nspires which have not been updated and put into the correct “Press to Test” mode are not allowed in the examinations. Nspires must be put into “Press to Test” mode immediately before the examination. If done earlier, a candidate must not have access to the calculator between the time it is put into “Press to Test” mode and the examination. Further details about “Press to Test” can be found on the TI website. Older versions may need two upgrades to enable the correct “Press to Test” mode.

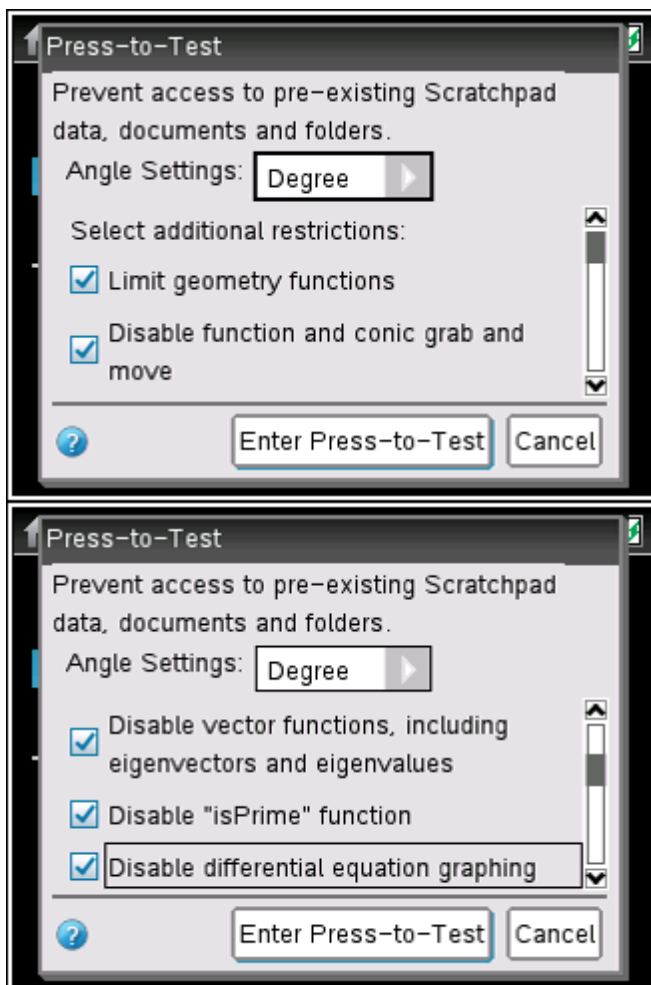
The following options in “Press to Test” mode must be **ticked** and therefore **blocked**.

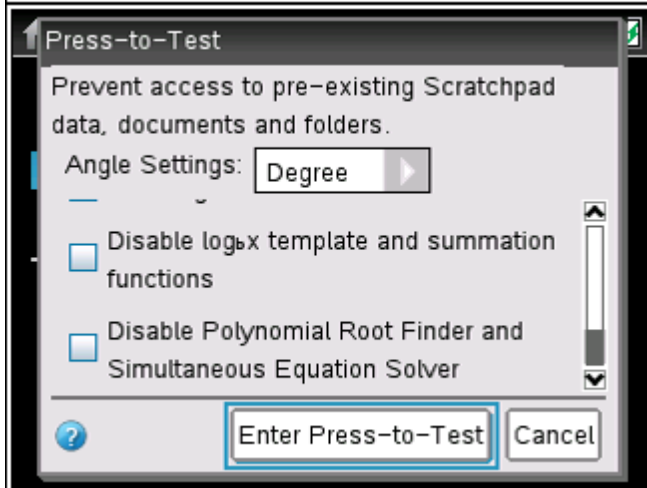
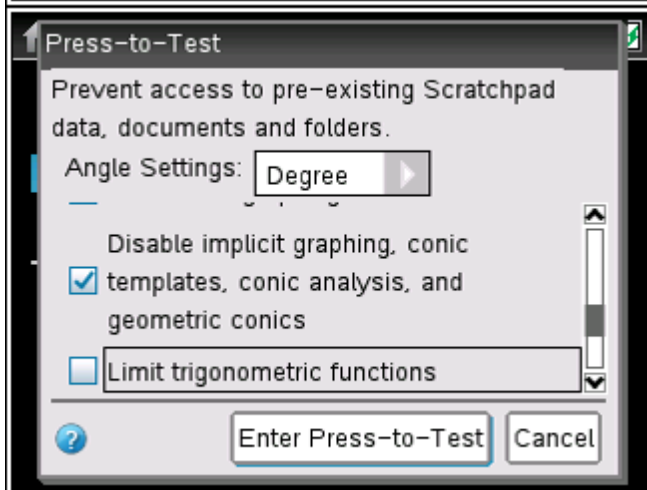
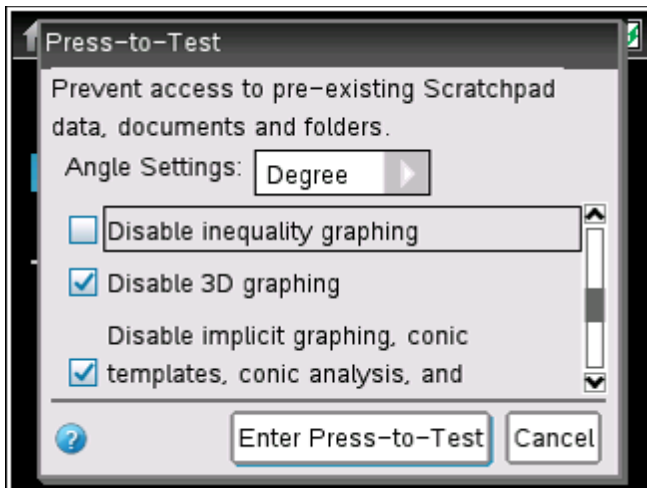
- Limit geometry functions
- Disable function and conic grab and move
- Disable vector functions, including eigenvectors and eigenvalues
- Disable “isPrime” function
- Disable differential equation graphing
- Disable 3D graphing
- Disable implicit graphing, conic templates, conic analysis, and geometric conics

The following options in “Press to Test” mode must be **unticked** and therefore **allowed**.

- Disable inequality graphing
- Limit trigonometric functions
- Disable  $\log_b x$  template and summation functions
- Disable Polynomial Root Finder and Simultaneous Equation Solver

The following screen shots show how to put the Nspire into the correct “Press to Test” mode.





## TI 83 (Plus and silver editions)/TI 84 (Plus and silver editions)

1. Reset all RAM memory.
2. Reset Archive Vars (if applicable).
3. Remove all Flash (ROM) applications (Apps) except those listed below.

App Menu Name	Description
CBL/CBR	Connectivity/set-up of CBL™ data collection system (Other connectivity Apps for USB-type probes are also acceptable and do not need to be removed.)
Chinese	Chinese version of Catalog Help
CtlgHelp	Catalog Help provides easy access to calculator function information
Dansk	Danish language localizer—this App will translate all prompts, error messages and most functions into Danish
Deutsch	Language localizer—this App will translate all prompts, error messages and most functions into German
EasyData	Connectivity App for USB-type data collection probes
Español	Language localizer—this App will translate all prompts, error messages and most functions into Spanish
Finance	Finance operations—part of the Operating System
Français	Language localizer—this App will translate all prompts, error messages and most functions into French
Italiano	Language localizer—this App will translate all prompts, error messages and most functions into Italian
Magyar	Language localizer—this App will translate all prompts, error messages and most functions into Hungarian
Nederlan	Language localizer—this App will translate all prompts, error messages and most functions into Dutch
Norsk	Language localizer—this App will translate all prompts, error messages and most functions into Norwegian
Polski	Language localizer—this App will translate all prompts, error messages and most functions into Polish
PolySmlt	Combination of two programs, one that finds polynomial roots and one that finds solutions to systems of equations. This version is an older version than PolySmlt2.
PlySmlt2	Combination of two programs, one that finds polynomial roots and one that finds solutions to systems of equations
Portug	Language localizer—this App will translate all prompts, error messages and most functions into Portuguese
Suomi	Language localizer—this App will translate all prompts, error messages and most functions into Finnish
Svenska	Language localizer—this App will translate all prompts, error messages and most functions into Swedish

## All Casio calculators

Initialize/reset **all** memory.