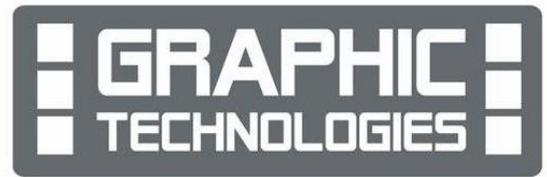


Graphical Times.

Volume 11, Issue 50, 2014.



Welcome back to term 2, 2014! We hope you have had a restful summer break and enjoy the content of this newsletter. Term 2 and 3 will see another random draw for the XJM240, 2500 ansi lumen, wide screen data projector from orders received during these terms.

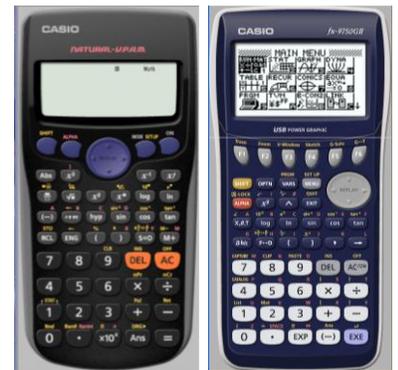
What's in here!

Included in this terms newsletter are calculator activities for the Classpad, graphic and scientific calculators:

- **Worksheet for the Classpad and similar models: Renaming constructions and using-altering text**
- **Worksheet for the FX9750GII and similar models: Linear Programming**
- **Worksheet for the FX82AU and similar models: Number Magic**
- **Term 2 pricing valid from the 5th May 2014 until the end of term - 4th July.**

Workshop opportunities.

Workshop opportunities: If you would like to have a workshop for teachers and or students then please make contact with *Graphic Technologies*. A large number of schools are taking up this opportunity either singularly or as a cluster of schools (with both the graphic calculator and the ClassPad), to look at how the graphic calculator and CAS could impact on and be integrated into classroom practice. With NZQA having acknowledged that year 12 & 13 students without the use of a graphical calculator being disadvantaged, a large number of schools are taking up the opportunity to up skill teachers and students in using these mathematics/statistics technologies.



Classpad update.

The new ClassPad II [fx-CP400] was released during 2013 and features a much larger, backlit screen than the previous models, while keeping the same functionality. Major differences on the handheld unit are that the 3D Graphing and Presentation applications have been replaced by E-Con EA200 for data logging. Connectivity is much easier, and the ClassPad II acts as a USB drive when plugged into either a PC or Mac.

eActivities are a great way to store formulas and procedures on the ClassPad II. These can be downloaded and sent to the handheld model using a standard USB cable.

Programs can be written to extend the functionality of your ClassPad II

Visit: <http://www.classpad.com.au/index.html>

[Note: please email for POA for the ClassPad II [fx-CP400].



Program to support the use of the FX9750GII.

Casio Education NZ launched the 'Top Schools Program' to support schools using the FX82AUplus II scientific and FX9750GII graphic calculators. So please support Casio Education NZ program in 2014 to support schools currently using FX82AUplus II scientific and FX9750GII graphic calculators.

The goal is to have all senior students in New Zealand using a graphics calculator so that no one is disadvantaged during NCEA examinations. Professional development courses will be offered in conjunction with Graphic Technologies supporting this initiative. **Details of the program can be uploaded from:** www.casio.edu.monacocorp.co.nz
Please make sure that your schools stationery lists are updated for 2014.

Mathematics and Statistics faculty circulation [Pass it on to . . .]

	→		→		→		→		→
	→		→		→		→		→
	→		→		→		→		→

Graphic Technologies Specials for term 2, 2014.

Some pricing specials for term 2, 2014. Valid until the end of term - 4th July 2014.

Product	# of Units	Price per unit (excl GST)
FX9750GII graphic calculator (monochrome) RRP \$132.95 Term 2, 2014 special – buy 20 and get 21 FX9750Gii – buy 40 and get 42 FX9750Gii Note: While stocks last. With a limit of 2 [maximum] free per school for this promotion.	1 - 10	\$90.50
	11 - 19	\$88.50
	20 +	\$85.50
FX82 AU plus scientific calculator RRP \$33.95	1 - 9	\$24.50
	10 +	\$23.00
FX-CG20 GRAPHIC CALCULATOR New model - Special pricing	NA	\$200.00

Also for each multiple of 10 FX9750GII ordered in term 2, 2014 receive a free FA-124USB cable [high-speed data communication between the PC and FX9750GII]. Buy 10 get 1 FA-124 USB cable, buy 20 get 2 FA-124 USB cables, buy 30 get 3 FA-124 USB cables, ... to a maximum of 4 FA-124 USB cables per school per order.

Term 2-3, 2014 Casio XJM240 data projector promotion.

The winning school is: [YOUR SCHOOL NAME COULD BE HERE] will be receiving the schools prize in October 2014.



Mercury-free, high-luminosity Hybrid Light Source



Casio projectors have been added to our product range. If you are thinking of replacing your current data projectors or looking for an additional unit(s) to meet your schools requirements please consider either of these units offered in our school pricing list. Additional information on these two data projectors is available on request.

Features Include:

- Ecologically sound and energy saving
- NEW mercury-free light source
- 2 × optical zoom
- Lamp-free technology with up to 20,000 hours continuous performance
- WLAN capability
- USB 2.0 for FX9750Gii graphic calculator can be connected directly into the projector [XJA145]
- USB data files can be connected directly into the projector
- The size of a ream of A4 paper!



Promotion: A term 2 and 3, 2014 promotion, every order received between 5th May, 2014 and 26th September, 2014 will go into the draw for winning a XJM240, 2500 ansi lumen, wide screen data projector.

See <http://www.casio-projectors.eu/euro/products/xjm240/> for technical details and the Graphic Technologies pricing list of the data projector models and types we are resellers for.

See the term 2 pricing sheet for more products and specials.

Websites of interest.

InZight version 2, March 2014 update, requires a complete download if you do not have the February 2014 version already. <http://www.stat.auckland.ac.nz/~wild/iNZight/dlw.html> for version 2.0.

Classpad update.

http://www.casio.edu.shriro.com.au/cr_classpad_corner.php

Worksheets downloaded off the web.

Visit Monaco Corporation and Graphic Technologies websites to view and download worksheets. There are links to other informative mathematics education websites too. For teachers we currently offer a large number of 'classroom ready' resources available and are designed primarily for the CASIO® FX82AU, FX9750Gii, FX9750G, FX9750G+, CFX9850GB, CFX9850GB+, CFX9850GC+, FX9750GA+ and FX9750Gii models of graphical calculators and the ALGEBRA 2.0. There is also a variety of activity sheets designed for the ClassPad300, 300+, 330A and 330A+ models. All of the activities and worksheets are designed for beginners to advanced users of the GC and CAS. More have been added to the website since the last newsletter.

Please visit: www.casio.edu.monacocorp.co.nz and <http://graphic-technologies.co.nz>

NCEA level 1, 2 and 3 Achievement Standards.

Students are expected to have access to appropriate technology. For statistics standards this would include statistical software. Students are expected to have access to appropriate technology. For statistics standards this would include statistical software.

Achievement Standard NCEA L1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	1.11	1.12	1.13		
Graphics calculator	√	NA	√	√	√	√	√	√	√	√	√	√	√		
CAS Calculator	√	NA	NA	√	√	NA	√	√	√	√	√	NA	√		
Achievement Standard NCEA L2	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	2.10	2.11	2.12	2.13	2.14	
Graphics calculator	√	√	√	√	√	√	√	NA	√	√	√	√	√	√	
CAS Calculator	√	√	√	√	√	NA	NA	NA	√	√	√	NA	√	√	
Achievement Standard NCEA L3	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	3.10	3.11	3.12	3.13	3.14	3.15
Graphics calculator	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
CAS Calculator	√	√	√	√	NA	NA	NA	√	√	√	√	√	√	√	√
Scholarship Statistics															
Graphics calculator	√														
CAS Calculator	√														
Scholarship Calculus															
Graphics calculator	√														
CAS Calculator	√														

Casio fx-991ES plus Calculator

For use in the CIE Exams, IGCSE, A/AS. It is the most advanced CIE approved calculator on the market.

Cambridge rules are:

- Where the only issue with calculators used by schools is that they produce exact numerical irrational output, and otherwise do not have any of the prohibited features, then they are permitted.

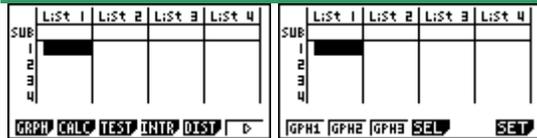
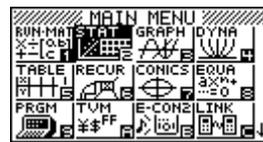
FEATURES INCLUDE:

Two way power	Matrix calculations / Vector calculations	CALC function / SOLVE function
417 Functions	Complex number calculation	List-based STAT data editor
Full Dot Display	Logarithm	Standard deviation
Integration / Differentiation	Base-n calculation	9 variable memories
Equation calculation	Fraction calculation	Logical operations
40 scientific constants	Combination and Permutation	Table function
New equation mode with √ and fraction display	40 metric conversions (20 conversion pairs)	Paired-variable statistics regression analysis
New slide on hard case	Natural Textbook Display	Random integers

Allows surd, numeric, improper fractions, proper fractions and standard deviation form. Natural textbook display lets you input and display fractions, square roots, and other numeric expressions just as they appear in your textbook!

Visit: <http://edu.casio.com/products/adves/fx991esplus/> for more information.

Pie charts drawn on the FX9750Gii.



Select **GRaPH** [F1] then **SET** [F6]



Select the 'Graph Type' by selecting the appropriate 'F' key.



Select which column the data will be extracted from.



Select the display as either '%' or 'Data'

The formula $e^{\pi i} + 1 = 0$

Linking 5 important numbers in modern mathematics together in one equation e , i , π , 0 and 1.

Consider the series expansions for e^x , $\cos x$ and $\sin x$ which can be found using Taylor's expansion.

$$e^x = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \frac{x^4}{4!} + \frac{x^5}{5!} + \dots$$

$$\cos x = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \dots$$

$$\sin x = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \dots$$

Now consider:

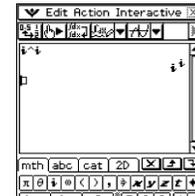
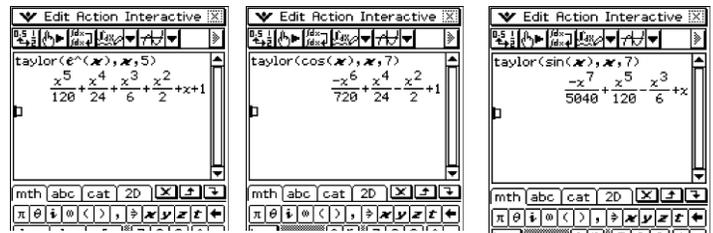
$$\begin{aligned} e^i &= 1 + i + \frac{i^2}{2!} + \frac{i^3}{3!} + \frac{i^4}{4!} + \frac{i^5}{5!} + \dots \\ &= 1 + i - \frac{1}{2!} - \frac{i}{3!} + \frac{1}{4!} + \frac{i}{5!} - \frac{1}{6!} - \frac{i}{7!} + \dots \\ &= (1 - \frac{1}{2!} + \frac{1}{4!} - \frac{1}{6!} + \dots) + i(1 - \frac{1}{3!} + \frac{1}{5!} - \frac{1}{7!} + \dots) \\ &= \cos 1 + i \sin 1 \end{aligned}$$

It follows that: $e^{i\theta} = \cos \theta + i \sin \theta$

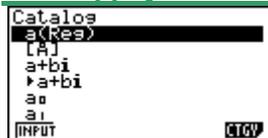
Setting $\theta = \pi$ we obtain $e^{i\pi} = \cos \pi + i \sin \pi = -1$

This last result, $e^{i\pi} = -1$, i.e. $e^{\pi i} + 1 = 0$ giving a clear link between e , i , π , 0 and 1.

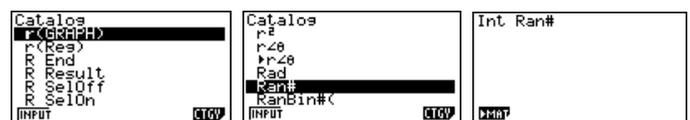
Question: Is i^i a real number?



Using quick ALPHA keys for 'CATALOGUE'.



Examples are demonstrated in 'RUN-MAT' mode. If you want **Int** for example then 'hit' the [() key, which is the key for I, then scroll down to **Int** then [F1] to input the command into the working window. Or **Ran#**, then **R**, [6] and scroll down to **Ran#**...



[Note: CATALOG, SHIFT [4]. can be used in other icons from the MAIN MENU.

A last word!

Well again, that's all I can fit onto the 4 pages! Enjoy term 2! Hope to see you at some workshops or hear from you via this newsletter or otherwise! If you would like to contribute or have suggestions as to what you would like to have discussed via this medium, please do not hesitate to contact us either by snail-mail, email, website, telephone, text or fax.

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