

Graphical Times.

Volume 9, Issue 34, 2010.



Welcome back to the start of term 2, 2010! We hope you have had a restful break and been able to read a few non-mathematical books. We hope you enjoy the read in this terms newsletter.

Great to see more people are ordering via the website. This term we are offering:

The first 5 schools to purchase a minimum \$500 worth of products via the website this term will receive a RMCLASSPAD in their order.

What's in here!

Included in this terms newsletter are:

- Calculator activities for the Classpad 330+ and Casio graphic calculator
- Worksheet for the Classpad 330 +: Geometrical construction on the ClassPad 300+.
- Worksheet for the FX9750GII and similar models: Approximations to Statistical Distributions #2
- Term 2, 2010 pricing list.

N.B. The Graphic Technologies Catalogue is available on request. Please email us @ graph.tech@xtra.co.nz, to receive your free copy.

Workshop opportunities.

Workshop opportunities: These are being planned for the second and third week of June, a flyer is included with this mail out with more details. 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 ClassPad330+, to look at how the graphic calculator and CAS could impact on and be integrated into your classroom practices.

Worksheets downloaded off the web.

Visit Monaco Corporation or Graphic Technologies website 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 are designed primarily for the CASIO® FX9750Gii, FX9750G, FX9750G+, CFX9850GB, CFX9850GB+, CFX9850GC+ FX9750GA+ models of graphical calculators and the ALGEBRA 2.0. There is also a variety of activity sheets designed for the ClassPad300, 300+ 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.

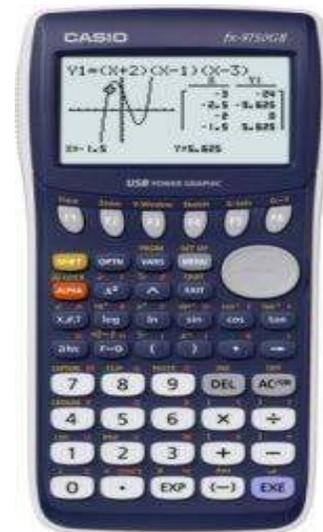
Visit: www.monacocorp.co.nz/casio and <http://graphic-technologies.co.nz>.

Introducing...the FX9750GII CASIO Graphic calculator

Features: Dot matrix display (128 x 64), USB port, Battery Powered and NCEA approved

This calculator also features:

- | | |
|---|--|
| <input type="checkbox"/> Sexagesimal calculations | <input type="checkbox"/> Matrix calculations |
| <input type="checkbox"/> Sexagesimal/Decimal conversions | <input type="checkbox"/> Integration & Differential calculations |
| <input type="checkbox"/> Regression analysis | <input type="checkbox"/> Equation calculations |
| <input type="checkbox"/> Binary, Octal, Hexadecimal calculations | <input type="checkbox"/> Exponential display |
| <input type="checkbox"/> Logical operations | <input type="checkbox"/> Increased 64k Program memory |
| <input type="checkbox"/> Standard deviation | <input type="checkbox"/> Solve, Replay, Answer function |
| <input type="checkbox"/> Paired variables | <input type="checkbox"/> Financial calculations |
| <input type="checkbox"/> Permutation, Combination | <input type="checkbox"/> Multi statements |
| <input type="checkbox"/> Hyperbolic, Inverse hyperbolic functions | <input type="checkbox"/> Error recovery |
| <input type="checkbox"/> Co-ordinate transformation | <input type="checkbox"/> Auto power off |
| <input type="checkbox"/> ENG conversion | <input type="checkbox"/> 180 x 85 x 25mm (HxWxD) |
| <input type="checkbox"/> Complex number calculations | |



Mathematics Department Cycle [Pass it on to . . .]

	→		→		→		→		→	
	→		→		→		→		→	

The new FX9750GII from Casio includes a number of new features over the FX9750G+ and FX9750GA.

New Functions include:

REF/RREF Function	Random Integers	Unit Conversion	New types of regressions	Chi-squared GOF function
9 new probability functions	Pie charts & Bar Graphs	Graph $X=f(Y)$	DISPLAY	

New overall design has the same generous screen size that you've enjoyed with the 9750GA+ with icon based menus.

SPEED

Faster processing speeds result in quicker calculations and enhanced overall performance

USB CONNECTIVITY

Direct connection to CASIO projectors

Data transfer from unit-to-unit and from unit-to-computer

New Manager Software available: See the Term 2 pricing list for more information on this item.

FX-9750GII Technical Specifications

Memory Available RAM/Flash ROM 26KB	Polar	Fixed Decimal Options	Recall and Edit Last Entry	One and Two-Variable Statistics
Number and Constant Memory	Sequence	Scientific Notation $10 + 2$	Calculates in Dec, Hex, Oct, Binary	Median, Quartiles
Prior Entry Recall	Constant (X=)	Fraction Operations	Logic Operations	Intermediate Statistics
Lines x characters 8 x 21	Inequality (auto shading)	Interactive Equation Solver	Recursive Sequences	Combinations, Permutations & Random Numbers
Screen Size (Pixels) 64 x 128	Zoom, Trace	Simultaneous Equation Solver Up to 6	Sin, Cos, Tan, and Inverses	Regression Models 10
Graphing 20	Dynamic/Transformation	Polynomial Root Finder Up to 3	Hyperbolic Functions	Estimated Values for Regression Graph
Function (Y= Equations to Graph)	Conics	Complex Numbers	Degrees-Radians-Grads Conversions	Degrees of Polynomial Regressions 2, 3, 4
Parametric	Table of Function Values	Matrices	Day/Date Calculation	Histograms, Scatter Plots
Polar \leftrightarrow Rectangular	Metric Conversions	Degree-Minute-Second \leftrightarrow Decimal Degree	Pie Chart, Bar Graph, Stacked Bar	Box & Whisker Plots
Number of Lists 26	List Length 255	Formula Solver	Inferential Statistics & Probability Distributions	One and Two Sample Z and T tests
Maximum, Minimum	Numeric Differentiation / Integration	Programs Available for EA-200 Data Analyzer	Chi-Squared, Anova, F Tests	Z and T Interval Tests
N, %, I, PMT, PV, FV, Amortization	Amortization Schedule	Interactive TVM Solver	Distributions (p.d. and c.d.) 7	Stats & Data Analysis
Interest Conversion	Annuity Due & Begin Setting	Recall of Financial Values	IRR, NPV, PBP, NFV, Cash Flow	Cost/Sell/Margin

For complex number solutions and calculations:

[SHIFT] [MENU] for SET UP
 Arrow down to Complex mode and
 Select [F2] for **a+bi** format.

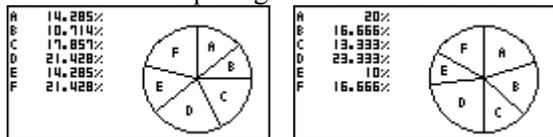


The use of the emulator makes it easy to capture screen shots
 When you are making up worksheets and activities for your class to use.

[STATS] icon sees a significant number of additional features.

Statistical Tests:

Pie chart: Comparing two different dice rolls.



	List 1	List 2	List 3	List 4
SUB				
1				
2				
3				
4				

EA-200 Controller
 F1: Setup EA-200
 F2: Setup Memory
 F3: Program Converter
 F4: Start Sampling
 F5: Graph Analysis
 SET MEM PROG STRT GRPH HELP

Using the EA200 [E-CON2] icon that makes the setting up of the Data logger and probes a breeze!

Graphing inequalities [GRAPH] sees the introduction of $x <$, $x >$, $x \geq$ and $x \leq$ for easier formation of linear programming problems.

Graph Func : Y=

Y1:	
Y2:	
Y3:	
Y4:	
Y5:	
Y6:	

X > X < X ≥ X ≤

Using the **Keylog on the emulator** to illustrate steps in the calculators sequence of key strokes used for display and students to follow.

26 lists each able to contain up to 255 rows.

	List 23	List 24	List 25	List 26
SUB				
1				
2				
3				
4				

GRAPH CALC TEST INTER DIST

3 different sequences and series catered for.

Recursion
 Bn+1: []
 bn+1: []
 Cn+1: []

SEL 3 DEL TYPE NAME SET TABL

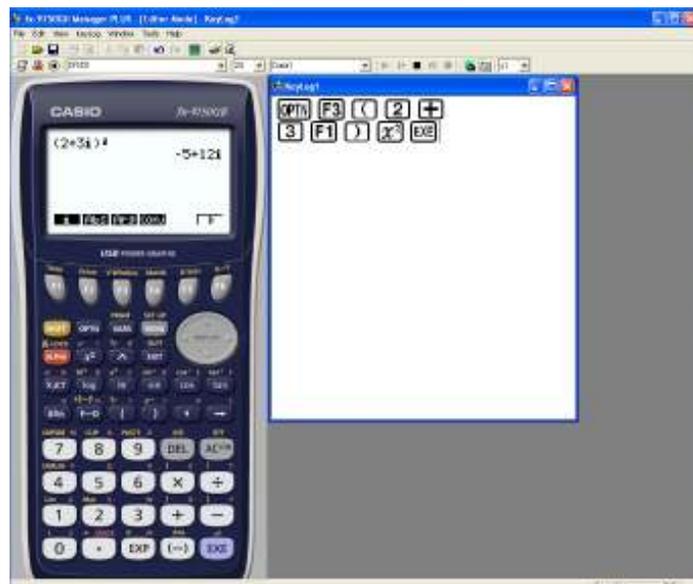
Conic sections enhanced:

Select Equation $X=H+T$ $Y=K+T$ $X=H+T$ $Y=K+AT^2$ $X=H+R\cos T$ $Y=K+R\sin T$ RECT POL FARM	Select Equation $X=H+T$ $Y=K+T$ $X=H+T$ $Y=K+AT^2$ $X=H+R\cos T$ $Y=K+R\sin T$ RECT POL FARM	Select Equation $X=A(Y-K)^2+H$ $X=AY^2+BY+C$ $Y=A(X-H)^2+K$ RECT POL FARM
---	---	---

Parametric

Polar

Rectangular



EA-200 Data logger and EA-2 Motion Sensor.

These have been very popular and we have secured more stock. These can connect to the graphic calculator or Classpads and we are offering a 63% saving purchasing these accessories singularly or a huge 69% discount on these two accessories when purchased together (**While stocks last, so be quick!**). The EA200 can connect up to 7 graphic calculators or ClassPad330's for data transfer from probes and motion sensor.

CASIO MOTION SENSOR

Emits Ultrasonic pulses
 Detects Pulses returned
 Can connect to EA200

EA200 CASIO DATA LOGGER

Data Analyser
 Includes Temperature, Optical and Voltage Probe
 Data collection at up to 50,000 points per second

Product	EA-200 Data Logger	EA- 2 Motion Sensor	Both units
Price (exclusive GST) per unit	\$300.00	\$300.00	\$500.00

N.B. Both of these models have a RRP of \$799.00 each.

AAA batteries – it's always that time of the year...

Graphic calculators require 4 AAA batteries and these have a life span of up to 1 year if they are used regularly. It is good practice to replace these rather than wait for them to fail, particularly if you operate class sets or hire them out to students for the academic year. *Graphic Technologies* sell these batteries

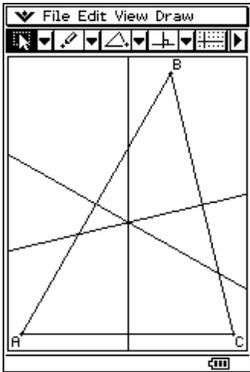


and will have special pricing operating in term 2 for bulk orders. The usual price is \$5.00 for each card (4 AAA batteries), but with orders of 12+ the cost will be \$4.60 + GST per card. You can buy in sets of 2 AA per card also at \$2.30 + GST per card. See the Term 2 pricing list for more information and other specials operating this term.

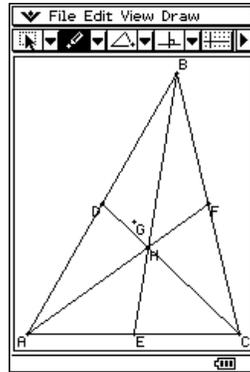
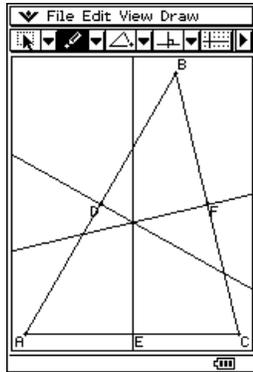
A problem to finish on!

1. The Euler line and the Orthocenter.

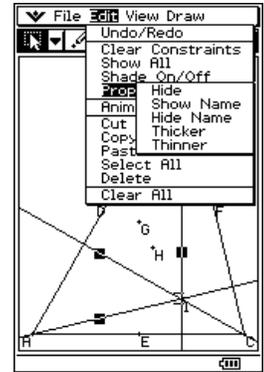
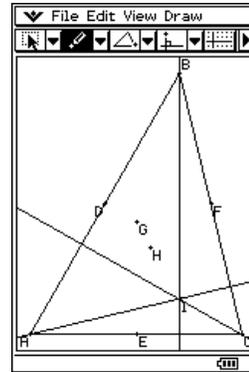
Of a triangle, assume it is not equilateral, then the **circumcentre** and **centroid** and a point on an altitude are collinear, [**orthocentre**]. Then this line is called the Euler line and all of the three altitudes all pass through one point on the **Euler line** such that $AB : BC$ is in the ratio 1 : 2.



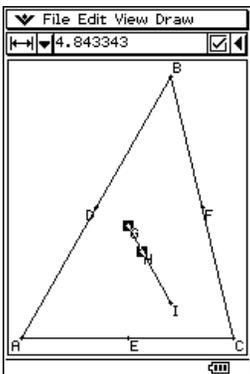
Construct the perpendicular bisectors to find the circumcentre.



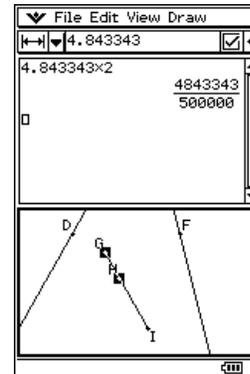
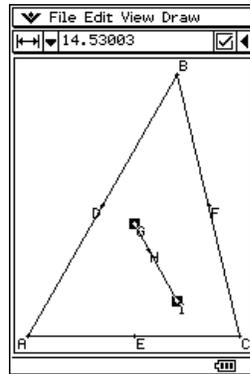
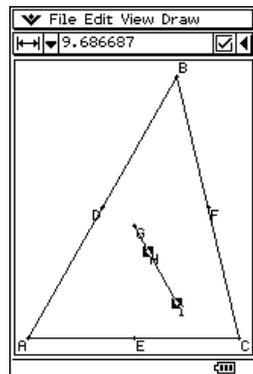
Construct the line segments from vertices to the midpoint of opposite sides for the centroid.



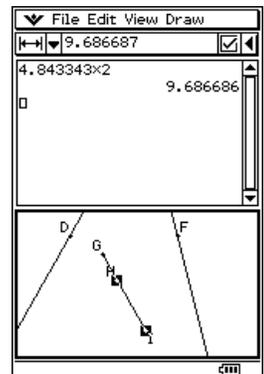
Don't forget to hide constructions!



Checking the lengths of GH, HI and GI.



Comparing the ratio $GH : HI$ is 1 : 2



Complete this set of constructions on a number of different triangle types.

What is the name of the point where all three altitudes meet at a common point?

[Orthocentre]

What type of triangle has all three points coinciding? [**circumcentre, centroid and orthocentre**]

Does the orthocentre of an obtuse angled triangle always lie outside the triangle? **Illustrate this.**

Where is the orthocentre of a right angled triangle? **Illustrate this.**

Any triangle having two equal altitudes is an isosceles triangle. **Illustrate this.**

2. The nine-point circle:

The midpoints of a triangles three sides, the midpoints of the three lines joining the orthocentre and the feet of the three altitudes all lie on a circle. **Construct and illustrate this.**

A last word!

Well again, that's all I can fit onto the 4 pages! Enjoy the 'Autumn-Winter' term! Hope to see you at some workshops or 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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