

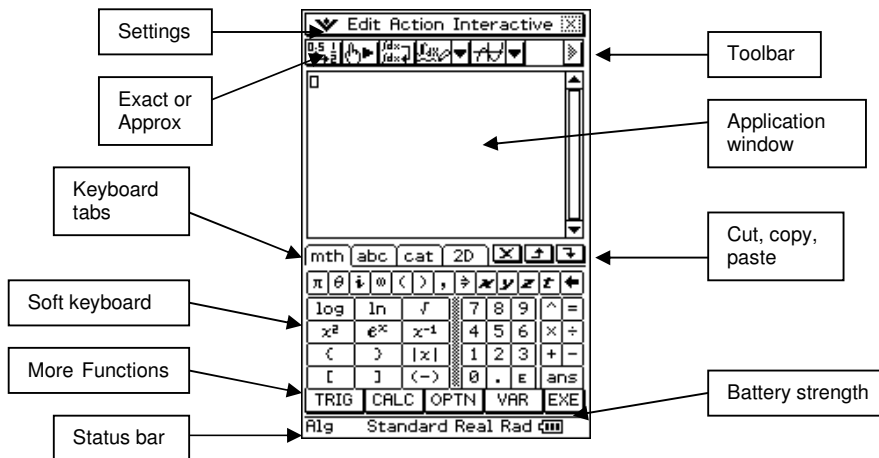
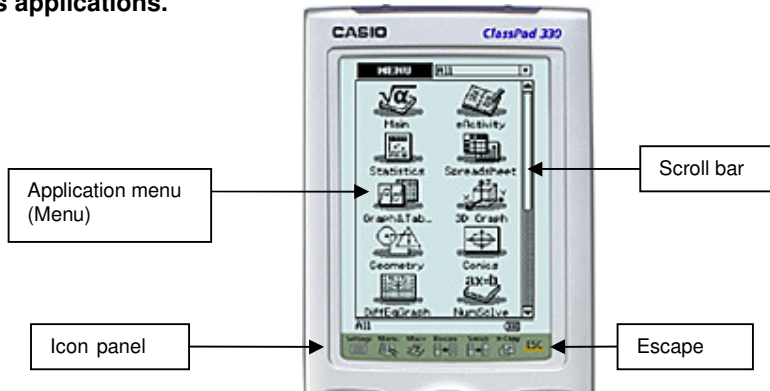
USING CASIO CLASSPAD TO ADDRESS SKILLS FOR STAGE 2 MATHS UNITS:

BEFORE BEGINNING:

- Check Operating Software (OS) version – should be 3.03.3000 (or at least 3.02.3000)
(Menu, System, System (at top of screen), Version (Software))
If this needs to be upgraded, the latest version is available at <http://edu.casio.com/dl/>.


To check your version, at the Application Menu (see below), scroll down to System, tap System right at top of screen, tap Version (Software).

Note: The Application Menu on the Classpad is like the desktop on your computer which contains the icons for all the installed applications. Tap the Menu icon in the Icon Panel (the fixed menu at the bottom of the display) to access applications.



The area on your calculator containing the physical buttons is called the **keypad**.

MAIN APPLICATION:

- Check settings for the format that you need for most calculations.
(Menu, Main, , Basic Format)

Check Current folder = main
 Number format = Normal 1
 Angle = Degree
 Advanced, descending order
 Choose Set.

- At the bottom of the Main screen, it should look like



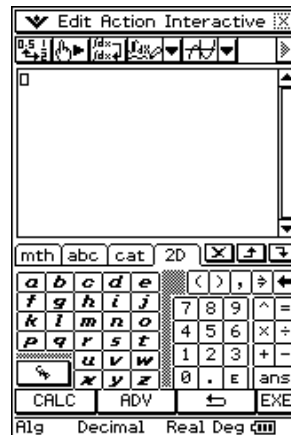
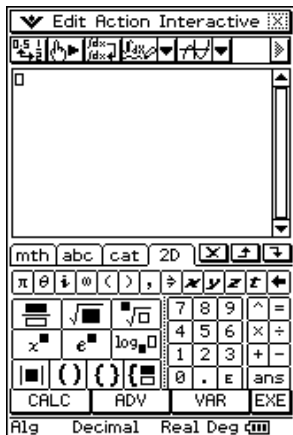
Anything that needs changing, simply tap on to toggle between the various available options.

Use of Edit, Clear All and Clear All Variables – assign values to variables using →

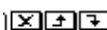
Use of Edit, Undo/Redo (can only be used for the one previous action)

Action v Interactive - try to use Interactive as much as possible, no special knowledge of syntax required.

Keyboard tabs and menus (**Mth**, **2D** (use this the most) **abc** (do not use for variables), **cat** (list of commands also available under Active and Interactive).



For variables other than x , y , z , use VAR option under **mth** or **2D** tab.

Copy and pasting - highlight, drag and drop - copy and paste tools  - Edit, cut, copy and paste.


UNIT 2AMAT:

- 1.1.6 “use calculators to calculate with integers, decimals, fractions, percentages, powers, square roots and cube roots.”

In the **Main** application,

- $0.25x - 12$ (can use either negative button or subtraction button)
- $\frac{1}{2} + \frac{5}{8}$ (use fraction template from **2D** tab on keyboard)
- $2.5\% \times 200$ (% from **abc** tab, SMBL on keyboard)
- $3^7 - 2^4$ (index template from **2D** tab on keyboard)
- $\sqrt{526}$ (square root template from **2D** tab on keyboard)
- $\sqrt[3]{526}$ (nth root template from **2D** tab on keyboard)

Solutions can easily be changed between fractional and decimal versions in a number of ways:

- Highlight solution and tap  icon in toolbar (top left of screen). This will toggle between fraction and decimal.
- Highlight original input expression and tap standard/decimal in the status bar (bottom of screen), tap EXE.

2. 1.2.4 “identify linear relationships in the form $y = mx + c$
- formulate linear rules from tables of values”

e.g.

x	1	2	3	4	5
y	7	4	1	-2	-5

Find the rule for the table of values above.

a) In the **Main** application,

use curly brackets (**mth** tab on keyboard) to input data in the format

{1,2,3,4,5},{7,4,1,-2,-5}

Highlight expression by dragging across it, tap Interactive, List Calculation, sequence. In the wizard that pops up, select Two lists of data, tap OK.

b) In the **Statistics** application,

put x values in list 1 and y values in list 2, tap Calc in toolbar, choose Linear Reg, a wizard pops up showing Xlist – List1, Ylist – List 2, tap OK, values for $y = ax + b$ are shown, tap OK and a graph of the line is displayed.

3. 1.2.4 - “read gradient and vertical intercepts of line graphs and link gradient to difference patterns in tables.”

In the **Geometry** application,

tap File, New, OK to get clear screen. Tap ‘measley’ icon to display the screen in Fig 1.

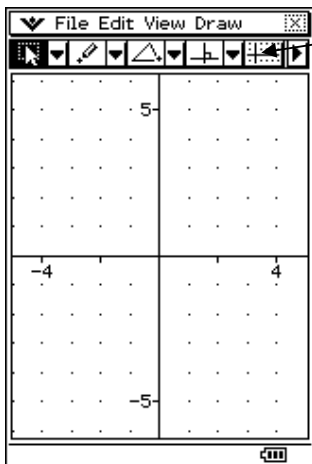


Fig 1

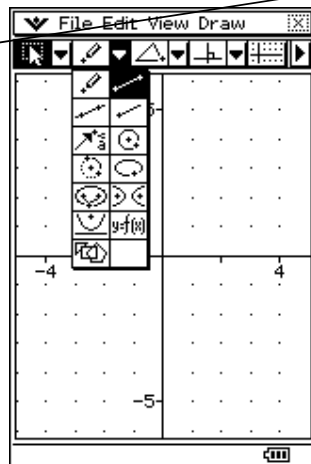


Fig 2

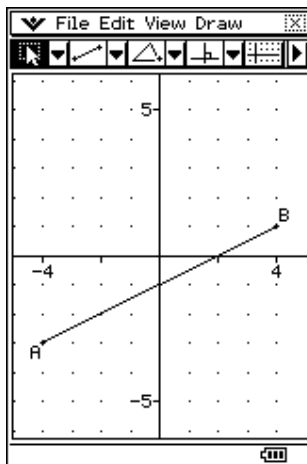


Fig 3

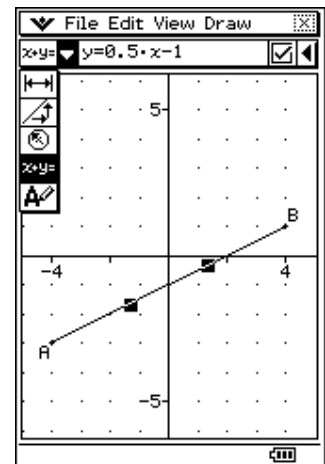


Fig 4

Select the line drawing tool from the toolbar (Fig 2) and draw line AB from (-4, -3) to (4, 1).

Unselect the line-drawing tool by tapping the selection tool (Fig 3) and then tap on the line AB to select it. Tap the ‘over the page’ icon (top right of toolbar) to access the measurement bar. By selecting the appropriate icon, the equation of the line will be displayed, namely $y = 0.5x - 1$.

We are now going to add an animation to this diagram to generate the coordinates of the points on this line and the gradient values for this line at these points. We will then inspect the values and make a connection between the difference pattern and the gradient values.

Put a point C somewhere on the line AB, by choosing the point drawing tool and tapping somewhere on line AB (Fig 5).

Check the point is actually on the line, by tapping the selection tool, tapping the line and then the point C to select them both, tap the 'over the page' icon and then check that the length measurement says 0 (Fig 6) or that the 'touching' icon says 'yes' (Fig 7).

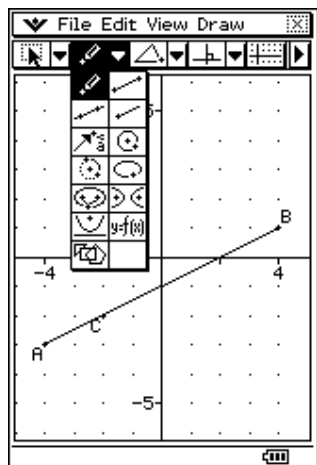


Fig 5

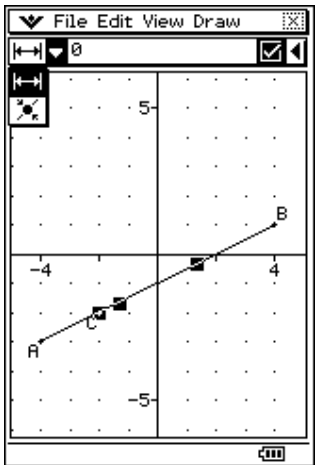


Fig 6

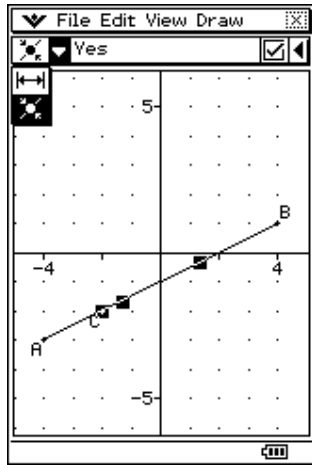


Fig 7

Make sure that the point C and the line AB are both selected. Tap Edit, Animate, Add Animation (Fig 8). Then tap Edit, Animate, Edit Animations (Fig 10) – set number of steps to 9. This will make the animation do 'nice' steps. Tap little cross in top right corner to close Edit Animations box.

Tap Edit, Animate, Go (to and fro) to start the animation (Fig 11). The point C will move up and down the line until you stop it by tap ESC in the grey icon panel at the bottom right of the screen. Let it go up and down the line at least once.

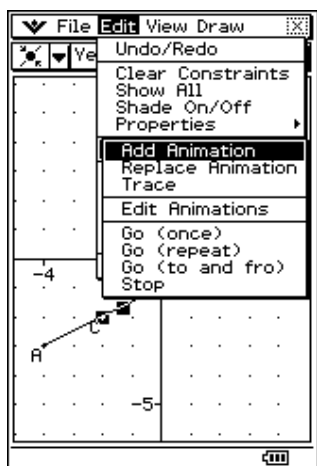


Fig 8

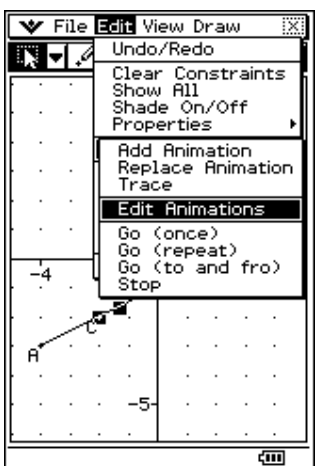


Fig 9

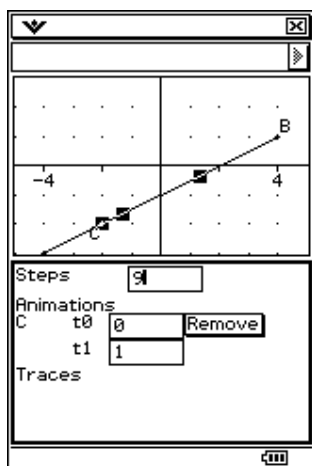


Fig 10

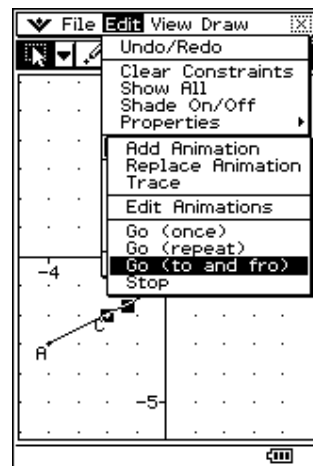


Fig 11

This animation has now generated some values that we can display to consider.

Tap point C only to select it. In the measurement toolbar, choose the (xx, yy) icon. The coordinates of point C will be displayed (Fig 12).

Tap the table icon next to the 'tick in the box' at the right hand end of the measurement toolbar.

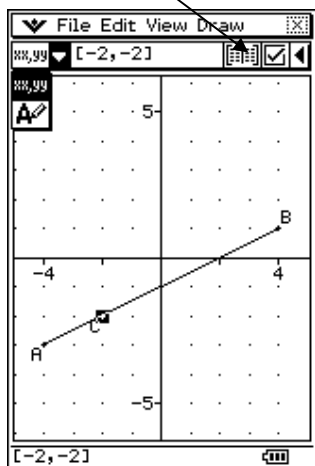


Fig 12

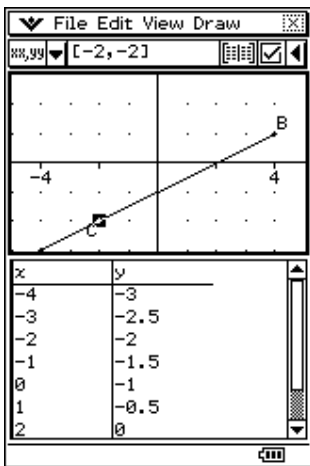


Fig 13

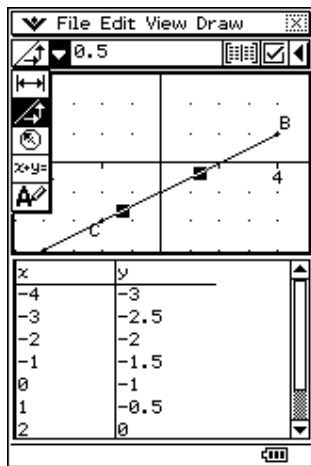


Fig 14

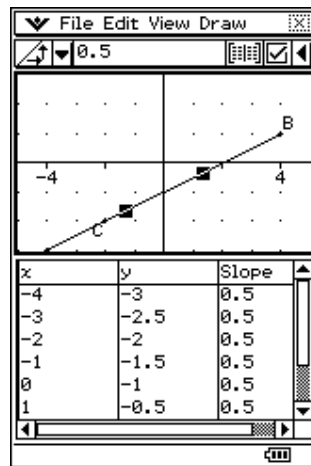


Fig 15

A table of values showing the coordinates of each point on the line AB that the point C passed through, is generated (Fig 13).

Unselect C and tap line AB to select it alone. Tap the gradient (slope) icon in the measurement toolbar to display the gradient of the line (Fig 14). Tap the table icon in the right of the measurement toolbar. A slope column will be added to the table of values created previously (Fig 15).

We will now copy these columns of values to a spreadsheet for easier inspection.

Select the table of values as the active part of the screen (if it is not already). Select the 3 columns of the table by tapping each in turn or by tapping Edit, Select All (Fig 16). Then tap Edit, Copy.

Tap Menu in the grey icon panel at the bottom of the screen and tap Spreadsheet. If the spreadsheet application already contains some data, clear it by tapping File, New, OK (Fig 17).

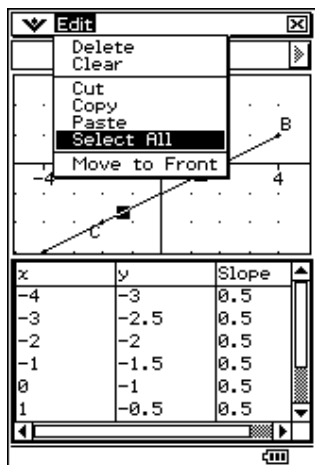


Fig 16

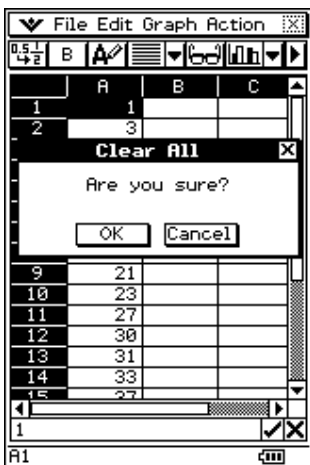


Fig 17

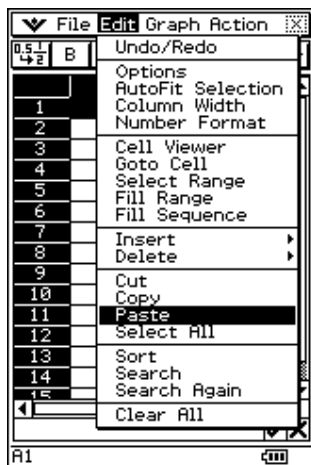


Fig 18

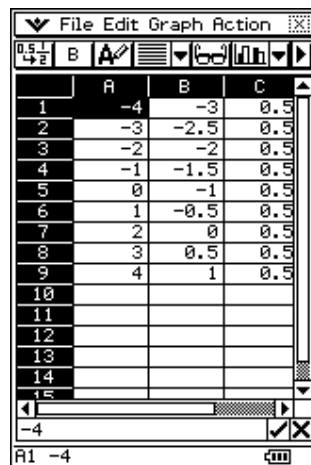


Fig 19

Tap Edit, Paste (Fig 18) to insert the table values into the spreadsheet (Fig 19).

If you would like to put some headings for the columns, insert a row above the numbers by selecting cell A1, then tapping Edit, Insert, Rows (Fig 20). Type x in new cell A1, y in cell B1 slope in cell C1 and d.p. (difference pattern) in cell D1 using **abc** keyboard (Fig 21). Then turn off the keyboard.

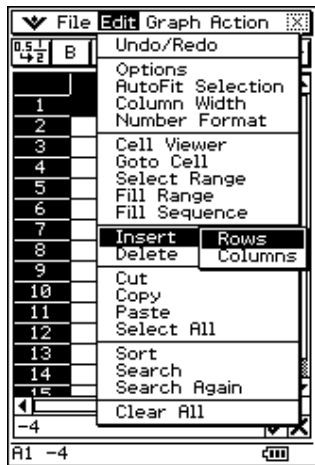


Fig 20



Fig 21

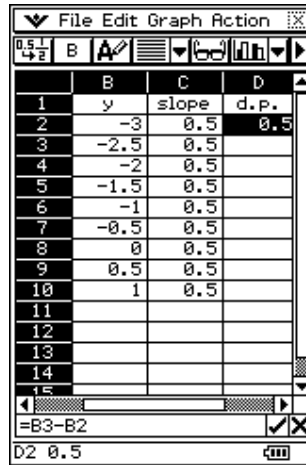


Fig 22

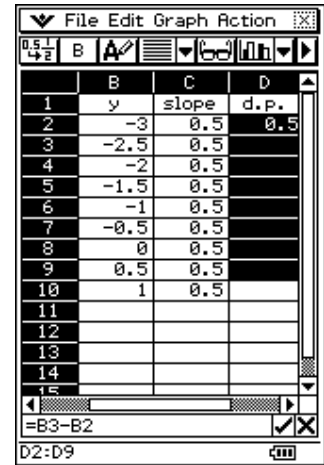


Fig 23

Select cell D2, input = B3-B2, EXE (Fig 22). Note: B3 can be input by tapping cell B3 and likewise B2 can be input by tapping cell B2. Tap away from cell D2, then tap D2 and drag down to cell D9 to highlight them all (Fig 23).

Tap Edit, Fill Range and a Fill Range wizard will pop up (Fig 24). Tap OK. Column D will then fill with the difference pattern for the y values (Fig 25). This can then be compared with column C which is the gradient values.



Fig 24

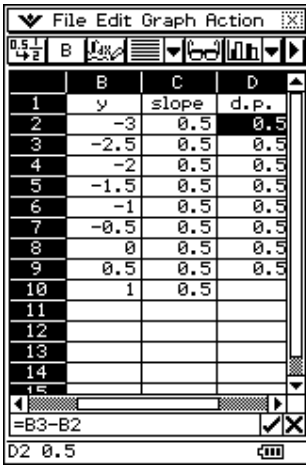


Fig 25

3. 3.2.4 “calculate the mean, median and mode for ungrouped frequency data”.

e.g. Find the mean, median, mode for

x	1	2	3	4	5	6
freq	3	5	13	17	17	4

a) In the **Statistics** application,

tap Edit, Clear All if there is any data in any of the lists.

Enter x data in List 1 and frequencies in List 2.

Tap Calc, One Variable and set X List: List 1 and Freq: List 2, tap OK.

All stats are generated including the mode. The CP lists each mode separately. It also includes ModeN = number of modes and ModeF = frequency of the mode(s).

b) In the **Main** application,

input, using curly brackets

$$\{1,2,3,4,5,6\},\{3,5,13,17,17,4\}$$

Highlight this expression, tap Interactive, List Calculation, mean. In the Mean wizard that pops up, choose Two lists of data (can ignore Freq List if data is input as above), tap OK.

Repeat same for median and mode.

UNIT 2B MAT:

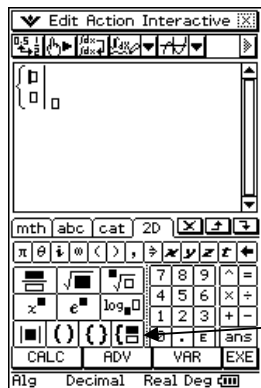
4. 1.3.4 “solve simultaneous linear equations graphically”.

e.g. Find the coordinates of the point where $4x - 2y = 14$ and $5y - 3x = 42$ meet.

a) In the **Main** application,

tap Edit Clear All, OK, Clear All Variables, OK to ensure that there are no values stored in any of the variables.

Turn on the keyboard, tap the **2D** tab, select the simultaneous equations template (Fig 26). (This template can be expanded to enter 3x3, 4x4 or more equations by repeated tapping on the template.)



Simultaneous equations template

Fig 26

In the first little box, input $4x - 2y = 14$, tap the second little box to input $5y - 3x = 42$. Tap third little box to the right of the vertical line to input x,y (the variables with respect to which we are solving). Tap EXE (Fig 27).



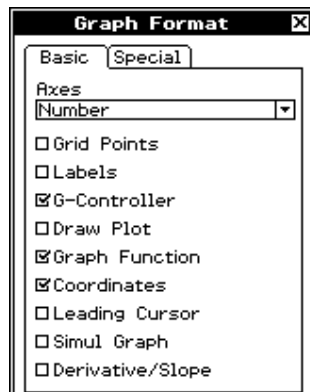
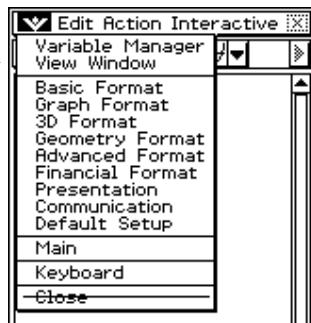
Graphing icon

Fig 27

To find the solution graphically, turn on the graph screen by tapping the graphing icon in the toolbar (Fig 27).

Check your Graph format settings.

G-Controller puts arrows on the ends of the axes and allows you to adjust the View Window of your graph easily.



Highlight the first equation, then drag and drop it in the graph part of the screen (Fig 28). Repeat the same for the second equation (Fig 29).

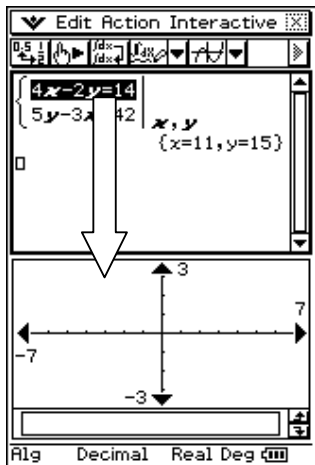


Fig 28

Highlight function, drag and drop into graph part of screen. You can use either input (left side) function or output (right side). Graph will be drawn automatically.

Thick black line indicates which part of screen is 'active'. Toolbar options change, depending on which application is active.

The current scale does not give a good view of the intersection of the lines, so the View Window needs adjusting. This can be done in a number of ways:

Use of G-Controllers to move the graph around the screen

Pan

Zoom (menu) (If no axes show, try Zoom, Quick Initialise)

Box Zoom

Auto (this is not always the most 'friendly' way of 'seeing' the graph)

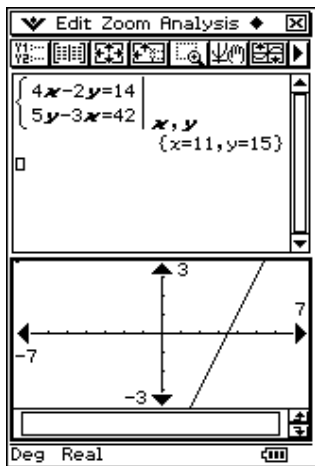


Fig 29

Keypad buttons also give quick zoom options - + button = zoom in
 - button = zoom out
 = button = auto (fit graph to screen)

If the View Window you try does not work, go to Zoom in Menu bar and choose Previous for a quick undo of a failed choice of axes scales.

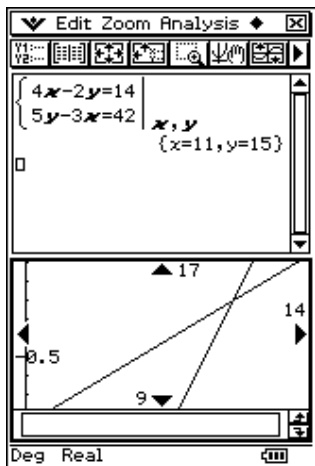


Fig 30

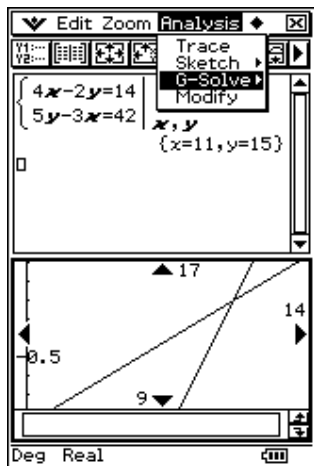


Fig 31

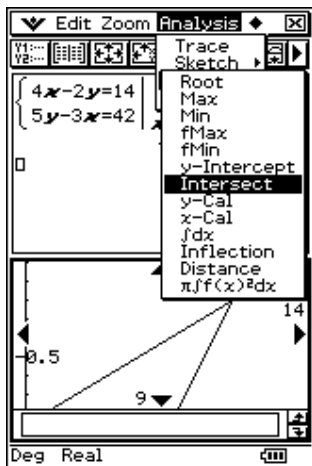


Fig 32

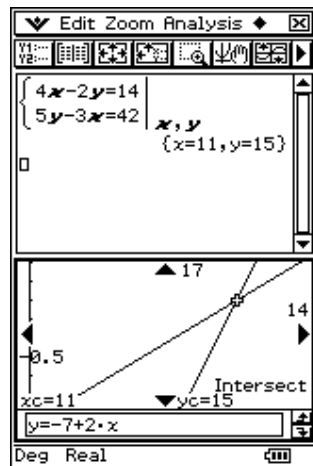


Fig 33

Tap **Analysis** in the Menu bar to find G-Solve (Fig 31) and a lot of tools for analysing the graph will appear. Select Intersect (Fig 32) and the intersection of the two lines will be generated (Fig 33).

5. 2.1.1 “use surface area and volume formulas directly and inversely for
 - cubes, right prisms and pyramids
 - cylinders, cones, spheres (decimal answers only)”

In the **EActivity** application,

Tap File, New, OK to get a fresh screen if there is anything on the screen. This also restores default settings.

Ensure that the text writing icon is showing (Fig 34). This allows text and equations to be entered without equations being calculated.

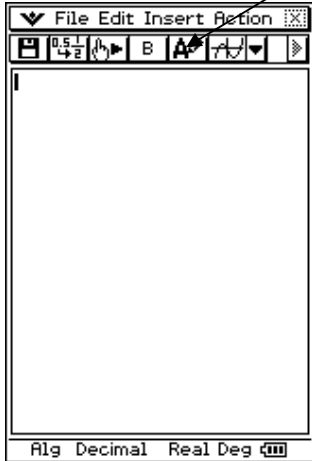


Fig 34

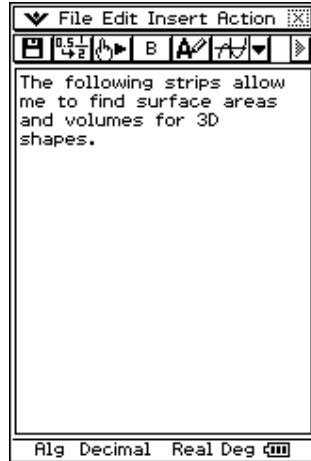


Fig 35

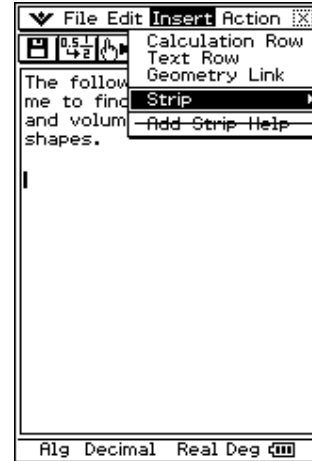


Fig 36

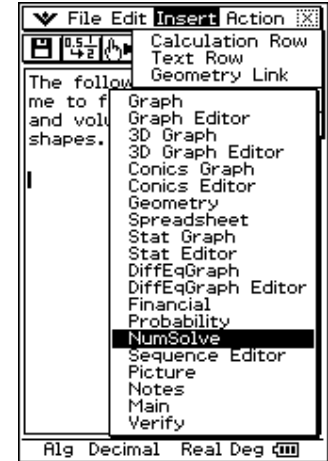


Fig 37

Enter some text that describes what the strips in the eActivity are going to be about. A strip is a link to various other applications in the Classpad without leaving the current screen. They are like web links in a Word document.

Tap Insert, Strip (Fig 36), NumSolve (Fig 37) to insert a strip (link) for solving equations. Input the formula for the surface area of a cube i.e. $S = 6xL^2$ using the keyboard and the VAR option in the **math** or **2D** tab (Fig 38), tap EXE Fig 39).

A value can then be entered for the length L of the side of a cube. Making sure that the radio button beside S is selected, tap Solve, Execute to solve for S (Fig 40). The solution appears as in Fig 41, tap OK to have the solution value displayed next to S.

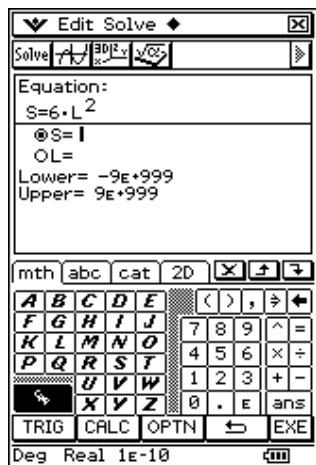


Fig 38

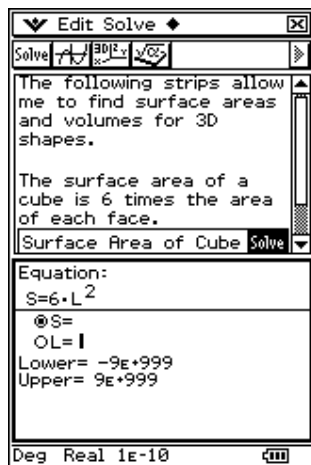


Fig 39

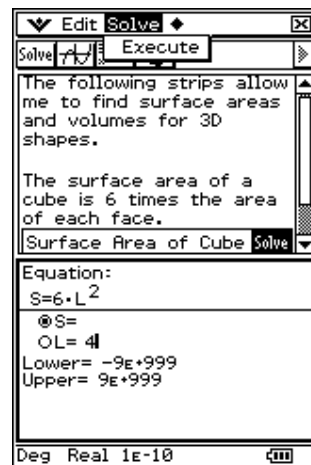


Fig 40

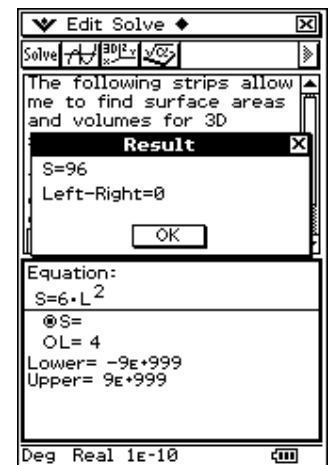


Fig 41

Turn the keyboard off to display a screen similar to Fig 39. To close the Solve strip, tap the dark rectangle saying Solve. Tap in the white space of the strip and give it a name such as Surface Area of Cube.

More strips can be added containing the formulas for different 3D shapes, with some explanatory text before/after each one.

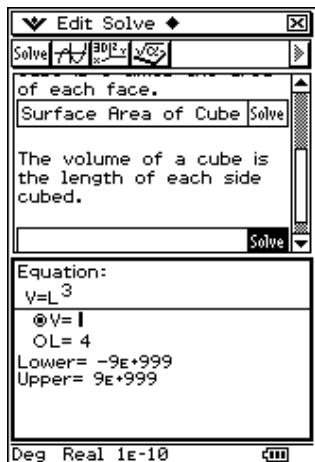


Fig 42

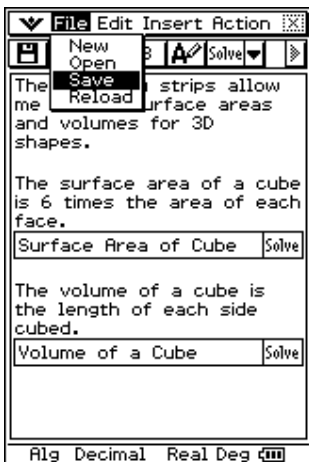


Fig 43



Fig 44

When the eActivity is completed, it will need to be saved so that it can be used again. Make sure any strips are closed, then tap File, Save (Fig 43). Give the file a name (max = 8 characters), tap Save (Fig 44).

The eActivity will be saved as it was at that point, with any values in the Solve strips that were left there. It is probably best to make the eActivity without entering any values in any of the strips first, name it and then save it in 'pristine' condition. It can then be used in any way necessary. When you then exit the eActivity, you will be prompted to Save Changes, to which you can then choose No to leave it in its original condition.