



## Teacher Notes for View 3D

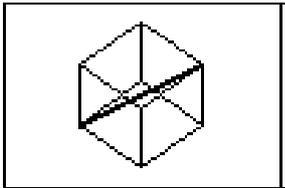
Compatibility: TI-83/83+/83+SE/84+/84+SE

Run The Program Called: **VIEW3D**

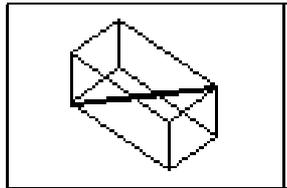
### ► Summary

This program allows you to view and move around 3-Dimensional objects, drawn as wire-frame diagrams. There are five pre-defined shapes to view or you may enter your own co-ordinate and line data.

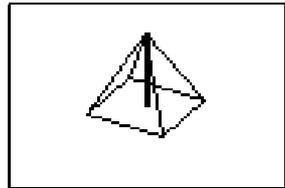
### ► Features



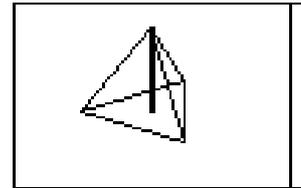
cube



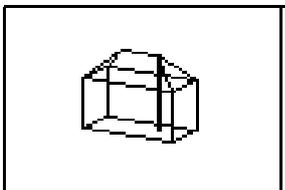
cuboid



pyramid



tetrahedron

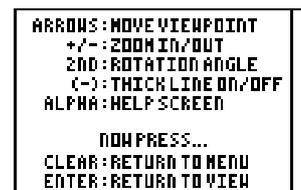


house

The pre-entered models all have a bold line indicating a dimension that is normal asked to be found. This dark line can be switched off by pressing the (-) button ... think of this button representing the thick line!



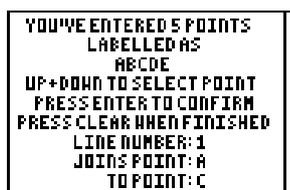
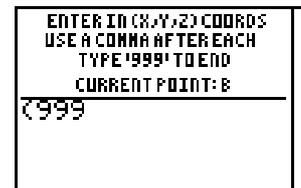
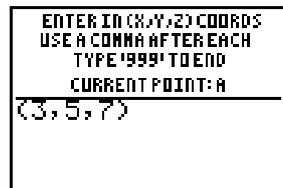
When viewing any shape, you will see the screen on the left's message whilst it calculates the new viewpoint. Pressing **ALPHA** will give you the screen on the right.



To understand how the arrow keys move you around the object, consider yourself on the surface of a transparent sphere that surrounds your 3-D model. Pressing the arrows will move you in your chosen direction over the surface of this sphere, whilst still looking inwards at the model.

The default setting is to move 15° at each step, but this can be altered to either 5° or 90° by pressing the 2<sup>ND</sup> button, and then using the up and down arrows to change the angle.

If you choose to enter your own design, you will need to provide the (x, y, z) coordinates of each vertex. Type them in, with commas. It will accept the 3 ordinates whether you close the brackets around them, or not.



The 3 axes are initially set with  $\pm 10$  for their scales, but you can zoom in and out as required.

It will allow you to enter a maximum of 26 points, from A to Z. You then specify how these letters are joined. With the screen on the left, use the up and down arrows to select the letters for the endpoints of each edge.

YOU'VE ENTERED IN 2 LINES  
ONE OF THESE WILL BE DRAWN  
AS A THICK LINE  
IT CAN ALSO BE AS NORMAL  
WHICH LINE: 2

Be aware of memory limitations for diagrams with lots of points and lines.

After pressing **CLEAR**, you can nominate one of these lines to be drawn in bold. This can help identify lines of interest, or just assist in orientating yourself around the object. Whichever line you choose, it can be switched back to a normal thickness line by pressing (-).

### ► Suggestions

The program can be used to help students realise that viewing objects in 3 Dimensions from differing viewpoints can make the shape appear radically different and sometimes distorted beyond recognition. This is useful for them to realise before tackling 3D vector work where diagrams that they draw do not need to be geometrically perfect in order to be useful.

If the students are to be set the challenge of designing their own shape then this can take about 40 minutes. Such a task demands pre-planning on paper along with an ordered approach, especially with the vertex and edge labelling.

Suggestions for shapes to students to try first would be either a triangular prism, or an “L-shaped” prism. These shapes have sufficient characteristics to be interesting when viewed, but without having too many points and edges to be entered.

At the end of completing their shape and having it resemble what they designed (!!), the students display a great deal of satisfaction. They also have an increased appreciation of the work invested in video games' graphics, etc, which are all designed and rendered in a similar way.