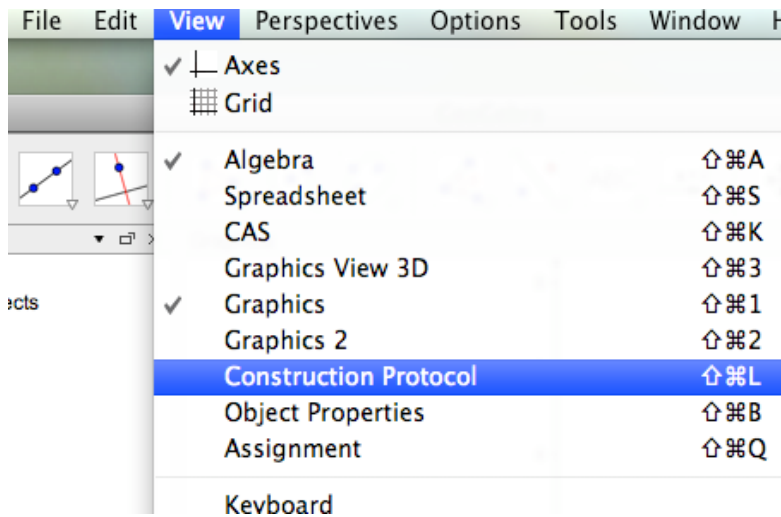# Creating a 3D file with linear equations

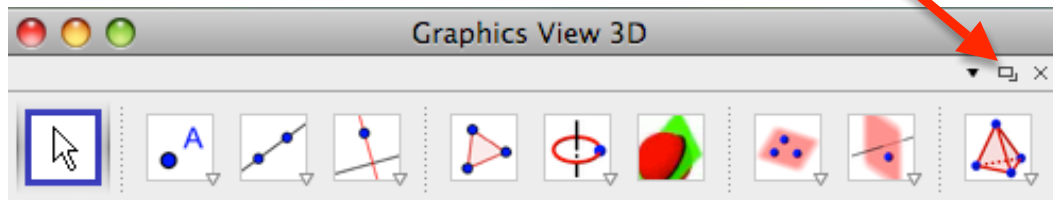## Preparing your display windows

Open GeoGebra 5.0
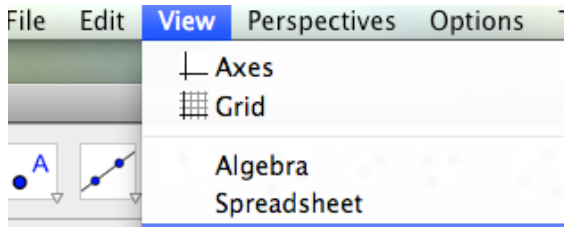Click on "View", select "Graphics View 3D"

In the 3D view, click on the icon "show view in main window" located in the top right corner of the view.
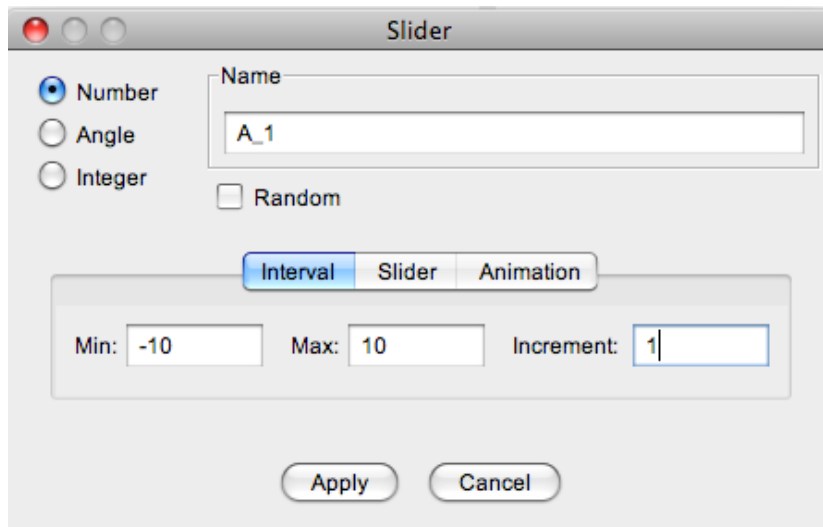

The algebra view can be closed, if you like. You can also uncheck the axes in the view menu.

File   Edit   **View**   Perspectives   Options T

⌐ Axes
▦ Grid

Algebra
Spreadsheet

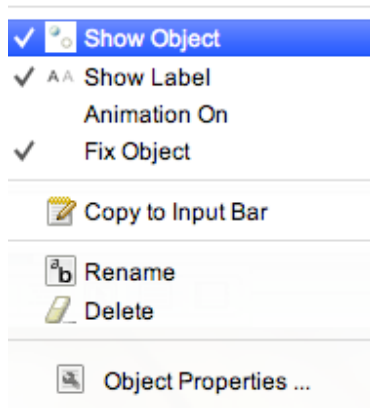**Creating sliders for the coefficients of the equations**

Select the slider icon. Click on the graphics view. An input window will be opened where you will type the name of the slider, its range of values, and the increments.
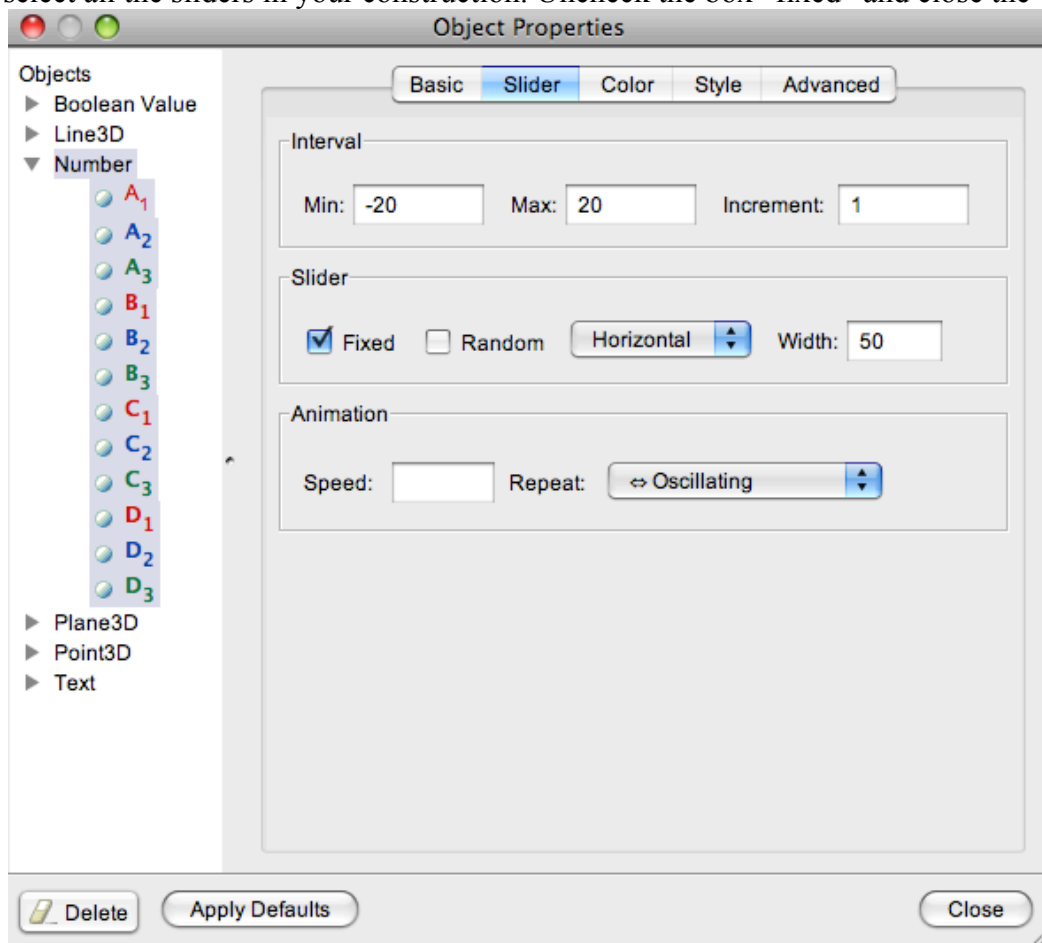
Repeat this step 12 times for all the coefficients of the three equations:
- A_1, B_1, C_1, D_1 for equation 1
- A_2, B_2, C_2, D_2 for equation 2
- A_3, B_3, C_3, D_3 for equation 3
- A_4, B_4, C_4, D_4 for equation 4

If you want to reposition the sliders in the graphics view, right click on one of the sliders and select "object Properties" at the bottom of the list.
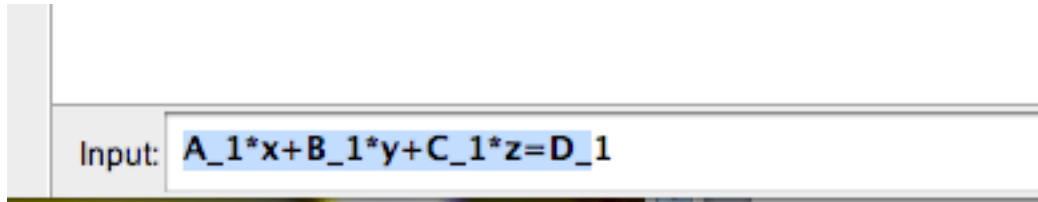
On the object properties, click on the word "number" located on the left list. This will select all the sliders in your construction. Uncheck the box "fixed" and close the window.

Now you can reposition the sliders in your graphics view. Once repositioned, repeat the previous step, and check the "Fixed" box in the object properties window.

Type the equations, one at a time, in the input bar located at the bottom of the graphics view.
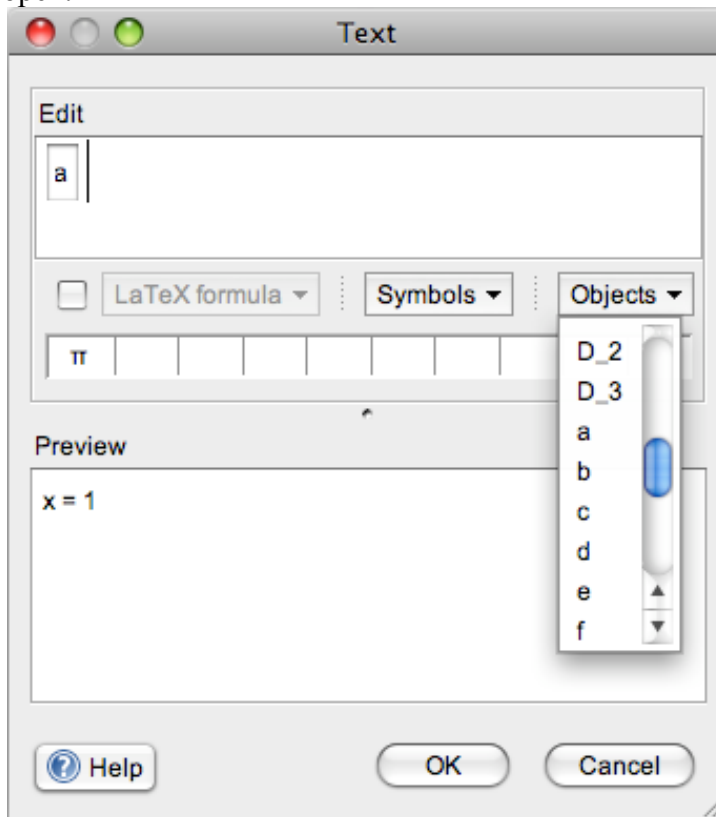
Input: **A_1*x+B_1*y+C_1*z=D_1**

Once you press enter, you will see the plane in the Graphics 3D view.
Do the same for the other 2 equations:

- A_2*x + B_2*y + C_2*z = D_2
- A_3*x + B_3*y + C_3*z = D_3

Display the equations in the graphics view

ABC

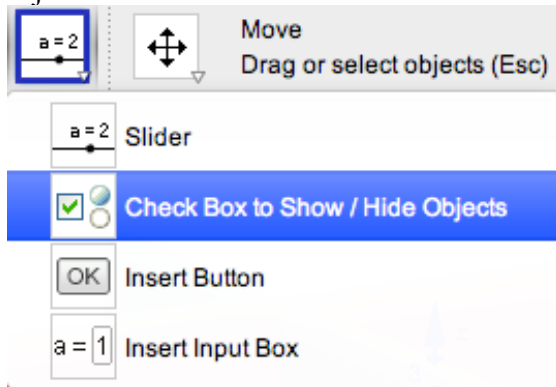Select the "Insert Text" icon. Click on the graphics view. An input window will open:

Open the drop down window "Objects" and select object "a", you will see in the preview window if that is the equation you want to display. If that is the equation, press the button OK.
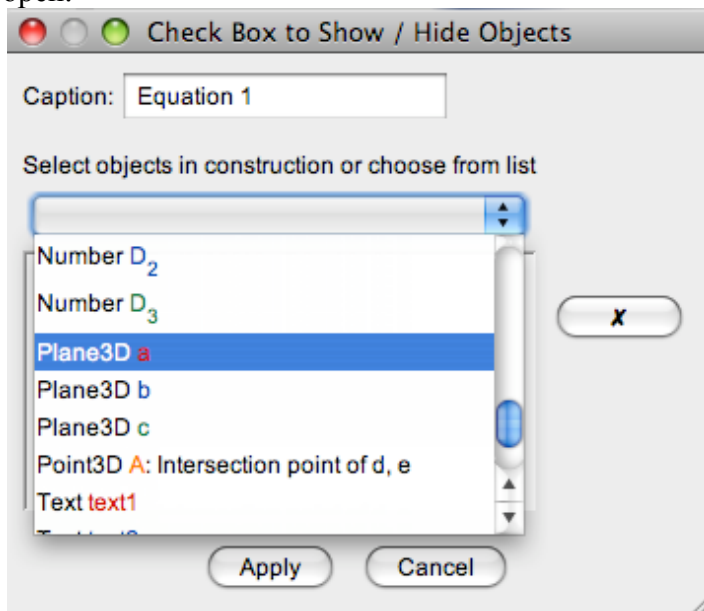
Repeat this step for the other two equations.

Adding check boxes.

Open the toolbox where the "insert text is located" by clicking on the small red arrow located on the lower right corner of the displayed icon. Select "Check box to hide/show objects"
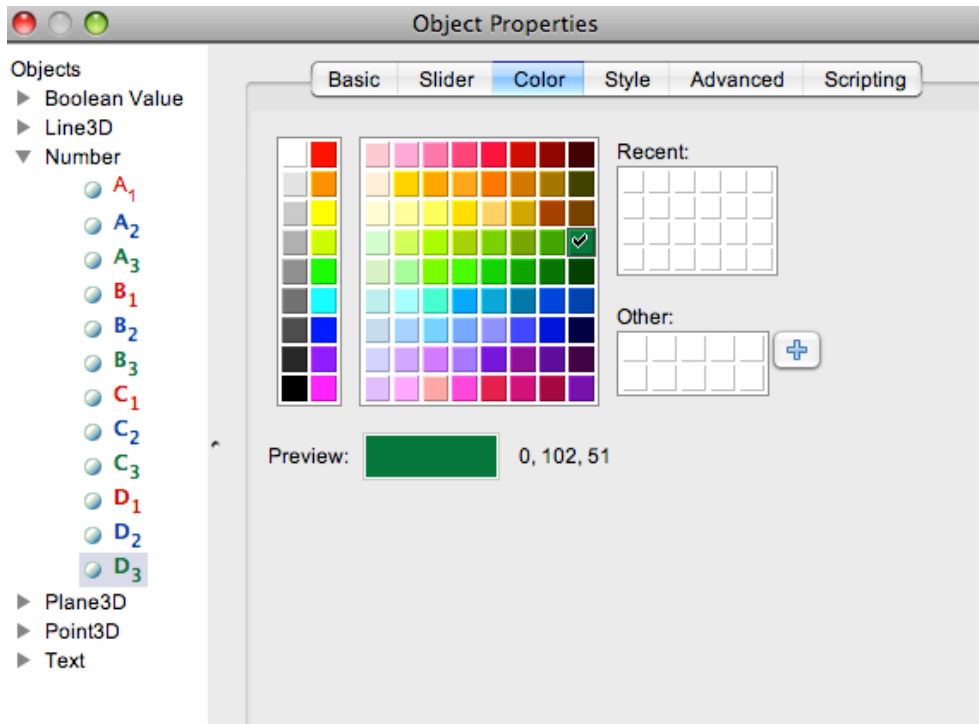

Once the check box is selected, click anywhere in the graphics view. A new input will open:

Type the title for your checkbox in the caption window. Open the drop box to select the objects in your construction from the given list or click in your construction the objects you would like to be controlled by the given check box, like the equation of the plane and the text that display the equation.

Changing colors

Right click on any object in the graphics and the select "Object Properties"

Click on the tab "Color", select the object from the list on the left side that you will like to change the color, select the color from the color palette.

Without closing the properties window, you can change the colors of all the objects you choose.