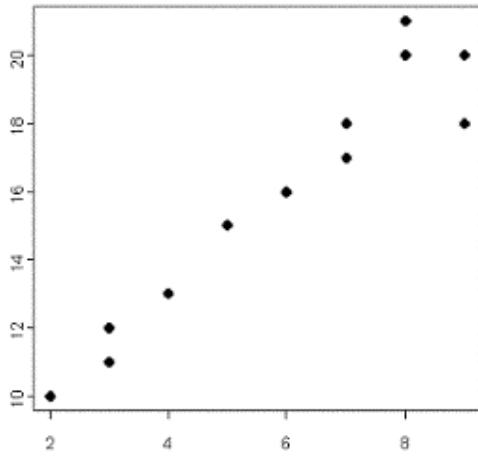


1. Start with scatter plot:



2. Find corner points

Easiest way to insert picture properly in GeoGebra is to have corner points.

We see that:

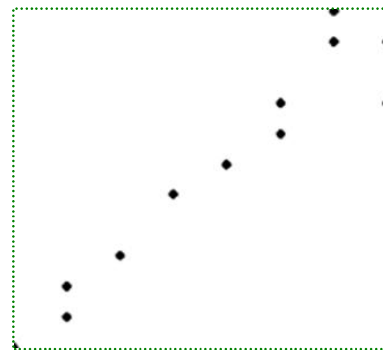
bottom “corner” is (2,10)

top “corner is (9,21)

3. Capture image

Snag and save this picture at these points.

(Remember where you save it!)



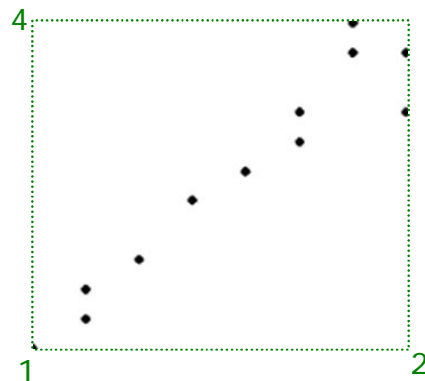
4. Corners

In GeoGebra corners go anti-clockwise:

Corner 1 (bottom left) is (2,10)

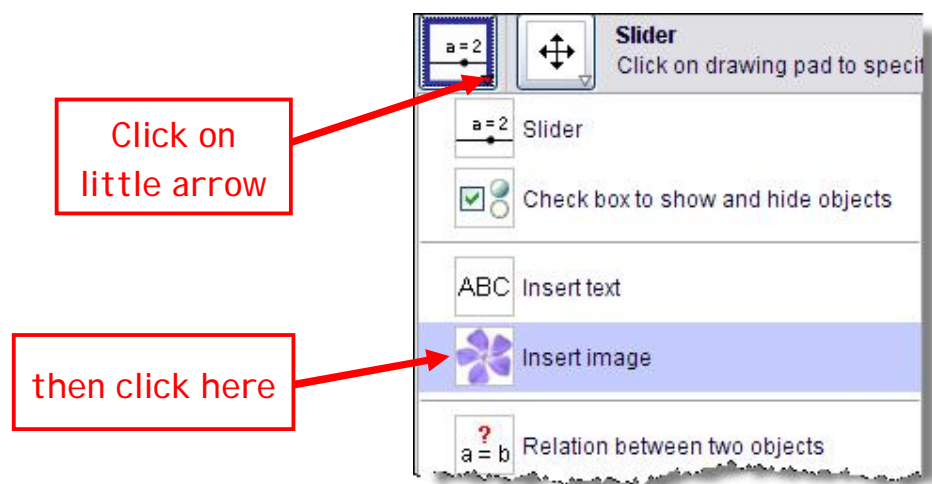
Corner 2 (bottom right) is (9,10)

Corner 4 (top left) is (2,21)



5. Insert image into GeoGebra

- Go to Insert Image Mode



- Click anywhere in drawing pad
- Click on desired image and then on Open.

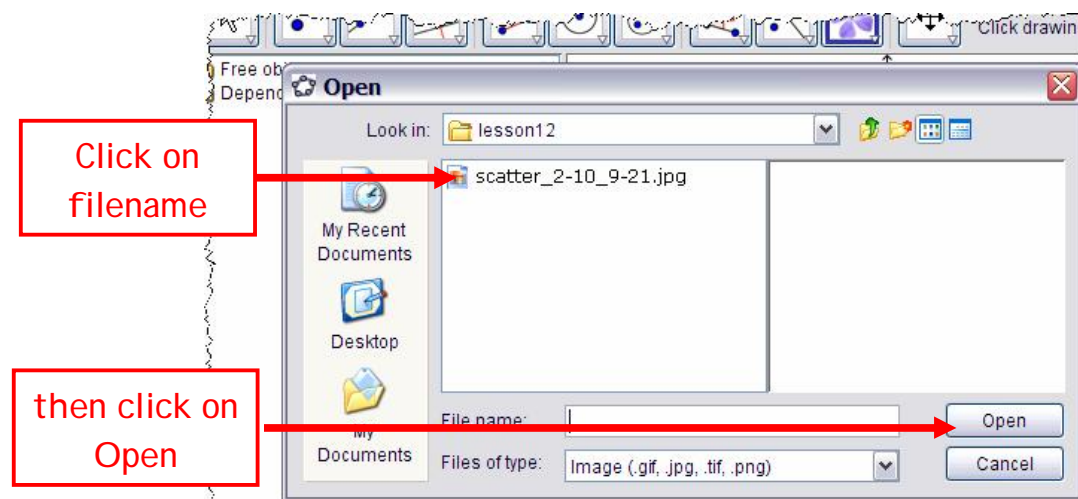
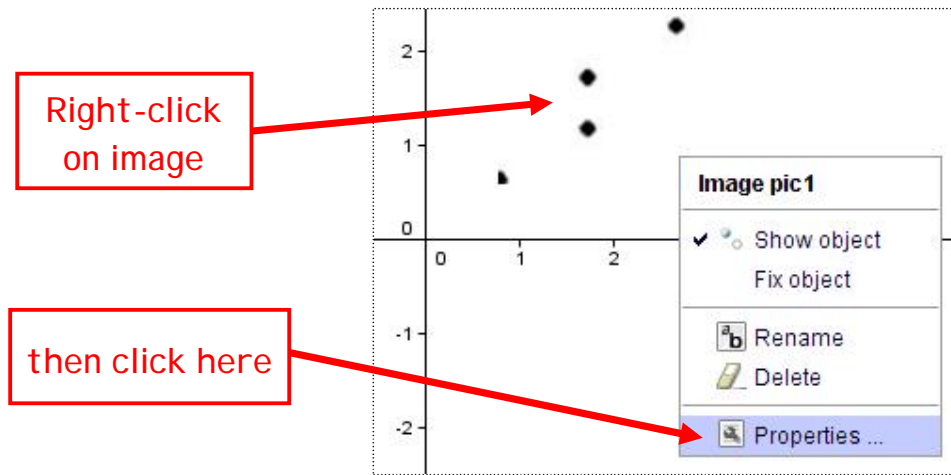
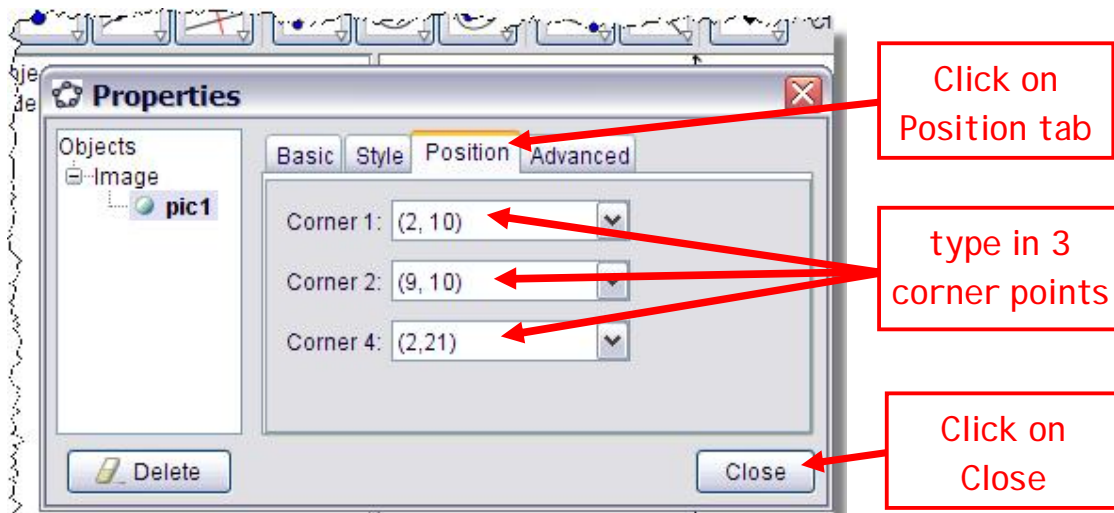


Image is now inserted on Layer 0. Now we want to put in the correct place.

d. Right-click on image and select properties.



e. Click on Position tab, then type in the points (no spaces required) and click on Close.



The image is now inserted and where we want it – even though probably we cannot see it!

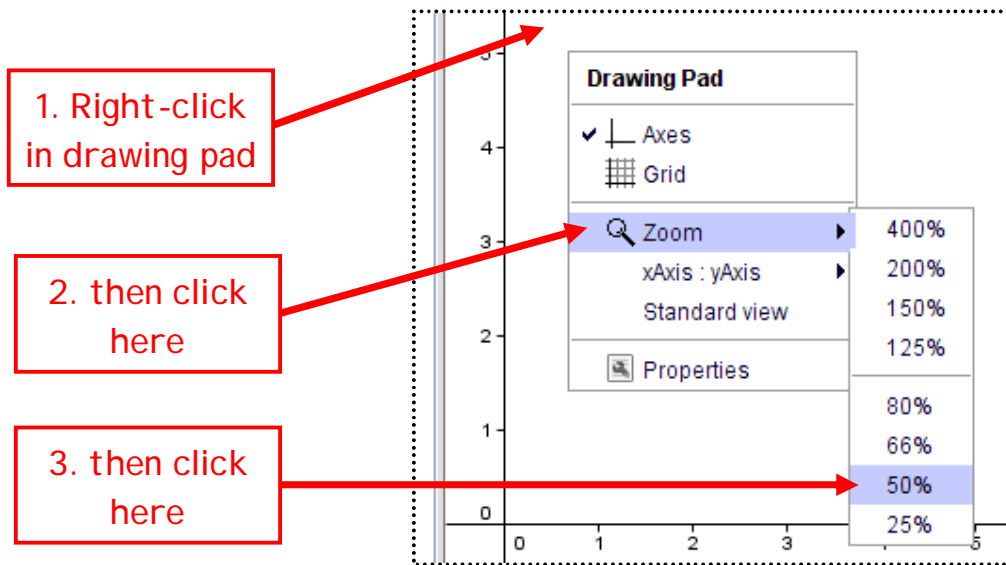
6. Zoom in on image

This part depends on the user preferences and you can do exact changes by using the command:

For example, notice that the original scatter plot was

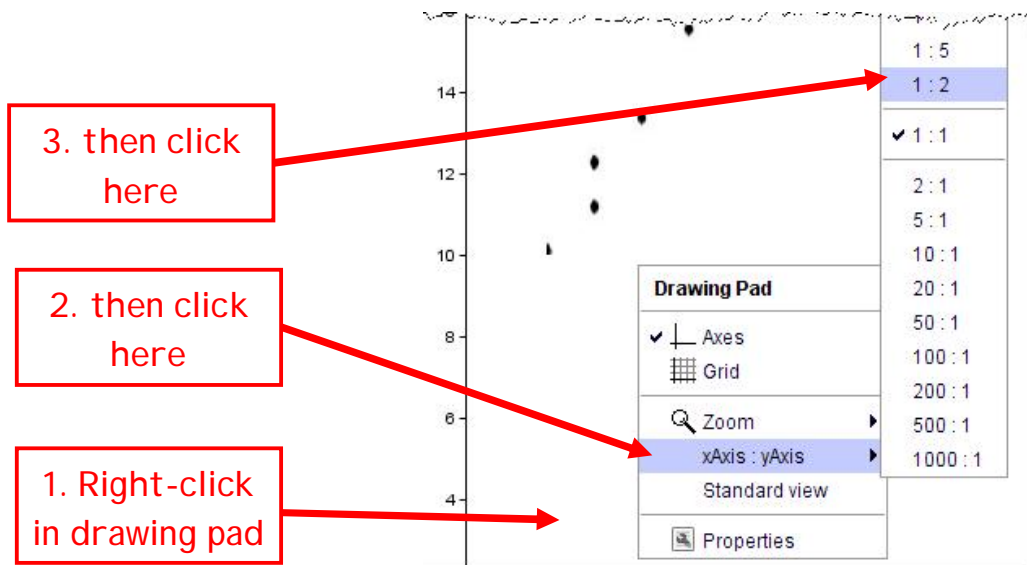
- scaled 1:2 (the x-scale was twice the y-scale)
- units were by 2 on both axes
- the axes were visible – in GeoGebra the axis are available only if (0,0) is visible.


a. To zoom-out: right-click in the drawing pad, click on zoom and then on 50%

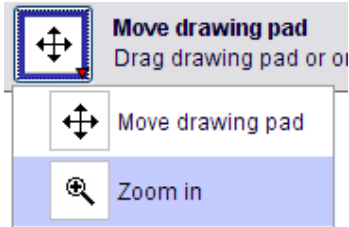


b. To change the x-y scale:

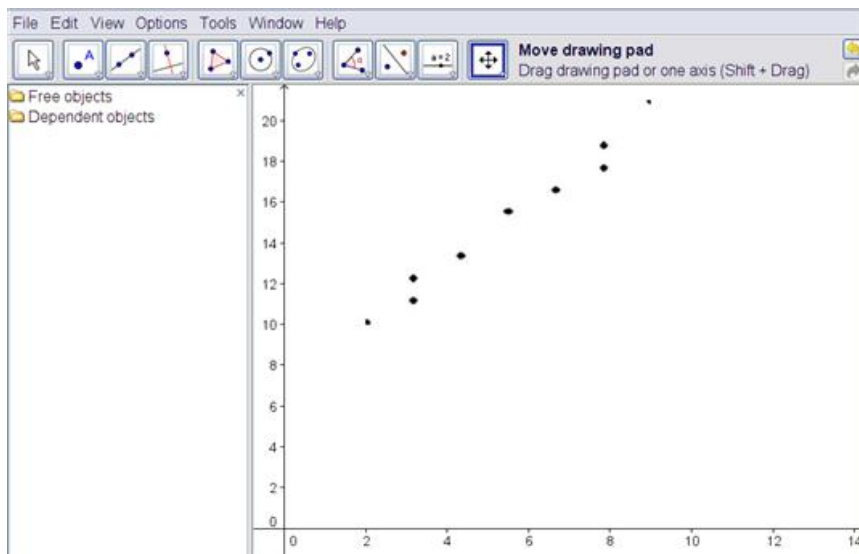
Right-click in drawing pad, click on xAxis:yAxis, click on 1:2



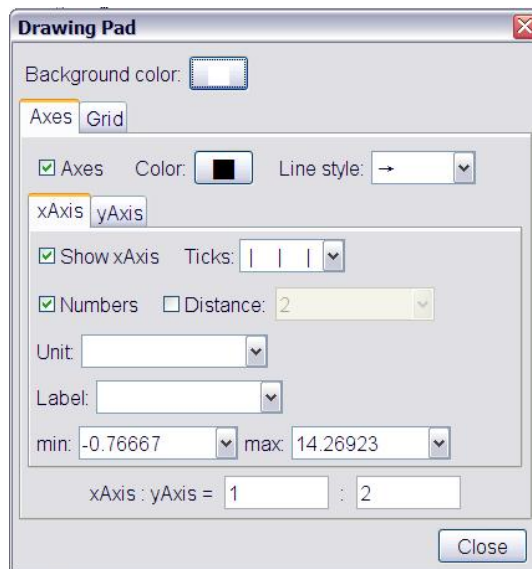
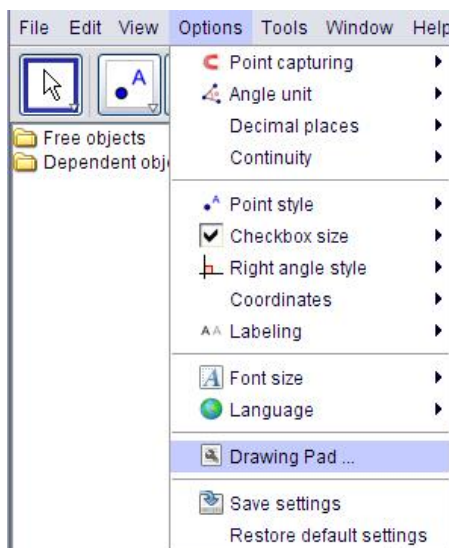
- c. To move the drawing pad – click on mode:  and then click and drag the drawing pad into the position you want.
- d. To zoom “exactly” – put mouse pointer in drawing pad and use *mouse scroll* to zoom in or out as desired.



Repeat steps c and d until you get what you want. Here is what we have.



** Exact data for the drawing pad can be entered via the command: Option -> Drawing Pad.



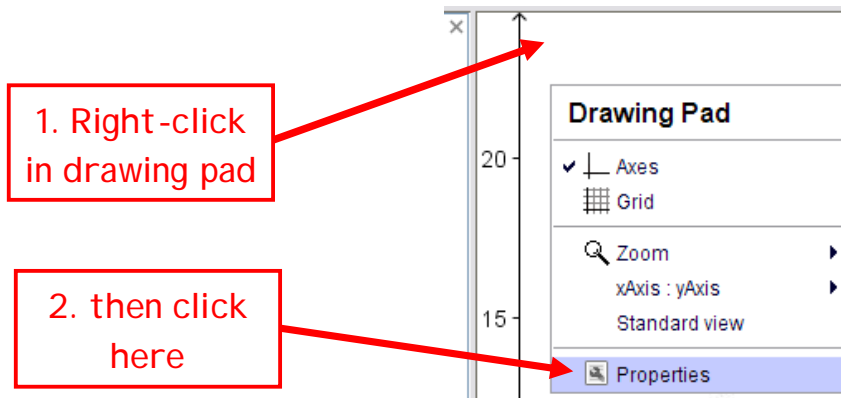
7. Adding Points to Image

We want to make the points on the scatter plot actual points in GeoGebra.

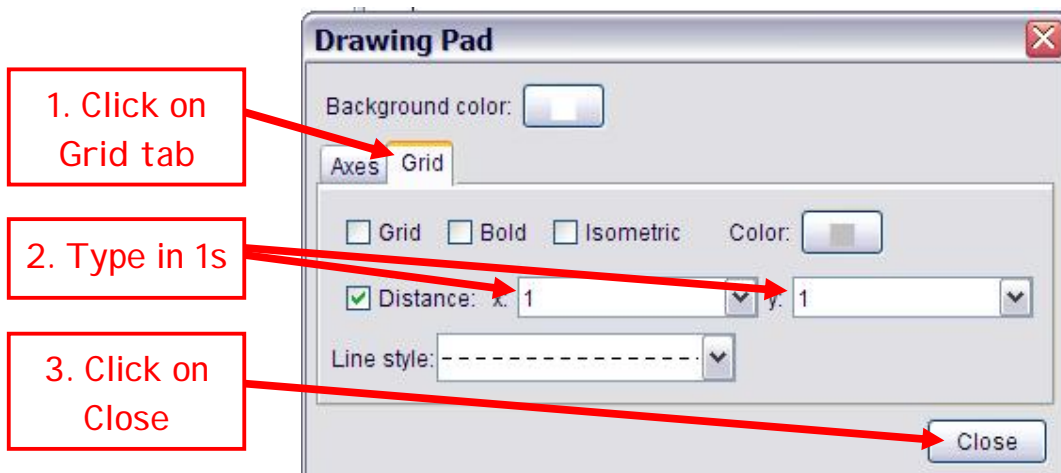
Notice that all of the points are on whole number values. It would be nice if all of our pick points were automatically whole number values. Unfortunately with our zooming we have made the grid 2x2.

To make the grid 1x1:

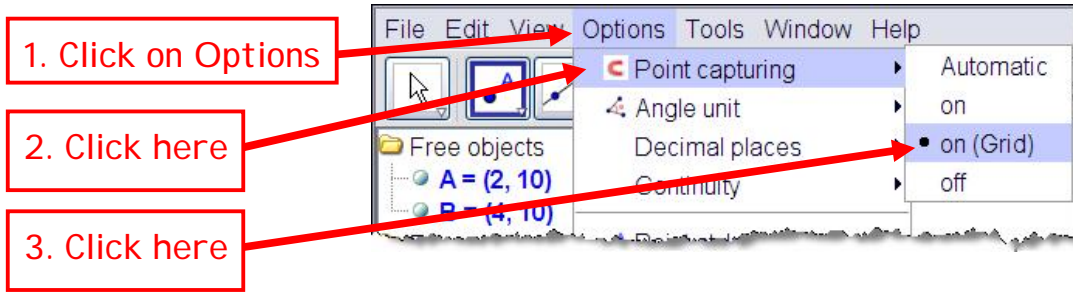
- a. Right-click on the drawing pad, click on properties.



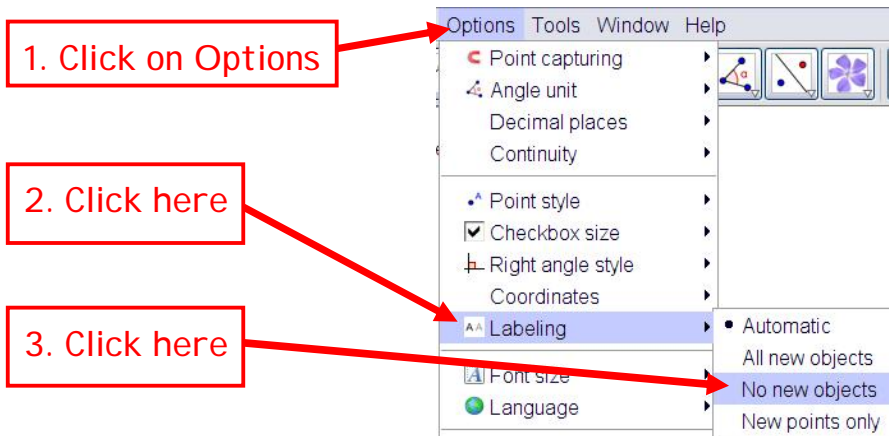
- b. Click on Grid Tab and type in 1 and 1 for x and y and then click on Close.



c. Activate “Snap to grid”: Click on Options -> Point capturing -> on (Grid).

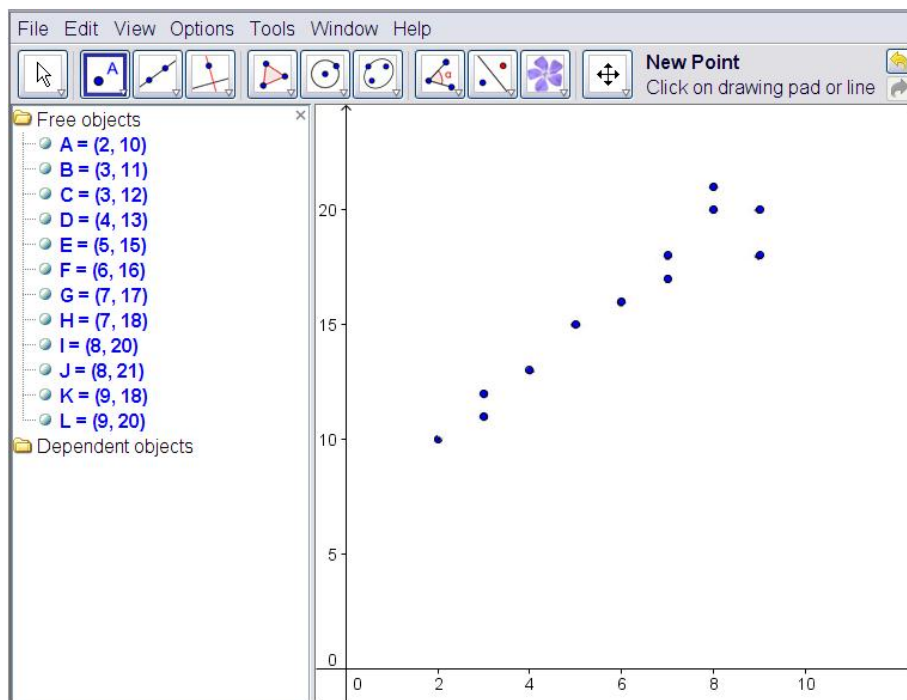


d. Don't want point labels in image?



We are ready to add points!

e. Activate new point mode:  and click on each of the points of the scatter plot.



9. Fit a line to the points

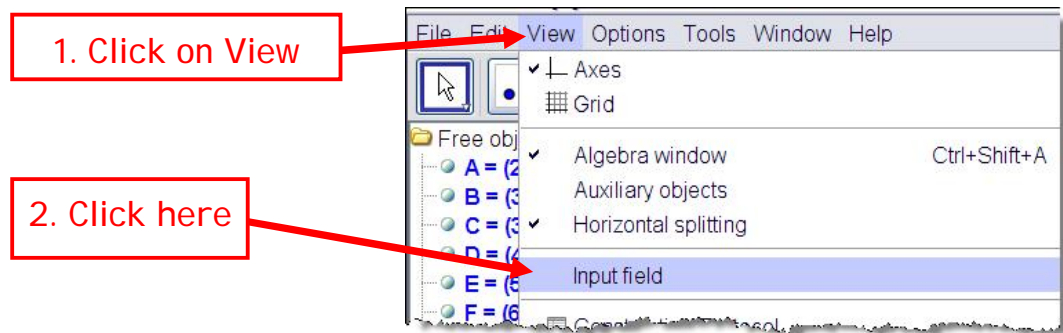
To use the function $\text{FitLine}[L]$, we need to make a list L of points.

We will call our list **LST**.

*Remember GeoGebra is **case-sensitive**.*

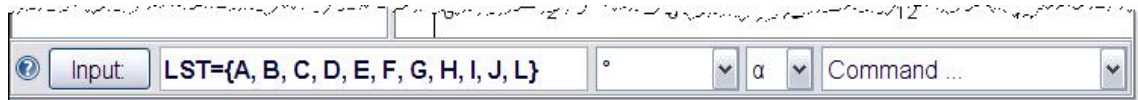
The easiest way is to type in the list in the input field.

To view input field (at the bottom of the GeoGebra window):



Enter List in Input field

- Hit CapsLock
- Click once in the Input field and then type:
- $\text{LST}=\{A,B,C,D,E,F,G,H,I,J,K,L\}$
- Hit Enter
- Then hit CapsLock again to turn it off.

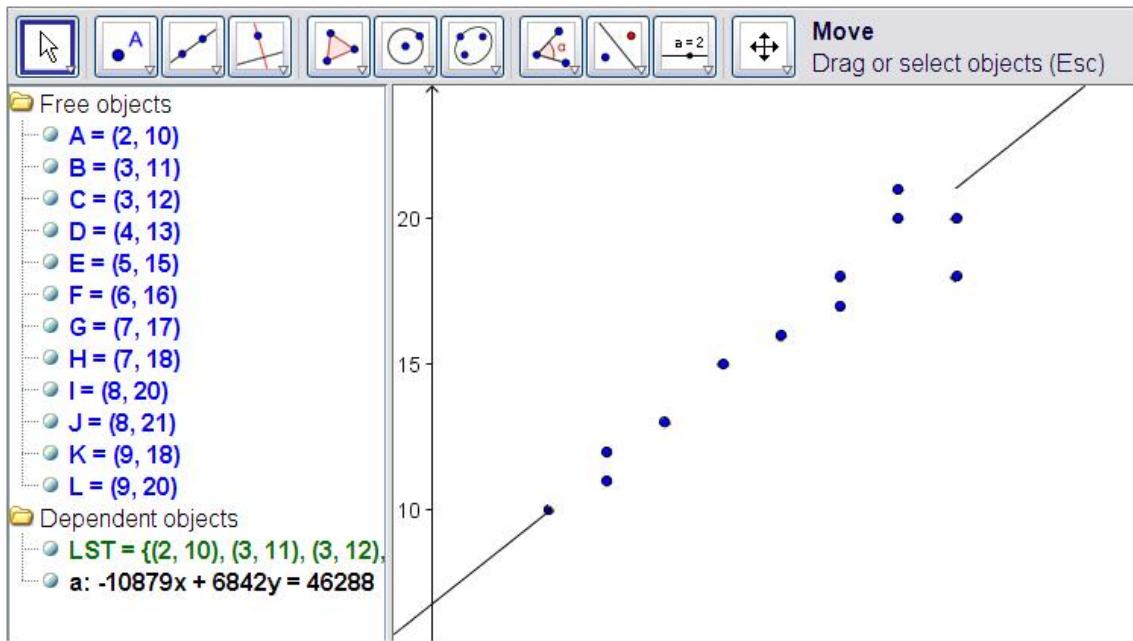


To make the line that best fits this list of points using the $\text{FitLine}[]$ function

- Click once in the Input field and then type:
- $\text{fitline}[\text{LST}]$ or
 - Start typing fitl – you should see $\text{FitLine}[]$
 - Use cursor arrow to put cursor between brackets.
 - Type LST (case sensitive)
- Hit Enter

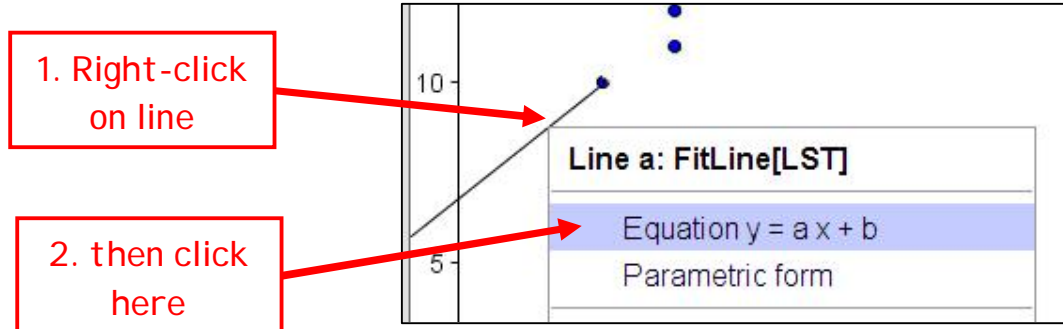
You will get a curve (line) called **a** in the default (standard) form $Ax+By=C$.

We can change this. Also the line is “behind” the points. No worries, we will bring it forward.



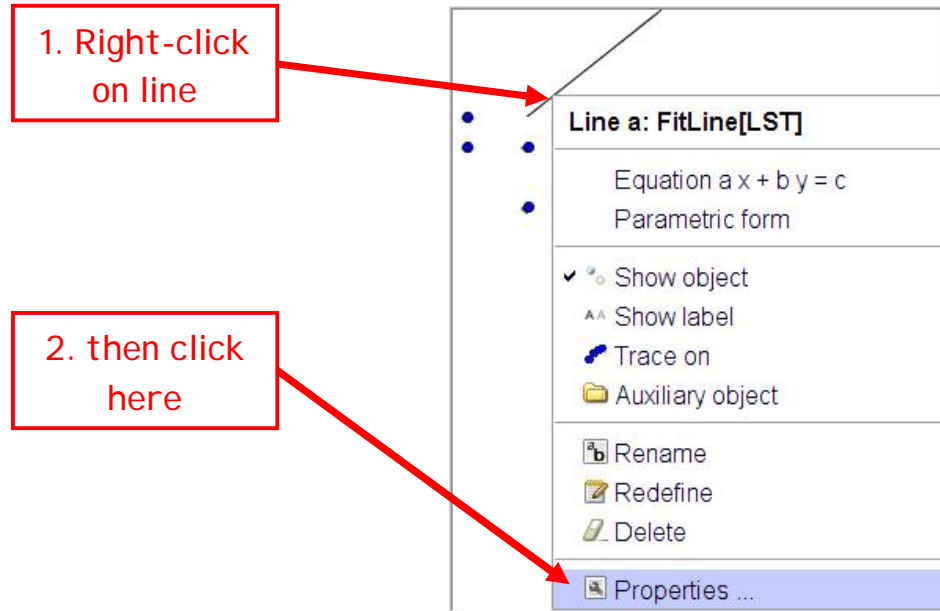
Change form of equation

To change the form of the equation, right-click either on a in the algebra window or on the line itself. Choose your form.

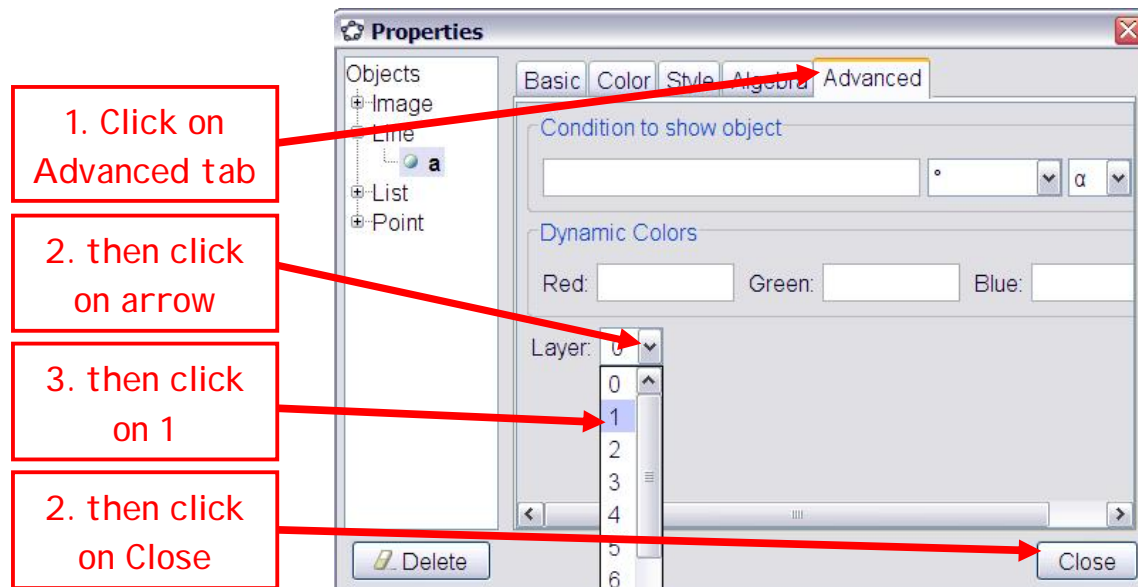


Bring line to front

To bring the line in front of the image, right-click either on a in the algebra window or on the line itself and choose properties.



In Properties window, click on Advanced tab, then on arrow right of Layer. Click on 1 (image is on layer 0) and then click on Close.



Final Product:

