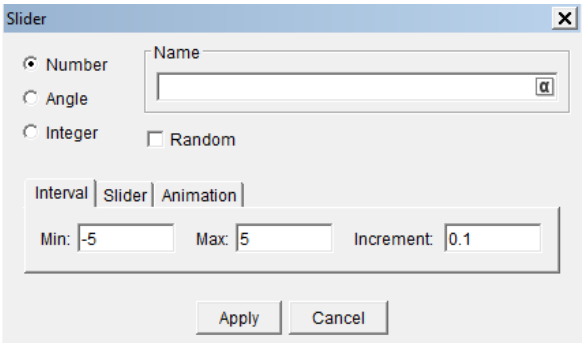
Patterns from function graphs in GeoGebra

Open *GeoGebra*.

1. Insert a *Slider* in the *Graphics view*.
   Fill in the cells (*Min, Max, Increment*).
   Open the *Animation* tab and choose *Speed* and *Repeat*.



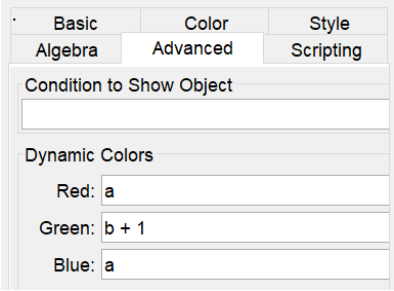
2. Insert some more *Sliders*.

3. To make a pattern, you have to type in an equation of a line in the *Input bar*. When doing this, you should use the slider names in the equation. For example, if you want to insert a line $y = ax + b$, you should have sliders named a and b. If you want to plot a graph of $y = c/x$, you should have slider named c. You can plot several lines, hyperbolas and parabolas.

4. Make a right-click in *Graphics view* and untick *Axes* and *Grid*.

5. Make a right-click on one of the graphs, choose *Object Properties* and follow the next steps:

- Open the *Basic* tab, untick *Show Label* and tick *Show Trace.*
- Open the *Style* tab and choose a *Line Thickness* and *Style.*
- To get a nice pattern, you can make changes in the dynamic colours. For this open the *Advanced* tab and add *Dynamic Colors*. You can use the slider names you already have or insert new sliders. Make changes until you are happy with your picture.



5. Repeat the steps (see point 5) with other graphs you have created.

6. To animate the slider, right-click the slider and click *Animation On*. That way, you can also turn off the animation if you want.
7. When creating a pattern, you can use several functions, and their graphs can be displayed or hidden by clicking on the small circle in front of the function equation in the *Algebra view*.
8. Pause the animation when you have a picture that you like.
9. To export your picture, open the menu *File -> Export -> Graphics View as Picture* or make a screenshot.

In addition, students can also be guided to explore more complex curves. Curves such as

$c = (x^2 + y^2 - 2ax)^2 - b^2(x^2 + y^2)$

$3axy = x^3 + y^3$

$(x^2 + y^2)^2 = 2a^2(x^2 - y^2)$

$(x^2 + y^2 - a)^3 - x^2y^3 = 0$

provide an opportunity to discuss whether the relation represents a function or not.

Workshop on 15.03.2026
by Sirje Pihlap