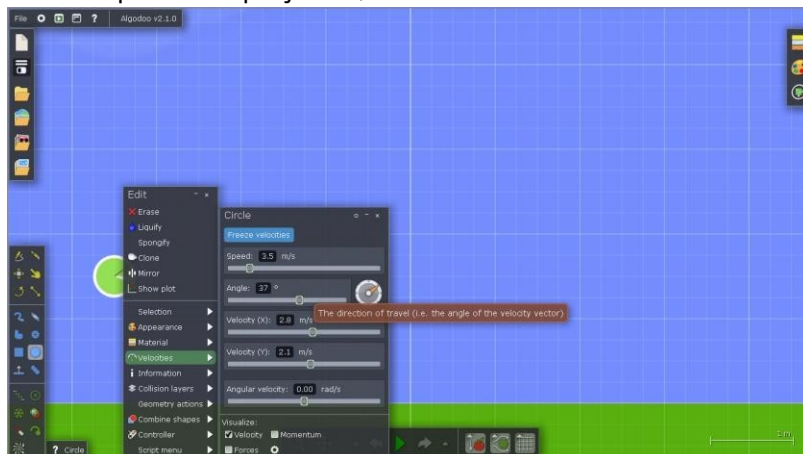**Let's get to know Algodoo**

We choose Algodoo as student sandbox artifact constructions. If necessary, students will obtain parental consent for account creation on the Algodoo website.

Algodoo is a digital sandbox for 2D physics simulations. The basic concepts for using Algodoo were introduced in the First scenario Real experiment - virtual workshops, developed for the Erasmus+ project "THE STEAM TEACHING APPROACH - A MEANINGFUL EDUCATION" That's why we will only introduce the new tutorials, for tools that were not shown before.
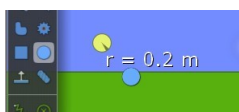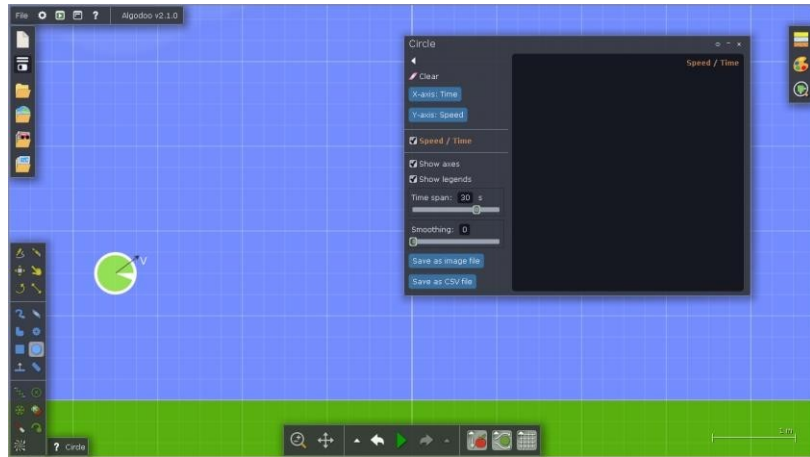
After opening a new scene in Algodoo, we will design a circle, using the Circle tool (or Shift + C command). The circle will represent a projectile, like a ball.

Right-clicking on the circle will open the Edit quick menu. By selecting Velocities, we can change its value as well as the launch angle. For those who want to experiment, the angular velocity can also be set.
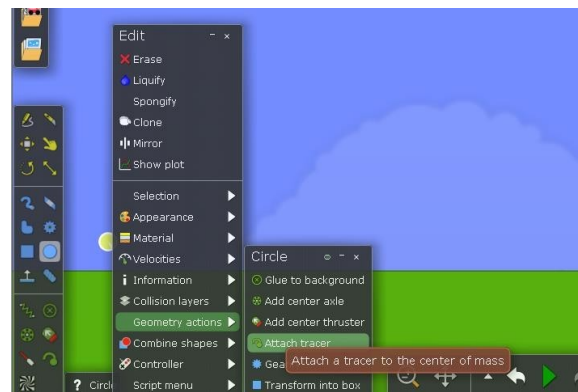
From the same quick menu, we can select the Show plot command, which will open the plot window. Set the window position so that you can see the moving "ball" and the plot at the same time.
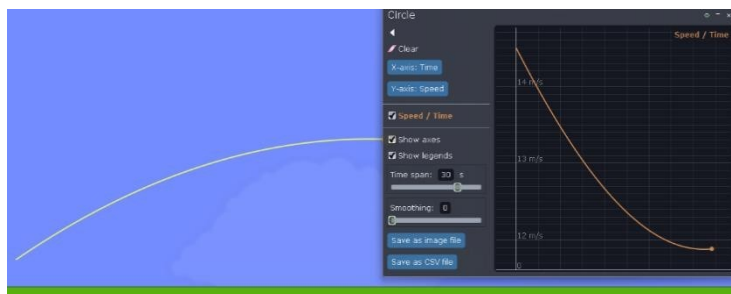
When you shoot the ball, you can see the radius, which can be changed.

From the Edit shortcut menu, select Geometry Action/Attach Plotter.

Allusion. You must have the pointer on the ball to set its properties, which can be set via the Edit context menu.
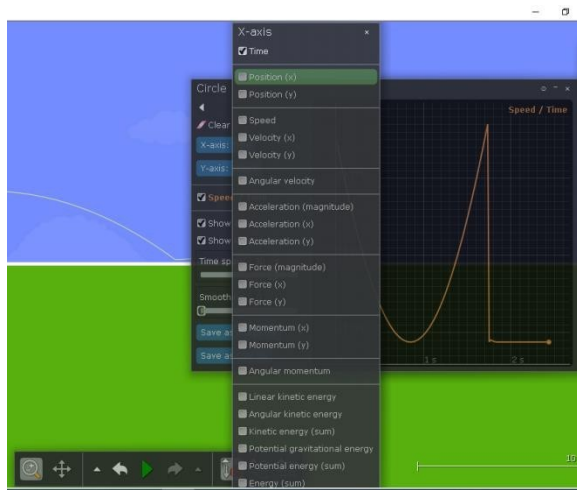
Open the Edit fast menu again and set the tracers – fade time to a value greater than 100 seconds and Diameter to a value less than 0.01m.

For an easier study, select from Materials the body stone type and set Friction and Restitution to zero.
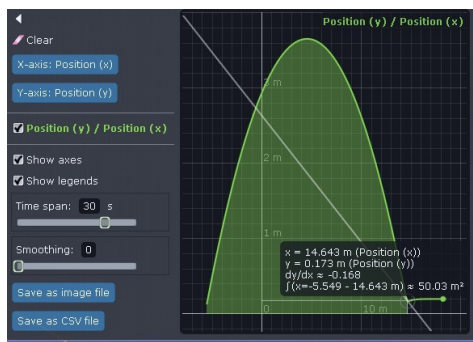

Run the scene and see on the speed graph, on the speed/time graph. The graph can be saved, as an image file, or as a CVS file, for later exploitation.
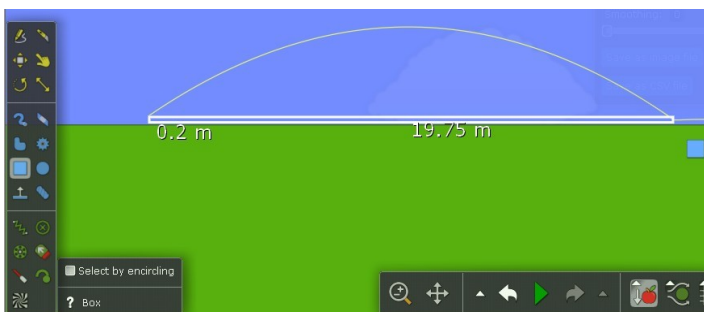
Change the graph type to Position (x) / Position (y), selecting Position (x) instead of time and Position (y) instead of velocity.

Reload the scene and save the new graph, with the linked files.

On the graph, with the indicator you can see the coordinates, which means you can identify the maximum height or horizontal distance, or the corresponding values.

The length of the maximum horizontal distance can be measured visually using the Box tool, which will be drawn between the starting point and the first point of impact.