# algodoo

FREE FALL

Target	Teacher: Key Stage 3 (ages 11-14) This lesson plan is not intended to be handed out to students but to be use as a teacher preparation and tutorial.
Description	What variables influence free fall? This lesson treats motion when there are no forces in contact with the object.
Learning objectives	Free fall – falling under the influence of gravitational acceleration only. Air drag – the influence of air drag of a falling object
Time frame	30-60 min
Keywords	free fall, gravity, air drag, force
In class	Drop an object. Discuss what aspects that might influence the motion (mass, shape, falling height). Discuss everyday experiences such as falling leaves, feathers, rocks, parachutists. Collect suggestion from the students and list them on the whiteboard. Discuss possible causes of the falling motion, gravity, air drag. Discuss how this can be visualized and explored in Algodoo using the Classmate PC. Let the students create scenes in Algodoo using the suggestions you came up with together or let them use their own ideas. Help the students make decisions and ask guiding questions. Encourage the students to follow the procedure Create – Predict – Interact – Evaluate. Allow the students to follow-up and share their experiences in class after the simulation.

FREE FALL

Create a scene

Create planes to work as ground in all directions. Create a number of objects with different shapes and masses for comparison. Make a small light ball, a large heavy ball, assign different materials to the same shape. Make a large featherlight object likely to fall slowly. Tilt the Classmate PC and let all the objects starts from one of the planes. Make sure that Air drag is turned off.
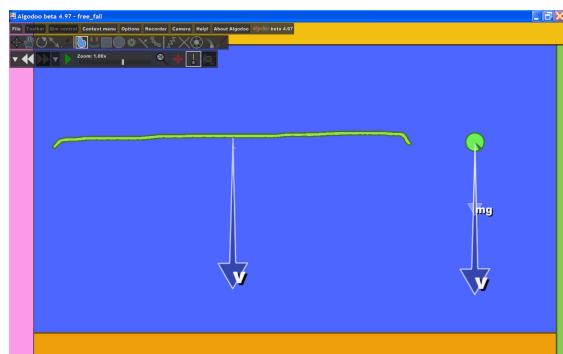
Make a prediction

Which object should come down first?

Run/Interact

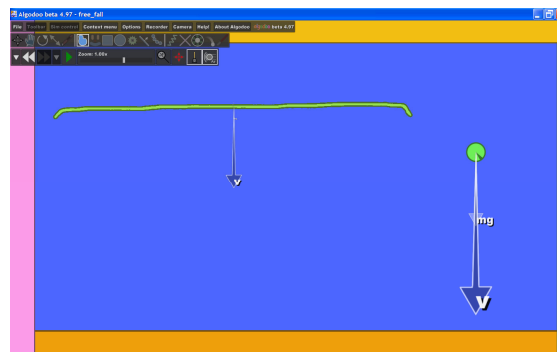Tilt the Classmate PC and watch the objects fall under the influence of gravity only.

Evaluate.

Which object fell to the ground first? Why?

Compare velocities of the falling objects.

FALL WITH AIR DRAG

Revise the scene

Turn on Air drag. Use the same objects as with the previous scene.

Make a prediction

Which object will now come down first?

Run/Interact

Tilt the Classmate PC and watch the objects fall under the influence of air drag and gravity.

Evaluate

Are there differences in how the objects fall?

Compare velocities of the falling objects.

ALGORYX
MULTIPHYSICS AND 3D SIMULATION