

GeoGebra for Physics

Lenore Horner

The Seven Hills Schools
Lenore.Horner@7hills.org

July 26, 2017

GeoGebra is a versatile and accessible tool for physics teachers. It facilitates creation of everything from precise figures to interactive 3D visualizations. GeoGebra is an interactive tool that graphs functions, plots data and does statistical analysis of it, does calculus and vector math, illustrates geometry, functions in 2D, 3D or both and more. Example physics applications include re-usable/variable inclined plane and pulley diagrams, ray diagrams, forces on a rotating coil in a magnetic field, sound demonstrations, randomized practice problems with solutions. GeoGebra and visualizations created with it are free and run on computers and tablets and as a web application.

- Good diagrams are instrumental in physics.
- Drawing takes time.
- Modifying the scenario shouldn't require redrawing from scratch. Interactive would be even better.

Inclined Plane

Assumptions

Forces

Optics

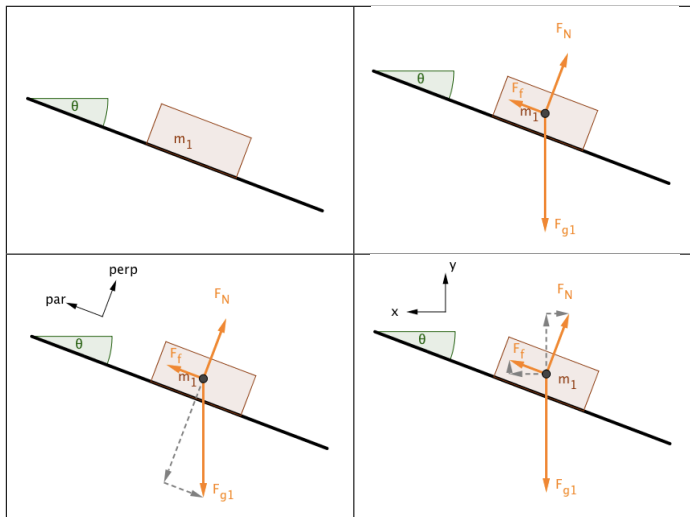
3D Vectors

Sound

Randomized Drill

Other Features

Resources



ForcesIncline.ggb

Modified Atwood

Assumptions

Forces

Optics

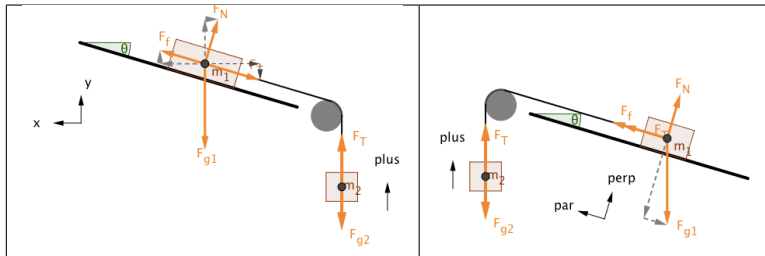
3D Vectors

Sound

Randomized Drill

Other Features

Resources



Wave Optics

Assumptions

Forces

Optics

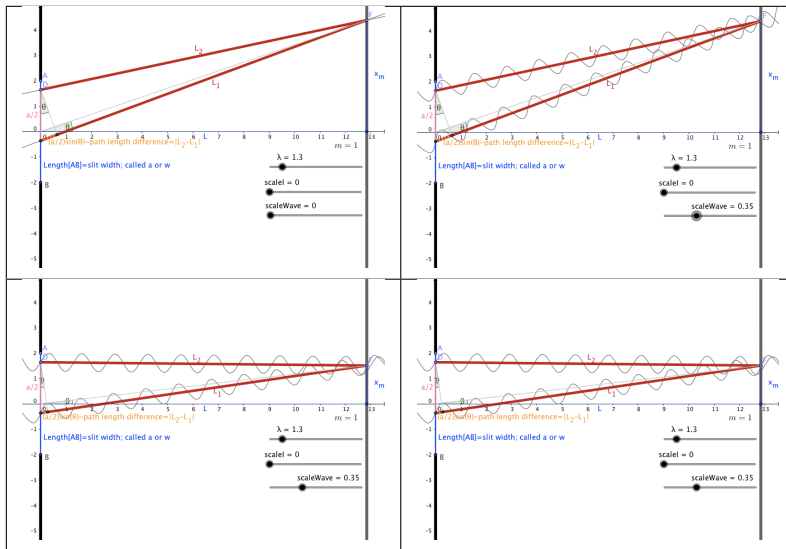
3D Vectors

Sound

Randomized Drill

Other Features

Resources



SingleSlitGeometry.ggb

Ray Optics

Assumptions

Forces

Optics

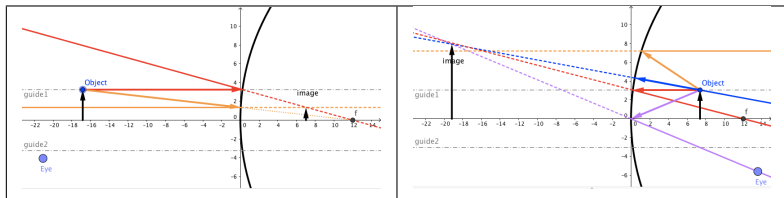
3D Vectors

Sound

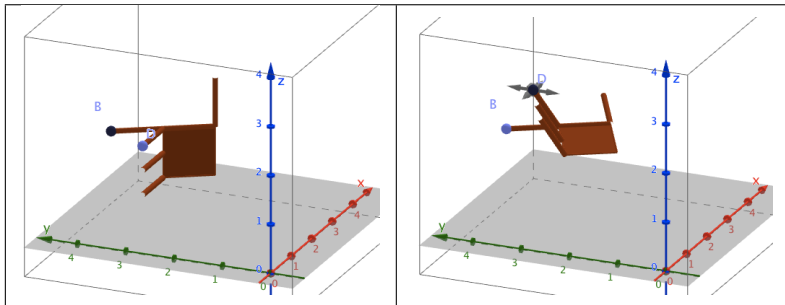
Randomized Drill

Other Features

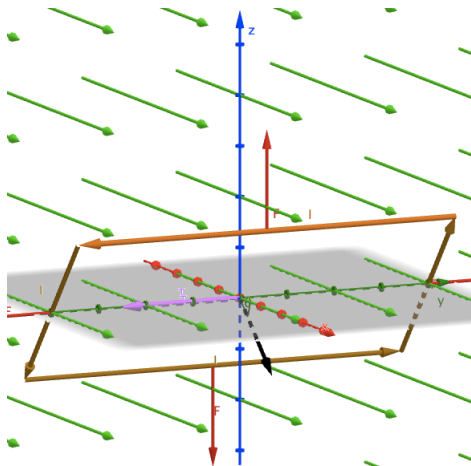
Resources



Mirrors2.ggb



RHR-hand.ggb



Torque-on-Coil.ggb

Sounds

Assumptions

Forces

Optics

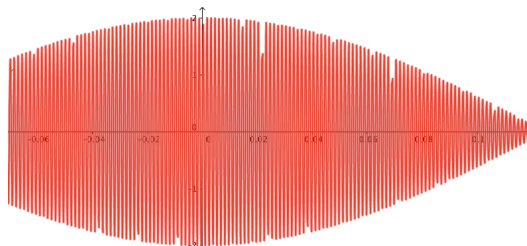
3D Vectors

Sound

Randomized Drill

Other Features

Resources



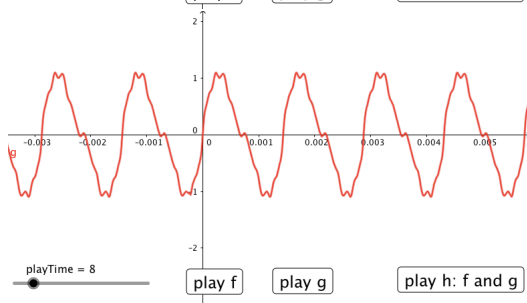
playTime = 1



play f

play g

play h: f and g



playTime = 8



play f

play g

play h: f and g

[PlayingSounds.ggb](https://www.geogebra.org/m/PlayingSounds.ggb)

Components

Assumptions

Forces

Optics

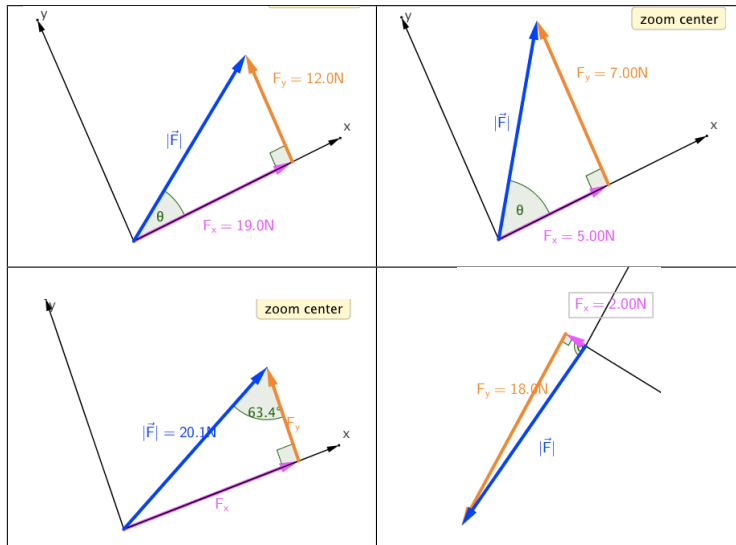
3D Vectors

Sound

Randomized Drill

Other Features

Resources



ComponentsPractice.ggb

There's More

- spreadsheet and function fitting
- statistical analysis
- calculus

Assumptions

Forces

Optics

3D Vectors

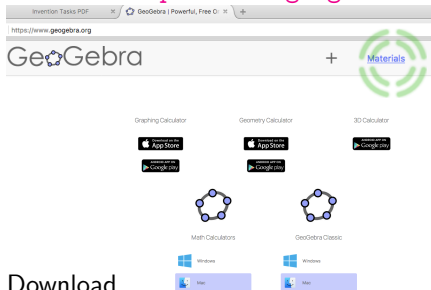
Sound

Randomized Drill

Other Features

Resources

- Basic address <https://www.geogebra.org/>
- Materials <https://www.geogebra.org/materials/>



- Download

- 13 / 14

Closing

Assumptions

Forces

Optics

3D Vectors

Sound

Randomized Drill

Other Features

Resources

Lenore.Horner@7hills.org

<https://www.geogebra.org/>