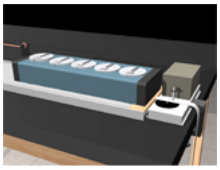
POLYHEDRON™ PHYSICS

Polyhedron Learning Media, Inc. ™

Adding Depth and Dimension to Education

Polyhedron Physics™ is a comprehensive set of 3D simulated laboratory equipment and data collection tools for conducting physics experiments. The experimental data produced by the simulations are realistic, including random and systematic errors. These features allow students to use standard data analysis and error analysis techniques to report on their own unique data, just as if the experiment had been performed using real equipment.

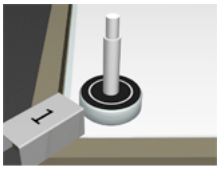
KINEMATICS AND DYNAMICS



CART AND PULLEY

Use a laboratory cart and pulley to explore uniformly accelerated motion in one dimension, Newton's Second Law, the relationship between impulse and change in momentum, and the relationship between work and change in mechanical energy.

Try the Cart and Pulley Simulation — FREE:
www.polyhedronlearning.com/CartandPulleySimulation/

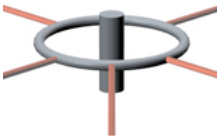


INCLINABLE AIR TABLE

Use an inclinable air table to investigate uniformly accelerated motion in two dimensions.

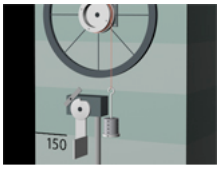
BALLISTIC PENDULUM

Use a ballistic pendulum to demonstrate the conservation of momentum in a totally inelastic collision.



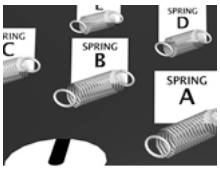
FORCE TABLE

Use a force table to investigate the vector addition of forces.



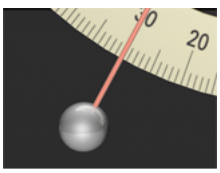
INERTIA WHEEL

Use a disk, a ring, and four masses mounted on a bearing, a mass hanger and slotted masses, a string, and a timer to investigate the relationship between torque, moment of inertia, and angular acceleration.



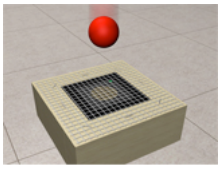
SPRING-MASS SYSTEM

Use a spring-mass system to investigate Hooke's Law, simple harmonic motion, and conservation of mechanical energy.



PENDULUM

Use a mass on a string to investigate the relationships between the mass, length, amplitude, and period of oscillation of a pendulum.

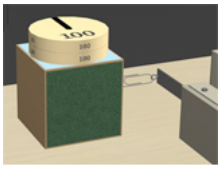


FREE FALL APPARATUS

Use a position sensor to examine the relationship between the position, velocity, and acceleration of a free-falling body.

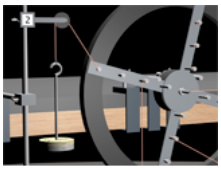
PROJECTILE LAUNCHER AND IMPACT PAD

Use a projectile launcher and an impact pad to investigate projectile motion.



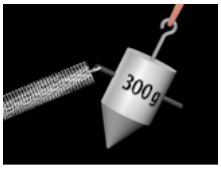
FRICTION BLOCK

Use a friction block to determine the coefficients of static friction and kinetic friction for two surfaces in contact.



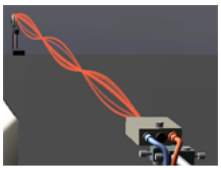
ROTATIONAL EQUILIBRIUM APPARATUS

Use masses and pulleys to apply torques to a wheel and investigate rotational equilibrium.



CENTRIPETAL FORCE APPARATUS

Use a centripetal force apparatus to investigate the relationships between the centripetal force on an object and the mass, velocity, and radius of revolution of the object.



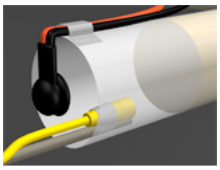
STANDING WAVES ON A STRING APPARATUS

Use a string vibrator, a sine wave generator, and strings of various linear densities to investigate standing waves.

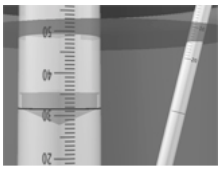
In development: Rotational Equilibrium Using a Meter Stick

For more information, send email to information@polyhedronlearning.com

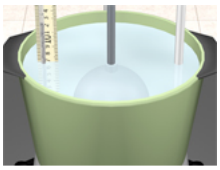
THERMODYNAMICS



RESONANCE CHAMBER
Use a transparent tube with moveable plunger, a sine wave generator and speaker, a microphone, and two sound level meters to investigate standing waves inside a resonance chamber.



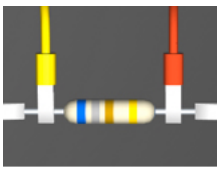
GAS LAWS APPARATUS
Use a plastic syringe, a water bath, a hot plate, ice, a thermometer, a barometer, and masses to demonstrate Boyle's Law, Charles' Law, and Gay-Lussac's Law, and to estimate values for absolute zero and the universal gas constant.



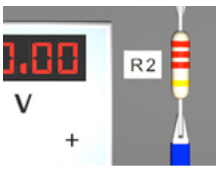
THERMOMETERS
Use an uncalibrated liquid column thermometer, a constant volume gas bulb with an absolute pressure gauge, a thermistor and ohmmeter, a water bath, a hot plate, and ice to investigate the measurement of temperature.

In development: Heat Engine; Calorimeter and Heating Coil; Archimedes' Principle Apparatus; Calorimeter and Metal Samples

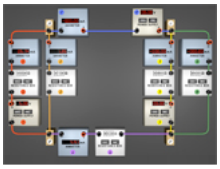
ELECTRICITY



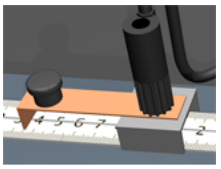
OHM'S LAW APPARATUS
Use a resistor, a power supply, a voltmeter, and an ammeter to investigate the relationships between the voltage, current, and resistance in a circuit.



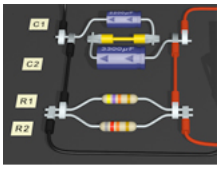
SERIES AND PARALLEL CIRCUITS
Use resistors, a power supply, a voltmeter, and an ammeter to investigate the effective resistances of circuits with resistors in series, in parallel, and in combinations of series and parallel components.



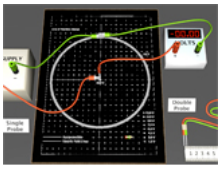
KIRCHHOFF'S CIRCUIT LAWS APPARATUS
Use power supplies, resistors, and ammeters to investigate Kirchhoff's Circuit Laws.



WHEATSTONE BRIDGE APPARATUS
Use a slide-wire device, a variable resistance box, and a fixed resistor to investigate a Wheatstone bridge circuit.



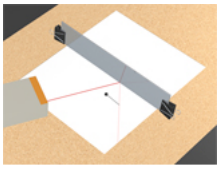
RC CIRCUITS
Use a power supply, a voltmeter, capacitors, and resistors to investigate resistor-capacitor (RC) circuits.



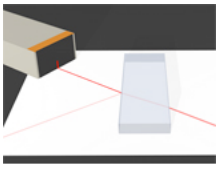
ELECTRIC FIELD MAPPING APPARATUS
Use silver paint electrodes on resistance paper, a power supply, and a voltmeter to measure and diagram the equipotential surfaces and electric fields produced by a line of charge, two lines of opposite charge, and two oppositely-charged parallel plates.

In development: AC LR Circuits; AC RC Circuits; AC LRC Circuits; Electric Motor and Pulley; Galvanometer as a Voltmeter; Galvanometer as an Ammeter; Long Straight Wire Apparatus

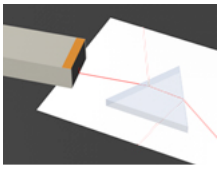
LIGHT AND OPTICS



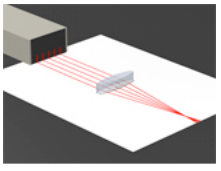
RAY BOX AND MIRROR
Use a plane mirror to investigate the relationships between object and image distances and angles of incidence and reflection.



RAY BOX AND RECTANGULAR PRISM
Use a rectangular prism and a ray box to investigate the refraction of a ray of light.



RAY BOX AND TRIANGULAR PRISM
Use a triangular prism and a ray box to investigate the refraction of a ray of light, determine the minimum angle of deviation, and demonstrate critical refraction and total internal reflection.



RAY BOX AND LENSES
Use a ray box and a convex and concave lens to investigate the properties of converging and diverging lenses.

In development: Ray Box and Refraction Cell, Optical Bench and Lenses, Discharge Tube and Diffraction Grating

NUCLEAR PHYSICS

In development: Barium-137 Source and Geiger Counter; Beta and Gamma Sources and Absorbers

For more information, send email to information@polyhedronlearning.com