

Pivot Interactives by Subject Tag

Biology

- Mitosis in Onion Root Tips
- Cell Size and Diffusion
- Introduction to Acids and Bases
- Environmental Effects on Hatching Brine Shrimp
- Osmosis and Diffusion: Concentration, Membranes and Motion
- Population Dynamics of Algae
- Garden of Splendor
- Transpiration Rates
- Osmosis and Water Potential in Vegetables and Fruits
- Plant Genetics – Single Trait Crosses
- Animal Behavior: Brine Shrimp and Light
- Exploring Respiration Rates
- Introduction to Cellular Respiration
- Introduction to Cellular Respiration – In Class Collaboration
- Introduction to Photosynthesis
- Colored Lights and Photosynthesis
- Catalase Activity Investigation
- Natural Selection of Yeas in Ethanol Environments
- Heat of Combustion of Carbon Chains and Food
- Gene Regulation: Yeast and Galactose
- Comparing Human Respiration Before and After Running
- Fruit Fly Genetics – Sex-linked Genes
- Introduction to Fermentation
- Measuring the Output of the Sun
- Torque and the Human Knee Joint

Chemistry

- Properties of Ionic and Covalent Bonded Substances
- Solubility Rules
- Masses of Gases
- Stoichiometry Practice: Magnesium and Hydrochloric Acid Reaction
- Introduction to Acids and Bases
- Introduction to Reversible Reactions
- Introduction to Acid-Base Titrations
- Enthalpy of Reaction: Acids and Bases with Limiting Reagents
- Will it Float? (Calculating the Density of Gases)

- Penny Isotopes: Determine the Percent Composition of Copper and Zinc Pennies
- Introduction to Measurement
- Buoyancy Problem
- Temperature During Phase Changes
- Gas Emission Spectra
- Introduction to Cellular Respiration
- Introduction to Cellular Respiration – in Class Collaboration
- Catalase Activity Investigation
- Introduction to Convection
- Making and Using Mathematical Models: The Gas Station Pump (open-ended)
- Measurement Uncertainty: Relative Uncertainty Method
- Measurement Uncertainty: Significant Figures Method
- Heat of Combustion of Carbon Chains and Food
- Mass Changes during Chemical Reactions
- Mass Changes during Chemical Reactions: Burning Steel Wool
- Lambert Law: Transmission vs Path Length
- Using Specific Heat to Identify a Substance
- Gas Laws: Pressure vs. Temperature
- Electrochemistry: Galvanic Cells
- Le Chatelier's Principle: Quantitative
- Gas Laws: Pressure vs. Volume
- Identify Liquids Using Density
- Introduction Mathematical Models: The Gasoline Pump (scaffolded)
- Density of Pennies (Interactive In-Class Version)
- Density of Precious Metals by Immersion (by Archimedes)
- Spot the Fake: Which is the Real Olympic Gold Medal?
- Millikan Oil Drop Experiment
- Identifying Unknown Liquids – Boiling Points
- Radioactive Decay and Half Life
- Flame Test Quantitative Analysis
- Sucrose Solution Densities
- Specific Heat of Water Experiments (graphical version)
- Experimental Design: Measuring the Specific Heat of Water
- Using Heat of Solution to Identify Substances
- Copper and Silver Nitrate Reaction
- Enthalpy of Reaction: Acids and Bases
- Ocean Acidification (Simplified Version)
- Ocean Acidification: Chemistry Focus
- Acid-Base Titrations: Choosing the Right Indicator
- Using an Electrolytic Cell to Determine Avogadro's Number
- Density of Metal Shapes
- How Does Temperature Affect the Volume of Water? (using graphs)

- How Does Temperature Affect the Volume of Water? (non-graphical version)
- Apparent Weight and Volume Changes
- Predicting Exothermic Reactions (graphical version)
- Beer-Lambert Law: Absorbance vs. Concentration
- Introduction to Reaction Rates: Effect of HCl Concentration on Rate of Reaction
- Surface Tension and Intermolecular Forces
- Reaction Rates: How does amount of magnesium affect Mg + HCl reaction?
- Double Replacement Reaction: Potassium Iodide and Lead(II) Nitrate
- Stoichiometry Puzzles Using Hydrates
- Introduction to Titration Curves
- Density of Solids: Precious Metals
- Practicing Titrations with Precision
- Endo & Exothermic Reactions
- Le Chatelier's Principle and Equilibrium
- First Order Rate Laws: Radioactive Decay
- Rate Laws: Crystal Violet and Sodium Hydroxide
- Modeling the Law of Definite Proportions: Magnesium and Hydrochloric Acid

Earth Science

- Will it Float? (Calculating the Density of Gases)
- Introduction to Convection
- Greenhouse Effect: Forcing vs Feedback in Climate
- Greenhouse Effect Part 1: Albedo
- Greenhouse Effect Part 2: Albedo and Infrared Light
- Greenhouse Effect Part 3: Infrared Light Absorption by Gases
- Radioactive Decay and Half Life
- Ocean Acidification (Simplified Version)
- Ocean Acidification: Chemistry Focus
- How Does Temperature Affect the Volume of Water? (using graphs)
- How Does Temperature Affect the Volume of Water? (non-graphical version)
- Efficiency of Solar (Photovoltaic) Panels
- Optimizing Power Generation from Photovoltaic Cells
- Measuring the Output of the Sun
- Starry Night
- Using an Atmospheric Simulation Chamber to Explore the Greenhouse Effect

Physics

- vISLE: 5.7 Application experiment: Measure spring constant (anomalous data)
- vISLE: 5.6 Application experiment: Measure spring constant
- vISLE: 5.5 Testing a mathematical model and assumptions
- vISLE: 1.2 Devise a new physical quantity. Observational Experiments
- vISLE: 1.1 Introduction to systems and conserved quantities

- Springs in Parallel
- Exploring Wave Propagation Speed in a Ruben's Flame Tube
- Advanced Analysis of Transverse Standing Waves
- Testing the Effect of Gravitational Field Strength of the Period of a Pendulum
- Analyzing RL Circuits
- Resistivity of Graphite
- Will it Float? (Calculating the Density of Gases)
- Measuring Torque with more scaffolding
- Measuring Torque
- Penny Isotopes: Determine the Percent Composition of Copper and Zinc Pennies
- Rolling Ball Challenge Level 1: Ball Rolling Right
- Buoyancy Problem
- Forces and Electric Charge I: Force vs. Distance
- Forces on Object on a Ramp (short version)
- Air-track Glider Collisions
- Pendulum Investigation
- Video Upload: Motion with Constant Velocity
- An Introduction to Studying Motion: The Ping-Pong Ball Bazooka
- Gas Emission Spectra
- Free Fall Five: Analyzing Motion of Object in Free Fall
- Motion Graphing a Dry Ice Puck on a Ramp
- Rotational Collisions: Disk on Disk (Make and Test Predictions)
- Making and Using Mathematical Models: The Gas Station Pump (open-ended)
- Rotational Collisions: Disk on Disk (Momentum and Energy)
- Exploring Properties of Transverse Mechanical Waves
- Falling Wheels
- Momentum and Energy Ratios During Collisions
- Heat of Combustion of Carbon Chains and Food
- Force on a Current-Carrying Conductor in a Magnetic Field (beta)
- vISLE: 5.3 Application experiment: Measuring the spring constant
- Analyzing RC Circuits
- Spring Oscillators: Period vs. Amplitude
- vISLE: 5.2 Period vs. Amplitude, Observational Experiment
- Angle of Refraction
- Exploring the Directions of Force, Acceleration, and Velocity
- Flying a Drone in a Sealed Box (aka: The Truck Filled with Canaries)
- Inertial vs Gravitational Mass on the Modified Atwood's Machine
- Photoelectric Effect with Lasers (feat. A. Einstein)
- Using Specific Heat to Identify a Substance
- Gas Laws: Pressure vs. Temperature
- One-D Kinematics Challenge: Three-way Billiard Ball Race!
- vISLE: 4.4 Application Experiment: Circular motion with assumptions

- vISLE: 3.3 Testing Newton's Second Law with the Rocket Cart
- Gas Laws: Pressure vs. Volume
- Greenhouse Effect: Forcing vs Feedback in Climate
- vISLE: 5.3 Exploring Kinematics and Dynamics of Simple Harmonic Motion
- vISLE: 5.4 Testing different mathematical relations for the period of a vibrating system
- vISLE: 5.1 Object vibrating on a spring. Observational Experiment
- Greenhouse Effect Part 2: Albedo and Infrared Light
- Motion Graphs of Positive and Negative Acceleration
- Light Diffraction
- Wave Interference: Reflection and Superposition
- Introduction to Mathematical Models: The Gasoline Pump (scaffolded version)
- Greenhouse Effect Part 3: Infrared Light Absorption by Gases
- Density of Pennies (Interactive In-Class Version)
- Discovering the Kinematics of Simple Harmonic Motion
- Density of Precious Metals by Immersion (by Archimedes)
- Spot the Fake: Which is the Real Olympic Gold Medal?
- Millikan Oil Drop Experiment
- Identifying Unknown Liquids – Boiling Points
- Radioactive Decay and Half Life
- Flame Test Quantitative Analysis
- Electromagnetic Induction
- Specific Heat of Water Experiments (graphical version)
- Experimental Design: Measuring the Specific Heat of Water
- vISLE: 2.2 Testing Experiment: Interactions between objects during collision
- vISLE: 4.2 Testing Experiment: Circular Motion
- vISLE: 4.1 Observational Experiments: Exploring Circular Motion
- vISLE: 4.3 Application experiment: Measuring the coefficient of static friction
- Analyzing Rotational Motion using a Bicycle Drivetrain
- Force and Motion with a Bow and Arrow
- Toy Car Investigation
- Roller Coaster in 2-dimensions
- Linear Spring Oscillators
- Angle of Reflection
- Disk Accelerated by Hanging Weight
- Experimental Design and Data Analysis Practice: Circular Motion 1
- Investigation: Helmets, Foam, and Collisions
- Fire Extinguisher Rocket Cart
- Spring Force Challenge
- Exploring Momentum and Impulse: Cart Push Off
- Tank Filling Challenge
- Efficiency of Solar (Photovoltaic) Panels
- Optimizing Power Generation from Photovoltaic Cells

- Mathematical Modeling: Height vs Velocity for a Puck on a Ramp
- Sliding to Rolling Transition
- Para actividades en español, por favor busque en la biblioteca comun
- Work-Energy Activity
- Exploring Electric Repulsion
- Joly Photometer: Brightness vs Distance
- Measuring the Output of the Sun
- Rollercoaster Loop
- Keep in Time! Measuring the Speed of Sound
- Current and Voltage Conductors
- Dry Ice Puck Rebound (structured version)
- Magnet Accelerated by Electric Current
- Rotational Collision: Dart Collides with Wooden Stick
- Blowdart Cart Collision
- Making and Testing Predictions Based on Energy (Super conduction puck)
- Wheels Accelerated by Hanging Weight
- Forces During Collisions
- Video Upload Lab: Find the Coefficient of Friction
- Force and Motion During a Hockey Slapshot
- 2D Collisions
- Testing Newton's Second Law using the Turbine Glider
- vISLE: 6 Coulomb's Law Observational Experiment (Force vs Distance)
- Ball Rolling on a Hoop
- Gauss Gun
- vISLE: 3.1 Observational Experiment: Exploring the relationship between acceleration, mass, and force
- vISLE: 3.4 Applying Newton's Second Law to measure the mass of objects
- vISLE: 2.1 Observational experiment: Dueling force scales
- Laminar Flow Projectile Motion
- Marble Collides with Block and Can
- Einstein on the Graviton
- Roller Coaster on a Big Hill
- Free Fall Show Down
- "Freefall" Tower
- 2D Relative Motion with a Drone
- Projectile Motion: Follow the Bouncing Ball
- Three Views of Projectile Ball
- Einstein Rides the Drone: Positive and Negative Velocity, Force, and Acceleration
- Comparing Light Sources Using a Joly Photometer
- Introduction to Transverse Standing Waves
- Circular Motion and the Traffic Circle
- Ballistic Simple Pendulum Challenge

- Exploring the Cause of Acceleration – Flipped Lab Version
- Modified Atwood's Machine
- Airplane on a String
- Air Track Linear Oscillators and Multiple Springs
- Air Table Projectile Motion
- 2D Constant Velocity
- Ballistic Physical Pendulum
- Vector Directions for a Current-Carrying Wire in a Magnetic Field
- Glider Explosions (not really)
- Glider Collisions (prototype)
- Dry Ice Puck Rebound (goal-less version)
- The Marvelous Rotating Fish Tanks (Feat. A. Einstein)
- How Fast is This? Ice Skaters
- Video Upload: Example of Teacher-Uploaded Video
- Forces on Objects on a Ramp
- How Fast is That: Maddy Sprints
- Friction: sliding on an inclined plane
- Efield (prototype)
- Exploring Forces in Circular Motion II
- vISLE: 7 Interactions between waves
- Ice Rink Sliding
- Spring Shot Lab
- Exploring the Force Exerted by a Spring (apparatus, not video)
- Flash! Bang! How far away are these explosions?
- One-Dimensional Relative Motion Using a Drone
- The Scrambler
- Experimental Design and Data Analysis Practice: Circular Motion 2
- Ramp rolling with Various Objects
- Exploring Factors that Affect Acceleration while Rolling on a Ramp
- Falling Coffee Filters
- Convex and Concave Curved Mirrors
- Exploring Concave and Convex Lenses
- Hill Runner (Jessie Diggins)
- Rotational Collision: Slab Dropped on Disk
- Moment of Inertia of Rolling Cylinders: Water-Filled Disk
- ATLAS V Rocket Launch
- Starry Night
- Ball Rebound
- Exploring Forces in Circular Motion I
- Eolos Wind Turbine
- Rocket Wheel
- Billiard Ball Collisions

- Rotating Levitated Magnet
- July 4th Mortar
- Torque and the Human Knee Joint
- Forces and Electric Charge II: Force vs Charge
- vISLE: 6 Electric Charge Transfer: Contact and Induction
- Boy on a Surfboard
- Power While Hill Running (Olympian Jessie Diggins)
- Dueling Force Scales
- Linear Oscillators: Period vs. Angle
- Simple Harmonic Motion? Disk on a Speaker
- Rolling Ball Challenge Level 3: Collisions
- Using Slope of a Graph: Puck Slides Across Table
- Rolling Ball Challenge Level 2: Ball Rolling Left
- Rotating Wheel at Constant Velocity
- Gravity-Powered Clock
- How Fast is This? Roller Coasters
- Use evidence to make an argument
- vISLE: 7 Exploring Properties of Transverse Mechanical Waves Part III
- Fan Glider
- Applying Standing Wave Concepts to Longitudinal Waves
- vISLE: 7 Exploring Properties of Mechanical Waves, Part II
- Joly Photometer: Measure Light Intensity