

Middle/High School Biology

Experiment	Description
<u>Do Seeds Metabolize?</u>	Measuring carbon dioxide production in seeds before and during germination
<u>Mammalian Diving Reflex</u>	Decreasing the heart rate when submerged in cold water to preserve body heat.
<u>City Microclimate</u>	Measuring temperature and humidity in green areas and around urban areas
<u>Acid Rain</u>	Determining the pH of acid rain and understanding the effects of it
<u>Lambert-Beer Law</u>	Measuring percentage transmittance of solutions at different concentrations
<u>Sweat Production</u>	Measuring temperature and humidity changes relative to perspiration
<u>Our Heart Rate</u>	Measuring our heart rate at rest and after physical activity
<u>Temperature Variation Between Night and Day</u>	Measuring thermal oscillation and luminosity during a full day
<u>Photosynthesis</u>	Measuring air pressure inside an active photosynthetic system
<u>Photosynthesis - Dissolved Oxygen</u>	Measuring dissolved oxygen inside an active photosynthetic system

Middle/High School Chemistry

Experiment	Description
<u>Titration</u>	Using the technique of acid-base titration to find the concentration of a strong acid
<u>Endo/Exothermic Reactions</u>	Performing different measurements to examine which reactions release or consume heat.
<u>Specific Heat</u>	Heating different liquids to the same temperature (70 degrees celcius) and comparing their individual cooling curves.
<u>Water Phase Changes</u>	Analyze temperature changes in water as a result of a physical state transition
<u>Boyle's Law</u>	Measuring air pressure in a closed container while verifying the relationship between air pressure and volume
<u>Liquid Conductivity</u>	Studying the relationship between dissolved ions and the conductivity of a saline water solution
<u>Lambert-Beer Law</u>	Measuring percentage transmittance of solutions at different concentrations
<u>Candle Flame</u>	Measuring the temperature of a flame according to the "three zones model"
<u>How Acidic are the Things we Drink?</u>	Measuring the pH of different beverages
<u>How Does Atmospheric Pressure Vary?</u>	Measuring atmospheric pressure at different levels above sea level

Middle/High School Environmental Studies

Experiment	Description
<u>Exploring our environment</u>	14 hands-on environmental science experiments
<u>Water Quality</u>	Measuring and comparing the turbidity of different water sources and the effect on aquatic life
<u>UV and Sunblock</u>	Measuring and comparing the levels of ultraviolet radiation through different types of filters
<u>Cloud Detection</u>	Measuring infrared temperature from the environment to characterize the current weather
<u>Greenhouse Effect</u>	Using a greenhouse to model the effects of the atmosphere on the Earth's temperature
<u>Liquid Conductivity</u>	Studying the relationship between dissolved ions and the conductivity of a saline water solution
<u>Acid Rain</u>	Determining the pH of acid rain and understanding the effects of it

<u>Variation of Light Intensity</u>	Measuring the light intensity of different light sources
<u>City Microclimate</u>	Measuring environmental temperature and humidity in green areas and around urban areas
<u>Photosynthesis</u>	Measuring air pressure inside an active photosynthetic system
<u>Photosynthesis - Dissolved Oxygen</u>	Measuring dissolved oxygen inside an active photosynthetic system
<u>Temperature Variation Between Night and Day</u>	Measuring thermal oscillation and luminosity during a full day

Middle/High School Physics

Experiment	Description
<u>Earth's Magnetic Field</u>	Measuring the Earth's magnetic field at a given location
<u>Newton's Second Law</u>	Studying the behavior of a propelled car
<u>Elastic Pendulum</u>	Observing changes in the elastic force exerted by a spring acting as a pendulum
<u>Biot-Savart Law</u>	Studying the magnetic field intensity variations around an inducting coil
<u>Hooke's Law</u>	Studying the elongation produced in springs
<u>Ohm's Law</u>	Exploring Ohm's Law in parallel and series circuits
<u>Change in Momentum</u>	Demonstrating the conservation of momentum
<u>Speed of Movement</u>	Measuring the speed of a moving object in different situations
<u>Free Fall</u>	Observing and analyzing the free fall motion of a bouncing ping-pong ball
<u>Lenz Law</u>	Verifying the Lenz Law by measuring the electric current flowing through a coil created by an external magnetic field
<u>Boyle's Law</u>	Measuring air pressure in a closed container while verifying the relations between air pressure and volume
<u>Sound Waves</u>	Recording sound waves and sound wave interference
<u>Variation of Light Intensity</u>	Measuring the light intensity of different light sources
<u>Friction</u>	Investigating static and kinetic friction of a body on different surfaces

Grades 3-5 experiments for the Mini (NGSS-correlated)

Experiment	Description
<u>Air Pressure</u>	Measure the air pressure inside a plastic bottle
<u>All Charged Up</u>	Compare the voltage and current output of different sized batteries
<u>Conductors and Insulators</u>	Measure the amount of electrical current flowing through different types of circuits
<u>Coping with a Warm Environment</u>	Measure environmental temperature and humidity
<u>Feel the Beat</u>	Record heart rate before and after exercise using an ear clip sensor
<u>Make Your Own Battery</u>	Measure the electricity produced by four different types of home-made batteries
<u>Right on Target</u>	Record heart rate before and after exercise using an ear clip sensor
<u>Sources of Heat other than Sunlight</u>	Measure heat created by mechanical and electrical sources
<u>Temperatures Around Us</u>	Measure environmental temperatures from a variety of locations around the school

<u>The Sun's Effects</u>	Measure the temperatures of a 10 different locations around the school yard
<u>Weather and Climate</u>	Measure daily weather conditions including temperature, humidity, air pressure and precipitation
<u>What's the Weather Like Today?</u>	Measure daily weather conditions including temperature, humidity, air pressure and precipitation
<u>What's the pHuss</u>	Measure the pH of a variety of substances
<u>A Walk in the Park</u>	Measure ambient temperature and humidity to see how the presence of "green space" affects these parameters
Project based learning	
Experiment	Description
<u>Project GLOBE</u>	Build a student weather station at your school and use the Labdisc to collect ongoing data about the weather conditions in your area.
<u>Project Nest Box</u>	Collect data on light, humidity and sound as well as temperature both inside and outside nesting boxes to find out what features make a birdhouse ideal.
<u>Turn-Down the Noise</u>	Measure the impact of noise pollution in your community and share this information with community leaders to help make their school and community a better and healthier place.
<u>What's It Like Out There</u>	Include a Labdisc GenSci or Labdisc Enviro as part of the payload of a high-altitude near-space weather balloon to record temperature, air pressure, sound and GPS location during the high-altitude weather balloons ascent and descent.
Elementary School	
Experiment	Description
<u>Light Absorbance</u>	Check and compare the light absorbance of different pairs of sunglasses
<u>Our Heart Rate</u>	Recording heart rate before and after exercise
<u>A Walk in the Park</u>	Recording temperature changes at a city's busy intersection and in a nearby park or garden
<u>Night and Day</u>	Examine temperature and light changes over a full day
<u>How Loud is Sound?</u>	Measure the decay of sound level over distance
<u>The Temperature Around Us</u>	Recording the temperature of different substances
<u>What is Distance?</u>	Examine the relationship between speed time and distance and explore graphs of distance versus time