- Lab Experiments are categorized by Topic/Objective.
- **Lab Prices are shown with the lab.** ***($0.50/lab processing fee up to 10).***
- Common household materials and a few inexpensive equipment items are required.
- **Answer keys** are provided for all labs.

Science Skills & Metric Measurement

Accuracy & Precision Activity $1.99
Hands on. Determine which volume measuring tool is most accurate and precise within the metric system.

Metric Measurement Lab $1.99
Hands on. Learn the metric progression by measuring household items.

Matter

Ice to Water $0.99
Hands on & virtual. Show the conservation of mass when states of matter change.

Classifying Matter Activity $0.99
Virtual. Classify 16 items are homogeneous (element, compounds, solution) or heterogeneous (mixtures).

Physical Versus Chemical Changes $1.99
Virtual. To investigate the difference between physical and chemical changes using 14 items.

Density: An Intensive Property $3.99
Hands On. Determining the density of six items.

Heating & Cooling Curves of Water $3.99
Hands on or Virtual. To investigate the energy changes which occur during phase changes resulting from heating or cooling substances.

Atomic Structure

Electrostatic Force Activities $2.99
Hands on and virtual. To investigate electric force using various activities. Attraction, repulsion using acrylic tape, balloons, and a Van der Graaf machine (video link provided).

Nuclear Symbols Simulation $2.99
Virtual. Determine the number of protons, neutrons, and electrons in various atoms of different elements and show atomic number and atomic mass. Isotopes.

Probability of Finding an Electron $0.49
Hands on. Use statistics to simulate the probability of finding an electron.

Flame Test Lab $2.99
Virtual. Explain the movement of electrons between orbitals in an atom. Use the flame tests to identify substances.

PHET Atomic Models Simulation $1.99
Virtual. Outstanding activity illustrating contributions of Dalton, Thomson, Rutherford, Bohr, Debroglie, and Shroedinger.

Gas Laws

Pressure Activities $0.99
Collapsing Can; Balloon & Eggs sucked into container.

Gas Laws: Boyle's & Charles' Law $3.99
Virtual. This experiment investigates two different Gas Laws, Boyle's Law and Charles' Law, confirming the relationship between variables of pressure and volume when temperature and moles are held constant (Boyle's Law), and between temperature and volume when pressure and moles are held constant (Charles' Law).

Boyle's & Charles' Law Simulations $0.99
Virtual. To learn how about Boyle's Law and Charles' Law using the internet.

Periodic Table

Periodic Table of Foods $0.49
Hands on. Arrange food items into columns and rows based on a recognizable pattern, which is analogous to the Periodic Table arrangement.

Top Secret Agent Periodic Table $0.99
Hands on. To discover patterns from various kinds of information in order to arrange elements or items into a meaningful sequence. Arrange the sketches in a pattern so that you can determine the missing secret agent.

Bonding

Movement of Charge $0.99
Hands on. To make a simple model of the atom, showing transfer of charge during an electrostatic reaction. This is the BEST activities ever to show how atoms become ions by the movement of electrons.

Formulas

Formulas & Naming Ionic Compounds Lab $0.99
Hands on. Practice building and naming ionic compounds and writing their formulas.

Reactions *(including Reaction Rate, Equilibrium, REDOX)*

Chemical Reactions Types and Their Equations $3.99
Virtual. Describe the five classes of chemical reactions. Observe chemical reactions for qualitative results. Write balanced chemical equations for chemical reactions.

REDOX Simulation $1.99
Virtual. Observe molecular reduction-oxidation reactions and how electrons are transferred. Learn about the metallic activity series.

Electrochemistry Lemon Battery $2.99
Hands on. A battery operates because reduction and oxidation are occurring simultaneously inside.

Reaction Rate versus Temperature $1.49
Hands on. To investigate reaction rate and factors that affect it.

Stressing Equilibrium (LeChatelier's Principle) Simulation $1.99
Virtual. Stressing a system by temperature, pressure, or concentration.

Solutions

Solubility of Solids (Temperature) $0.49
Hands on. To investigate solubility of solids based on the temperature of the solvent.

Solubility & Temperature Using Gases $0.99
Hands on & virtual. To investigate solubility of gases based on temperature.

Freezing Point Depression $2.99
Hands on. To investigate the Colligative property of Freezing Point depression in a most yummy and delightful way: making ice cream!

Acid / Base

Acids & Bases Simulation $1.99
Virtual. To learn about neutralization, hydronium and hydroxide ion concentrations, and pH.

Indicators from Natural Sources $0.99
Hands on. To measure the pH of common household materials by using a natural indicator, and to make an indicator chart.

Titration Lab $3.99
Virtual. Learn about strong and weak acids and bases and titrating them. Reading titration graphs and using dilutions.

Carbon Chemistry

Carbon Chemistry Lab $2.99
Hands on. To investigate carbon compounds and their structure. Alkane series. Saturated and unsaturated hydrocarbons. Oxygen functional groups.

Nuclear Chemistry

Half-Life Lab $1.99
Hands on. *This activity will define half-life and develop a half-life curve for radioactivity.*

Radioactivity Simulation $1.99
Virtual. Investigates decay rates of various artifacts, fossils, etc. and dating techniques.

Force & Motion

Vectors Lab $1.99
Hands on. Understand basics of vectors using a "paper river" and motion cars.

Nature of Forces Activity $0.99
Hands on. Use coins to observe forces and parameters of forces.

The Great Balloon Race Lab $0.99
Hands on. To investigate force & motion by designing the fastest balloon rocket. Measure time, distance, and calculate speed. Analyze forces (friction, rocket) and energy.

Friction Lab $0.99
Hands on. Investigate factors that affect friction and types of friction. Need a spring scale.

Acceleration Activity $0.99
Hands on. To perform a simple investigation showing acceleration (change in speed).

Speed (Velocity) Lab $3.99
Hands on or Virtual. Determine and analyze the speed of objects using distance and time. Includes average, instantaneous, and constant speed.

Free Fall Lab $1.99
Hands on. To investigate freely falling objects in terms of time and distance of fall.

Reaction Time (Free Fall) Lab $1.99
Hands on. To investigate freely falling objects using reaction time. Calculate distance an object falls, the time it takes to fall, and determine how to improve one's reaction time.

Newton's Laws of Motion

Newton's 1st Law & Friction Activities $1.99
Hands on. Four activities to investigate Newton's 1st law and friction.

Newton's 1st Law Activity $0.99
Hands on. Use a ball to observe Newton's 1st law. Draw vector diagrams.

Newton's 2nd Law Lab $1.99
Hands on. To investigate force, mass & acceleration using a motion cart, mass set, and timer. Graph applied force versus acceleration.

Newton's 2nd Law Activity $0.99
Hands on. Investigate force, mass, and acceleration using a tennis ball. Calculate instantaneous velocity of fall.

Newton's 3rd Law Lab (Linear Motion) $0.99
Hands on. To perform a simple investigation showing paired forces (action-reaction) using a friction car (buy at Dollar store).

Newton's 3rd Law Lab (Orbital/Circular Motion) $0.99
Hands on. To investigate opposing forces (action-reaction) involving circular (orbital) motion.

Paper Football Momentum Activity $0.99
Hands on. To investigate the aspects of momentum (mass, velocity, direction) using a paper football.

Momentum Lab (Colliding Balls) $1.99
Hands on. To investigate momentum using a tennis ball, golf ball and soft ball. Calculate momentum using distance, time, velocity, and mass. Observe the relationships between mass, velocity and momentum.

Momentum & Collisions Lab $2.99
Virtual. To investigate conservation of momentum (mv = mv) in a system of two colliding motion carts.

Work & Simple Machines

Classes of Levers Activity $0.49
Hands on. Identify and apply the three classes of levers to household items.

Work Activity $0.99
Hands on. Compare the work done without and with friction using a tennis ball or super ball. Calculate work, and compare kinetic and potential energy at various heights of fall, showing conservation of energy.

Simple Machines Lab $1.99
Hands on. Investigate work done using an inclined plane and a pulley. Identify effort (input) force and distance and resistance (load) force and distance. Calculate mechanical advantage and work.

Energy / Heat

Convection Activity $0.99
Hands on or Virtual. To investigate the heat transfer involving convection using ice and salt water.

Energy Lab – Potential & Kinetic Energy $2.99
Hands on. To investigate the total energy of a system using free fall and a pendulum. Calculate PE and KE and show conservation of energy.

Specific Heat Lab $0.99
Hands on. To investigate the specific heat of metal compared to water using a simple calorimeter.

Heating & Cooling Curves of Water $3.99
Hands on or Virtual. To investigate the energy changes which occur during phase changes resulting from heating or cooling substances.

Energy Transfer $2.99
Hands on. To investigate how heat energy is transferred from one object to the next comparing radiation, convection, and conduction. Define albido. Graph temperature versus time.

Electricity / Magnetism

Electrostatic Force Activities $1.99
Hands on or virtual. To identify opposite charges. To investigate electric force using friction, conduction, and induction.

Static Electricity & Magnetism Lab $1.99
Hands on. To investigate various materials and their response to static electricity and magnets.

Electric Circuits Lab $1.99
Hands on or virtual. To investigate and compare a simple series circuit with a simple parallel circuit.

Magnetism Lab 1 $1.99
Hands on. To predict and experiment related to magnetism and compare to static electricity.

Magnetism Field Lines Lab $1.99
Hands on. To predict and experiment related to magnetic poles and magnetic field lines.

Electromagnetism Lab $1.99
Virtual. To investigate electromagnetism (bar magnet, coils, electromagnets) in the form of electromagnetic induction.

Waves & Sound

Electromagnetic Radiation Lab $0.99
Virtual. Identify wave types in the Electromagnetic spectrum by frequency and wavelength. Arrange the EM spectrum in order, understanding which has the most energy.

Sound Activities $1.99
Hands on. Three activities to investigate the medium through which sound travels, the relationship between frequency and wavelength, and the Doppler effect.

Sound Waves Lab $1.99
Hands on or virtual. Investigate wave travel from a single point source, interference with a double point source and with resonance boxes. Understanding a musical scale and standing waves.

Light & Color

Reflection & Refraction Lab $3.99

Hands on or virtual. Investigate reflection off a surface and refraction when light passes through two different media. Draw and label light rays and angles of incidence and reflection / refraction.

Color of Light Simulation $0.99

Virtual. Categorize the primary additive colors of light, the subtractive primaries, and Complementary colors (color opposites).

Flat & Spherical Mirrors Lab $1.99

Hands on. To investigate reflection off a flat mirror and spherical mirrors (convex and concave). Categorize mirrors by the image produced (erect/inverted, regular/reversed, size, real/virtual). Observe magnification.

Lenses Lab $1.99

Virtual. To investigate convergence and divergence of light in lenses. Categorize lenses by the image produced (erect/inverted, regular/reversed, size, real/virtual). Observe magnification. Understanding near and far sighted conditions and their remedy.

Prisms Lab $1.99

Hands on or virtual. To investigate refraction of light using prisms, including dispersion and total internal reflection. Draw and label light rays and angles of incidence and refraction.