

Unit	Lab	Objective	Materials Needed
1: Math	Volume and Chemistry	Teach to work with volume measurements and techniques	Food coloring, Chlorine bleach
	Mass in Chemistry	Teach you some of the basic chemistry measuring skills	Liquid detergent, Vegetable oil, Chlorine bleach, Food coloring
	Dimensional Analysis	Help solve conversion problems	Dimensional Analysis cards from Lab-Aids
	Density	Teach how to solve density	
2: Introduction to Matter	Mixtures	Teach how ordinary matter is made of combinations of simpler substances	Distilled water, granular sugar, salt and sand
	Physical and Chemical Changes	Determines whether a change is physical or chemical	Barium nitrate, potassium sulfate, magnesium ribbon, food coloring
3: Atomic Structure	Spectroscopy (possible)	Teaches that each element has its own unique signature, spectrum	NAC Master CD from Lab-Aids, Element Spectroscopy cards
	Flame Tests	Determine the identity of metallic ions	Barium Nitrate, Calcium Nitrate, Copper (II) Nitrate, Lithium Nitrate, Potassium Nitrate, Sodium Chloride, and Strontium Nitrate, Q tips
	Electric Solutions	Determines which solutions	Potassium nitrate, vinegar, soda

		contains ions	
4: Radioactivity and Nuclear Reactions	Half Life Experiments: Coin Toss	Teach meaning of half life and demonstrates it without radiation	Pennies
	The Alchemical Race	Teaches radioactive decay	Chart of radioactive decay chains from lab aids
5: Nomenclature	Naming Chemical Compounds	Practice naming household chemicals	Sunscreen, toothpaste, shampoo, mouthwash, antacid, skin cream, baking soda
	Quiz Trade: Nomenclature	Practice using nomenclature techniques	
6: Chemical Bonding	Lewis Structures	Shows how to make Lewis structures	
	The Geometry of Molecules	Show how to make molecules 3 dimensionally	
7: Chemical Reactions	Indicators of Chemical Reactions	Teach the signs of a chemical reaction	Vinegar, phenolphthalein, copper sulfate powder (anhydrous), NaOH, hydrogen peroxide, iron powder, silver nitrate (crystal), vitamin C solution, 3% iodine tincture, starch
	Discovering the Solubility Rules	Learn solubility and insolubility	Salt crystals to make solutions of these: sodium nitrate, sodium sulfate, sodium carbonate, copper (II) nitrate, ammonium nitrate, potassium nitrate
	Chemical Reactions	Predict products, writing chemical equations for the reactions performed	Copper strips, magnesium ribbon, wax candles, calcium oxide, 1.0M potassium hydroxide, copper (II) carbonate, ammonium carbonate, cobalt(II) chloride paper, phenolphthalein, Lime water, baking soda, wooden splint
8: Chemical Composition	Molar Conversion Lab	Perform molar conversions for small samples of two everyday substances, water and chalk	chalk
	Determination of an Empirical Formula	To determine the empirical formula of a compound	Magnesium chloride, HCl
9: Stoichiometry	Stoichiometry	How to determine the precise	Baking soda, vinegar

		amounts of chemicals used or produced in chemical reactions	
	Stoichiometry: Quantitative Precipitate	Teaches percentage yield and how to determine	Copper(II) chloride, sodium carbonate
10: Thermodynamics	Heat and Temperature	Prove heat and temperature are not the same thing, but they are closely related	
	Specific Heat	Finding the specific heat of steel	Steel washers
11: Gases	Hess's Law	Measure and compare the quantity of heat released in three chemical processes. Calculate the energy change.	Sodium hydroxide, sodium chloride, hydrochloric acid
	Determination of the Molar Mass of Butane (possible)	How to determine the molar mass of butane	Lighter, CRC handbook, hair dryer
	Density of Air	Measure density of air and compare to a solid and a liquid	Tire pressure gauge
12: Liquids and Solids	Surface Tension and Surfactants	Teach surface tension, how it can be observed and changed	Soap, vegetable oil
	Heat of Fusion	Teach how temperature will remain the same as long as there is a phase change occurring	
	Heating / Cooling Curve of Water	Produce a heating curve for water by using a hot plate to melt ice to water and then to boiling	
13: Solutions	Density and Concentration	Determine densities of different sodas and comparing them to a calibration curve that is created by pure sugar and water mixtures	Variety of sodas, granulated sugar
	Solution Properties	To determine the effect of solubility for a series of liquids and solids.	Kerosene, isopropyl alcohol, table salt, rock salt, ammonium chloride
	Rate of Solution	To determine factors that effect the rate of a solution	Rock salt, table salt
	Saturation Point	TBD – looking for lab that shows saturation point...	TBD
	Freezing Point Depression – Ice	To show freezing point depression	Sugar, vanilla, rock salt, table

	Cream Lab		salt, duct tape
14: Reactions Rates/ Equilibrium	Reaction Rate and Concentration	Investigate the effect of changing the concentration of reactants has on the reaction rate	Na ₂ S ₂ O ₃ solid to make a 1.0M solution
	Le Chatelier's Principle	Students able to see Le Chatelier's principle in action	Iron (III) nitrate, potassium thiocyanate, potassium phosphate
15: Acids and Bases	The pH Scale	Teach the pH scale and the logarithmic nature of it	Methyl orange
	Commercial Antacids	How antacids work	Phenolphthalein indicator, antacid tablets
	Titration of Vinegar (possible)	Teach the titration process – which is used to determine the moles on an acid or base in an aqueous solution	Phenolphthalein indicator,
16: Organic Chemistry (Do if Time Permits)	Oil Spill	Teach environmental concerns of oil spills	Vegetable oil, cocoa powder, dish detergent, sand, cotton balls, feathers, eye dropper
	Distilling Aromatic Hydrocarbons Esters (possible)	Create familiar smells using objects you can find in the kitchen or garden	Salt, variety of spices