Chemistry Lab Experiment Materials

Equipment and materials are categorized below as “**Required**” (mandatory purchase), “**Virtual** (online/video provided) **/ household items** (needed for labs)”, and “**Optional**” supplies (not mandatory, but fun). The goal of labs is to offer hands-on experiences as well as online, virtual activities. Labs are meant to be predictive, interactive, engaging, educational, and fun.

* Eye protection (safety glasses or goggles) is required for some labs.
* You can use “substitute” equipment as long as it uses METRIC measurements.
* **“Required” items must be obtained (see suggestions at end of document).**
* “Hands On” uses household items that should be obtained if possible.
* “Virtual” is based on videos that are provided for data collection.
* “Optional” is up to you.

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| **Unit of Chemistry** | **Lab Title/Topic** | **Supplies** | | |
| **Required** | **Virtual/Hands On** | **Optional** |
| Basic Skills Ch 1 | Simple Graphing |  | Videos for data collection |  |
| States of Matter | * Classifying Matter * Physical & Chemical Changes |  | Videos for data collection |  |
| States of Matter | Separating Mixtures  Chromatography |  | * Green marking pen * Metric ruler * Pencil * Clear plastic drinking cup * Filter paper strip * Clear plastic tape * Rubbing alcohol * Clear plastic wrap | video |

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| **Unit of Chemistry** | **Lab Title/Topic** | **Required** | **Virtual/Hands On** | **Optional** |
| States of Matter | Sublimation |  | * Solid air freshener (small pieces) * Small, shallow container * 2 clear 8-oz plastic cups * Hot tap water * Ice * 3 thick cardboard strips | video |
| Measurement | Metric Progression  Accuracy & Precision |  | * Meter stick * Pencil * Metric ruler * 3 x 5 index card |  |
| **Measurement** | **LAB REPORT**  **Density** | * **Mass balance** * **100 ml plastic grad cylinder** * **10 Copper Coins** | * **Vegetable Oil (20 ml)** * **Metric ruler** * **Wood block 2x4x3”** * **Food coloring** * **Diet pop (12 oz)** * **Regular pop (12 oz)** |  |
| Modern Atomic Theory | Flame Tests |  | Video for data collection |  |
| Ionic Bonding | Movement of Charge |  | * 8 ½ x 11” paper * Marking Pen * Post It Notes | * Colored paper * Small Yellow Post It Notes |

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| **Unit of Chemistry** | **Lab Title/Topic** | **Required** | **Virtual/Hands On** | **Optional** | | |
| Ionic Bonding | Solutions Containing Ions |  | * 3 D-cell batteries * Masking tape * 2 - 30 cm lengths of bell wire * Clear plastic cup * Vinegar * Baking soda | * Video * Conductivity probe | | |
| Covalent Bonding | Polar Vs. Non-Polar Compounds |  | * Vegetable oil * Styrofoam cup * Safety goggles | video | | |
| **Formulas** | **LAB REPORT**  **Bonding & Formulas** |  | * **Marshmallows** * **Toothpicks** |  | | |
| Formulas | Law of Definite Proportions |  | Video for data collection |  | | |
| Molar Quantities | Counting by Weighing |  | Baking Soda |  | | |
| Chemical Reactions | Types of Chemical Reactions |  | Video for worksheet completion and data collection |  | | |
| Chemical Reactions | Double Displacement |  | Videos for worksheet completion and data collection |  | | |
| Stoichiometry | Empirical Formula of a Copper Oxide |  | Video for worksheet completion and data collection |  | | |
| Stoichiometry | Limiting & Excess Reagents |  | Video for worksheet completion and data collection |  | | |
| **Stoichiometry** | **LAB REPORT Percent Yield** | **Baking Soda, Vinegar, Mass balance**  **Graduated Cylinder, heat source, beaker** | |  | | |
| **Unit of Chemistry** | **Lab Title/Topic** | **Required** | **Virtual/Hands On** | | | **Optional** |
| Gas Laws | Gas Laws Boyle’s & Charles |  | Video for worksheet completion and data collection | | |  |
| Solutions | Solubility of Solids versus Temperature |  | * 1 - 250 ml beaker   + - ½ Teaspoon of Hot Cocoa mix     - Hot Plate or stove | | |  |
| Solutions | Solubility of Gases versus Temperature |  | * 2 - 250 ml beakers * 12 oz. Root Beer or Cola * Hot Plate/stove * 2 Large Test Tubes * Ice * Beaker Tongs * 2 1-holed Rubber Stoppers (#4) * 100 ml Grad Cylinder | | | video |
| Solutions | * Colligative Properties Simulation * Ice Cream   Freezing Point Depression |  | Video for worksheet completion and data collection | | * ½ Cup Whole Milk (half & half cream?) * 4 Cups Crushed Ice * ½ Teaspoon Vanilla * 1 Tablespoon Sucrose (table sugar) * 4 Tablespoons Rock salt, NaCl * 2 Zip-lock Freezer Bags (quart size) * 1 Zip-lock Freezer bag (gallon size) * Gloves, mittens or paper towels | |
| **Unit of Chemistry** | **Lab Title/Topic** | **Required** | **Virtual/Hands On** | | **Optional** | |
| **Thermochemistry** | **LAB REPORT**  **Heating Curve of Water** | * **Celsius Thermometer** * **250 ml beaker** * **Safety goggles** * **Mass balance** | * **Ice (preferably crushed)** * **Hot plate / stove / heat source** * **Plastic stirring rod** | | **video** | |
| Thermochemistry | Specific Heat | * Celsius Thermometer | * 10 oz Styrofoam cup * Tongs * 2-3” metal bolt | | video | |
| Reaction Rate & Equilibrium | Reaction Rate | * Mass balance * 250 ml Beaker * Celsius Thermometer | * 4 - Alka Seltzer Tablets * Ice * Heat Source | |  | |
| Equilibrium | LeChatelier’s Principle |  | Video for worksheet completion and data collection | |  | |
| Acids & Bases | Acid Base Simulation |  | Video for worksheet completion and data collection | |  | |
| Acids & Bases | Natural pH Indicators |  | * Red cabbage leaves * 250 ml Beaker * 2 jars * Clean white cloth * 10 clear plastic cups * White vinegar * Baking soda * Household ammonia * Eye dropper/pipette | | video | |

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| **Unit of Chemistry** | **Lab Title/Topic** | **Required** | **Virtual/Hands On** | **Optional** |
| Acids & Bases | Titration |  | Video for worksheet completion and data collection |  |
| Redox & Electrochemistry | * Redox Simulation * Lemon Battery Electrochemistry |  | Videos for worksheet completion and data collection | * One lemon or lime * 0 – 3 Volt Voltmeter * 5 cm copper wire * 5 cm Metal Electrodes (magnesium, aluminum, zinc, iron) * Red Alligator clip * Black Alligator clip |
| Electrochemistry | Voltaic Cell & Electrolytic Cell |  | Videos for worksheet completion and data collection |  |

Required Equipment / Supplies

You must have these items, but you may purchase them where you like. Here are some suggestions:

# **Mass scale (Amazon.com …** B07XYN4T55 … **Digital Kitchen Scale, Stainless Food Weigh Scale Grams, Mini Pocket Scale 500g x 0.01g, Small Jewelry Scale with Automatic Shutdown … ~$15)**

**100 ml plastic grad cylinder (Carolina.com … #721613 … $3)**

**250 ml Beaker / Cup (Transparent 250 ml OR 500ml … ~$5)**

# **Celsius Thermometer (Carolina.com … #959877 … Student Thermometer Low Range ~$3)**

**Safety goggles (Carolina.com … #972160 … ~$3)**

**10 Copper Coins***(pennies or whatever type of COPPER money you have) … people should have these.*