



Switched-On

SCHOOLHOUSE® 2012 EDITION

Supply List

Chemistry

Table of Contents

UNIT 1: MEASUREMENT AND ANALYSIS.....	1
UNIT 2: STARTING THE INVESTIGATION: HOW TO IDENTIFY ELEMENTS, COMPOUNDS, AND MIXTURES	2
UNIT 3: EXPLORING LAWS FOR GASES AND CONSERVATION OF MASS.....	3
UNIT 4: THE DISCOVERY OF ATOMS: NATURE'S BUILDING BLOCKS.....	4
UNIT 5: MOLECULAR STRUCTURE	4
UNIT 6: SEMESTER REVIEW AND EXAM	4
UNIT 7: CHEMICAL REACTIONS, RATES AND EQUILIBRIUM.....	5
UNIT 8: EQUILIBRIUM SYSTEMS	6
UNIT 9: CARBON CHEMISTRY: HYDROCARBONS.....	6
UNIT 10: CARBON CHEMISTRY: FUNCTIONAL GROUPS	6
UNIT 11: CHEMISTRY REVIEW.....	7
UNIT 12: SEMESTER REVIEW AND EXAM	7
UNIT 13: FINAL EXAM	7

Please have a pencil, paper and access to a printer available for all projects by default.

UNIT 1: MEASUREMENT AND ANALYSIS

Assignment # and Title	Project Summary	Video Demo	Materials Needed
3. Report: Metric System	In this assignment, you will research and describe the history of measurement and its impact on the advancement of science and societies.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<ul style="list-style-type: none"> Reference materials
12. Project: Measuring Length with Precision	In this project, you will demonstrate proficiency in using a metric ruler to make precise measurements.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<ul style="list-style-type: none"> metric ruler
13. Experiment: Masses	In this experiment, you will demonstrate proficiency in using a centigram balance to make precise measurements	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<ul style="list-style-type: none"> centigram balance various small objects
18. Project: Tutorial for Making a Scatter Plot Using an Electronic Spreadsheet Program	In this project, you will be designing a scatter plot (a type of line graph) based on information given to you in a data table.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<ul style="list-style-type: none"> Microsoft® Excel®
22. Special Project	Special Project assignments are used by teachers to create their own projects if needed.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A

UNIT 2: STARTING THE INVESTIGATION: HOW TO IDENTIFY ELEMENTS, COMPOUNDS, AND MIXTURES

Assignment # and Title	Project Summary	Video Demo	Materials Needed
4. Experiment: Observations of a Phase Change	In this experiment, you will identify differences in energy content of various phases and how these can be visually demonstrated, interpret graphs produced from data collected during the phase change process, and communicate conclusions.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<ul style="list-style-type: none"> test tube with 12-15 grams paradichlorobenzene (PDCB) (moth crystals) (Not suggested if you do not have access to a fume hood or good ventilation system to perform. Paraffin wax may then be used in place of PDCB.) test tube with 12 - 15 grams of paraffin wax. (substitute for PDCB) <ul style="list-style-type: none"> three Pyrex beakers the same size, 150 mL to 500 mL range two 250 mL Pyrex beakers two thermometers beaker stand water heat source three dye tablets or egg-coloring tablets
5. Experiment: Salt and Sand	In this experiment, you will make a mixture of salt and sand and then devise a way to separate them into the original sample of pure salt and pure sand.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<ul style="list-style-type: none"> pure white sand 1/2 sand and 1/2 salt mixture pure salt <ul style="list-style-type: none"> filter funnel filter paper or heavy paper hand towel
8. Report: Density	In this assignment, you will plan and implement an investigative procedure to verify the identity of a substance based on its density and communicate findings.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Choose objects of which you are sure of their identity, such as: <ul style="list-style-type: none"> aluminum foil (crumpled or in a ball) copper wire iron nails
10. Experiment: Using the Tyndall Effect to Identify Colloids	In this experiment, you will differentiate between a solution and colloid based on the Tyndall Effect, clearly state the basis for the Tyndall Effect, and communicate findings.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<ul style="list-style-type: none"> 3 clear glasses with smooth sides laser pointer or flashlight <ul style="list-style-type: none"> red Jell-O red food coloring sugar water
12. Special Project	Special Project assignments are used by teachers to create their own projects if needed.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A

UNIT 3: EXPLORING LAWS FOR GASES AND CONSERVATION OF MASS

Assignment # and Title	Project Summary	Video Demo	Materials Needed
3. Project: Graphing Kinetic Energy	In this assignment, you will apply the principles of Kinetic Molecular Theory to graphs of molecular motion.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A
8. Experiment: Finding Absolute Zero Experimentally	In this experiment, you will organize data onto a graph, better understand the concept of extrapolation, visualize the relationship between the temperature and volume of a gas, evaluate, make inferences, and predict trends from data, and communicate findings	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<ul style="list-style-type: none"> • 250 mL Erlenmeyer flask • wire gauze • short piece of plastic tube • rubber stop, 1-hole to fit flask • water • beaker to fit flask • ice <ul style="list-style-type: none"> • burner or hot plate • ring stand • ring • thermometer • If a gas jet burner is used: <ul style="list-style-type: none"> • ring • wire gauze
9. Experiment: Charles' Law and a Metal Can	In this experiment, you will describe experimental outcomes in terms of Charles' law.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<ul style="list-style-type: none"> • gallon metal can with lid • bunsen burner • cold water
10. Project: Absolute Zero: Real or Theoretical?	In this assignment, you will use original sources to document findings concerning the research question and support your position with conclusions from research.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<ul style="list-style-type: none"> • reference materials
17. Essay: Biography	In this assignment, you will research and describe the important contributions of investigators to the science of chemistry	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<ul style="list-style-type: none"> • reference materials
18. Project: Examining the Use of Certain Gases as Propellants	In this lesson, you will describe the sources and properties of specific gases important to ozone depletion reactions and understand the interaction of energy (sunlight) and matter (chemicals) in the stratosphere of Earth.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<ul style="list-style-type: none"> • reference materials
20. Special Project	Special Project assignments are used by teachers to create their own projects if needed.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A

UNIT 4: THE DISCOVERY OF ATOMS: NATURE'S BUILDING BLOCKS

Assignment # and Title	Project Summary	Video Demo	Materials Needed
2. Experiment: Physical Properties of Elements	In this experiment, you will be exploring some of the physical properties of some common elements.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	N/A
3. Experiment: Chemical Properties of Some Metals	In this experiment, you will test certain metals for their ability to burn.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<ul style="list-style-type: none"> tin can lid with 4 indentations support stand and ring Bunsen burner or propane burner samples of iron, copper, magnesium, and lead
13. Report: Fission Reactors	In this assignment, you will describe in detail the process of energy production in a nuclear reactor, document the use of nuclear reactors in this country and world-wide, and evaluate the impact of this scientific advancement on societies and the environment.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<ul style="list-style-type: none"> Reference materials
15. Special Project	Special Project assignments are used by teachers to create their own projects if needed.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A

UNIT 5: MOLECULAR STRUCTURE

Assignment # and Title	Project Summary	Video Demo	Materials Needed
9. Experiment: Demonstrating Polar Properties	In this experiment, you will demonstrate a difference between polar and nonpolar substances.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<ul style="list-style-type: none"> acetate (overhead transparency material) strip and tissue paper vinyl strip and woolen cloth slow, steady stream of water from a faucet
11. Special Project	Special Project assignments are used by teachers to create their own projects if needed.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A

UNIT 6: SEMESTER REVIEW AND EXAM

Assignment # and Title	Project Summary	Video Demo	Materials Needed
N/A	N/A	N/A	N/A

UNIT 7: CHEMICAL REACTIONS, RATES AND EQUILIBRIUM

Assignment # and Title	Project Summary	Video Demo	Materials Needed
2. Experiment: Observing Chemical Changes	In this experiment, you will better conceptualize various indicators for chemical change.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<ul style="list-style-type: none"> goggles 0.01 M NaCl solution, table salt = 0.58 g/L of solution 0.01 M K₂CrO₄ solution, = 1.94 g/L of solution; solid can be purchased at drug, hobby or photo supply store 0.01 M AgNO₃ solution, 1.7 g/L of solution or a diluted solution; solution can be purchased at a local drug or photo supply store several small test tubes several eye droppers, one for each solution
3. Experiment: Chemical Reactions	In this experiment, you will see what happens when reactants are combined.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<ul style="list-style-type: none"> goggles 0.01 M acidified iron (II) sulfate, FeSO₄ - 1.52 g/liter of solution and 1 mL concentrated HCl; solid FeSO₄ can be purchased at drug or hobby store. 0.01 M potassium permanganate, KMnO₄ - 1.58 g/liter of solution; solid KMnO₄ can be purchased at drug, hobby, or chemical supply store 0.01 M NaCl solution - 0.58g/liter of solution; table salt 0.01 M ammonium nitrate, NH₄NO₃ - 0.80 g/liter of solution; solid ammonium nitrate can be purchased at drug or fertilizer store several test tubes or baby-food jars several medicine (eye) droppers graduated cylinders or marked disposable pipettes
4. Experiment: Ammonium Nitrate	After completing this experiment you will answer some questions.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<ul style="list-style-type: none"> goggles solid sodium hydroxide, NaOH - lye, can be purchased in grocery store solid ammonium nitrate, NH₄NO₃, can be purchased from a drug or fertilizer store phenolphthalein solution (or other indicator) - can be purchased from a hobby shop concentrated hydrochloric acid, HCl thermometer to fit test tubes forceps (tweezers) water test tubes with stoppers graduated cylinders or marked disposable pipettes
9. Experiment: Affect of Solution Concentration on Reaction Rate	In this experiment, you will observe how a trend in solution concentration for a specific solution affects reaction rate and communicate findings.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<ul style="list-style-type: none"> chalk crumbs or dust 0.1 M HCl - see previous experiment. clean test tubes (5) metric balance weighing paper goggles
13. Activity: Exploring Factors that Affect Equilibrium	In this assignment, you will evaluate experimental results showing equilibria shifts due to temperature change.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A
16. Special Project	Special Project assignments are used by teachers to create their own projects if needed.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A

UNIT 8: EQUILIBRIUM SYSTEMS

Assignment # and Title	Project Summary	Video Demo	Materials Needed
8. Experiment: Solubility Trends	In this experiment, you will form a testable hypothesis; collect, analyze and display results of investigative procedures; draw conclusions from experimental data concerning solubility trends; and communicate findings.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<ul style="list-style-type: none"> rock salt (water softener crystals) glycerin water 2 baby-food jars with lids rubbing alcohol (isopropyl alcohol) stirring rod test tubes
12. Experiment: Acid Strength	In this experiment, you will form a testable hypothesis for what happens when HCl and marble interact based on a chemical reaction; determine how acid strength affects the speed and strength of the reaction; collect, analyze and display results of investigative procedures; and communicate findings.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<ul style="list-style-type: none"> goggles 4 test tubes distilled water 0.1 M HCl (8.3 mL concentrated HCl per 1 L of solution) 0.001 M HCl (1 mL 0.1 M HCl per 100 mL of solution) 0.0001 M HCl (1 mL 0.001 M HCl per 100 mL of solution) marble, limestone, or chalk chips pipette (glass with suction bulb or disposable)
21. Special Project	Special Project assignments are used by teachers to create their own projects if needed.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A

UNIT 9: CARBON CHEMISTRY: HYDROCARBONS

Assignment # and Title	Project Summary	Video Demo	Materials Needed
3. Experiment: Volatility	In this experiment, you will study the volatility of a number of organic compounds.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<ul style="list-style-type: none"> goggles acetone - Available in the paint department of stores isopropyl alcohol - 90% rubbing alcohol available at drug stores mineral oil water 4 test tubes or other equal size glass containers grease marker or masking tape ruler
11. Special Project	Special Project assignments are used by teachers to create their own projects if needed.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A

UNIT 10: CARBON CHEMISTRY: FUNCTIONAL GROUPS

Assignment # and Title	Project Summary	Video Demo	Materials Needed
10. Experiment: Volatility	In this experiment, you will take polyvinyl alcohol and add Sodium borate (borax) to make the polyvinyl alcohol polymerize.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<ul style="list-style-type: none"> 3 small beakers stirring rod polyvinyl alcohol borax food coloring (optional)ruler
12. Special Project	Special Project assignments are used by teachers to create their own projects if needed.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A

UNIT 11: CHEMISTRY REVIEW

Assignment # and Title	Project Summary	Video Demo	Materials Needed
18. Special Project	Special Project assignments are used by teachers to create their own projects if needed.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A

UNIT 12: SEMESTER REVIEW AND EXAM

Assignment # and Title	Project Summary	Video Demo	Materials Needed
N/A	N/A	N/A	N/A

UNIT 13: FINAL EXAM

Assignment # and Title	Project Summary	Video Demo	Materials Needed
N/A	N/A	N/A	N/A