



# 2014-2015 Science Supply List

Science 600

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UNIT 1: PLANT SYSTEMS

Assignment Title	Project Summary	Video Demo	Materials Needed
Experiment: Anacharis Photosynthesis	In this experiment, you will investigate the effect of light on photosynthesis	Yes	<ul style="list-style-type: none"> <li>A few sprigs of Anacharis; these can be obtained from a local pet store that has fish and aquarium supplies</li> <li>Two large test tubes, about 6" long</li> <li>Two clear disposable plastic cups with lids, or small glass jars</li> </ul>
Experiment: Seeds	In this experiment you will examine how water and light affect seed growth.	Yes	<ul style="list-style-type: none"> <li>4 kernels of corn or beans</li> <li>4 paper towels</li> <li>4 test tubes or baby food jars</li> <li>water</li> </ul>
Experiment: Digestive Enzymes	In this experiment, you will investigate the effect of saliva enzymes on the digestion of starch.	Yes	<ul style="list-style-type: none"> <li>soda crackers</li> <li>Benedict's solution</li> <li>4 test tubes</li> <li>beaker or small saucepan</li> <li>burner; either a stove burner, an alcohol lamp, or a Bunsen burner</li> </ul>
Experiment: Root Observation	In this experiment you will take a closer look at the root hairs of a plant.	Yes	<ul style="list-style-type: none"> <li>4 radish or corn seeds</li> <li>metric ruler</li> <li>2 thumb tacks</li> <li>water</li> <li>hand lens</li> <li>1 plastic bag</li> <li>scissors</li> <li>microscope</li> <li>1 paper towel</li> <li>stapler</li> <li>microscope slide</li> </ul>
Experiment: Celery	In this experiment you will watch the transport of water through a stem.	Yes	<ul style="list-style-type: none"> <li>celery stalk with leaves</li> <li>food coloring (red or blue)</li> <li>dropper</li> <li>microscope</li> <li>microscope slide</li> <li>water</li> <li>tall baby-food jar or glass</li> <li>razor blades (single-edged)</li> <li>metric ruler</li> </ul>
*Experiment: Growing Roots	In this experiment, you will observe the growth of a plant from a cutting	No	<ul style="list-style-type: none"> <li>water</li> <li>stem cutting of growing plants</li> <li>tall baby-food jar</li> </ul>
*Special Project	Special Project assignments are used by teachers to create their own projects if needed.	No	N/A

\*indicates alternate project/experiments

UNIT 2: BODY SYSTEMS

Assignment Title	Project Summary	Video Demo	Materials Needed
Experiment: Digestion	In this experiment, you will Observe the effect of rennin on digestion of milk.	Yes	<ul style="list-style-type: none"> <li>water</li> <li>stove, hot plate, or alcohol burner</li> <li>1 Rennet tablet or 1/2 g rennin</li> </ul> <ul style="list-style-type: none"> <li>Pyrex beaker (about 250 ml)</li> <li>10 ml whole milk</li> <li>test tube and clamp</li> </ul>
Experiment: Oil and Soap	In this experiment you will see how an emulsion is formed.	Yes	<ul style="list-style-type: none"> <li>two test tubes with stoppers or two tall thin bottles (vials) with lids</li> <li>water</li> </ul> <ul style="list-style-type: none"> <li>20 drops of cooking oil</li> <li>4 drops of liquid soap</li> </ul>
Experiment: Passing Food	In this experiment you will see how food can be passed through a membrane.	Yes	<ul style="list-style-type: none"> <li>water</li> <li>honey</li> <li>starch</li> <li>masking tape</li> <li>glucose test strips</li> <li>1 drop of iodine solution</li> <li>2 dental rubber bands/small rubber bands</li> </ul> <ul style="list-style-type: none"> <li>2 small baby-food jars/beakers/cups</li> <li>dialysis membrane or semi-permeable membrane (2 squares, 5 cm x 5 cm)</li> <li>2 small bottles or test tubes that will fit easily inside the baby-food jars</li> </ul>
Experiment: Pulse Rate	In this experiment, you will investigate the effect of exercise on pulse rate.	No	<ul style="list-style-type: none"> <li>2 friends</li> </ul>
*Project: Heart	In this project, you will learn more about the heart. Choose a project, then select your materials.	No	<ul style="list-style-type: none"> <li>a beef heart from a local meat market</li> <li>research resources.</li> </ul> <ul style="list-style-type: none"> <li>paper</li> <li>pencil</li> <li>bulletin board</li> </ul>
Experiment: Carbon Dioxide	In this experiment you will see how much carbon dioxide is expelled by the lungs.	Yes	<ul style="list-style-type: none"> <li>clear limewater - limewater needs to be prepared 24 hrs beforehand, see instructions below.</li> <li>quart jar (needed for limewater preparation)</li> <li>tablespoon</li> </ul> <ul style="list-style-type: none"> <li>CaO or lime (found in grocery stores, used for pickling)</li> <li>distilled water</li> <li>2 soda straws</li> <li>hand air pump</li> <li>2 baby-food jars</li> </ul>
*Project: Lungs	In this project you will learn more about the lungs.	No	<ul style="list-style-type: none"> <li>an animal lung from a local meat market</li> <li>hand lens</li> </ul> <ul style="list-style-type: none"> <li>paper</li> <li>poster</li> </ul>
Experiment: Evaporation and Cooling	In this experiment, you will compare the rate of evaporation of water and alcohol		<ul style="list-style-type: none"> <li>rubbing alcohol</li> <li>water</li> <li>two cotton balls</li> <li>blackboard</li> </ul> <ul style="list-style-type: none"> <li>two baby food jar lids</li> <li>a watch with a second hand</li> </ul>
*Special Project	Special Project assignments are used by teachers to create their own projects if needed.	No	N/A

\*indicates alternate project/experiments

**UNIT 3: PLANTS AND ANIMAL BEHAVIOR**

<b>Assignment Title</b>	<b>Project Summary</b>	<b>Video Demo</b>	<b>Materials Needed</b>
Report: The Eye	In this project, you will learn about the structure and function of the eye.	No	<ul style="list-style-type: none"> <li>• paper</li> <li>• pencil</li> </ul>
Report: The Ear	In this project, you will learn about the structure and function of the ear.	No	<ul style="list-style-type: none"> <li>• paper</li> <li>• pencil</li> </ul>
Report: Instincts	In this report, you will write about animal instincts.	No	<ul style="list-style-type: none"> <li>• research resources</li> </ul>
*Experiment: Response	In this experiment you will use conditioning to teach a response to a goldfish.	No	<ul style="list-style-type: none"> <li>• several goldfish in bowls</li> <li>• fish food</li> </ul>
*Experiment: Trial and Error	In this experiment you will observe how trial-and-error affects performance on a task.	No	<ul style="list-style-type: none"> <li>• piece of card stock or heavy paper (10 cm x 10 cm)</li> <li>• scissors</li> </ul>
*Report: Man's Influence	In this report, you will write about an extinct or endangered animal	No	<ul style="list-style-type: none"> <li>• research resources</li> </ul>
*Special Project	Special Project assignments are used by teachers to create their own projects if needed.	No	N/A

\*indicates alternate project/experiments

**UNIT 4: MOLECULAR GENETICS**

<b>Assignment Title</b>	<b>Project Summary</b>	<b>Video Demo</b>	<b>Materials Needed</b>
*Project: Flower Structure	In this project, you will dissect and examine the structure of a flower.	No	<ul style="list-style-type: none"> <li>• magnifying glass</li> <li>• toothpick</li> <li>• fresh flower</li> </ul> <ul style="list-style-type: none"> <li>• black paper or very dark material</li> <li>• plastic knife</li> </ul>
*Project: Lima Bean Embryo	In this project, you will dissect and examine the structure of a bean embryo.	No	<ul style="list-style-type: none"> <li>• lima beans soaked overnight in water</li> </ul> <ul style="list-style-type: none"> <li>• a magnifying glass</li> </ul>
*Project: Mendel's Discovery	In this project, you will use your knowledge of inheritance to predict pea plant traits.	No	<ul style="list-style-type: none"> <li>• 20 dried garden pea seeds</li> </ul>
Experiment: Taste Gene Lab	In this experiment you will test whether you have a dominant or recessive gene for the chemical phenylthiocarbamide (PTC).	Yes	<ul style="list-style-type: none"> <li>• a small trash bag or a can lined with a plastic bag (This is used to spit out the PTC.)</li> </ul> <ul style="list-style-type: none"> <li>• PTC taste paper strips</li> <li>• a lifesaver mint (to get the taste out of your mouth after the experiment).</li> </ul>
*Project: Traits	In this project, you will compare the frequency of dominant and recessive traits in a sample population.	No	<ul style="list-style-type: none"> <li>• 14 people to look at</li> </ul>
*Experiment: Albinism	In this experiment you will test the frequency of albinism in corn and/or sorghum plants.	No	<ul style="list-style-type: none"> <li>• flat of soil or pots of soil</li> </ul> <ul style="list-style-type: none"> <li>• seeds of corn, sorghum</li> </ul>
*Report: Genetics	In this report you will investigate the benefits of genetic research.	No	<ul style="list-style-type: none"> <li>• research resources</li> </ul>
*Project: Pea Pod	In this project, you will observe the size of peas in a pod.	No	<ul style="list-style-type: none"> <li>• 1 large, fully developed pea pod (not opened); Beans will work too but not as well.</li> </ul> <ul style="list-style-type: none"> <li>• a ruler marked in millimeters</li> </ul>
*Special Project	Special Project assignments are used by teachers to create their own projects if needed.	No	N/A

\*indicates alternate project/experiments

## UNIT 5: CHEMICAL STRUCTURE AND CHANGE

Assignment Title	Project Summary	Video Demo	Materials Needed
Experiment: Solid, Liquid, and Gas	In this experiment you will examine the properties of solids, liquids, and gasses.	Yes	<ul style="list-style-type: none"> <li>a balloon</li> <li>a small block of wood (or a rock)</li> <li>a clean, square, plastic container or square baking dish</li> <li>a soda pop</li> </ul>
Experiment: Copper Iodide	In this experiment you will cause a chemical change and make a compound.	Yes	<ul style="list-style-type: none"> <li>a copper penny</li> <li>iodine solution from your medicine cabinet</li> <li>a cotton swab</li> <li>a small pan for heating the penny</li> <li>a hot plate or Bunsen burner for heating the penny</li> </ul>
Experiment: Calcium Carbonate	In this experiment, you will create a compound through a chemical change.	Yes	<ul style="list-style-type: none"> <li>a clear plastic disposable glass or a test tube</li> <li>a soda straw</li> <li>about 3 tablespoons of limewater</li> </ul>
Project: Water Molecule Model	In this project you will create a visual representation of a water molecule.	No	<ul style="list-style-type: none"> <li>2 toothpicks</li> <li>2 black styrofoam balls and 1 white one (construction paper may be used in place of styrofoam balls)</li> </ul>
*Project: Chart and Diagram	In this project you will pictorially represent an atom of helium and an atom of lithium.	No	<ul style="list-style-type: none"> <li>paper</li> <li>pencil</li> </ul>
*Report: Chemical Discoveries	In this project, you will write about an important chemical discovery.	No	<ul style="list-style-type: none"> <li>research resources</li> </ul>
Experiment: Acid or Base?	In this experiment you will test for acids and bases using phenolphthalein.	Yes	<ul style="list-style-type: none"> <li>Phenolphthalein solution</li> <li>1/4 teaspoon of baking soda mixed in 1 tablespoon of water</li> <li>1/4 teaspoon of household ammonia mixed in 1 tablespoon of water</li> <li>1/4 cup of vinegar</li> <li>2 clear plastic glasses</li> <li>a plastic spoon to stir the solution</li> <li>about 1 tablespoon of additional baking soda</li> <li>eye dropper</li> </ul>
*Project: Chemical Symbols	In this project you will practice using chemical symbols.	No	<ul style="list-style-type: none"> <li>a few friends</li> </ul>
*Special Project	Special Project assignments are used by teachers to create their own projects if needed.	No	N/A

\*indicates alternate project/experiments

**UNIT 6: LIGHT AND SOUND**

<b>Assignment Title</b>	<b>Project Summary</b>	<b>Video Demo</b>	<b>Materials Needed</b>
Experiment: Test Tube Tunes	In this experiment you will change the pitch of a sound by changing the volume of liquid in a test tube.	Yes	<ul style="list-style-type: none"> <li>8 test tubes or soda-pop bottles</li> <li>water</li> </ul>
Project: Sound Vibrations	In this project you will use a tuning fork to see sound waves.	No	<ul style="list-style-type: none"> <li>a tuning fork</li> <li>a bowl of water (preferably a plastic container)</li> </ul>
Project: Light Waves	In this project you will observe how light is refracted.	No	<ul style="list-style-type: none"> <li>a penny</li> <li>a short, opaque cup</li> <li>a tabletop</li> <li>water</li> <li>a partner</li> </ul>
Project: Refracted Light	In this project, you will observe how refracted light can change the appearance of objects in water.	No	<ul style="list-style-type: none"> <li>a glass ½ full with water</li> <li>a coin of any type</li> <li>a pencil</li> </ul>
Project: Color Spectrum	In this experiment you will use a mirror and water to separate the colors in sunlight.	No	<ul style="list-style-type: none"> <li>1 clear glass dish</li> <li>1 small rectangular mirror</li> <li>water</li> </ul>
*Project: Create a Rainbow	In this project you will make your own rainbow.	No	<ul style="list-style-type: none"> <li>a clear drinking glass</li> <li>a white sheet of paper</li> <li>water</li> </ul>
Project: Color Wheel	In this experiment you will investigate what happens when all the colors of the spectrum are viewed at once.	No	<ul style="list-style-type: none"> <li>cardboard circle, about 5 inches in diameter</li> <li>white paper circle, the same size as the cardboard circle</li> <li>piece of string, about 4 feet long</li> <li>crayons: red, orange, yellow, green, blue, and violet</li> <li>glue or shellac, ruler, paste, and pencil</li> </ul>
Experiment: Subtractive Colors	In this experiment, you will create different colors using paper and cellophane and understand that objects absorb all colors except the color you see	Yes	<ul style="list-style-type: none"> <li>pieces of cloth: red, green, black, and white</li> <li>piece of red glass or red cellophane</li> </ul>
*Experiment: Mixing Colored Lights	In this experiment you will see what happens when different colors are absorbed and reflected back to your eye.	No	<ul style="list-style-type: none"> <li>3 flashlights</li> <li>red, green and blue cellophane</li> <li>white wall or sheet of white paper</li> </ul>
*Experiment: Mixing Colorants	In this experiment you will make new colors using the three primary colors, red, yellow, and blue.	No	<ul style="list-style-type: none"> <li>red, yellow and blue dye or food coloring</li> <li>warm water</li> <li>8 clear plastic cups</li> </ul>
*Special Project	Special Project assignments are used by teachers to create their own projects if needed.	No	N/A

\*indicates alternate project/experiments



**UNIT 7: MOTION AND ITS MEASUREMENT**

<b>Assignment Title</b>	<b>Project Summary</b>	<b>Video Demo</b>	<b>Materials Needed</b>
Experiment: Forces of Lifting and Pulling	In this experiment you will compare the amount of work done moving, lifting, and pulling a box.	No	<ul style="list-style-type: none"> <li>1 spring scale, with a hook (The type of scale used for weighing fish is most suitable.)</li> <li>A smaller spring scale may be used, but you will have to adjust the amount of weight in the box to less than a pound.</li> </ul>
*Report: Horsepower and Watts	In this report you will learn more about James Watt or horsepower.	No	<ul style="list-style-type: none"> <li>research resources</li> </ul>
*Experiment: Your Horsepower	In this experiment you will measure the work done by climbing stairs. You will then use this measurement to figure out your horsepower.	No	<ul style="list-style-type: none"> <li>a watch with a second hand, or a stopwatch</li> <li>access to a flight of stairs</li> </ul>
Experiment: The Law of Inertia	In this experiment you will test Newton's first Law of Motion.	No	<ul style="list-style-type: none"> <li>1 quart jar (an old mayonnaise jar that can be thrown away)</li> <li>1 square piece of cardboard large enough to cover the top of the jar</li> <li>1 marble</li> <li>enough sand or dirt to make about 2 inches in the bottom of the jar (the sand keeps the jar from falling over when flicked or breaking when the marble drops into it)</li> </ul>
*Special Project	Special Project assignments are used by teachers to create their own projects if needed.	No	N/A

\*indicates alternate project/experiments

UNIT 8: SPACESHIP EARTH

Assignment Title	Project Summary	Video Demo	Materials Needed
*Experiment: Balloon Globe	In this experiment you will see how the earth's shape and axis affect the seasons.	No	<ul style="list-style-type: none"> <li>one round balloon filled with air</li> <li>a flashlight (a small penlight works best)</li> <li>a square-shaped object, about 4 or 5 inches square</li> </ul> <ul style="list-style-type: none"> <li>2 small circles of paper (to be used for the north and south poles)</li> <li>a small amount of glue</li> </ul>
Experiment: Observing Shadows	In this experiment you will see how the angles of sunlight change as the earth orbits the sun.	No	<ul style="list-style-type: none"> <li>a large piece of brown wrapping paper or newspaper (about 4 feet by 8 feet); can be taped together</li> </ul> <ul style="list-style-type: none"> <li>a black or dark brown crayon</li> <li>masking tape</li> </ul>
Experiment: Eclipses	In this experiment you will simulate both a solar and lunar eclipse.	No	<ul style="list-style-type: none"> <li>A large ball about the size of a basketball to represent the earth</li> <li>A strong light of about 100 watts or more</li> </ul> <ul style="list-style-type: none"> <li>A small ball about the size of a tennis ball to represent the moon</li> <li>A method for darkening the room</li> </ul>
*Special Project	Special Project assignments are used by teachers to create their own projects if needed	No	N/A

\*indicates alternate project/experiments

**UNIT 9: ASTRONOMY AND THE STARS**

<b>Assignment Title</b>	<b>Project Summary</b>	<b>Video Demo</b>	<b>Materials Needed</b>
*Report: Great Astronomers	In this report, you will learn about important astronomers and their discoveries.	No	<ul style="list-style-type: none"> <li>research resources</li> </ul>
*Project: The Spectroscope	In this project, you will construct a spectroscope.	Yes	<ul style="list-style-type: none"> <li>piece of diffraction grating (NOTE: The diffraction grating used in making this spectroscope is the transmission type of diffraction grating.)</li> <li>cardboard cylinder from the inside of a roll of paper towels</li> <li>small ruler</li> <li>sheet of black construction paper</li> <li>scotch tape or masking tape</li> </ul>
*Experiment: Spectrography	In this experiment you will use a spectroscope to view different spectra.	No	<ul style="list-style-type: none"> <li>spectroscope</li> <li>lights of various types</li> </ul>
*Experiment: Oil on Water	In this experiment you will use oil to make a spectrum.	No	<ul style="list-style-type: none"> <li>medicine dropper</li> <li>water</li> <li>liquid black ink</li> <li>disposable, clear, plastic glass</li> <li>automotive motor oil</li> <li>tablespoon</li> </ul>
*Project: Constellations	In this project you will learn the stars that make up common constellations.	No	<ul style="list-style-type: none"> <li>research resources</li> </ul>
*Special Project	Special Project assignments are used by teachers to create their own projects if needed.	No	N/A

\*indicates alternate project/experiments

**UNIT 10: THE EARTH AND THE UNIVERSE**

<b>Assignment Title</b>	<b>Project Summary</b>	<b>Video Demo</b>	<b>Materials Needed</b>
*Special Project	Special Project assignments are used by teachers to create their own projects if needed.	No	N/A

\*indicates alternate project/experiments