



Switched-On
SCHOOLHOUSE®

2014 Science Supply List

Biology

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UNIT 1: TAXONOMY: KEY TO ORGANIZATION

Assignment Title	Project Summary	Video Demo	Materials Needed
Experiment: Fruit	In this experiment, you will create and utilize a dichotomous key to classify a variety of fruits.	No	<ul style="list-style-type: none"> reference materials
*Activity: Keying Plants	In this assignment, you will select ten flowers to make a dichotomous key.	No	(Optional) <ul style="list-style-type: none"> Microscope magnifying glass razor blade tweezers dissecting needles
*Activity: Keying Animals	In this assignment, you will select ten to twenty animals to construct a dichotomous key.	No	<ul style="list-style-type: none"> related pictures
Project: Research	In this assignment, you will write a report on the origin of life.	No	<ul style="list-style-type: none"> reference materials
*Project: Origins	In this assignment, you will choose one of three projects on origins to complete.	No	<ul style="list-style-type: none"> related materials
*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: CHEMISTRY OF LIFE

Assignment Title	Project Summary	Video Demo	Materials Needed
Experiment: Static Electricity	In this assignment, you will perform an experiment of ionic bonding.	Yes	<ul style="list-style-type: none"> two inflated balloons piece of material (nylon, wool, or fur) thread nylon stocking string piece of white paper
*Experiment: Temperature Control	In this experiment, you will investigate water as a temperature control.	Yes	<ul style="list-style-type: none"> two flat aluminum cake pans (disposable) a liter measure sand aluminum foil thermometer
Experiment: Water Properties	In this investigation, you will observe what happens to two different solutes when added to water and then filtered.	Yes	<ul style="list-style-type: none"> chalk calcium hydroxide filter paper phenolphthalein heat source two Pyrex beakers
*Experiment: Indicators	In this experiment, you will determine acidity and basicity of common household products utilizing indicators.	Yes	<ul style="list-style-type: none"> litmus paper vinegar bicarbonate of soda fruit juice tomato juice other varied household liquids soup
*Experiment: Starch	In this experiment, you will perform investigations for presence of starch or sugar.	Yes	<ul style="list-style-type: none"> powdered starch Glucose test strips (The kind that are used to test glucose in urine.) beakers, tumblers, or small disposable cups iodine fresh fruits and vegetables fruit juices processed food: soft drinks, diet soft drinks, salad dressings, baby food, vinegar, and sauces sugar (Karo syrup)
*Experiment: Digestion	In this experiment, you will perform investigations to explore the action of enzymes on digestion.	Yes	<ul style="list-style-type: none"> two jars with lids crackers diluted hydrochloric acid cornstarch ground beef (raw) Glucose test strips iodine
*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: CELLS

Assignment Title	Project Summary	Video Demo	Materials Needed
*Experiment: The Onion Cell	In this experiment, you will prepare and observe a slide of onion cells.	No	<ul style="list-style-type: none"> • microscope • single-edged razor blade or exacto knife • coverslip • medicine dropper • iodine stain <ul style="list-style-type: none"> • forceps • onion slide (clear) • paper towel • water
Experiment: Osmosis	In this experiment, you will perform an experiment that demonstrates osmosis.	No	<ul style="list-style-type: none"> • 3 eggs • 4 cups vinegar <ul style="list-style-type: none"> • 2 cups tap water • 2 cups corn syrup
*Experiment: Tissues	In this experiment, you will observe several types of tissue cells using a microscope.	Yes	<ul style="list-style-type: none"> • microscope <ul style="list-style-type: none"> • prepared slides of tissues
*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: CELL DIVISION AND REPRODUCTION

Assignment Title	Project Summary	Video Demo	Materials Needed
Experiment: Mitosis	In this experiment, you will observe slides of onion root and whitefish blastula for mitosis.	Yes	<ul style="list-style-type: none"> microscope prepared slide of onion (<i>Allium</i>) root stained to show chromosomes prepared slide of whitefish blastula stained to show chromosomes
*Experiment: Regeneration	In this experiment, you will perform an experiment of regeneration on flatworms.	Yes	<ul style="list-style-type: none"> a small glass jar or a culture jar a razor blade, a scalpel, or a very sharp knife a dissection microscope or a good hand lens eight or ten individual <i>Planaria</i> or flatworms a small piece of fresh liver about 2 cm on a side placed in fresh water which is just the depth of the height of the liver blunt ended tweezers or forceps
Experiment: Bulb Structure	In this experiment, you will using an onion, make observations of a bulb.	No	<ul style="list-style-type: none"> a hand lens or dissection microscope a knife or razor blade a fresh onion or some other kind of bulb
*Experiment: Cuttings	In this experiment, you will perform investigations of different types of cuttings.	No	<ul style="list-style-type: none"> one glass jar of 16-ounce, or larger, size two or more flower pots of 4-inch, or larger, diameter rich loamy soil or potting mix toothpicks a sweet potato
*Experiment: Sexual Reproduction	In this experiment, you will make observations of an egg cell and a sperm cell using prepared slides.	Yes	<ul style="list-style-type: none"> a compound microscope one or more prepared slides of egg cells from an animal one or more prepared slides of animal sperm, preferably from the same species as the slides of the egg cell
Experiment: Tissue Structure	In this experiment, you will observe different types of cells.	Yes	<ul style="list-style-type: none"> microscope prepared slide of erythrocytes, or leukocytes (from blood) prepared slide of some internal organ such as the kidney, liver, or heart prepared slide of muscle tissue
*Experiment: Ferns And Pines	In this experiment, you will prepare a slide of sporangia from a fern leaf and observe.	Yes	<ul style="list-style-type: none"> hand lens or dissection microscope forceps microscope medicine dropper fern leaves with sori clean glass slides pine cone (green and unopened would be best) coverslip

UNIT 4: CELL DIVISION AND REPRODUCTION (CONTINUED)

Assignment Title	Project Summary	Video Demo	Materials Needed
*Experiment: Flowers	In this experiment, you will examine a variety of flowers and identify the parts.	Yes	<ul style="list-style-type: none"> • microscope • razor blade or sharp knife • hand lens or dissection • microscope • medicine dropper
			<ul style="list-style-type: none"> • microscope • clean glass slides • teasing needle • coverslips • several kinds of fresh flowers
*Special Project	Special Project assignments are used by teachers to create their own projects if needed.	No	N/A

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UNIT 5: GENETICS: GOD'S PLAN OF INHERITANCE

Assignment Title	Project Summary	Video Demo	Materials Needed
Experiment: Probability	In this experiment, you will perform an experiment on probability.	No	<ul style="list-style-type: none"> • 2 Coins
			<ul style="list-style-type: none"> • box (shoebox will work)
Experiment: Molecular Genetics	In this experiment, you will perform an experiment on molecular genetics.	No	<ul style="list-style-type: none"> • 60 radish seeds • 2 petri dishes or flat covered containers
			<ul style="list-style-type: none"> • sand-peat mixture • medicine dropper • box to cover 1 petri dish
*Special Project	Special Project assignments are used by teachers to create their own projects if needed.	No	N/A

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UNIT 6: MICROBIOLOGY

Assignment Title	Project Summary	Video Demo	Materials Needed
Experiment: Fungus All Around (Part 1)	In this experiment, you will grow and observe a number of different fungi.	No	<ul style="list-style-type: none"> a compound microscope or 5X or 10X hand lens slice of hard cheese 3 sealable plastic sandwich bags slice of bread sharp knife or razor blade microscope slide a flashlight or light source of some kind for observations
Experiment: Fungus All Around (Part 2)	In this experiment, you will grow and observe a number of different fungi.	No	<ul style="list-style-type: none"> compound microscope sugar 5X or 10X hand lens fresh whole mushroom flashlight depression slide methylene blue stain tweezers medicine dropper pin cover slip baker's yeast packet cup or glass sharp knife or razor blade spoon
Experiment: Protozoan Culture	In this experiment, you will grow and observe a number of different protozoans taken from a "dirty" water source.	Yes	<ul style="list-style-type: none"> 1 water collection container (quart jar) "dirty" water source 6 grains of rice 1 tsp rich black soil (NOT potting soil) 4 small glass jars (baby food jars) handful of hay or grass clippings pinch of hard-boiled egg yolk cotton ball medicine dropper cover slips microscope depressions slide protozoan cultures
*Experiment: Algae Observations	In this experiment, you will examine prepared slides of nostoc and spirogyra.	Yes	<ul style="list-style-type: none"> microscope a prepared slide of nostoc (cyanobacteria) a prepared slide of spirogyra (green algae)
*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: PLANTS: GREEN FACTORIES

Assignment Title	Project Summary	Video Demo	Materials Needed
Experiment: Seeds	In this experiment, you will collect four different types of seeds and perform the investigation.	Yes	<ul style="list-style-type: none"> four different types of seeds (at least one grass such as corn and one bean such as a pinto bean)--at least four seeds of each kind magnifying glass (hand lens)
*Experiment: Terrarium	In this experiment, you will construct a terrarium	No	<ul style="list-style-type: none"> Large glass or plexiglass container washed gravel, sand and/or rock aquarium charcoal potting soil A few assorted plants
*Special Project	Special Project assignments are used by teachers to create their own projects if needed.	No	N/A

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UNIT 8: HUMAN ANATOMY AND PHYSIOLOGY

Assignment Title	Project Summary	Video Demo	Materials Needed
Experiment: Heart Rate	In this experiment, you will perform and experiment on heart rate.	No	<ul style="list-style-type: none"> a partner a clock or watch with a second hand
*Experiment: Muscle Types	In this experiment, you will observe slides of the three muscle types.	Yes	<ul style="list-style-type: none"> microscope raw chicken leg blunt probe scissors prepared slides of smooth muscle, skeletal muscle, and cardiac muscle latex gloves
*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: ECOLOGY, POLLUTION, AND ENERGY

Assignment Title	Project Summary	Video Demo	Materials Needed
Experiment: Habitats	In this experiment, you will select a habitat and set up a living community.	No	<ul style="list-style-type: none"> gallon jar (or other large, glass container)
*Experiment: Quadrats	In this experiment, you will choose a quadrat location and count and list different plant and animal species in the quadrat.	No	<ul style="list-style-type: none"> string or twine large nails meter stick
*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: PRINCIPLES AND APPLICATIONS OF BIOLOGY

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

*indicates alternate project/experiments