



# monarch

2018 - 2019 Curriculum Catalog

Science 500

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## UNIT 1: CELLS

Assignment	Summary	Video Demo	Supplies
Experiment: Skin Cells	In this experiment you will use a microscope to examine examples of different types of cells.	No	<ul style="list-style-type: none"> <li>• microscope</li> <li>• slide</li> <li>• slide cover</li> <li>• knife</li> </ul> <ul style="list-style-type: none"> <li>• small eye dropper or toothpick</li> <li>• diluted iodine solution</li> </ul>
Experiment: Onion Cells	In this experiment you will examine the structure of onion cells using a microscope	Yes	<ul style="list-style-type: none"> <li>• onion bulb with leaves and roots</li> <li>• knife</li> <li>• tweezers</li> <li>• slide cover</li> </ul> <ul style="list-style-type: none"> <li>• microscope</li> <li>• microscope slide</li> <li>• iodine stain</li> <li>• toothpick</li> </ul>
Experiment: Pond Water Examination	In this experiment you will observe pond water organisms using a microscope	Yes	<ul style="list-style-type: none"> <li>• microscope</li> <li>• slide</li> <li>• slide cover</li> </ul> <ul style="list-style-type: none"> <li>• dropper</li> <li>• pond water</li> </ul>
Experiment: Cheek Cells	In this experiment you will examine cheek cells using a microscope and compare cheek and skin cells	Yes	<ul style="list-style-type: none"> <li>• microscope</li> <li>• clean sterile cotton swab</li> <li>• iodine stain</li> </ul> <ul style="list-style-type: none"> <li>• an eye dropper</li> <li>• slide cover</li> </ul>
Experiment: Blood Cells	In this experiment you will use a microscope to take a closer look at the cells in your blood.	No	<ul style="list-style-type: none"> <li>• microscope</li> <li>• two slides</li> <li>• rubbing alcohol</li> <li>• cotton ball</li> </ul> <ul style="list-style-type: none"> <li>• dropper</li> <li>• needle</li> <li>• ink stain (methylene blue stain)</li> </ul>
*Special Project	Use this Special Project template to create your own assignment for this unit.	N/A	N/A

## UNIT 2: PLANTS: LIFE CYCLES

Assignment	Summary	Video Demo	Supplies
Experiment: Flower Dissection	In this activity, you will look at the structure of two different types of flowers.	Yes	<ul style="list-style-type: none"> <li>• 2 flowers</li> <li>• microscope</li> <li>• 2 microscope slides</li> <li>• magnifying glass</li> </ul> <ul style="list-style-type: none"> <li>• 2 slide covers</li> <li>• straight pins</li> <li>• paper</li> <li>• dropper</li> <li>• sharp knife</li> </ul>

Experiment: Seed Dissection	In this experiment, you will identify the main reproductive parts of seed-bearing and spore-bearing organism.	Yes	<ul style="list-style-type: none"> <li>• lima bean seed</li> <li>• knife</li> <li>• corn seed</li> </ul>	<ul style="list-style-type: none"> <li>• baby food jar half full of water</li> <li>• tweezers</li> </ul>
Project: Examining Cones	In this experiment, you will identify the main reproductive parts of seed-bearing and spore-bearing organism.	No	<ul style="list-style-type: none"> <li>• male and female pine cones</li> </ul>	
*Project: Seed Hunt	In this experiment, you will identify the main reproductive parts of seed-bearing and spore-bearing organism.	No	<ul style="list-style-type: none"> <li>• various seeds</li> </ul>	
*Report: Walking Fern	In this activity, you will explain differences between the main categories of plants, fungi, and protists.	No	<ul style="list-style-type: none"> <li>• research resources</li> </ul>	
Experiment: Mold	In this experiment, you will Describe the life cycles of plants, fungi, and some protists and relate the structure of plants, fungi, and protists with their reproduction in a life cycle.	Yes	<ul style="list-style-type: none"> <li>• slice of bread</li> <li>• large jar with lid</li> <li>• magnifying glass</li> <li>• 4 clear sealable plastic bags (sandwich-sized)</li> <li>• A spray bottle full of water</li> <li>• A piece of fruit – in this case an apple</li> <li>• A piece of cheese</li> <li>• 1 cracker</li> <li>• Tape</li> </ul>	
*Special Project	Use this Special Project template to create your own assignment for this unit.	N/A		N/A

### UNIT 3: ANIMALS: LIFE CYCLES

Assignment	Summary	Video Demo	Supplies
*Report: Protozoa	In this report you will find information about a protozoan type other than the amoeba or paramecium.	No	<ul style="list-style-type: none"> <li>• research resources</li> </ul>
*Experiment: Mealworm	In this experiment, you will observe the development of a small larva called a mealworm into an adult grain beetle over several weeks.	Yes	<ul style="list-style-type: none"> <li>• baby-food jar with lid</li> <li>• bran flakes or oatmeal</li> <li>• potato</li> <li>• magnifying glass</li> <li>• mealworm</li> <li>• knife</li> </ul>
*Report: The Spider	Spiders are invertebrate animals in the arachnid group. In this report	No	<ul style="list-style-type: none"> <li>• research resources</li> </ul>

	you will learn more about these animals.			
*Report: Insect Study	In this report, you will choose an unusual insect to study and write a 200-word report about it.	No	<ul style="list-style-type: none"> <li>research resources</li> </ul>	
*Experiment: Chicken Egg	In this experiment you will take a closer look at the structure of a bird egg.	No	<ul style="list-style-type: none"> <li>chicken egg</li> <li>dropper</li> <li>small dish</li> </ul>	<ul style="list-style-type: none"> <li>tissue paper</li> <li>magnifying glass</li> <li>food coloring</li> </ul>
*Report: Mammals	In this report you will learn more about a mammal species.	No	<ul style="list-style-type: none"> <li>research resources</li> </ul>	
*Essay: God and Animals	In this essay you will think and write about a Bible passage on animals.	No		N/A
*Special Project	Use this Special Project template to create your own assignment for this unit.	N/A		N/A

## UNIT 4: BALANCE IN NATURE

Assignment	Summary	Video Demo	Supplies	
*Project: Cycles	In this project you will review the water cycle, carbon cycle, and chemical cycle.	No	<ul style="list-style-type: none"> <li>paper</li> <li>pencil</li> </ul>	
Project: Terrarium Project	In this experiment, you will build a terrarium if conditions permit.	No	<ul style="list-style-type: none"> <li>Large container (glass or clear plastic)—at least 2-liter capacity</li> <li>container cover or lid</li> <li>gravel</li> <li>potting soil</li> </ul>	<ul style="list-style-type: none"> <li>several cans or small jars</li> <li>sand</li> <li>small sprinkling can</li> <li>bottle cap</li> <li>something to punch holes in lid</li> <li>water</li> </ul>
*Project: Prairie Land	In this project you will find out where prairies are located in North America.	No	<ul style="list-style-type: none"> <li>research resources</li> <li>a map of North America</li> </ul>	
*Report: Prairie Birds	In this report you will learn more about one species of prairie bird.	No	<ul style="list-style-type: none"> <li>research resources</li> </ul>	
*Project: Prairie Food Chain	In this project you will think about other possible prairie food chains.	No	<ul style="list-style-type: none"> <li>research resources</li> </ul>	

*Project: Special Environments	In this project you will think and learn about another type of environment.	No	<ul style="list-style-type: none"> <li>research resources</li> </ul>
*Special Project	Use this Special Project template to create your own assignment for this unit.	N/A	N/A

## UNIT 5: TRANSFORMATION OF ENERGY

Assignment	Summary	Video Demo	Supplies
*Experiment: Heat from The Sun	In this experiment, you will use a thermometer to observe the effect of direct and indirect sunlight on the heat energy of matter.	No	<ul style="list-style-type: none"> <li>yellow construction paper</li> <li>a thermometer</li> </ul>
*Experiment: Heat from Bending	In this experiment you will examine the effect of movement on heat energy.	No	<ul style="list-style-type: none"> <li>2 paper clips</li> </ul>
*Experiment: Heat Energy in A Chemical Reaction	In this experiment, you will conduct a safe chemical reaction with simple kitchen materials and observe the change in heat energy from the reaction.	Yes	<ul style="list-style-type: none"> <li>3 liquid ounces of vinegar</li> <li>1 tablespoon of baking soda</li> <li>1 glass jar</li> <li>1 thermometer</li> </ul>
Experiment: Solar Energy for Heat	In this experiment, you will investigate how light energy and water temperature are related	No	<ul style="list-style-type: none"> <li>a baby-food jar filled with water (The jar should be placed somewhere in the room where sunlight will not reach it. Set it aside for at least half hour before using it.)</li> <li>a thermometer</li> </ul>
*Special Project	Use this Special Project template to create your own assignment for this unit.	N/A	N/A

## UNIT 6: RECORDS IN THE ROCK: THE FLOOD

Assignment	Summary	Video Demo	Supplies
*Project: Interview with Noah	You have learned that scientists have found physical evidence of the Flood. In this project you will think about Noah and his construction of the ark.	No	N/A
*Report: Ancient Flood Stories	In this report you will, research and answer questions about flood stories from other cultures	No	<ul style="list-style-type: none"> <li>research resources</li> </ul>

*Special Project	Use this Special Project template to create your own assignment for this unit.	N/A	N/A
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## UNIT 7: RECORDS IN THE ROCK: FOSSILS

Assignment	Summary	Video Demo	Supplies
Experiment: Mold Fossil Copy	In this experiment you will create a copy of a fossil mold.	Yes	<ul style="list-style-type: none"> <li>a small plastic container (about 10 centimeters across)</li> <li>modeling clay</li> <li>a seashell or bone</li> </ul>
*Project: Make A Cast Fossil Copy	In this project you will learn how a cast fossil is made.	No	<ul style="list-style-type: none"> <li>the mold fossil copy from the earlier activity</li> <li>molding plaster</li> <li>a tin can and stick</li> <li>a jar of water</li> </ul>
*Project: Plant And Animal Fossils	In this project you will learn about some extinct organisms.	No	<ul style="list-style-type: none"> <li>paper</li> <li>pencil</li> <li>research resources</li> </ul>
*Project: Fossil Clues	In this project you will look for fossil clues like a scientist.	No	N/A
*Project: Fill in the Skeleton	In this project you will make inferences and draw conclusions about an animal from its skeleton.	No	<ul style="list-style-type: none"> <li>printer to print out the picture of the skeleton</li> <li>colored pencils</li> </ul>
*Project: Be Creative	In this project you will show how reconstructions can give incorrect information about an animal.	No	<ul style="list-style-type: none"> <li>pencil</li> <li>paper</li> </ul>
*Special Project	Use this Special Project template to create your own assignment for this unit.	N/A	N/A

## UNIT 8: RECORDS IN THE ROCK: GEOLOGY

Assignment	Summary	Video Demo	Supplies
Project: Compare An Orange And The Earth	In this project you will use a model to "view" the earth up close and from a distance.	No	<ul style="list-style-type: none"> <li>magnifying glass</li> <li>orange</li> </ul>
*Experiment: Examine A Mineral	In this project you will take a closer look at the geometric shape of salt.	No	<ul style="list-style-type: none"> <li>small amount of table salt</li> <li>magnifying glass</li> </ul>

			<ul style="list-style-type: none"> <li>colored paper</li> </ul>
*Report: Rocks	In this report, you will research and write about a type of rock or mineral	No	<ul style="list-style-type: none"> <li>research resources</li> </ul>
*Project: Rock Hunt	In this project you will hunt for and learn about rocks near your home.	No	<ul style="list-style-type: none"> <li>rocks</li> </ul>
*Experiment: Erosion	In this experiment you will observe the powerful force of running water.	Yes	<ul style="list-style-type: none"> <li>plastic tub or metal pan</li> <li>short board</li> <li>glass of water</li> <li>mixture of soil, sand, large and small pebbles</li> </ul>
*Project: Volcano Summary	In this project you will learn about famous volcanoes.	No	<ul style="list-style-type: none"> <li>research resources</li> </ul>
*Special Project	Use this Special Project template to create your own assignment for this unit.	N/A	N/A

## UNIT 9: CYCLES IN NATURE

Assignment	Summary	Video Demo	Supplies
Experiment: Volume	In this experiment you will use water displacement to find the volume of a sphere.	Yes	<ul style="list-style-type: none"> <li>tall, thin jar (Alka-Seltzer bottle)</li> <li>small marble</li> <li>large marble</li> <li>masking tape</li> <li>ruler</li> </ul>
*Experiment: Water Container	In this experiment you will examine the ability of water to change shape.	No	<ul style="list-style-type: none"> <li>4 differently shaped clear containers</li> <li>water</li> <li>paper</li> <li>pencil</li> </ul>
*Experiment: Types of Changes	In this experiment you will change the physical and chemical structure of matter.	Yes	<ul style="list-style-type: none"> <li>candle in candle holder</li> <li>large glass plate or pan</li> <li>match</li> </ul>
*Experiment: Conservation Of Matter	In this experiment you will make a prediction. Your prediction will be based on the section you have finished reading, conservation of matter.	Yes	<ul style="list-style-type: none"> <li>2 baby-food jars with equal mass</li> <li>2 baby-food jar lids with equal mass</li> <li>equal-arm balance</li> <li>ice cube</li> <li>dropper</li> </ul>
*Project: Globe	In this project you will use a globe to observe how the earth's tilt causes seasons.	Yes	<ul style="list-style-type: none"> <li>globe with a tilted axis</li> </ul>
*Report: Famous Comets	In this report you will learn about a famous comet.	No	<ul style="list-style-type: none"> <li>research resources</li> </ul>



*Experiment: Water Evaporation	In this experiment you will compare the evaporation of cold and hot water.	No	<ul style="list-style-type: none"> <li>• liquid measure</li> <li>• two identical pans</li> <li>• funnel</li> </ul>
*Special Project	Use this Special Project template to create your own assignment for this unit.	N/A	N/A

## UNIT 10: REVIEW

Assignment	Summary	Video Demo	Supplies
*Special Project	Use this Special Project template to create your own assignment for this unit.	N/A	N/A

\* indicates an alternative assignment