Science Curriculum Guide

Fourth Grade

Fourth Grade Science: First Nine Weeks

VA Standards of Learning (SOL) Essential Understandings	Content Knowledge and Skills	MCPS Adopted Materials	Supporting Materials
4.1 The student will plan and conduct investigations The concepts developed in this standard include the following: • To communicate an observation accurately, one must provide a clear description of exactly what is observed and nothing more. Those conducting investigations need to understand the difference between what is seen and what inferences, conclusions, or interpretations can be drawn from the observation. • An inference is a conclusion based on evidence about events that have already occurred. Accurate observations and evidence are necessary to draw realistic and plausible conclusions. • A scientific prediction is a forecast about what may happen in some future situation. It is based on the application of scientific principles and factual information. • Systematic investigations require standard measures (metric), consistent and reliable tools, and organized reporting of data. The way the data are displayed can make it easier to uncover important information. This can assist in making reliable scientific forecasts of future events. • An experiment is a fair test driven by a hypothesis. A fair test is one in which only one variable is compared. A hypothesis is a prediction about the relationship between variables.	Standard 4.1 does not require a discrete unit on scientific investigation because the inquiry skills that make up the standard should be incorporated in all the other 4th grade science standards. **Each skill has been connected to specific content within this curriculum guide, but teachers may also provide instruction in any of the skills throughout the school year.** In order to meet this standard, it is expected that students should be able to: • Differentiate among simple observations, conclusions, inferences, and predictions, and correctly apply the terminology in oral and written work. This requires students to comprehend the basic terminology and apply it in novel situations related to fourth grade SOL concepts. • Analyze a set of 20 or fewer objects, measures, or pictures; classify them into basic categories to organize the data (descriptive or numerical); and construct bar graphs and line graphs depicting the distribution of those data. • Use millimeters, centimeters, meters, kilometers, milliliters, liters, grams, and kilograms in measurement. • Choose the appropriate instruments, including centimeter rulers, meter sticks, graduated cylinders, beakers, scales and balances, and Celsius thermometers, for making basic metric measures. • Make predictions based on picture graphs, bar graphs, and basic line graphs. • Create a plausible hypothesis, stated in terms of cause and effect, from a set of basic observations that can be tested. This requires a student to comprehend what "cause and effect" is and to be able to apply that idea in new situations. The application should occur in terms of fourth grade SOL-related concepts or other concrete situations. Hypotheses should be stated in terms such as: "If the water temperature is increased, then the amount of sugar that can be dissolved in it will increase."	**Text** X-XXIII **VASOL** p. 24 See: "How Scientists Work" "Investigate" "Investigate Further"	**AIMS** SI Notebook Candy Counting Are You a Square? Math and Science: A Solution It's a Shoe Unique U Overhead and Underfoot Sherlock Combs the Yard Hardhatting in a Geo-World Student-Made Measuring tools

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4.1 continued • In order to conduct an experiment, one must recognize all of the potential variables or changes that can affect its outcome. • A manipulated variable is the factor in an experiment that is altered by the experimenter. • A responding variable is the factor in an experiment that changes as a result of the manipulated variable.	• Analyze the variables in a simple experiment, and decide which must be held constant (not allowed to change) in order for the investigation to represent a fair test. This requires students to comprehend what "variables" are and to apply that idea in new situations related to fourth grade SOL-related concepts. Variables are either manipulated or responding. • Judge which, if any, data in a simple set of results (generally 10 or fewer in number) appear to be considerably outside the expected range. Students should be able to determine the significance of unusual data. **Skills** The student will plan and conduct investigations in which: • Distinctions are made among observations, conclusions, inferences, and predictions. • Hypotheses are formulated based on cause-and-effect relationships. • Variables that must be held constant in an experimental situation are defined. • Appropriate instruments are selected to measure linear distance, volume, mass, and temperature. • Appropriate metric measures are used to collect, record, and report data. • Data are displayed using bar and basic line graphs. • Numerical data that are contradictory or unusual in experimental results are recognized. • Predictions are made based on data from picture graphs, bar graphs, and basic line graphs.		

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4.6 The student will investigate and understand how weather conditions and phenomena occur and can be predicted. The concepts developed in this standard include the following: • Temperature is the measure of the amount of heat energy in the atmosphere. • Air pressure is due to the weight of the air and is determined by several factors including the temperature of the air. • A front is the boundary between air masses of different temperature and humidity. • Cirrus, stratus, cumulus, and cumulo-nimbus clouds are associated with certain weather conditions. • Cumulus clouds are fluffy and white with flat bottoms. They usually indicate fair weather. However, when they get larger and darker on the bottom, they produce thunderstorms. • Stratus clouds are smooth, gray clouds that cover the whole sky (block out direct sunlight). Light rain and drizzle are usually associated with stratus clouds. • Cirrus clouds are feathery clouds. They are associated with fair weather. Cirrus clouds often indicate that rain or snow will fall within several hours. • Extreme atmospheric conditions create various kinds of storms such as thunderstorms, hurricanes, and tornadoes. • Different atmospheric conditions create different types of precipitation.	In order to meet this standard, it is expected that students will be able to: • Use a thermometer to compare air temperatures over a period of time. • Analyze the changes in air pressure occurring over time, using a barometer, and predict what the changes mean in terms of changing weather patterns. • Differentiate between the types of weather associated with high and low pressure air masses. Illustrate and label high and low pressure air masses and warm and cold fronts. • Differentiate between cloud types (cirrus, stratus, cumulus, and cumulo-nimbus clouds) and the associated weather. • Compare and contrast the formation of different types of precipitation (rain, snow, sleet, and hail). • Recognize a variety of storm types, describe the weather conditions associated with each, and explain when they occur (thunderstorms, hurricanes, and tornadoes). • Analyze and report information about temperature and precipitation on weather maps. • Measure wind speed, using an anemometer. • Measure precipitation with a rain gauge. • Design an investigation in which weather data are gathered using meteorological tools and charted to make weather predictions.	**Text:** B54-57 D1 D4 D7-8 D10-21 D20-25 D27- 29 D55 **KWL Workbook** p. 152, 160 **Instruments** Activity: Make a rain gauge Activity: Make an Anemometer Activity: Make a Wind Vane **VASOL** p. 49-54 **Harcourt CD** Tornado Chase **Harcourt Video** Tornado Tracking **Website** http://www.scilinks.org/harcourt	**AIMS** ES Notebook Thermometers & Scales Comparing Scales What is the Temperature? A Matter of Degrees Pressure Points Highs & Lows Just a Gust Rain Check A Cloud is Born Sky Watch (make your own chart) Cloud Combos (cloud table picture graph & song) Classifying Clouds Severe Weather Out Front Overhead and Underfoot Weather Tool Bag Activity When It's Hot, It's Hot Its in the Wind **Science Is** Making Clouds p. 278 Front Seat p. 280-283

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4.6 continued • Meteorologists gather data by using a variety of instruments. • Meteorologists use data to predict weather patterns. • A barometer measures air pressure. • An anemometer measures wind speed. • A rain gauge measures precipitation. • A thermometer measures the temperature of the air.	**Skills** • Appropriate metric measures are used to collect, record, and report data. • Data are displayed using bar and basic line graphs.		**Enhanced Scope and Sequence Plus** Precipitation and Temperature p. 55 Name That Cloud p. 59 Air Pressure p. 63 Storm Warning p. 66 **Websites** www.wunderground.com http://hurricanes.noaa.gov/ http://tornadoproject.com/ http://www.ucar.edu/research/storms/ http://www.spc.noaa.gov/

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4.2 The student will investigate and understand characteristics and interaction of moving objects. The concepts developed in this standard include the following: • The position of an object can be described by locating it relative to another object or to the background. • Tracing and measuring an object's position over time can describe its motion. • Speed describes how fast an object is moving. • Energy may exist in two states: kinetic or potential. • Kinetic energy is the energy of motion. • A force is any push or pull that causes an object to move, stop, or change speed or direction. • The greater the force, the greater the change in motion will be. The more massive an object, the less effect a given force will have on the object. • Friction is the resistance to motion created by two objects moving against each other. Friction creates heat. • Unless acted on by a force, objects in motion tend to stay in motion and objects at rest remain at rest.	In order to meet this standard, it is expected that students should be able to: • Describe the position of an object. • Collect and display in a table and line graph time and position data for a moving object. • Explain that speed is a measure of motion. • Interpret data to determine if the speed of an object is increasing, decreasing, or remaining the same. • Identify the forces that cause an object's motion. • Describe the direction of an object's motion: up, down, forward, backward. • Infer that objects have kinetic energy. • Design an investigation to determine the effect of friction on moving objects. **Skills** • Hypotheses are formulated based on cause-and-effect relationships. • Variables that must be held constant in an experimental situation are defined.	**Text** C18-21 C28 – 30 F40-59 F66-89 **KWL** 152 **Workbook** 314 325-326 330 **Harcourt Video** "Coaster Physics" **Activity** F44-45 **Activity** F54-55 **VASOL** p.61-66 **Harcourt CD** "Build a Model Race Car" **Website** http://www.si.edu/harcourt/science	**AIMS** PS Notebook Get a Move On How Heavy How Far (can build own ramp) Time to Move It Time to Move it More (use matchbox cars) Energy & Motion Forceful Friction Brick Slide Slip Sliding Away Pieces and Patterns Rally Round the Room **Enhanced Scope and Sequence Plus** Where Am I? p. 73 Investigating Motion, Using the Inclined Plane p. 78 On Your Mark! / Start Your Engines! p. 83 May the Force Be with You! p. 91 **Websites** Simple Machines http://www.edheads.org/activities/simple-machines/ **Science Is** Penny Power p. 61 Revolving Bucket p. 49 Drop It p. 145

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4.3 The student will investigate and understand the characteristics of electricity. The concepts developed in this standard include the following: • A continuous flow of negative charges (electrons) creates an electric current. The pathway taken by an electric current is a circuit. Closed circuits allow the movement of electrical energy. Open circuits prevent the movement of electrical energy. • Electrical energy moves through materials that are conductors (metals). Insulators (rubber, plastic, wood) do not conduct electricity well. • Among conducting materials, energy passes more or less easily because of the material's resistance. • In a series circuit, there is only one pathway for the current, but in a parallel circuit there are two or more pathways for it. • Rubbing certain materials together creates static electricity. • Lightning is the discharge of static electricity in the atmosphere. • Electrical energy can be transformed into heat, light, or mechanical energy.	In order to meet this standard, it is expected that students should be able to: • Apply the terms insulators, conductors, open and closed in describing electrical circuits. • Differentiate between an open and closed electric circuit. • Use the dry cell symbols (–) and (+). • Create and diagram a functioning series circuit using dry cells, wires, switches, bulbs, and bulb holders. • Create and diagram a functioning parallel circuit using dry cells, wires, switches, bulbs, and bulb holders. • Differentiate between a parallel and series circuit. • Create a diagram of a magnetic field using a magnet. • Compare and contrast a permanent magnet and an electromagnet. • Explain how electricity is generated by a moving magnetic field. • Design an investigation using static electricity to attract or repel a variety of materials. • Explain how static electricity is created and occurs in nature. • Construct a simple electromagnet using a wire, nail, or other iron-bearing object, and a dry cell.	**Text** E38 F30 F4-9 F12 –15 F18-21 **KWL** p. 152 **VASOL** 39-42 71-74 75-76 **Workbook** p. 291 **Website** http://www.si.edu/	**AIMS** PS Notebook Static Electricity Static Sensations Static Strokes Balance Your Charge Account Electrical Energy Sparky's Light Kit Path Finders An Electrical Circuits Make a Switch Parallel Circuits Series Circuits Electric Circuits Conductor or Insulator Conductors and Insulators An Accidental Discovery that Changed the World The Electromagnetic Connection Make an Electromagnet Thomas Edison Benjamin Franklin Samuel Morse Electricity Timeline (Charging in Time) Electrical Connections Lightning Nature's Light and Sound Show Biographies Electricity Time Line Sparky's Light Kit Conductor or Insulator The Electromagnetic Connection Electric Circuits Make a Dinner Switch Make a Switch Short Cuts

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VA Standards of Learning (SOL) Essential Understandings	Content Knowledge and Skills	MCPS Adopted Materials	Supporting Materials
4.3 continued • Certain iron-bearing metals attract other such metals (also nickel and cobalt). Lines of force extend from the poles of a magnet in an arched pattern defining the area over which magnetic force is exerted. An electric current creates a magnetic field, and a moving magnetic field creates an electric current. • A current flowing through a wire creates a magnetic field. Wrapping a wire around certain iron-bearing metals (iron nail) and creating a closed circuit is an example of a simple electromagnet. • Benjamin Franklin, Michael Faraday, and Thomas Edison made important discoveries about electricity.	• Design and perform an investigation to determine the strength of an electromagnet. (The manipulated variable could be the number of coils of wire and the responding variable could be the number of paperclips the magnet can attract.) • Describe the contributions of Ben Franklin, Michael Faraday, and Thomas Edison to the understanding and harnessing of electricity. **Skills** • Hypotheses are formulated based on cause-and-effect relationships. • Variables that must be held constant in an experimental situation are defined.		<u>Electrical Connections continued</u> Path Finders Circuit Quiz Boards - challenge <u>Mostly Magnets</u> Will a Magnet Attract Through These Stick To It What Will a Magnet Attract How Close Can you Get Face to Face Floating Magnets Making Magnets Make an Electromagnet How to make an Electric Motor **Enhanced Scope and Sequence Plus** Inventors p. 103 Circuits, Batteries, and Bulbs p. 107 Electromagnets p. 121 Static Electricity p. 125 **Science Is** Electricity Faraday's Way Nature's Sound & Light Show **Websites** http://www.phy.hr/~dpaar/fizicari/xfaraday.html http://www.energyquest.ca.gov/scientists/faraday.html http://www.need.org/needpdf/infobook_activities/IntInfo/Elec3I.pdf

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VA Standards of Learning (SOL) Essential Understandings	Content Knowledge and Skills	MCPS Adopted Materials	Supporting Materials
4.7 The student will investigate and understand the relationships among the Earth, moon, and sun. The concepts developed in this standard include the following: • The Earth completes one revolution around the sun every 365 days. The moon revolves around the Earth about once every month. • Due to its axial tilt, the Earth experiences seasons during its revolution around the sun. • The phases of the moon are caused by its position relative to the Earth and the sun. The phases of the moon include the new, waxing crescent, first quarter, waxing gibbous, full, waning gibbous, last quarter, and waning crescent. • The sun is an average-sized yellow star, about 110 times the diameter of the Earth. The sun is approximately 4.6 billion years old. • Our moon is a small rocky satellite, having about one-quarter the diameter of the Earth and one-eightieth its mass. It has extremes of temperature, virtually no atmosphere, no water, and no life. • The Earth is one of nine planets that revolve around the sun and comprise the solar system. The Earth, the third planet from the sun, is one of the four rocky inner planets. It is about 150 million kilometers from the sun. (The emphasis is placed on the Earth, rather than the other planets.)	In order to meet this standard, it is expected that students will be able to: • Differentiate between rotation and revolution. • Describe how the Earth's axial tilt causes the seasons. • Model the formation of the eight moon phases, sequence the phases in order, and describe how the phases occur. • Describe the major characteristics of the sun, including its approximate size, color, age, and overall composition. • Create and describe a model of the Earth-moon-sun system with approximate scale distances and sizes. • Compare and contrast an Earth-centered to the sun-centered model of the solar system. • Analyze the differences in what Aristotle, Ptolemy, Copernicus, and Galileo observed and what influenced their conclusions. • Compare and contrast the surface conditions of the Earth, moon, and sun. • Describe a contribution of the NASA Apollo missions to our understanding of the moon. **Skills** • Distinctions are made among observations, conclusions, inferences, and predictions. • Appropriate instruments are selected to measure linear distance, volume, mass, and temperature.	**Text** D 65-70 D 74-77 D 80-91 E52 **TE** D82 **VASOL** p 55-60 **K-W-L** p. 152 **Workbook** p. 196 **Websites** http://www.si.edu/ http://scilinks.org/harcourt **Harcourt Video** "Glass Blowing" (thermal energy) "Hubble Images"	**AIMS** ES Notebook The Earth Moon & Sun Solar Size Size Surprise Stringing Out the Spaces Physical Features of Earth and Moon Lunar Looking Our Star the Sun Rotation & Revolution Dizzy Spells Seasonal Do-Si-Do Reasons for the Seasons Our Knowledge of Space; then and now Apollo Arrangements (use chart on p. 222) Sending Men to the Moon **Enhanced Scope and Sequence Plus** What's the Difference? p. 161 The Play's the Thing p. 167 Sun-Earth-Moon Model p. 176 Moon Phases p. 187

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VA Standards of Learning (SOL) Essential Understandings	Content Knowledge and Skills	MCPS Adopted Materials	Supporting Materials
4.7 continued • The Earth is a geologically active planet with a surface that is constantly changing. Unlike the other three inner planets (see previous bullet), it has large amounts of life-supporting water and an oxygen-rich atmosphere. The Earth's protective atmosphere blocks out most of the sun's damaging rays. • Our understanding of the solar system has changed from an Earth-centered model of Aristotle and Ptolemy to the sun-centered model of Copernicus and Galileo. • The NASA Apollo missions added greatly to our understanding of the moon. • Our understanding of the sun, moon, and the solar system continues to change with new scientific discoveries.			**Websites** Radford University Planetarium http://planetarium.radford.edu/ Windows to the Universe http://www.windows.ucar.edu/tour/link=/earth/earth.html

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VA Standards of Learning (SOL) Essential Understandings	Content Knowledge and Skills	MCPS Adopted Materials	Supporting Materials
4.4 The student will investigate and understand basic plant anatomy and life processes. The concepts developed in this standard include the following: • For many typical green plants, there are anatomical structures that perform certain basic functions. For example, roots anchor the plants and take water and nutrients from the soil. Plant stems provide support and allow movement of water and nutrients. • The plant kingdom can be divided into two general groups: those that produce seeds and those that produce spores. • Many seed-producing plants have roots, stems, leaves, and flowers. The stamen and pistil are reproductive parts of the flower. The sepals are the small leaves that form the housing of the developing flower. • Pollination is part of the reproductive process of flowering plants. Pollination is the process by which pollen is transferred from the stamens to the stigma. • Some plants reproduce with spores. These include ferns and mosses. • Green plants produce their own food through the process of photosynthesis. Green plants use chlorophyll to produce food (sugar), using carbon dioxide, water, nutrients, and sunlight. Leaves are the primary food producing part of these plants.	In order to meet this standard, it is expected that students should be able to: • Create a model/diagram illustrating the parts of a flower (stamen, pistil, sepal, ovary, ovuole, seed) and explain the functions of those parts. • Analyze a common plant: identify the roots, stems, leaves, and flowers, and explain the function of each. • Create a model/diagram illustrating the reproductive processes in typical flowering plants, and explain the processes. • Compare and contrast different ways plants are pollinated. • Explain that ferns and mosses reproduce with spores rather than seeds. • Explain the process of photosynthesis, using the following terminology: sunlight, chlorophyll, water, carbon dioxide, oxygen, and sugar. • Design an investigation to determine the relationship between the presence of sunlight and plant growth. • Explain the role of dormancy for common plants.	**Text** A68-92 **Graphic Organizers** TR152, 154, 155 **KWL** TR p. 152 **Harcourt Video** "Bloomin Business" **Harcourt CD** "Do You Have a Green Thumb"	**AIMS** LS Notebook Plant Parts Getting to the Root of It Stem Study Leaves: Food Factory Sunlight Studies Photosynthesis and it's Products Photosynthesis Flower Power (mini book & puzzle) Pairing Up Pollenators Dissect a Seed Seeds Seeds, Spores, & More Spores, A Special Seed Playing a Dormant Role Dormancy Details Budding Botanist Dissect A Seed Down Under Leaf Facts Herb Wood A Flower Study (only to label the plant parts) **Enhanced Scope and Sequence Plus** Little Sprouts p. 2 Let There Be Light! p. 7 Photosynthesis p. 12 Flower Dissection p. 17

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VA Standards of Learning (SOL) Essential Understandings	Content Knowledge and Skills	MCPS Adopted Materials	Supporting Materials
4.4 continued • Oxygen is produced during photosynthesis. • Dormancy is a period of suspended life processes brought on by changes in the environment.	**Skills** • Distinctions are made among observations, conclusions, inferences, and predictions. • Appropriate instruments are selected to measure linear distance, volume, mass, and temperature.		**Websites** The Plant Escape www.urbanext.uiuc.edu/gpe/index.html Plants for Kids directory www.kathimitchell.com/plants.html The seedy side of plants www.pbs.org/wnet/nature/plants/ **Science Is** Light the Way”

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VA Standards of Learning (SOL) Essential Understandings	Content Knowledge and Skills	MCPS Adopted Materials	Supporting Materials
4.5 The student will investigate and understand how plants and animals in an ecosystem interact with one another and the nonliving environment. The concepts developed in this standard include the following: • Organisms have structural adaptations, or physical attributes that help them meet a life need. • Organisms also have behavioral adaptations, or certain types of activities they perform, which help them meet a life need. • The organization of communities is based on the utilization of the energy from the sun within a given ecosystem. The greatest amount of energy in a community is in the producers. • Within a community, organisms are dependent on the survival of other organisms. Energy is passed from one organism to another. • The organization of a community is defined by the interrelated niches within it. • The sun's energy cycles through ecosystems from producers through consumers and back into the nutrient pool through decomposers. • An organism's habitat provides food, water, shelter, and space. The size of the habitat depends on the organism's needs.	In order to meet this standard, it is expected that students will be able to: • Distinguish between structural and behavioral adaptations. • Investigate and infer the function of basic adaptations and provide evidence for the conclusion. • Understand that adaptations allow an organism to succeed in a given environment. • Explain how different organisms use their unique adaptations to meet their needs. • Describe why certain communities exist in given habitats. • Illustrate the food webs in a local area and compare and contrast the niches of several different organisms within the community. • Compare and contrast the differing ways an organism interacts with its surroundings at various stages of its life cycle. Specific examples include a frog and a butterfly. • Differentiate among positive and negative influences of human activity on ecosystems. **Skills** • Numerical data that are contradictory or unusual in experimental results are recognized • Predictions are made based on data from picture graphs, bar graphs, and basic line graphs.	**Text** A 48 - 60 B 2-4 B 14-17 B 56-61 **Workbook** p. 24 **KWL** p. 152 **TR** p. 145 **Harcourt Video** Monarch Migration **VASOL** p. 7-9 p. 46-48 **Harcourt Website** http://www.harcourtschool.com/menus/science/grade4_nl.html http://www.harcourtschool.com/menus/science/up_close4.html	**AIMS** LS Notebook Ecosystems Communities Niche Pics Food Chain Chain Games Survival Rivalry Adaptations Bird Beaks and Fowl Feet This Is Your Life, Tadpole Pasta, Pie Graphs, & Painted Ladies (Stage Time) Impacting Ecosystems Critters Catch Me If you Can Field Detectives Pizza Parts & Web Wheels Overhead and Underfoot Color Me Safe

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VA Standards of Learning (SOL) Essential Understandings	Content Knowledge and Skills	MCPS Adopted Materials	Supporting Materials
4.5 continued • A niche is the function that an organism performs in the food web of that community. A niche also includes everything else the organism does and needs in its environment. No two types of organisms occupy exactly the same niche in a community. • During its life cycle, an organism's role in the community — its niche — may change. For example, what an animal eats, what eats it, and other relationships will change. • Humans can have a major impact on ecosystems. • Habitat is the place or kind of place in which an animal or plant naturally lives.			**Enhanced Scope and Sequence Plus** Hello from My Habitat! p. 25 Life in the Web p. 30 The Best Beak for the Job p. 35 Change Is Good! p. 41 What Can We Do? p. 47 **Websites** http://www.vtaide.com/png/foodchains.htm http://www.ecokids.ca/pub/eco_info/topics/frogs/chain_reaction/index.cfm http://www.pen.k12.va.us/VDOE/LFB/lessonplans/foodwebs/index.html

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4.8 The student will investigate and understand important Virginia natural resources watershed and water resources; animals and plants; minerals, rocks, ores, and energy sources; and forests, soil, and land. The concepts developed in this standard include the following: • Virginia is rich in a wide variety of natural resources, including forests, arable (farmable) land, coal, sand and aggregates (rocks), wildlife and aquatic organisms, clean water and air, and beautiful scenery. • A watershed is an area over which surface water (and the materials it carries) flows to a single collection place. The Chesapeake Bay watershed covers approximately half of Virginia's land area. The other two major watershed systems are the Gulf of Mexico and the North Carolina Sounds. • Virginia's water resources include groundwater, lakes, reservoirs, rivers, bays, and the Atlantic Ocean. • Virginia has a great variety of plant and animal resources. • Natural and cultivated forests are a widespread resource in Virginia. • Virginia's soil and land support a great variety of life, provide space for many economic activities, and offer a variety of recreational opportunities.	In order to meet this standard, it is expected that students will be able to: • Compare and contrast natural and man-made resources. • Distinguish among rivers, lakes, and bays; describe characteristics of each; and name an example of each in Virginia. • Create and interpret a model of a watershed. Evaluate the statement: "We all live downstream." • Identify watershed addresses. • Recognize the importance of Virginia's mineral resources, including coal, limestone, granite, and sand and gravel. • Appraise the importance of natural and cultivated forests in Virginia. • Describe a variety of soil and land uses important in Virginia. **Skills** • Numerical data that are contradictory or unusual in experimental results are recognized. • Predictions are made based on data from picture graphs, bar graphs, and basic line graphs.	**Text** B1 B 62-63 B 66-67 B 72-75 C 50-57 C 62-63 D 49 D76 E56 **VASOL** p. 5-16 p. 27-38	**AIMS** ES Notebook Earth's Resources Renewable Resources Nonrenewable Resources Inexhaustible Resources Resourceful Thinking Watershed Addresses Concentrating on Resources What's Seen Downstream? Where Water Goes **Enhanced Scope and Sequence Plus** Watersheds p. 134 A River Runs Through It p. 139 Journey of a Raindrop p. 146 Forests p. 153 Virginia's Mineral Resources p. 156 **Websites** Soil and water conservation district http://www.dcr.virginia.gov/sw/ How to find a watershed address http://www.epa.gov/owow/watershed/address.html Lessons from the Bay http://www.pen.k12.va.us/VDOE/LFB/lessonplans/journeyraindrop/index.html Sinkholes http://ga.water.usgs.gov/edu/earthgwsinkholes.html