

Science Grade 4

August 2012

Standard 4: The Living Environment		Students will understand and apply scientific concepts, principles, and theories pertaining to the physical setting and living environment and recognize the historical development of ideas in science		
Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
Describe the characteristics of and the variations between living and nonliving things	<p>In what ways are living and non-living things alike/ different?</p> <p>What do plants need for survival?</p> <p>How does a living thing's environment affect its growth and survival?</p>	<p>Major Understandings:</p> <p>1.1a Animals need air, water and food in order to live and thrive.</p> <p>1.1b Plants require air, water, nutrients, and light in order to live and thrive</p> <p>1.1c Nonliving things do not live and thrive.</p> <p>1.1d Nonliving things can be human-created or naturally occurring.</p>	<ul style="list-style-type: none"> • Students will plan and set up a controlled environment to determine the most successful growing environment for a seed. • Videos: <i>What Do Seeds Need?</i> Bill Nye: <i>Plants</i> • Students will plan and set up a simple controlled experiment to test how moisture affects the germination of plant seeds. 	<p>Student Science Journal</p> <ul style="list-style-type: none"> • Text assignments • Chapter test • Teacher observation • Lab Activity Report
Common Core ELA Standard: Reading Informational Texts: R.I. 4.1. Refer to examples and details in a text when explaining what the text says explicitly and when drawing conclusions from the text.				

<p>1.2 Describe the life processes common to all living things</p>	<p>How are the life cycles of all living things alike/different?</p>	<p>1.2a Living things grow, take in nutrients, breathe, reproduce, eliminate waste, and die.</p>	<ul style="list-style-type: none"> • Students will plan and set up a simple controlled experiment to test how moisture affects the germination of plant seeds. • Compare/contrast plant life cycle to other life cycles (i.e. human, butterfly) • Act out a skit showing the different stages of the life cycle. • "Investigating a Habitat" student activity text pgs. A72-73. • SmartBoard Demonstrations and Activities 	<p>Students are able to create a model of and describe the life cycle of a plant.</p> <p>Write a paragraph describing stages of plant life cycle</p> <p>Create a poster showing the sequential stages in a plant's life cycle</p> <p>Text assignments</p> <ul style="list-style-type: none"> • Chapter test • Teacher observation
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Common Core ELA Standard: Writing: 4.2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

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Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
Recognize that traits of living things are both inherited and acquired or learned.	<p>How are living things alike from generation to generation?</p> <p>How can interacting with the environment change the characteristics of a single living thing?</p>	<p>Major Understandings:</p> <p>2.1a Some traits of living things have been inherited (e.g. color flowers and number of limbs of animals)</p> <p>2.1b Some characteristics result from an individual's interactions with the environment and cannot be inherited b the next generation (e.g. having scars, riding a bicycle).</p>	<ul style="list-style-type: none"> • Parent/Student interview (chart of inherited traits) • Guest speaker - farmer • Create hair or eye color charts and graphs • Guide Dog demonstration • <i>Adaptable Animal Activity</i> • SmartBoard Demonstrations and Activities 	<ul style="list-style-type: none"> • Choose a plant and identify three inherited traits and create 1 imaginary learned trait (i.e. catches mosquitoes, talks) • Text assignments • Chapter test • Teacher observation • Lab Activity Report
Common Core ELA Standard: Reading Informational Texts: R.I. 4.1. Refer to examples and details in a text when explaining what the text says explicitly and when drawing conclusions from the text.				
Recognize that for humans and other living things there is genetic continuity between generations.	What does "The apple doesn't fall far from the tree" mean?	<p>Major Understandings:</p> <p>2.2a Plants and animals closely resemble their parents and other individuals in their species.</p> <p>2.2b Plants and animals can transfer specific traits to their offspring when they reproduce.</p>	<ul style="list-style-type: none"> • Students' Baby Pictures bulletin board • Family Member Interview 	<ul style="list-style-type: none"> • Choose a plant and identify three inherited traits and create 1 imaginary learned trait (i.e. catches insects, talks) • Text assignments • Chapter test • Teacher observation
Common Core ELA Standard: Writing: 4.2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly.				

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Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
Describe how the structures of plants and animals complement the environment of the plant or animal.	What structures help plants and animals survive?	<p>Major Understandings:</p> <p>Plants and animals have structures which help them survive in their environment,</p>	<ul style="list-style-type: none"> • <i>Exploring How Animals Hide</i> text activity • Field Trip to AgStravaganza program at Cortland County fairgrounds. • SmartBoard Demonstrations and Activities 	<ul style="list-style-type: none"> • Text assignments • Chapter test • Teacher observation • Lab Activity Report
<p>Common Core ELA Standard: Reading Informational Texts: R.I. 4.1. Refer to examples and details in a text when explaining what the text says explicitly and when drawing conclusions from the text.</p>				

Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
<p>Observe that differences within a species may give individuals an advantage in surviving and reproducing.</p>	<p>3.1b How do the parts of a plant help it to survive and reproduce?</p> <p>How does a plant's environment affect its survival?</p>	<p>Each plant has different structures that serve different functions in growth, survival, and reproduction:</p> <ul style="list-style-type: none"> • Roots help support the plant and take in water and nutrients. • Leaves help plants utilize sunlight to make food for the plant. • Stems, stalks, trunks, and other similar structures provide support for the plant. • Some plants have flowers. • Flowers are reproductive structures of plants that produce fruit which contains seeds. • Seeds contain stored food that aids in germination and the growth of young plants. <p>In order to survive in their environment, plants and animals must be adapted to that environment:</p> <ul style="list-style-type: none"> • Seeds disperse by a plant's own mechanism and/or in a variety of ways that can include wind, water, and animals. • Leaf, flower, stem, and root adaptations may include variations in size, shape, thickness, color, smell and texture. • Animal adaptations include coloration for warning or attraction, camouflage, defense mechanisms, movement, hibernation, and migration. 	<ul style="list-style-type: none"> • Videos: <i>Magic School Bus Goes To Seed</i> • Dissect a flower to observe its reproductive parts. • Construct and label a model flower and its parts using paper. • Field Trip to AgStravaganza program at Cortland County fairgrounds. • Take students on a walk to observe plants and their parts. • Videos: <i>Magic School Bus Goes To Seed</i> • <i>Secrets of the Plant World</i> • <i>Sorting Seeds by Properties</i> Activity 	<ul style="list-style-type: none"> • Students will use new vocabulary words to illustrate and describe the process of pollination and fertilization. • Text assignments • Chapter test • Teacher observation • Lab Activity Report • Given a group of seeds students will be able to identify the properties of each seed and sort them according to their method of dispersal. • Text assignments • Chapter test • Teacher observation • Lab Activity Report
<p>Common Core ELA Standard: Reading Informational Texts: R.I. 4.3. Explain events, procedures, ideas, or concepts based on specific information in the text.</p>				

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Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
<p>Describe the major stages in the life cycles of selected plants and animals</p>	<p>Do all plants come from seeds?</p> <p>How do plants that do not come from seeds reproduce?</p>	<p>Major Understandings:</p> <p>4.1a Plants and animals have life cycles. These may include beginning of a life, development into an adult, reproduction as an adult, and eventually death.</p> <p>4.1b Each kind of plant goes through its own stages of growth and development that may include seed, young plant, and mature plant.</p> <p>4.1c The length of time from beginning of development to death of a plant is called its life span.</p> <p>4.1d Life cycles of some plants include changes from seed to mature plant.</p> <p>4.1e Each generation of animals goes through changes in form from young to adult. This completed sequence of changes in form is called a life cycle.</p> <p>4.1f Each kind of animal goes through its own stages of growth and development during its life span.</p> <p>4.1g The length of time from an animal's birth to its death is called its life span. Life spans of different animals vary.</p>	<ul style="list-style-type: none"> • Videos: <i>Magic School Bus Goes To Seed</i> • <i>The Life Cycle of Plants</i> • <i>What Seeds Need</i> • Propagate plants using the four methods (cuttings, runners, bulbs, tuber) • Field Trip to AgStravaganza program at Cortland County fairgrounds. • SmartBoard Demonstrations and Activities 	<ul style="list-style-type: none"> • Record observations in science journal. • Illustrate the four methods or propagation through drawings, collages, etc.) • Text assignments • Chapter test • Teacher observation • Lab Activity Report

<p>Describe evidence of growth, repair, and maintenance, such as nails, hair and bone, and the healing of cuts and bruises.</p>	<p>What does a plant need to grow? How would a plant be affected if it did not receive what it needs to survive?</p>	<p>Major Understandings:</p> <p>4.2a Growth is the process by which plants and animals increase in size.</p> <p>4.2b Food supplies the energy and materials necessary for growth and repair.</p>	<ul style="list-style-type: none"> • Video: <i>Human Body for Students</i> • Variable/Control Plant Experiment • Cornell Cooperative Extension guest speaker and program • <i>Operation Brainstorm</i> program by National Guard. • SmartBoard Demonstrations and Activities 	<ul style="list-style-type: none"> • Record observations in science journal. • Illustrate the four methods or propagation through drawings, collages, etc.) • Text assignments • Chapter test • Teacher observation • Lab Activity Report
<p>Common Core ELA Standard: Reading Informational Texts: R.I. 4.3. Explain events, procedures, ideas, or concepts based on specific information in the text.</p>				

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Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
Describe basic life functions of common living specimens (e.g. guppies, mealworms, gerbils).	<p>What do all plants have in common?</p> <p>How do the parts of a plant help it survive?</p>	<p>Major Understandings:</p> <p>5.1a All living things grow, take in nutrients, breathe, reproduce, and eliminate waste.</p> <p>5.1b An organism's external physical features can enable it to carry out life functions in particular environment.</p>	<ul style="list-style-type: none"> • Video: <i>Secrets of the Plant World</i> • Cornell Cooperative Extension guest speaker and program • Goldfish in Bowl on Overhead Projector Demonstration 	<ul style="list-style-type: none"> • Given art supplies, the students will correctly create a model of a flower and label its major parts. • Text assignments • Chapter test • Teacher observation
Common Core ELA Standard: Writing: 4.2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly.				

Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
Common Core ELA Standard: Writing: 4.2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly.				
Describe the factors that help promote good health and growth in humans.	How can you keep your digestive, circulatory, and nervous systems healthy?	<p>Major Understandings:</p> <p>5.3a Humans need a variety of healthy foods, exercise, and rest in order to grow and maintain good health.</p> <p>5.3b Good health habits include hand washing and personal cleanliness; avoiding harmful substances (including alcohol, tobacco, illicit drugs); eating a balanced diet; engaging in regular exercise.</p>	<ul style="list-style-type: none"> • <i>Exploring Food Labels Activity</i> • <i>Identifying Cause and Effect Activity</i> • <i>Investigating How The Heart Works Activity</i> • Bicycle Safety Rodeo (helmet benefits & safety) • Create and illustrate a food pyramid poster. • <i>Operation Brainstorm</i> program by National Guard. • SmartBoard Demonstrations and Activities 	<ul style="list-style-type: none"> • Plan a healthy meal assignment • Text assignments • Chapter test • Teacher observation • Lab Activity Report

Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
Common Core ELA Standard: Writing: 4.3. Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.				

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Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
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Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
Describe how plants and animals, including humans, depend upon each other and the nonliving environment.	What roles do the living and nonliving parts of our environment play?	<p>Major Understandings:</p> <p>6.1a Green plants are producers because they provide the basic food supply for themselves and animals.</p> <p>6.1b All animals depend on plants. Some animals (predators) eat other animals (prey).</p> <p>6.1c Animals that eat plants for food may in turn become food for other animals. This sequence is called a food chain.</p> <p>6.1d Decomposers are living things that play a vital role in recycling nutrients.</p> <p>6.1e An organism's pattern of behavior is related to the nature of that organism's environment, including the kinds and number of other organisms present, the availability of food and other resources, and the physical characteristics of the environment.</p> <p>6.1f When the environment changes, some plants and animals and others die or move to new locations.</p>	<ul style="list-style-type: none"> • Classroom Composting Activity • Terrarium Projects • <i>Investigate a Habitat</i> Activity • Producer/Consumer Stories • Woods Walk • Food Web Collages • <i>Investigating Decomposition</i> Activity • SmartBoard Demonstrations and Activities 	<ul style="list-style-type: none"> • Environmental News Stories • Text assignments • Chapter test • Teacher observation • Lab Activity Report
Common Core ELA Standard: Reading Informational Texts: R.I. 4.1. Refer to examples and details in a text when explaining what the text says explicitly and when drawing conclusions from the text.				

Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
Describe the relationship of the sun as an energy source for living and nonliving cycles.	How do plants make their own food?	<p>Major Understandings:</p> <p>6.2a Plants manufacture food by utilizing air, water, and energy from the Sun.</p> <p>6.2b The Sun's energy is transferred on Earth from plants to animals through the food chain.</p> <p>6.2c Heat energy from the Sun powers the water cycle (see Physical Science Key Idea 2).</p>	<ul style="list-style-type: none"> • Food chain game • Solar Cell Demonstration and online monitoring of school's solar array's performance. • Observe and chart/graph plants' growth which receive different amounts of light (example: closet vs. windowsill). • SmartBoard Demonstrations and Activities 	<ul style="list-style-type: none"> • Text assignments • Chapter test • Teacher observation • Lab Activity Report

Common Core ELA Standard: Reading Informational Texts: R.I. 4.1. Refer to examples and details in a text when explaining what the text says explicitly and when drawing conclusions from the text.

Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
7.1 Identify ways in which humans have changed their environment and the effects of those changes.	<p>How have humans changed their environment through history?</p> <p>In what ways do humans affect their environment around them?</p>	<p>Major Understandings:</p> <p>7.1a Humans depend on their natural and constructed environments.</p> <p>7.1b Over time humans have changed their environment by cultivating crops and raising animals, creating shelter, using energy, manufacturing goods, developing means of transportation, changing populations, and carrying out other activities.</p> <p>7.1c Humans, as individuals or communities, change environments in ways that can be either helpful or harmful for themselves and other organisms.</p>	<ul style="list-style-type: none"> • Social Studies Curriculum • Native American unit • Earth Week Activities • Bill Nye: <i>Pollution Solutions</i> video • <u>The Lorax</u> by Dr. Seuss • SmartBoard Demonstrations and Activities 	<ul style="list-style-type: none"> • Earth Week Projects • Text assignments • Chapter test • Teacher observation • Lab Activity Report

Common Core ELA Standard: Reading Informational Texts: R.I. 4.1. Refer to examples and details in a text when explaining what the text says explicitly and when drawing conclusions from the text.

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Physical Setting: Key Idea 1: The Earth and celestial phenomena can be described by principles of relative motion and perspective.				
Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
1.1 Describe patterns of daily, monthly, and seasonal changes in their environment.	<p>Is there a sunrise-sunset pattern to discover?</p> <p>What patterns can you observe in the moon phases?</p> <p>What seasonal patterns can we observe?</p>	<p>1.1A. Natural cycles and patterns include</p> <ul style="list-style-type: none"> • Earth spinning around once every 24 hours (rotation), resulting in day and night • Earth moving in a path around the Sun (revolution), resulting in one Earth year • The length of daylight and darkness varying with the seasons • Weather changing from day to day and through the seasons • The appearance of the Moon changing as it moves in a path around Earth to complete a single cycle. <p>1.1B. Humans organize time into units based on natural motions of Earth:</p> <ul style="list-style-type: none"> • second, minute, hour • week, month <p>1.1C. The sun and other stars appear to move in a recognizable pattern both daily and seasonally</p>	<ul style="list-style-type: none"> • BOCES planetarium visit. • Students observe and chart the phases of the moon for 30 days. • Students research and record sunrise and sunset times on a chart. • <i>Phases of the Moon</i> Activity with white foam balls and bright light bulb. • website: http://solar.anu.edu.au/sun/SunPath • SmartBoard Demonstrations and Activities 	<ul style="list-style-type: none"> • Text assignments • Chapter test • Teacher observation • Lab Activity Report
Common Core ELA Standard: Reading Informational Texts: R.I. 4.1. Refer to examples and details in a text when explaining what the text says explicitly and when drawing conclusions from the text.				

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Physical Setting: Key Idea 2: Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land				
Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
Describe the relationship among air, water, and land on Earth	<p>What different place on earth can you find water?</p> <p>How is water on Earth recycled?</p>	<p>Major Understandings:</p> <p>2.1A. Weather is the condition of the outside air at a particular moment.</p> <p>2.1B. Weather can be described and measured by:</p> <ul style="list-style-type: none"> • Temperature • Wind Speed and Direction • Form and Amount of Precipitation • General Sky Conditions (cloudy, sunny, partly cloudy) <p>2.1C. Water is recycled by natural processes on Earth.</p> <ul style="list-style-type: none"> • Evaporation: changing of water (liquid) into water vapor (gas) • Condensation: changing of water vapor (gas) into water (liquid) • Precipitation: rain, sleet, snow, and hail. • Runoff: water flowing on Earth's surface. • Groundwater: water that moves downward into the soil. 	<ul style="list-style-type: none"> • Write Storm Stories • Keep classroom weather log with corresponding clouds noted. • Read to class the book: <u>The Drop in My Drink</u> By Merideth Hooper • Videos: Bill Nye: <i>Wetlands</i>, Bill Nye: <i>Water Cycle</i> • SmartBoard Demonstrations and Activities 	<ul style="list-style-type: none"> • Text assignments • Chapter test • Teacher observation • Lab Activity Report • Students draw and label a poster showing the water cycle.
Common Core ELA Standard: Writing: 4.2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly.				

Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
	<p>How does erosion on Earth occur?</p> <p>How does erosion affect your environment?</p>	<p>2.1D. Erosion and deposition result from the interaction among air, water, and land:</p> <ul style="list-style-type: none"> • Interaction between air and water breaks down earth materials • Pieces of earth material may be moved by air, water, wind, and gravity • Pieces of earth material will settle or deposit on land or in the water in different places • Soil is composed of broken-down pieces of living and nonliving earth material <p>2.1E. Extreme natural events (floods, fires, earthquakes, volcanic eruptions, hurricanes, tornadoes, and other severe storms) may have positive or negative impacts on living things.</p>	<ul style="list-style-type: none"> • Cornell Cooperative Extension guest speaker • farmer guest speaker • Assemble classroom rock collection. • Videos: Bill Nye: <i>Erosion</i> • Erosion Search on school grounds • ELA story "Landslides" • Tornado tube demonstration. • Optional: <u>Night of the Twisters</u> literature unit. Use of weather maps to plot fall hurricane season. • SmartBoard Demonstrations and Activities 	<ul style="list-style-type: none"> • Text assignments • Chapter test • Teacher observation

Common Core ELA Standard: Reading Informational Texts: R.I. 4.3 Explain events, procedures, ideas, or concepts based on specific information in a text.

Physical Setting: Key Idea 3 Observe and describe properties of materials, using appropriate tools

<p>Observe and describe properties of materials, using appropriate tools.</p>	<p>How are materials alike and how are they different?</p> <p>Why do we measure things?</p> <p>How do you know what unit to use when measuring?</p> <p>Why is it important to use units when measuring?</p>	<p>Major Understandings:</p> <p>3.1A Matter takes up space and has mass. Two objects cannot occupy the same place at the same time.</p> <p>3.1B. Matter has properties (color, hardness, odor, sound, taste, etc.) That can be observed through the senses</p> <p>3.1C. Objects have properties that can be observed, described and/ or measured: length, width, volume, size, shape, mass or weight, temperature, texture, flexibility, reflectiveness of light.</p> <p>3.1D. Measurements can be made with standard metric units and non standard units.</p>	<ul style="list-style-type: none"> • <i>Classifying Rocks</i> Activity • <i>Science Trivia Game</i> • Play Mystery Matter game • FOSS Kit: Measurement Investigations 1, 2, 3, & 4. • FOSS Science Stories • FOSS Kit: Measurement Investigations 1, 2, & 3. • FOSS Science Stories • SmartBoard Demonstrations and Activities 	<ul style="list-style-type: none"> • Using balances and graduated cylinders, students will determine the mass of 50ml of water. • Students will correctly identify the properties used to describe matter. • Students will sort given set of identified rocks into 3 groups. • Text assignments • Chapter test • Teacher observation • Given a set of numbers with decimals, students will be able to read them. • Students will use spring scales to accurately measure classroom objects and record their results. • Given a set of numbers with decimals, students will be able to read them correctly. • Students will demonstrate the ability to accurately measure work by using the formula $W=F \times D$.
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Common Core ELA Standard: Reading Informational Texts: R.I. 4.1. Refer to examples and details in a text when explaining what the text says explicitly and when drawing conclusions from the text.

		<p>3.1E. The material(s) an object is made up of determine some specific properties of the object (sink/float, conductivity, magnetism). Properties can be observed or measured with tools such as hand lenses, metric rulers, thermometers, balances, magnets, circuit testers, and graduated cylinders</p> <p>3.1F. Objects and/or materials can be sorted or classified according to their properties</p>	<ul style="list-style-type: none"> • <i>Exploring Matter</i> Activity • <i>Exploring Mass</i> Activity • <i>Describing and Measuring Matter</i> Activity • <i>Comparing Series and Parallel Circuits</i> Activity • <i>Simple, Compound, and Complex Machines</i> Search • <i>Classifying Rocks</i> Activity • <i>Play Mystery Matter</i> game • <i>Animal Classification</i> Activity 	<ul style="list-style-type: none"> • Students will weigh and measure objects made of various materials and determine specific properties of each objects. • Students will construct and demonstrate properly working circuits and circuits with short circuits. • Students will share journal results of the tests they have conducted. • Students will label illustrations of simple machines. • Text assignments • Chapter test • Teacher observation • Lab Activity Report
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Common Core ELA Standard: Reading Informational Texts: R.I. 4.3 Explain events, procedures, ideas, or concepts based on specific information in a text.

<ul style="list-style-type: none"> Describe chemical and physical changes, including changes in states of matter. 	<ul style="list-style-type: none"> What are chemical and physical changes in states of matter? 	<p>3.1G. Some properties of an object are dependent on the conditions of the present surroundings in which the object exists. For example:</p> <ul style="list-style-type: none"> temperature - hot or cold lighting - shadows, color moisture - wet or dry <p>Major Understanding:</p> <ul style="list-style-type: none"> Matter exists in three states: solid, liquid, gas. Solids have a definite shape and volume. Liquids do not have a definite shape but have a definite volume. Gasses do not hold their shape or volume Temperature can affect the state of matter of a substance. Changes in the properties or materials of objects can be observed and described. 	<ul style="list-style-type: none"> <i>Exploring Surface Temperature Activity</i> <i>Investigating Air Pressure and Weather Activity</i> <i>Exploring How Magma Moves Activity</i> Vinegar and Baking Soda Demonstration <i>What's the Matter? Activity</i> Physical Changes in Paper and Clay Activity Use Kidspiration software to create graphic organizers of states of matter information. Mentos & Soda Demonstration SmartBoard Demonstrations and Activities 	<ul style="list-style-type: none"> Text assignments Chapter test Teacher observation Lab Activity Report Students will correctly identify the physical and chemical changes in states of matter. Text assignments Chapter test Teacher observation Lab Activity Report
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Common Core ELA Standard: Writing: 4.2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

Physical Setting: Key Idea 4 Energy exists in many forms, and when these forms change energy is conserved

<ul style="list-style-type: none"> Describe a variety of forms of energy (e.g. heat, chemical, light) and the changes that occur in objects when they interact with those forms of energy 	<p>What are some different forms of energy?</p> <p>How do objects change when they are exposed to different forms of energy?</p> <p>When is friction helpful?</p> <p>When is friction harmful?</p>	<p>Major understandings:</p> <p>4.1A. Energy exists in various forms: heat, electric, sound, chemical, mechanical, light.</p> <p>4.1B. Energy can be transferred from one place to another.</p> <p>4.1C. Some materials transfer energy better than others (heat and electricity).</p> <p>4.1D. Energy and matter interact: water is evaporated by the sun's heat; a bulb is lighted by means of electrical current; a musical instrument is played to produce sound; dark colors may absorb light, light colors may reflect light.</p> <p>4.1E. Electricity travels in a closed circuit.</p> <p>4.1F. Heat can be released in many ways, for example, by burning, rubbing (friction), or combining one substance with another.</p>	<ul style="list-style-type: none"> <i>Splat! Change Potential to Kinetic Energy Activity</i> Write "Forceful Sports" Broadcast. Read <u>Faith and the Electric Dogs</u> book. <i>Comparing Conductors Activity</i> <i>Building Simple Circuits Activity</i> <i>Exploring Surface Temperature Activity</i> Videos: Bill Nye: <i>Friction</i>, Bill Nye: <i>Energy</i>. FOSS Kit: Magnetism and Electricity <i>Create Open and Closed Circuits Activity</i> Friction activity with milk carton on different surfaces. Hand Rubbing Activity 	<ul style="list-style-type: none"> Students will be able to list any 5 energy sources. Students will write a paragraph using the topic sentence: Work is done only when a force moves something. Students will correctly construct a switch and draw diagrams of what they drew. Students will successfully complete quiz on parts of a light bulb. Text assignments Chapter test Teacher observation Lab Activity Report Students will give an example of when lubrication is needed and why.
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<p>Observe the way one form of energy can be transferred into another form of energy present in common situations (e.g. mechanical to heat energy, mechanical to electrical energy, chemical to heat power).</p>	<p>How does energy change?</p>	<p>4.1G. Interactions with forms of energy can be either helpful or harmful.</p> <p>Major understandings:</p> <p>4.2A. Everyday events involve one form of energy being changed to another</p> <ul style="list-style-type: none"> • Animals convert food to heat and motion <p>4.2B. Humans utilize interactions between matter and energy such as chemical to electrical, light, and heat: battery and bulb electrical to sound (e.g., doorbell buzzer), mechanical to sound (e.g., musical instrument, clapping), light to electrical (e.g., solar-powered calculator)</p>	<ul style="list-style-type: none"> • Electrical Safety Posters • Fire Safety Poster Contest • Conduct Safety Survey • Food Web Collages • Videos: Bill Nye: <i>Electricity</i>, Bill Nye: <i>Food Web</i> • Rolling Marble/Milk Carton Energy Activity • <i>Comparing Series and Parallel Circuits</i> Activity • <i>Create Open and Closed Circuits</i> Activity • <i>Build an Electromagnet</i> Activity • FOSS Science Stories • SmartBoard Demonstrations and Activities 	<ul style="list-style-type: none"> • Text assignments • Chapter test • Teacher observation • Lab Activity Report <p>Students will draw and label a series circuit correctly with appropriate electrical symbols.</p> <p>Students will draw and label a parallel circuit correctly with appropriate electrical symbols.</p> <ul style="list-style-type: none"> • Text assignments • Chapter test • Teacher observation • Lab Activity Report
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Common Core ELA Standard: Writing: 4.2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

Science Grade 4 Standard 4

Physical Setting: Key Idea 5 Energy and matter interact through forces that result in changes in motion.				
Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
Describe the effects of common forces (pushes and pulls) of objects, such as those caused by gravity, magnetism, and mechanical forces.	<p>How do simple machines make man's life easier?</p> <p>What are the effects of gravity?</p> <p>How does friction affect the amount of work to be done?</p>	<p>Major Understandings</p> <p>5.1A. The position of an object can be described by locating it relative to another object or the background (e.g., on top of, next to, over, under, etc.).</p> <p>5.1B. The position or direction of motion of an object can be changed by pushing or pulling.</p> <p>5.1C. The force of gravity pulls objects toward the center of Earth.</p> <p>5.1D. The amount of change in the motion of an object is affected by friction.</p> <p>5.1E. Magnetism is a force that may attract or repel certain materials.</p>	<ul style="list-style-type: none"> • Playground Demonstration • Plan & Perform Puppet Show • <i>Ball and Cup Motion Game</i> • <i>Coin on Index Card Over a Cup Inertia Demonstration</i> • <i>Simple, Compound, and Complex Machines Search Activity</i> • <i>Friction on Different Surfaces Activity</i> • Have students write short stories about how ancient people may have discovered that lodestones were magnetic • <i>Experimenting with Electromagnets Activity</i> 	<ul style="list-style-type: none"> • Text assignments • Chapter test • Teacher observation • Lab Activity Report • Students will write a paragraph explaining how lubricants affect friction. • Students will test rock and mineral samples to determine if they interact with a magnet.

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	<p>How can pulleys make it easier to lift an object?</p> <p>What are the six simple machines?</p>	<p>5.1F. Mechanical energy maybe cause change in motion through the application of force and through the use of simple machines such as pulleys, levers, and inclined planes.</p>	<ul style="list-style-type: none"> • <i>Lever</i>s Activity • <i>Pulleys</i> Activity • Video - "<i>Using Simple Machines</i>" • Ithaca Sciencenter Field Trip • SmartBoard Demonstrations and Activities 	<ul style="list-style-type: none"> • Students will correctly build and operate all three kinds of pulleys. • Students will correctly identify all 6 simple machines and describe how they make work easier.
<p>Common Core ELA Standard: Reading Informational Texts: R.I. 4.1. Refer to examples and details in a text when explaining what the text says explicitly and when drawing conclusions from the text.</p>				
<ul style="list-style-type: none"> • Describe how forces can operate across distances. 		<p>Major Understandings:</p> <p>5.2A. The forces of gravity and magnetism can affect objects through gases, liquids, and solids.</p> <p>5.2B. The force of magnetism on objects decreases as distance increases.</p>	<ul style="list-style-type: none"> • <i>Building Simple Machines</i> Activity • <i>Pulleys</i> Activity • FOSS Kit: Magnetism & Electricity Activity 1 • SmartBoard Demonstrations and Activities 	<ul style="list-style-type: none"> • Text assignments • Chapter test • Teacher observation • Lab Activity Report
<p>Common Core ELA Standard: Writing: 4.2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</p>				