

Grade K
 Life Science

State Standard	FOSS Program
K.LS1: From Molecules to Organisms: Structures and Processes	
1) Use information from observations to identify differences between plants and animals (locomotion, obtainment of food, and take in air/gasses). 2) Recognize differences between living organisms and non-living materials and sort them into groups by observable physical attributes. 3) Explain how humans use their five senses in making scientific findings.	FOSS Next Generation Animals Two by Two TE: Investigation 1; Parts 1-5 Investigation 2; Parts 1-3 Investigation 3; Parts Investigation 4; Parts 1-3 SE: <i>Fish Same and Different, Fish Live in Many Places, Birds Outdoors, Water and Land Snails, Worms in Soil, Isopods, Animals All Around Us, Living and Nonliving</i> DR: Seashore Surprises, Find the Parent FOSS Next Generation Trees and Weather TE: Investigation 1; Parts 1-4 Investigation 2; Parts 1-5 SE: <i>How Do We Learn?</i> DR: Leaf Sorting, Once There Was a Tree
State Standard	FOSS Program
K.LS3.1: Heredity: Inheritance and Variation of Traits	
1) Make observations to describe that young plants and animals resemble their parents.	FOSS Next Generation Animals Two by Two TE: Investigation 3; Part 4 SE: <i>Animals All Around Us</i> DR: Find the Parent

Earth and Space Science

State Standard	FOSS Program
K.ESS2: Earth's Systems	
1) Analyze and interpret weather data (precipitation, wind, temperature, cloud cover) to describe weather patterns that occur over time (hourly, daily) using simple graphs, pictorial weather symbols, and tools (thermometer, rain gauge). 2) Develop and use models to predict weather and identify patterns in spring, summer, autumn, and winter.	FOSS Next Generation Trees and Weather TE: Investigation 3; Parts 1-3 Investigation 4; Parts 1-9 SE: <i>Up in the Sky, Weather, My Apple Tree, Orange Trees, Maple Trees</i> DR: Who Lives Here?, Once There Was a Tree, Summer
State Standard	FOSS Program
K.ESS3: Earth and Human Activity	
1) Use a model to represent the relationship between the basic needs (shelter, food, water) of different plants and animals (including humans) and the places they live. 2) Explain the purpose of weather forecasting to prepare for, and respond to, severe weather in Tennessee. 3) Communicate solutions that will reduce the impact from humans on land, water, air, and other living things in the local environment.	FOSS Next Generation Trees and Weather TE: Investigation 3; Parts 1-3 Investigation 4; Parts 1-9 SE: <i>Up in the Sky, Weather, My Apple Tree, Orange Trees, Maple Trees</i>

TE: Teacher Editions-Investigations Guide, Teacher Resources • SE: Student Edition-Science Resources Book • DR: Digital Resources

Grade K
 Physical Science

State Standard	FOSS Program
K.PS1: Matter and Its Interactions	
1) Plan and conduct an investigation to describe and classify different kinds of materials including wood, plastic, metal, cloth, and paper by their observable properties (color, texture, hardness, and flexibility) and whether they are natural or human-made. 2) Conduct investigations to understand that matter can exist in different states (solid and liquid) and has properties that can be observed and tested. 3) Construct an evidence-based account of how an object made of a small set of pieces (blocks, snap cubes) can be disassembled and made into a new object.	FOSS Next Generation Materials and Motion TE: Investigation 1; Parts 1-4 Investigation 2; Parts 1-4 Investigation 3; Parts 1-4 SE: <i>The Story of a Chair, The Story of a Box, What is Fabric Made From?, How Are Fabrics Used?</i> DR: Where is Wood?, Weave a Pattern

Engineering Design ETS

State Standard	FOSS Program
K.ETS1: Engineering Design	
1) Ask and answer questions about the scientific world and gather information using the senses. 2) Describe objects accurately by drawing and/or labeling pictures.	FOSS Next Generation Materials and Motion TE: Investigation 4; Parts 1-4 SE: <i>Pushes and Pulls, Collisions,</i> DR: Build a Roller Coaster FOSS Next Generation Trees and Weather TE: Investigation 1; Parts 1-4 Investigation 2; Parts 1-5 SE: <i>How Do We Learn?,</i> DR: Leaf Sorting, Once There Was a Tree FOSS Next Generation Animals Two by Two TE: Investigation 1; Parts 1-5 Investigation 2; Parts 1-3 Investigation 3; Parts 1-3 Investigation 4; Parts 1-3 SE: <i>Fish Same and Different, Fish Live in Many Places, Birds Outdoors, Water and Land Snails, Worms in Soil, Isopods, Animals All Around Us, Living and Nonliving</i> DR: Seashore Surprises, Find the Parent

State Standard	FOSS Program
K.ETS2: Links Among Engineering, Technology, Science, and Society	
1) Use appropriate tools (magnifying glass, rain gauge, basic balance scale) to make observations and answer testable scientific questions.	FOSS Next Generation Materials and Motion TE: Investigation 4; Parts 1-4 SE: <i>Pushes and Pulls, Collisions,</i> DR: Build a Roller Coaster FOSS Next Generation Trees and Weather TE: Investigation 3; Parts 2-3 SE: <i>Up in the Sky, Weather</i> FOSS Next Generation Animals Two by Two TE: Investigation 3; Part 1 Investigation 4; Part 1

TE: Teacher Editions-Investigations Guide, Teacher Resources • SE: Student Edition-Science Resources Book • DR: Digital Resources

Grade 1
 Life Science

State Standard	FOSS Program
<p>1.LS1: From Molecules to Organisms: Structures and Processes</p> <p>1) Recognize the structure of plants (roots, stems, leaves, flowers, fruits) and describe the function of the parts (taking in water and air, producing food, making new plants).</p> <p>2) Illustrate and summarize the life cycle of plants.</p> <p>3) Analyze and interpret data from observations to describe how changes in the environment cause plants to respond in different ways.</p>	<p>FOSS Next Generation Plants and Animals</p> <p>TE: Investigation 1; Parts 1-4 Investigation 2; Parts 1-3 Investigation 3; Parts 1-4 Investigation 3; Parts 1-3 Investigation 4; Parts 1-3</p> <p>SE: <i>What do Plants Need?, The Story of Wheat, Variation, Plants and Animals Around the World, Learning from Nature</i></p> <p>DR: How Plants Grow, How Plants Live in Different Places, Watch it Grow</p>
State Standard	FOSS Program
<p>1.LS2: Ecosystems: Interactions, Energy, and Dynamics</p> <p>1) Conduct an experiment to show how plants depend on air, water, minerals from soil, and light to grow and thrive.</p> <p>2) Obtain and communicate information to classify plants by where they grow (water, land) and the plant's physical characteristics.</p> <p>3) Recognize how plants depend on their surroundings and other living things to meet their needs in the places they live.</p>	<p>FOSS Next Generation Plants and Animals</p> <p>TE: Investigation 1; Parts 1-4 Investigation 2; Parts 1-3 Investigation 3; Parts 1-4 Investigation 3; Parts 1-3 Investigation 4; Parts 1-3</p> <p>SE: <i>What do Plants Need?, The Story of Wheat, Variation, Plants and Animals Around the World, Learning from Nature</i></p> <p>DR: How Plants Grow, How Plants Live in Different Places, Watch it Grow</p>

Earth and Space Science

State Standard	FOSS Program
<p>1.ESS1: Earth's Place in the Universe</p> <p>1) Use observations or models of the sun, moon, and stars to describe patterns that can be predicted.</p> <p>2) Observe natural objects in the sky that can be seen from Earth with the naked eye and recognize that a telescope, used as a tool, can provide greater detail of objects in the sky.</p> <p>3) Analyze data to predict patterns between sunrise and sunset, and the change of seasons.</p>	<p>FOSS Next Generation Air and Weather</p> <p>TE: Investigation 2; Parts 1-4 Investigation 4; Parts 1-4</p> <p>SE: <i>What is the Weather Today?, Clouds, Water in the Air, Changes in the Sky, Seasons, Getting through the Winter</i></p> <p>DR: Cloud Catcher</p>

Grade 1
 Physical Science

State Standard	FOSS Program
1.PS3: Energy	
1) Make observations to determine how sunlight warms Earth's surfaces (sand, soil, rocks, and water).	FOSS Next Generation Air and Weather TE: Investigation 2; Part 2 SE: <i>What is the Weather Today?</i>
State Standard	FOSS Program
1.PS4: Waves and Their Application in Technologies for Information Transfer	
1) Use a model to describe how light is required to make objects visible. Summarize how illumination could be from an external light source or by an object giving off its own light. 2) Determine the effect of placing objects made with different materials (transparent, translucent, opaque, and reflective) in the path of a beam of light.	FOSS Next Generation Sound and Light TE: Investigation 1; Parts 1-3 (Addresses Gr. 2: 2PS4) Investigation 2; Parts 1-4 (Gr. 2: 2PS4) Investigation 3; Parts 1-3 Investigation 4; Parts 1-4 SE: <i>Vibrations and Sound, Listen to This, Animal Ears and Hearing, Strings in Motion, More Musical Instruments, Playing in the Light, Reflections, Seeing the Light, Communicating with Light</i> DR: Sorting Sounds, All About Sound, Light and Shadows, All About Light, My Shadow, Light and Darkness

Engineering Design ETS

State Standard	FOSS Program
1.ETS1: Engineering Design	
1) Solve scientific problems by asking testable questions, making short-term and long-term observations, and gathering information.	FOSS Next Generation Air and Weather TE: Investigation 1; Parts 1-5 Investigation 3; Parts 1-5 SE: <i>What is All Around Us?, Understanding the Weather,</i> DR: Friction and Air Resistance, Wind Speed FOSS Next Generation Sound and Light TE: Investigation 2; Part 4 Investigation 4; Part 4 SE: <i>Communicating with Light</i>
State Standard	FOSS Program
1.ETS2: Links Among Engineering, Technology, Science, and Society	
1) Use appropriate tools (magnifying glass, basic balance scale) to make observations and answer testable scientific questions.	FOSS Next Generation Air and Weather TE: Investigation 1; Parts 3-4 Investigation 2; Part 2 Investigation 3; Part 4 SE: <i>What is the Weather Today?, Understanding the Weather</i> FOSS Next Generation Plants and Animals TE: Investigation 3; Part 2 SE: <i>Plants and Animals Around the World</i>

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Grade 2
 Life Science

State Standard	FOSS Program
2.LS1: From Molecules to Organisms: Structures and Processes	
1) Use evidence and observations to explain that many animals use their body parts and senses in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air. 2) Obtain and communicate information to classify animals (vertebrates-mammals, birds, amphibians, reptiles, fish, invertebrates-insects) based on their physical characteristics. 3) Use simple graphical representations to show that species have unique and diverse life cycles.	FOSS Next Generation <i>Insects and Plants</i> TE: Investigation 1; Parts 1-3 Investigation 2 Investigation 3; Parts 1-4 Investigation 3; Parts 1-3 SE: <i>Animals and Plants in Their Habitats, Flowers and Seeds, How Seeds Travel, Watch It Grow, So Many Kinds, So Many Places; Insect Shapes and Colors, Insect Life Cycles, Life Goes Around</i> DR: Insect Hunt, How Plants Grow; What is Pollination?
State Standard	FOSS Program
2.LS2: Ecosystems: Interactions, Energy, and Dynamics	
1) Develop and use models to compare how animals depend on their surroundings and other living things to meet their needs in the places they live. 2) Predict what happens to animals when the environment changes (temperature, cutting down trees, wildfires, pollution, salinity, drought, land preservation).	FOSS Next Generation <i>Insects and Plants</i> TE: Investigation 1; Parts 1-3 Investigation 2: Investigation 3; Parts 1-4 Investigation 3; Parts 1-3 SE: <i>Animals and Plants in Their Habitats, Flowers and Seeds, How Seeds Travel, Watch It Grow, So Many Kinds, So Many Places; Insect Shapes and Colors, Insect Life Cycles, Life Goes Around</i> DR: Insect Hunt, How Plants Grow, What is Pollination? FOSS Next Generation <i>Sound and Light</i> TE: Investigation 2; Part 1 SE: <i>Animal Ears and Hearing</i>
State Standard	FOSS Program
2.LS3: Heredity: Inheritance and Variation of Traits	
1) Use evidence to explain that living things have physical traits inherited from parents and that variations of these traits exist in groups of similar organisms.	FOSS Next Generation <i>Insects and Plants</i> TE: Investigation 1; Parts 1-3 Investigation 2: Investigation 3; Parts 1-4 Investigation 3; Parts 1-3 SE: <i>Animals and Plants in Their Habitats, Flowers and Seeds, How Seeds Travel, Watch It Grow, So Many Kinds, So Many Places; Insect Shapes and Colors, Insect Life Cycles, Life Goes Around</i> DR: Insect Hunt, How Plants Grow, What is Pollination?

Earth and Space Science

State Standard	FOSS Program
2.ESS1: Earth's Place in the Universe	
1) Recognize that some of Earth's natural processes are cyclical, while others have a beginning and an end. Some events happen quickly, while others occur slowly over time.	FOSS Next Generation <i>Pebbles, Sand and Silt</i> TE: Investigation 1; Parts 1-2 Investigation 4; Parts 1-4 SE: <i>Exploring Rocks</i> DR: All About Volcanoes

TE: Teacher Editions-Investigations Guide, Teacher Resources • SE: Student Edition-Science Resources Book • DR: Digital Resources

Grade 2

State Standard	FOSS Program
2.ESS2: Earth's Systems	
<p>1) Compare the effectiveness of multiple solutions designed to slow or prevent wind or water from changing the shape of the land.</p> <p>2) Observe and analyze how blowing wind and flowing water can move Earth materials (soil, rocks) from one place to another, changing the shape of a landform and affecting the habitats of living things.</p> <p>3) Compare simple maps of different land areas to observe the shapes and kinds of land (rock, soil, sand) and water (river, stream, lake, pond).</p> <p>4) Use information obtained from reliable sources to explain that water is found in the ocean, rivers, streams, lakes, and ponds, and may be solid or liquid.</p>	<p>FOSS Next Generation Pebbles, Sand and Silt TE: Investigation 1; Parts 1-3 Investigation 2; Parts 1-4 Investigation 4; Parts 1-4 SE: <i>Exploring Rocks, The Story of Sand, Rocks Move, Landforms, What is Soil? Testing Soil, Where is Water Found? States of Water, Erosion, Ways to Represent Land and Water</i> DR: All About Volcanoes, Rock Sorting, All About Land Formations</p>

Physical Science

State Standard	FOSS Program
2.PS2: Motion and Stability: Forces and Interactions	
<p>1) Analyze the push or the pull that occurs when objects collide or are connected.</p> <p>2) Evaluate the effects of different strengths and directions of a push or a pull on the motion of an object.</p> <p>3) Recognize the effect of multiple pushes and pulls on an object's movement or non-movement</p>	<p>FOSS Third Edition Balance and Motion TE: Investigation 1; Parts 1-4 Investigation 2; Parts 1-3 Investigation 3; Parts 1-4 Investigation 5; Part 1 SE: <i>Make it Balance, Push or Pull, Things That Spin, Rolling, Rolling; Move It, but Don't Touch It</i> FOSS Next Generation Motion and Matter TE: Investigation 4; Parts 1-3 SE: <i>Pushes and Pulls, Collisions</i> DR: Build a Roller Coaster</p>
2.PS3: Energy	
<p>1) Demonstrate how a stronger push or pull makes things go faster and how faster speeds during a collision can cause a bigger change in the shape of the colliding objects.</p> <p>2) Make observations and conduct experiments to provide evidence that friction produces heat and reduces or increases the motion of an object.</p>	<p>FOSS Third Edition Balance and Motion TE: Investigation 1; Parts 1-4 Investigation 2; Parts 1-3 Investigation 3; Parts 1-4 SE: <i>Make it Balance, Push or Pull, Things That Spin, Rolling, Rolling;</i> FOSS Next Generation Motion and Matter TE: Investigation 4; Parts 1-3 SE: <i>Pushes and Pulls, Collisions,</i> DR: Build a Roller Coaster</p>
2.PS4: Waves and Their Applications in Technologies for Information Transfer	
<p>1) Plan and conduct investigations to demonstrate the cause and effect relationship between vibrating materials (tuning forks, water, bells) and sound.</p>	<p>FOSS Third Edition Balance and Motion TE: Investigation 4; Parts 1-3 SE: <i>Strings in Motion</i></p>

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Grade 2

<p>2) Use tools and materials to design and build a device to understand that light and sound travel in waves and can send signals over a distance.</p> <p>3) Observe and demonstrate that waves move in regular patterns of motion by disturbing the surface of shallow and deep water.</p>	<p>Fully Addressed in Grade 1 FOSS Next Generation Sound and Light TE: Investigation 1; Parts 1-3 Investigation 2; Parts 1-4 Investigation 3; Parts 1-3 Investigation 4; Parts 1-4 SE: <i>Vibrations and Sound, Listen to This, Animal Ears and Hearing, Strings in Motion, More Musical Instruments, Playing in the Light, Reflections, Seeing the Light, Communicating with Light</i> DR: Sorting Sounds, All About Sound, Light and Shadows, All About Light, My Shadow, Light and Darkness,</p>
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Engineering Design ETS

State Standard	FOSS Program
<p>2.ETS1: Engineering Design</p> <p>1) Define a simple problem that can be solved through the development of a new or improved object or tool by asking questions, making observations, and gather accurate information about a situation people want to change.</p> <p>2) Develop a simple sketch, drawing, or physical model that communicates solutions to others. 28</p> <p>3) Recognize that to solve a problem, one may need to break the problem into parts, address each part, and then bring the parts back together</p> <p>4) Compare and contrast solutions to a design problem by using evidence to point out strengths and weaknesses of the design.</p>	<p>FOSS Third Edition Balance and Motion TE: Investigation 1; Part 4 Investigation 2; Parts 2- 3 Investigation 3; Part 3 SE: <i>Things That Spin</i></p> <p>FOSS Next Generation Pebbles Sand and Silt TE: Investigation 4; Part 4 SE: <i>Erosion</i></p>
State Standard	FOSS Program
<p>2.ETS2: Links Among Engineering, Technology, Science, and Society</p> <p>1) Use appropriate tools to make observations, record data, and refine design ideas.</p> <p>2) Predict and explain how human life and the natural world would be different without current technologies.</p>	<p>FOSS Third Edition Balance and Motion TE: Investigation 1; Part 4 Investigation 2; Parts 2- 3 Investigation 3; Part 3 Investigation 5; Part 2 SE: <i>Things That Spin, Tools and Machines</i> DR: All About Simple Machines</p> <p>FOSS Next Generation Pebbles, Sand and Silt TE: Investigation 3; Parts 1-5 SE: <i>Making Things with Rocks,</i> DR: Find Earth Materials</p>

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Grade 3
 Life Science

State Standard	FOSS Program
<p>3.LS1: From Molecules to Organisms: Structures and Processes</p> <p>1) Analyze the internal and external structures that aquatic and land animals and plants have to support survival, growth, behavior, and reproduction.</p>	<p>FOSS Next Generation Structures of Life TE: Investigation 1; Parts 1-4 Investigation 2; Parts 1-4 Investigation 3; Parts 1-3 SE: <i>The Reason for Fruit, the Most Important Seed, Barbara McClintock Nature Journal-How Seeds Travel, Germination, Life Cycles, Crayfish, Adaptations, Life on Earth</i> DR: How Seeds Get Here-And There, How Plants Get Food, All About Animal Life Cycles, All About Animal Adaptations, Walking Stick Survival, All About Animal Behavior and Communication</p>
State Standard	FOSS Program
<p>3.LS2: Ecosystems: Interactions, Energy, and Dynamics</p> <p>. 1) Construct an argument to explain why some animals benefit from forming groups.</p>	<p>FOSS Next Generation Structures of Life TE: Investigation 3; part 3 SE: <i>Life on Earth, All About Animal Behavior and Communication</i></p>
State Standard	FOSS Program
<p>3.LS4: Biological Change: Unity and Diversity</p> <p>1) Explain the cause and effect relationship between a naturally changing environment and an organism's ability to survive.</p> <p>2) Infer that plant and animal adaptations help them survive in land and aquatic biomes. 3) Explain how changes to an environment's biodiversity influence human resources.</p>	<p>FOSS Next Generation Structures of Life TE: Investigation 1; Parts 1-4 Investigation 2; Parts 1-4 Investigation 3; Parts 1-3 SE: <i>The Reason for Fruit, the Most Important Seed, Barbara McClintock Nature Journal-How Seeds Travel, Germination, Life Cycles, Crayfish, Adaptations, Life on Earth</i> DR: How Seeds Get Here-And There, How Plants Get Food, All About Animal Life Cycles, All About Animal Adaptations, Walking Stick Survival, All About Animal Behavior and Communication</p>

TE: Teacher Editions-Investigations Guide, Teacher Resources • SE: Student Edition-Science Resources Book • DR: Digital Resources

Grade 3
 Earth and Space Science

State Standard	FOSS Program
3.ESS1: Earth's Place in the Universe	
1) Use data to categorize the planets in the solar system as inner or outer planets according to their physical properties.	Delta Science Reader: Solar System
State Standard	FOSS Program
3.ESS2: Earth's Systems	
1) Explain the cycle of water on Earth.	FOSS Next Generation Water and Climate TE: Investigation 1; Parts 1-4 Investigation 2; Parts 1-5 Investigation 3; Parts 1-5 Investigation 4; Parts 1-2 SE: <i>A Report from the Blue Planet, Surface Tension, Which Way Does it Go?, Opinion and Evidence, Water Everywhere, Vacation Aggravation, Celsius and Fahrenheit, Water: Hot and Cold, Ice is Everywhere, Studying Weather, Drying Up, Surface-Area Experiment, Condensation, the Water Cycle, Climate Regions,</i> DR: Measuring Volume, Measuring Mass, Measuring Temperature, Reading a Thermometer, Expansion and Contraction of Water, All About Meteorology, Water Cycle, Weather Grapher, Evaporation Experiment, All About Climate and Seasons, Climate Regions Map
2) Associate major cloud types (cumulus, cumulonimbus, cirrus, stratus, nimbostratus) with weather conditions.	
3) Use tables, graphs, and tools to describe precipitation, temperature, and wind (direction and speed) to determine local weather and climate.	
4) Incorporate weather data to describe major climates (polar, temperate, tropical) in different regions of the world.	
State Standard	FOSS Program
3.ESS3: Earth and Human Activity	
1) Explain how natural hazards (fires, landslides, earthquakes, volcanic eruptions, floods) impact humans and the environment.	FOSS Next Generation Water and Climate TE: Investigation 4; Part 3 Investigation 5 Parts 1-2 SE: <i>Wetlands for Flood Control, Conserving Water During Droughts, Come a Tide, Floods, Water: A Vital Resource, Making Drinking Water Safe</i>
2) Design solutions to reduce the impact of natural hazards (fires, landslides, earthquakes, volcanic eruptions, floods) on the environment.	

Physical Science

State Standard	FOSS Program
3.PS1: Matter and Its Interactions	
1) Describe the properties of solids, liquids, and gases and identify that matter is made up of particles too small to be seen.	FOSS Next Generation Motion and Matter TE: Investigation 4; Parts 1-3 SE: <i>Mixtures, Reactions, Careers You Can Count On,</i> DR: Measuring Mass, Conservation of Mass, Measuring Volume and Mass, Measuring Volume, Chemical Reaction, Metric Mystery, Measuring Length, Measurement Logic 3.PS1.2 is supplemented with Delta Science Content Reader: Changes in Matter (2 reading levels)
2) Differentiate between changes caused by heating or cooling that can be reversed and that cannot.	
3) Describe and compare the physical properties of matter including color, texture, shape, length, mass, temperature, volume, state, hardness, and flexibility.	
State Standard	FOSS Program
3.PS2: Motion and Stability: Forces and Interactions	
1) Explain the cause and effect relationship of magnets.	FOSS Next Generation Motion and Matter TE: Investigation 1; Parts 1-3 SE: <i>Magnetism and Gravity, What Scientists Do, Change and Motion</i> DR: Magnetic Poles, All About Motion and Balance, All about Magnets
2) Solve a problem by applying the use of the interactions between two magnets.	

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Grade 3

State Standard	FOSS Program
3.PS3: Energy	
1) Recognize that energy is present when objects move; describe the effects of energy transfer from one object to another. 2) Apply scientific ideas to design, test, and refine a device that converts electrical energy to another form of energy, using open or closed simple circuits. 3) Evaluate how magnets cause changes in the motion and position of objects, even when the objects are not touching the magnet.	FOSS Next Generation Motion and Matter TE: Investigation 2; Parts 1-4 Investigation 3; Parts 1-3 SE: <i>Patterns of Motion, What Goes Around, What Engineers Do, Engineering Practices, Soap Box Derby, The Metric System, How Scientists and Engineers Work Together, Magnets at Work</i> DR: Roller Coaster Builder, Measuring Length, Measuring Logic,

Engineering Design

State Standard	FOSS Program
3.ETS1: Engineering Design	
1) Design a solution to a real-world problem that includes specified criteria for constraints. 2) Apply evidence or research to support a design solution. by comparing them to specified criteria for constraints.	FOSS Next Generation Motion and Matter TE: Investigation 3; Parts 1-3 SE: <i>What Engineers Do, Engineering Practices, Soap Box Derby, The Metric System, How Scientists and Engineers Work Together, Magnets at Work</i> DR: Roller Coaster Builder, Measuring Length, Measuring Logic FOSS Next Generation Water and Climate TE: Investigation 5; Part 3 SE: <i>Using the Energy of Water</i>
State Standard	FOSS Program
3.ETS2: Links Among Engineering, Technology, Science, and Society	
1) Identify and demonstrate how technology can be used for different purposes.	FOSS Next Generation Motion and Matter TE: Investigation 3; Parts 1-3 SE: <i>What Engineers Do, Engineering Practices, Soap Box Derby, The Metric System, How Scientists and Engineers Work Together, Magnets at Work</i> DR: Roller Coaster Builder, Measuring Length, Measuring Logic FOSS Next Generation Water and Climate TE: Investigation 2; Parts 1-2 Investigation 3; Part 1 Investigation 5; Parts 2-3 SE: <i>Celsius and Fahrenheit, Studying Weather, Making Drinking Water Safe, Using the Energy of Water</i> DR: Measuring Temperature, Reading a Thermometer, All About Meteorology, Weather Grapher

TE: Teacher Editions-Investigations Guide, Teacher Resources • SE: Student Edition-Science Resources Book • DR: Digital Resources

Grade 4
 Life Science

State Standard	FOSS/Delta Program
4.LS2: Ecosystems: Interactions, Energy, and Dynamics	FOSS/Delta Program
<p>1) Support an argument with evidence that plants get the materials they need for growth and reproduction chiefly through a process in which they use carbon dioxide from the air, water, and energy from the sun to produce sugars, plant materials, and waste (oxygen); and that this process is called photosynthesis.</p> <p>2) Develop models of terrestrial and aquatic food chains to describe the movement of energy among producers, herbivores, carnivores, omnivores, and decomposers.</p> <p>3) Using information about the roles of organisms (producers, consumers, decomposers), evaluate how those roles in food chains are interconnected in a food web, and communicate how the organisms are continuously able to meet their needs in a stable food web.</p> <p>4) Develop and use models to determine the effects of introducing a species to, or removing a species from, an ecosystem and how either one can damage the balance of an ecosystem.</p> <p>5) Analyze and interpret data about changes (land characteristics, water distribution, temperature, food, and other organisms) in the environment and describe what mechanisms organisms can use to affect their ability to survive and reproduce.</p>	<p>FOSS Next Generation Environments TE: Investigation 1; Parts 1-3 Investigation 2; Parts 1-4 Investigation 3; Parts 1-4 SE: <i>Two Terrestrial Environments, Darkling Beetles, Setting Up a Terrarium, Isopods, Amazon Rain Forest Journal, Freshwater Environments, What is an Ecosystem? Food Chains and Food Webs, Human Activities and Aquatic Ecosystems, Comparing Aquatic and Terrestrial Ecosystems, Animal Sensory Systems, Saving Murrelets through Mimicry, Brine Shrimp, The Mono Lake Story, What Happens When Ecosystems Change, The Shrimp Club?, Variation and Selection, Environmental Scientists, Range of Tolerance, How Organisms Depend on One Another, Animals From the Past,</i> DR: Virtual Aquarium, Virtual Terrarium, Animal Language and Communication, Food Webs, Trout Range of Tolerance, Analyzing Environmental Experiments, All about Plant Adaptations</p>
4.LS4: Biological Change: Unity and Diversity	FOSS/Delta Program
<p>1) Obtain information about what a fossil is and ways a fossil can provide information about the past.</p>	<p>FOSS Next Generation Environments TE: Investigation 4; Part 2 SE: <i>Animals from the Past</i></p> <p>FOSS Next Generation Soils, Rocks, and Landforms TE: Investigation 2; Part 4 SE: <i>Fossils Tell a Story,</i> DR: Fossils</p>

Earth and Space Science

State Standard	FOSS/Delta Program
4.ESS1: Earth's Place in the Universe	FOSS/Delta Program
<p>1) Generate and support a claim with evidence that over long periods of time, erosion (weathering and transportation) and deposition have changed landscapes and created new landforms.</p> <p>2) Use a model to explain how the orbit of the Earth and sun cause observable patterns: a. day and night; b. changes in length and direction of shadows over a day.</p>	<p>FOSS Next Generation Soils, Rocks, and Landforms TE: Investigation 1; Parts 1-4 Investigation 2; Parts 1-4 Investigation 3; Part 4 SE: <i>What is Soil?, Weathering, Erosion and Deposition, Landforms Photo Album, It Happened So Fast,</i> DR: Weathering and Erosion, Soils, Geology Lab: Stream Tables, Tutorial-Stream Tables: Slope and Flood, Virtual Investigation-Stream Tables</p>

TE: Teacher Editions-Investigations Guide, Teacher Resources • SE: Student Edition-Science Resources Book • DR: Digital Resources

Grade 4

State Standard	FOSS/Delta Program
4.ESS2: Earth's Systems	FOSS/Delta Program
<p>1) Collect and analyze data from observations to provide evidence that rocks, soils, and sediments are broken into smaller pieces through mechanical weathering (frost wedging, abrasion, tree root wedging) and are transported by water, ice, wind, gravity, and vegetation.</p> <p>2) Interpret maps to determine that the location of mountain ranges, deep ocean trenches, volcanoes, and earthquakes occur in patterns.</p> <p>3) Provide examples to support the claim that organisms affect the physical characteristics of their regions.</p> <p>4) Analyze and interpret data on the four layers of the Earth, including thickness, composition, and physical states of these layers.</p>	<p>FOSS Next Generation Soils, Rocks, and Landforms TE: Investigation 1; Parts 1-4 Investigation 2; Parts 1-4 Investigation 3: Parts 1-4 Investigation 4; Part 3 SE: <i>What is Soil?, Weathering, Erosion and Deposition, Landforms Photo Album, It Happened So Fast, Topographic Maps, The Story of Mt Shasta, It Happened So Fast, Where Do Rocks Come From?</i> DR: Weathering and Erosion, Soils, Geology Lab: Stream Tables, Tutorial-Stream Tables: Slope and Flood, Virtual Investigation-Stream Tables, Volcanoes, Topographer, Mt. St. Helen's Impact</p>
4.ESS3: Earth and Human Activity	FOSS/Delta Program
<p>1) Obtain and combine information to describe that energy and fuels are derived from natural resources and that some energy and fuel sources are renewable (sunlight, wind, water) and some are not (fossil fuels, minerals).</p> <p>2) Create an argument, using evidence from research, that human activity (farming, mining, building) can affect the land and ocean in positive and/or negative ways.</p>	<p>FOSS Next Generation Soils, Rocks, and Landforms TE: Investigation 4; Parts 1-3 Investigation 1; Part 3 SE: <i>Geoscientists at Work, Making Concrete, Weathering</i> DR: Natural Resources, Resources ID, Weathering and Erosion</p> <p>FOSS Next Generation Energy TE: Investigation 5; Part 3 SE: <i>Alternative Sources of Electricity</i></p>

Physical Science

State Standard	FOSS/Delta Program
4.PS3: Energy	FOSS/Delta Program
<p>1) Use evidence to explain the cause and effect relationship between the speed of an object and the energy of an object.</p> <p>2) Observe and explain the relationship between potential energy and kinetic energy. 3) Describe how stored energy can be converted into another form for practical use.</p>	<p>FOSS Next Generation Energy TE: Investigation 1; Parts 1-2 Investigation 4; Part 1-3 SE: <i>Edison Sees the Light, Energy Sources, Energy, What Causes Change of Motion?, Bowling, Force and Energy, Potential and Kinetic Energy at Work</i> DR: Lighting a Bulb, Flow of Electricity, Tutorial: Simple Circuits, Soccer, All About the Transfer of Energy</p>
4.PS4: Waves and their Application in Technologies for Information Transfer	FOSS/Delta Program
<p>1) Use a model of a simple wave to explain regular patterns of amplitude, wavelength, and direction.</p> <p>2) Describe how the colors of available light sources and the bending of light waves determine what we see.</p> <p>3) Investigate how lenses and digital devices like computers or cell phones use waves to enhance human senses.</p>	<p>FOSS Next Generation Energy TE: Investigation 5; Parts 1-3 SE: <i>Waves, Light Interactions, Throw a Little Light on Sight, More Light on the Subject, Alternative sources of Electricity, Ms Osgood's Class Report</i> DR: Sound Energy, Waves, Real World Science: Sound All Around Us, All About Light, Reflecting Light, Colored Light</p>

TE: Teacher Editions-Investigations Guide, Teacher Resources • SE: Student Edition-Science Resources Book • DR: Digital Resources

Grade 4
 Engineering Design

State Standard	FOSS/Delta Program
<p>4.ETS1: Engineering Design</p> <p>1) Categorize the effectiveness of design solutions by comparing them to specified criteria for constraints.</p>	<p>FOSS Next Generation Energy TE: Investigation 1; Parts 2-3 Investigation 3; Parts 1-3 Investigation 5; Part 3 SE: <i>Series and Parallel Circuits, Science Practices, Engineering Practices, Thinking Like an Engineer, Engineering a Solar Lighting Solution, Electricity Creates Magnetism, Using Magnetic Fields, Electromagnets Everywhere, Alternative Sources of Electricity</i> DR: Tutorial: Simple Circuits, Tutorial: Electromagnets, Virtual Electromagnet, Morse Gets Clicking</p>
State Standard	FOSS/Delta Program
<p>4.ETS2: Links Among Engineering, Technology, Science, and Society</p> <p>1) Use appropriate tools and measurements to build a model.</p> <p>2) Determine the effectiveness of multiple solutions to a design problem given the criteria and the constraints.</p> <p>3) Explain how engineers have improved existing technologies to increase their benefits, to decrease known risks, and to meet societal demands (artificial limbs, seatbelts, cell phones).</p>	<p>FOSS Next Generation Energy TE: Investigation 1; Parts 2-3 Investigation 3; Parts 1-3 Investigation 5; Part 3 SE: <i>Series and Parallel Circuits, Science Practices, Engineering Practices, Thinking Like an Engineer, Engineering a Solar Lighting Solution, Electricity Creates Magnetism, Using Magnetic Fields, Electromagnets Everywhere, Alternative Sources of Electricity</i> DR: Tutorial: Simple Circuits, Tutorial: Electromagnets, Virtual Electromagnet, Morse Gets Clicking</p> <p>4.ETS2.3 also addressed by: FOSS Next Generation Soils, Rocks, Landforms TE: Investigation 3; Part 3 Investigation 4; Part 1 SE: <i>Geoscientists at Work</i> DR: Mt. St. Helens</p>

Grade 5
 Life Science

State Standard	FOSS Program
5.LS1: From Molecules to Organisms: Structures and Processes	
1) Compare and contrast animal responses that are instinctual versus those that are gathered through the senses, processed, and stored as memories to guide their actions.	Delta ScienceFLEX Adaptations or Delta Science Reader: Heredity
State Standard	FOSS Program
5.LS3: Heredity: Inheritance and Variation of Traits	
1) Distinguish between inherited characteristics and those characteristics that result from a direct interaction with the environment. Apply this concept by giving examples of characteristics of living organisms that are influenced by both inheritance and the environment.	ScienceFLEX Adaptations or Delta Science Content Reader: Changes in Ecosystems
2) Provide evidence and analyze data that plants and animals have traits inherited from parents and that variations of these traits exist in a group of similar organisms.	
State Standard	FOSS Program
5.LS4: Biological Change: Unity and Diversity	
1) Analyze and interpret data from fossils to describe types of organisms and their environments that existed long ago. Compare similarities and differences of those to living organisms and their environments. Recognize that most kinds of animals (and plants) that once lived on Earth are now extinct.	5.LS4.1 and 5.LS4.2 addressed in FOSS Next Generation Environments (grade 4) TE: Investigation 4 Part 2 SE: <i>Animals from the Past</i>
2) Use evidence to construct an explanation for how variations in characteristics among individuals within the same species may provide advantages to these individuals in their survival and reproduction.	5.LS4.1 addressed in FOSS Next Generation Soils, Rocks, and Landforms (grade 4) TE: Investigation 2; Part 4 SE: <i>Fossils Tell a Story,</i> DR: Fossils
	5.LS4.2 ScienceFLEX Adaptations

Earth and Space Science

State Standard	FOSS Program
5.ESS1: Earth's Place in the Universe	
1) Explain that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from the Earth.	FOSS Third Edition Sun, Moon and Planets TE: Investigation 1; Parts 1-3 Investigation 2; Parts 1-3 Investigation 3; Parts 1-2 Investigation 4; Parts 1-2
2) Research and explain the position of the Earth and the solar system within the Milky Way galaxy, and compare the size and shape of the Milky Way to other galaxies in the universe.	SE: <i>Changing Shadows, Sunrise and Sunset, The Night Sky, Comparing the Size of the Earth and the Moon, Changing Moon, Lunar Cycle, Eclipses, Exploring the Solar System, Why Doesn't Earth Fly Off into Space, How Did Earth's Moon Form?, Stargazing, Looking through Telescopes, Star Scientists, Our Galaxy</i>
3) Use data to categorize different bodies in our solar system including moons, asteroids, comets, and meteoroids according to their physical properties and motion.	DR: All About the Moon, Planets and the Solar System, All About Stars
4) Explain the cause and effect relationship between the positions of the sun, earth, and moon and resulting eclipses,	

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Grade 5

<p>position of constellations, and appearance of the moon.</p> <p>5) Relate the tilt of the Earth’s axis, as it revolves around the sun, to the varying intensities of sunlight at different latitudes. Evaluate how this causes changes in day-lengths and seasons.</p> <p>6) Use tools to describe how stars and constellations appear to move from the Earth’s perspective throughout the seasons.</p> <p>7) Use evidence from the presence and location of fossils to determine the order in which rock strata were formed.</p>	
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Physical Science

State Standard	FOSS Program
5.PS1: Matter and Its Interactions	FOSS Next Generation <i>Mixtures and Solutions</i>
<p>1) Analyze and interpret data from observations and measurements of the physical properties of matter to explain phase changes between a solid, liquid, or gas.</p> <p>2) Analyze and interpret data to show that the amount of matter is conserved even when it changes form, including transitions where matter seems to vanish.</p> <p>3) Design a process to measure how different variables (temperature, particle size, stirring) affect the rate of dissolving solids into liquids.</p> <p>4) Evaluate the results of an experiment to determine whether the mixing of two or more substances result in a change of properties.</p>	<p>TE: Investigation 1; Parts 1-4 Investigation 2; Part 3 Investigation 3; Parts 2-4 Investigation 5; Parts 1-3</p> <p>SE: <i>Mixtures, Taking Mixtures Apart, Extracts, The Story of Salt, Solid to Liquid, Liquid and Gases Changes, Celsius and Fahrenheit, Concentrated Solutions, The Air, Famous Scientists, Carbon Dioxide Concentration in the Air, Ask a Chemist, When Substances Change, Air Bags</i></p> <p>DR: Tutorial: Mixtures, Tutorial: Solutions, Separating Mixtures, Virtual Investigation: Separating Mixtures, Changes in Properties of Matter, Tutorial: Concentration, Virtual Investigation: Saltwater Concentration, Why Are Oceans Salty, Tutorial: Density, Fizz Quiz, Chemical Reactions, Tutorial: Reaction or Not?</p>
5.PS2: Motion and Stability: Forces and Interactions	FOSS Program
5.PS2: Motion and Stability: Forces and Interactions	FOSS Third Edition <i>Motion, Force, and Models</i>
<p>1) Test the effects of balanced and unbalanced forces on the speed and direction of motion of objects.</p> <p>2) Make observations and measurements of an object’s motion to provide evidence that a pattern can be used to predict future motion.</p> <p>3) Use evidence to support that the gravitational force exerted by Earth on objects is directed toward the Earth’s center.</p> <p>4) Explain the cause and effect relationship of two factors (mass and distance) that affect gravity.</p> <p>5) Explain how forces can create patterns within a system (moving in one direction, shifting back and forth, or moving in cycles), and describe conditions that affect how fast or slowly these patterns occur.</p>	<p>TE: Investigation 1; Parts 1-3 Investigation 2; Parts 1-4 Investigation 3; Parts 1-3 Investigation 4</p> <p>SE: <i>What Causes Change of Motion? Galileo and Pendulums, Bowling, Force and Energy, Potential and Kinetic Energy at Work, Coming to a Stop, Concussion Discussion, Springs in Action, Graphing Data</i></p> <p>DR: All About Motion and Balance, Springs</p> <p>ScienceFLEX Motion and Forces in Toys Lesson 1 Motion and Energy Lesson 2 Measuring Speed Lesson 3 Forces and Speed/Motion Lesson 4 Forces and Weight Lesson 5 Gravity Lesson 6 Friction Lesson 7 Collisions Lesson 8 Balanced Forces Lesson 9 Engineering Challenge</p>

TE: Teacher Editions-Investigations Guide, Teacher Resources • SE: Student Edition-Science Resources Book • DR: Digital Resources

Grade 5
 Engineering Design

State Standard	FOSS Program
<p>5.ETS1: Engineering Design</p> <p>1) Research, test, re-test, and communicate a design to solve a problem.</p> <p>2) Plan and carry out tests on one or more elements of a prototype in which variables are controlled and failure points are considered to identify which elements need to be improved. Apply the results of tests to redesign the prototype.</p> <p>3) Describe how failure provides valuable information toward finding a solution.</p>	<p>FOSS Third Edition <i>Motion, Force, and Models</i> TE: Investigation 4; Parts 1-3 SE: <i>Scientists and Models, Beachcombing Science, The Path to Invention, Creative Solutions</i></p> <p>ScienceFLEX <i>Motion and Forces in Toys</i> Lesson 9 Engineering Challenge</p>
State Standard	FOSS Program
<p>5.ETS2: Links Among Engineering, Technology, Science, and Society</p> <p>1) Use appropriate measuring tools, simple hand tools, and fasteners to construct a prototype of a new or improved technology.</p> <p>2) Describe how human beings have made tools and machines (X-ray cameras, microscopes, satellites, computers) to observe and do things that they could not otherwise sense or do at all, or as quickly or efficiently.</p> <p>3) Identify how scientific discoveries lead to new and improved technologies.</p>	<p>FOSS Third Edition <i>Motion Force and Models</i> TE: Investigation 4; Parts 1-3 SE: <i>Scientists and Models, Beachcombing Science, The Path to Invention, Creative Solutions</i></p> <p>FOSS Next Generation <i>Mixtures and Solutions</i> TE: Investigation 4 ;Part 4 SE: <i>East Bay Academy for Young Scientists, Drinking Ocean Water</i></p>