



SmartScience®

Smart Science® Lessons and Elementary School Next Generation Science Standards

You have chosen the right place to find great science learning and, **beyond learning, how to think.** The NGSS emphasize thinking and inquiry, which sit front and center in every Smart Science® lesson. These lessons improve student test scores because the students come to understand the material and, importantly, the **nature of science.**

Elementary school students benefit greatly in their understanding by doing real experiments and taking their own data in a hands-on fashion, the hallmarks of Smart Science® lessons.

These web-delivered lessons use HTML5 to ensure that your students can use them on any modern device from desktops to smart phones.

Furthermore, you will see the software and content constantly improving to provide the best in online and virtual learning tools you can find anywhere and to do so always. We look forward to welcoming you to the Smart Science® family of educators.

Next Generation Science Standards & Smart Science® Lessons Third Grade

| Disciplinary Core Idea | Performance Expectation | Students who demonstrate understanding can: | Smart Science® Lessons |
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| Motion and Stability: Forces and Interactions | 3-PS2-1 | Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. | <ul style="list-style-type: none"> • Falling Things • Moving Friction • Levers |
| Motion and Stability: Forces and Interactions | 3-PS2-2 | Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion. | <ul style="list-style-type: none"> • Collisions • Falling Things • Water Flow • Line Graphs • Water Graphs |
| Motion and Stability: Forces and Interactions | 3-PS2-3 | Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. | <ul style="list-style-type: none"> • Magnet Force • Basic Electrostatic Ideas |
| Motion and Stability: Forces and Interactions | 3-PS2-4 | Define a simple design problem that can be solved by applying scientific ideas about magnets.* | <ul style="list-style-type: none"> • Magnet Force |
| From Molecules to Organisms: Structures and Processes | 3-LS1-1 | Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. | <ul style="list-style-type: none"> • <i>Insect Life Cycle*</i> • Flowering Plant Cycle |
| Ecosystems: Interactions, Energy, and Dynamics | 3-LS2-1 | Construct an argument that some animals form groups that help members survive. | |
| Heredity: Inheritance and Variation of Traits | 3-LS3-1 | Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. | <ul style="list-style-type: none"> • Corn Inheritance Activity |
| Heredity: Inheritance and Variation of Traits | 3-LS3-2 | Use evidence to support the explanation that traits can be influenced by the environment. | <ul style="list-style-type: none"> • Beaks of Birds |

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| Biological Evolution: Unity and Diversity | 3-LS4-1 | Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. | <ul style="list-style-type: none"> • <i>Fossil Ideas*</i> |
| Biological Evolution: Unity and Diversity | 3-LS4-2 | Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. | <ul style="list-style-type: none"> • Natural Selection Ideas |
| Biological Evolution: Unity and Diversity | 3-LS4-3 | Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. | <ul style="list-style-type: none"> • Plants and Water • Watering Plants • Plants and Salt • Yeast and Sugar |
| Biological Evolution: Unity and Diversity | 3-LS4-4 | Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.* | <ul style="list-style-type: none"> • Plants and Salt • Diversity Activity |
| Earth's Systems | 3-ESS2-1 | Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. | <ul style="list-style-type: none"> • Weather Maps • Cloud Identification |
| Earth's Systems | 3-ESS2-2 | Obtain and combine information to describe climates in different regions of the world. | <ul style="list-style-type: none"> • Biome Ideas • Water Evaporation |
| Earth and Human Activity | 3-ESS3-1 | Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.* | <ul style="list-style-type: none"> • Air Pollution Ideas |

Next Generation Science Standards & Smart Science® Lessons Fourth Grade

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| Energy | 4-PS3-1 | Use evidence to construct an explanation relating the speed of an object to the energy of that object. | <ul style="list-style-type: none"> • Pendulum Length Ideas • Projectile Angle Ideas • Pendulum Energy Ideas |
| Energy | 4-PS3-2 | Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. | <ul style="list-style-type: none"> • Heat Transfer Ideas • Heat Conduction Ideas • Bulb Brightness** • Stirling Engine** |
| Energy | 4-PS3-3 | Ask questions and predict outcomes about the changes in energy that occur when objects collide. | <ul style="list-style-type: none"> • Collisions |
| Energy | 4-PS3-4 | Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.* | <ul style="list-style-type: none"> • Electrical Properties • Circuits |
| Waves and Their Applications in Technologies for Information Transfer | 4-PS4-1 | Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move. | <ul style="list-style-type: none"> • Wavelength • Wave Speed • Sound Pitch Ideas |
| Waves and Their Applications in Technologies for Information Transfer | 4-PS4-2 | Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen. | <ul style="list-style-type: none"> * Reflecting Light |
| Waves and Their Applications in Technologies for Information Transfer | 4-PS4-3 | Generate and compare multiple solutions that use patterns to transfer information.* | |

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| From Molecules to Organisms: Structures & Processes | 4-LS1-1 | Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. | <ul style="list-style-type: none"> • Beaks of Birds • Basic Body Systems • Plant Parts* |
| From Molecules to Organisms: Structures & Processes | 4-LS1-2 | Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways. | <ul style="list-style-type: none"> • Animal Actions |
| Earth's Place in the Universe | 4-ESS1-1 | Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. | <ul style="list-style-type: none"> • Rock Activity • Rock Classification • Introduction to Mineral Ideas • Mineral Ideas Exercise • Fossil Ideas* |
| Earth's Systems | 4-ESS2-1 | Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. | <ul style="list-style-type: none"> • Acid Rain Ideas • Erosion Ideas, Slope |
| Earth's Systems | 4-ESS2-2 | Analyze and interpret data from maps to describe patterns of Earth's features. | <ul style="list-style-type: none"> • Reading Topographic Maps |
| Earth and Human Activity | 4-ESS3-1 | Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment. | <ul style="list-style-type: none"> • Non-Renewable Energy Ideas |
| Earth and Human Activity | 4-ESS3-2 | Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.* | <ul style="list-style-type: none"> • Air Pollution Ideas |

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| Matter and Its Interactions | 5-PS1-1 | Develop a model to describe that matter is made of particles too small to be seen. | <ul style="list-style-type: none"> • Brownian Motion Ideas • Water Volume-Temperature |
| Matter and Its Interactions | 5-PS1-2 | Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. | <ul style="list-style-type: none"> • Conservation of Mass** • Density of Matter |
| Matter and Its Interactions | 5-PS1-3 | Make observations and measurements to identify materials based on their properties. | <ul style="list-style-type: none"> • Electrical Properties • Heat Conduction in Solids • Acids and Bases |
| Matter and Its Interactions | 5-PS1-4 | Conduct an investigation to determine whether the mixing of two or more substances results in new substances. | <ul style="list-style-type: none"> • Chemical Change Ideas • Acids and Bases |
| Motion and Stability: Forces and Interactions | 5-PS2-1 | Support an argument that the gravitational force exerted by Earth on objects is directed down. | <ul style="list-style-type: none"> • Falling Things • Projectile Angle Ideas |
| Energy | 5-PS3-1 | Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun. | <ul style="list-style-type: none"> • Plant Photosynthesis • Foods and Fat • Yeast and Sugar |
| From Molecules to Organisms: Structures and Processes | 5-LS1-1 | Support an argument that plants get the materials they need for growth chiefly from air and water. | <ul style="list-style-type: none"> • Plants and Water • Watering Plants |
| From Molecules to Organisms: Structures and Processes | 5-LS2-1 | Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment. | <ul style="list-style-type: none"> • Food Web Activity |

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| Earth's Place in the Universe | 5-ESS1-1 | Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from the Earth. | • Brightness and Distance* |
| Earth's Place in the Universe | 5-ESS1-2 | Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. | • Shadows • Star Path Ideas |
| Earth's Systems | 5-ESS2-1 | Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. | |
| Earth's Systems | 5-ESS2-2 | Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth. | |
| Earth and Human Activity | 5-ESS3-1 | Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment. | |