



Louisiana Student Standards for Science
Grade 4



Inspire
Science
Grade 4 Version 2

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Page References: SN= Student
Edition, TE = Teacher Edition

STANDARDS	MODULE - LESSON
ENERGY	
Students who demonstrate understanding can:	
<p>4-PS3-1. Use evidence to construct an explanation relating the speed of an object to the energy of that object.</p> <p>Clarification Statement Relating the speed of an object to the energy of the object does not require calculation of the object's speed.</p>	<p>MODULE- Energy and Motion Lesson 1- Energy and Speed</p> <p>Explore Inquiry Activity: The Moving Marble (SN: 7-8, TE: 6-7, 11)</p> <p>Explain Video: Speed and Energy (SN: 10, TE: 10)</p> <p>Explain Quick Check: Infer (TE p.12)</p> <p>Evaluate Performance Task: Test Toy Cars (SN: 16-19, TE: 15-17)</p> <p>Science Handbook – Force and Acceleration p. 283</p>
STANDARDS	MODULE - LESSON
<p>4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.</p> <p>Clarification Statement When energy is transferred it may change forms such as when light from the sun warms a window pane.</p>	<p>MODULE – Transfer of Energy</p> <p>Lesson 1: Types of Energy Transfer Inquiry Activity Demonstration of Energy Transfers (SN: 41-42, TE: 36-37) Elaborate Online Simulation- Energy Transfer Through Matter (SN:48, TE: 44-45)</p> <p>Lesson 2: Transfer of Energy by Electricity Explore Inquiry Activity – Simple Electricity (SN: 55-56, TE: 50-51) Evaluate Performance Task – Make it Work (SN: 62-65, TE: 58-60)</p> <p>Lesson 3: Transfer of Energy by Light Explore Inquiry Activity – Solar Circuit (SN: 69-70, TE: 64-65) Evaluate Performance Task – A Bright Idea! (SN: 79-81, TE: 73-75)</p> <p>Lesson 4: Design Energy Solutions Inquiry Activity – It's Too Loud in Here! (SN: 85-86, TE: 78-79) Evaluate Performance Task – It's too Cold in Here! (SN: 96-100, TE: 87-89)</p> <p>Science Handbook – Energy Changes p. 302, Conservation of Energy p. 303, Heat Transfer p. 308-309, Thermal Conductivity p. 310, Sound Energy p. 328-331, Light Energy p. 336-337</p>

<p>4-PS3-3. Ask questions and predict outcomes about the changes in energy that occur when objects collide.</p> <p>Clarification Statement</p> <p>Emphasis is on the change in the energy due to the change in speed, not on the forces, as objects interact. Quantitative measurements of energy are not included.</p>	<p>MODULE- Energy and Motion- Lesson 2: Energy Change in Collisions</p> <p>Explore Inquire Activity: Collision Variables (SN: 23-24, TE: 20-23)</p> <p>Explain Quick Check: Draw Conclusions TE p. 26</p> <p>Elaborate Online Simulation: Newton’s Cradle (SN: 29, TE: 27)</p> <p>Science Handbook – Forces p. 282-287</p>
<p>4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.</p> <p>Clarification Statement</p> <p>Examples of devices could include electric circuits that convert electrical energy into motion energy of a vehicle, light, or sound and a passive solar heater that converts light into heat. Example of constraints could include the materials, cost, or time to design the device.</p>	<p>MODULE – Transfer of Energy – Lesson 1: Types of Energy Transfer</p> <p>Performance Task – Energy Transfer Machine (SN: 49-51, TE: 45-47)</p> <p>Module Wrap Up</p> <p>Performance Project Design a Windmill (SN: 101-103, TE: 90-91)</p> <p>Science Handbook – Forms of Energy p. 297-301, Energy Changes 302 – 303, Engineering Design Process p. 354-357</p>
<p>STANDARDS MODULE - LESSON</p>	
<p>WAVES AND THEIR APPLICATIONS IN TECHNOLOGIES FOR INFORMATION TRANSFER</p>	
<p>4-PS4-1. Develop a model of waves to describe patterns in terms of amplitude and wavelength and to show that waves can cause objects to move.</p> <p>Clarification Statement</p> <p>Examples of models could include diagrams, analogies, or physical models using wire to illustrate wavelength and amplitude of waves. Examples of wave patterns could include the vibrating patterns associated with sound or the vibrating patterns of seismic waves produced by earthquakes. Does not include interference effects, electromagnetic waves, non-periodic waves, or quantitative models of amplitude and wavelength.</p>	<p>Module- Wave Patterns and Information Transfer – Lesson 1: How Waves Move</p> <p>Inquiry Activity What Makes Sound? (SN: 173-175, TE: 158-159)</p> <p>Inquiry Activity Sound Carriers (SN: 177-179, TE: 163-164)</p> <p>Evaluate Performance Task – Making Waves (SN: 183-185, TE:168-169)</p> <p>Science Handbook – Sound waves p. 329, Sound Energy p. 332-334, Light waves p. 336</p>

4-PS4-2. Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.

Clarification Statement

Develop a model to make sense of a phenomenon involving the relationship between light reflection and visibility of objects. In the model, identify the relevant components including light and its source, objects, the path that light follows, and the eye.

Module – Structures and Functions of Living Things – Lesson 4: The Role of Animals’ Eyes

Digital Interactive – Why Do Some People Need Eyeglasses? (SN: 162, TE: 149)

Evaluate Performance Task – It’s Time to Focus (SN: 163-165, TE: 149-150)

Module Wrap-Up

Performance Project – How are the shapes and sizes of animals’ eyes related to their functions? (SN: 166-167, TE: 152-153)

Science Handbook – Bouncing and Bending of Light p. 340-343

STANDARDS

MODULE - LESSON

FROM MOLECULES TO ORGANISMS: STRUCTURE AND 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.

Clarification Statement

Examples of structures could include thorns, stems, roots, colored petals, heart, stomach, lung, brain, shells, fur or skin.

MODULE – Structures and Functions of Living Things – Lesson 1: Structures and Functions of Plants

Explore Inquiry Activity – Movement of Water in Plants (SN: 109-110, TE: 96-97)

Digital Interactive – Roots, Stems, and Leaves SN: 111- 114, TE: 98)

Elaborate Inquiry Activity – Design an Experiment (SN: 116-117, TE: 103-104)

Evaluate Performance Task – How Do Plants Respond to Changes in Their Environment? (SN: 118-121, TE: 105-106)

Lesson 2 – Structures and Functions of Animals

Explore Inquiry Activity – Put Your Best Foot Forward (SN: 125-126, TE: 110-111)

Explain Digital Interactive – How Animals Survive (SN: 130, TE: 115)

Elaborate Inquiry Activity – Structures of a Snail (SN: 133-134, TE: 117-118)

Evaluate Performance Task – The Model is Afoot! (SN: 135-137, TE: 119-120)

Science Handbook – Cells to Tissues p. 56-57, Plant Parts 64-67, Animals p. 74-83, Organization of the Human Body p. 384-387

4-LS1-2. Construct an explanation to describe how animals receive different types of information through their senses, process the information in their brains, and respond to the information in different ways.

Clarification Statement

Emphasis is on systems of information transfer. Responses could include animals running from predators, animals returning to breeding grounds, animals scavenging for food, or humans responding to stimuli.

MODULE - Structures and Functions of Living Things-Lesson 2: Structures and Functions of Animals

Elaborate Inquiry Activity- Structures of a Snail (SN: 133-134, TE: 117-118)

Lesson 3: Information Processing in Animals

Explore Inquire Activity – Sense of Touch (SN: 141-142, TE: 124-125)
 Explain Inquiry Activity – Reaction Time (SN: 143-146, TE: 126-127)
 Evaluate Performance Task – Comparing Senses (SN: 149-151, TE: 134-136)

Science Handbook – Structural Adaptations – Animal Senses p. 112-113, Behavioral Adaptations p. 117-118, The Nervous System p. 390-392

STANDARDS

MODULE - LESSON

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 landforms over time.

Clarification Statement

Examples of evidence from patterns could include rock layers with marine shell fossils above rock layers with plant fossils and no shells, indicating a change from land to water over time, and a canyon with different rock layers in the walls and a river in the bottom, indicating that over time a river cut through the rock. Does not include specific knowledge of the mechanism of rock formation or memorization of specific rock formation and layers.

MODULE – Patterns of Earth’s Changing Features – Lesson 3 History of Earth’s Surface

Explain Inquiry Activity – Fossil Model (SN: 249-250, TE: 228-229)
 Evaluate Performance Task – Fossil Types (SN: 252-254, TE: 232-234)
 Explain Quick Check: Infer (TE p. 230)

Module Wrap Up

Performance Project – Model of a Canyon (SN: 255-257, TE: 236-237)

Science Handbook – Earth’s Changing Surface p. 162-177, Fossils p. 214-217

EARTH'S SYSTEM

<p>4-ESS2-1. Plan and conduct investigations on the effects of water, ice, wind, and vegetation on the relative rate of weathering and erosion.</p> <p>Clarification Statement</p> <p>Examples of variables to test could include angle of slope in the downhill movement of water, amount of vegetation, speed of wind, relative rate of deposition, cycles of freezing and thawing of water, cycles of heating and cooling, and volume of water flow.</p>	<p>MODULE – Patterns of Earth’s Changing Surface – Lesson 2: Effects of Erosion</p> <p>Explore Inquiry Activity – Shake, Rattle, and Roll (SN: 227-228, TE: 208-209)</p> <p>Explain Inquiry Activity – Weathered by Vegetation (SN: 230-231, TE: 212-213)</p> <p>Explain Dwindling Mountains (SN: 232, TE: 215)</p> <p>Explain Inquiry Activity – Rates of Erosion (SN: 234-235, 216-217)</p> <p>Elaborate Online Simulation – Effects of Erosion on Landforms (SN: 235, TE: 219)</p> <p>Evaluate Performance Task – Landslide Experiment (SN: 237-239, TE: 220-221)</p> <p>Science Handbook – Erosion and Deposition p. 166-171</p>
<p>4-ESS2-2. Analyze and interpret data from maps to describe patterns of Earth’s features.</p> <p>Clarification Statement</p> <p>Maps can include topographic maps of Earth’s land and ocean floor, as well as maps of the locations of mountains, continental boundaries, volcanoes, and earthquakes.</p>	<p>MODULE – Patterns of Earth’s Changing Features – Lesson 1: Earth’s Landforms and Features</p> <p>Evaluate Performance Task – Landforms from Another Planet (SN: 220-222, TE: 203-204)</p> <p>Science Handbook – Landforms p. 141-143. Earth’s Ocean Features p. 144-145, Using Maps p. 414-419</p>

STANDARDS	MODULE - LESSON
<p>4-ESS2-3. Ask questions that can be investigated and predict reasonable outcomes about how living things affect the physical characteristics of their environment.</p> <p>Clarification Statement Investigations include making observations in various habitats in real life or virtual circumstances. Living things could include animals such as beavers, crawfish, armadillos, nutria, gophers, and plants such as kudzu, water hyacinth, and Chinese tallow.</p>	<p>MODULE – Patterns of Earth’s Changing Features – Lesson 2: Effects of Erosion Explain Inquiry Activity – Weathered by Vegetation p. 230-231</p> <p>Science Handbook – Changes in Ecosystems p. 104-107</p>
EARTH AND HUMAN ACTIVITY	
<p>4-ESS1-1. Obtain and combine information to describe that energy and fuels are derived from renewable and non-renewable resources and how their uses affect the environment.</p> <p>Clarification Statement Examples of renewable energy resources could include wind energy, hydroelectric energy, and solar energy; non-renewable energy resources are fossil fuels. Examples of environmental effects could include loss of habitat due to dams, loss of habitat due to surface mining, and air pollution from burning fossil fuels.</p>	<p>MODULE – Energy From Natural Resources- Lesson 1: Energy from Nonrenewable Resources Explore Inquiry Activity – Limited Resources (SN: 293-294, TE: 272-273) Explain Quick Check: Summarize (TE: 279) Explain Inquiry Activity – Oil Spill Clean Up (SN: 297-298, TE: 276-277) Evaluate Performance Task – Energy Usage Investigation (SN: 302-305, TE: 281-283)</p> <p>Lesson 2: Renewable Resources Explore Inquiry Activity – Renewable Resources (SN: 309-310, TE: 286-287) Explain Talk About It (TE: 290) Explain Quick Check: Classify (TE: 294) Explain Digital Interactive- Hydroelectric and Geothermal Energy (SN: 312-313, TE: 292) Elaborate Research, Investigate, and Communicate – Pittsburgh’s transformation (SN: 316-318, TE: 295-296) Evaluate Performance task – Renewable Energy Campaign (SN: 319-321, TE: 297-299)</p> <p>Module Wrap-Up Performance Project – Making Wise Choices (SN: 322-323, TE: 300-301)</p> <p>Science Handbook – Earth’s Natural Resources p. 126-129, People Change Environments p. 130-133, Fossil Fuels p, 218-219</p>

4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.

Clarification Statement

Examples of solutions could include designing flood, wind, or earthquake resistant structures and models to prevent soil erosion.

**MODULE – Natural Hazards – Lesson 2:
Tsunamis and Floods**

Evaluate Performance Task – Flooding River: A Solution (SN: 283-285, TE: 254-255)

Module Wrap Up

Performance Project – Natural Disaster Safety (SN: 286, TE: 266-267)

Science Handbook – Erosion and Deposition p. 166-167, Shorelines p. 170-171, Earthquake Safety p. 181, Floods p. 184, Landslides p. 185, Weather Events p. 202-207