

Third through Fifth Grade

Third Grade

Standard 1: Physical Science

Generate sound energy using a variety of materials and techniques.
Investigate and recognize properties of sound that include pitch, loudness, and vibration.
Investigate and recognize that sound moves through solids, liquids and gases (e.g., air).
Plan and Conduct investigations to determine how light is absorbed, changes its direction, is reflected back and passes through objects.
Make observations to provide evidence to support the idea that light and sound are forms of energy, and can be transferred

Standard 2: Earth Science

Observe the detailed characteristics of rocks and minerals. Identify rocks as being composed of different combinations of minerals.
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Make observations and design a system or process for how rocks and minerals are organized and classified by their physical properties.
Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.
Describe natural materials and give examples of how they sustain the lives of plants and animals.
Describe how the properties of earth materials make them useful to humans in different ways. Describe ways that humans have altered these resources to meet their needs for survival.

Standard 3: Life Science

Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
Plan and conduct an investigation to determine the basic needs of plants to grow, develop, and reproduce.

Standard 4: Engineering and Technology

Choose and use the appropriate tools to estimate and measure length, mass and temperature in
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SI units.
Identify types of simple machines and their uses. Investigate and build simple machines to understand how they are used.
Define a simple design problem that can be solved by applying scientific ideas about simple machines

Fourth Grade

Standard 1: Physical Science

Describe and investigate the different ways in which energy can be generated.
Apply scientific principles to design, construct, and test a device that demonstrates thermal energy transfer
Construct a complete circuit through which an electrical current can pass as evidenced by the lighting of a bulb or ringing of a bell.
Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

Standard 2: Earth Science

Demonstrate, identify, and describe how rocks and the earth's surfaces erode and weather in natural and man-made processes.
Describe how earthquakes, volcanoes and landslides suddenly change the shape of the land.
Investigate earth materials that serve as natural resources and gather data to determine which ones are limited by supply and how their uses affect the environment.
Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.
Describe ways in which humans have changed the natural environment. Explain if these changes have been detrimental or beneficial both short and long term.
Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.
Use a calendar to record observations of the shape of the moon and the rising and setting times over the course of a month. Based on the observations, describe patterns in the moon cycle.

Standard 3: Life Science

Observe, analyze, and interpret how offspring are very much, but not exactly, like their parents or one another. Describe how these differences in physical characteristics among individuals in a population may be advantageous for survival and reproduction.
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Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction in a different ecosystem.
Construct an investigation to collect evidence to support how plants and animals (including humans) can change the environment to meet their needs.
Use evidence to support the explanation that a plant or animal might adapt to a change in the environment.

Standard 4: Engineering and Technology

Investigate transportation systems and devices that operate on or in land, water, air and space and recognize the forces (lift, drag, friction, thrust and gravity) that affect their motion.
Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.
Investigate and demonstrate how changes in speed or direction are caused by forces: the greater the force exerted on an object, the greater the change.
Define a problem in the context of motion and transportation. Propose a solution to this problem by evaluating, reevaluating and testing the design. Gather evidence about how well the design meets the needs of the problem. Document the design so that it can be easily replicated.

Fifth Grade

Standard 1: Physical Science

5.1.1 Describe and measure the volume and weight of a sample of a given material.
5.1.2 Describe the difference between weight and mass. Understand that weight is dependent on gravity and mass is the amount of matter in a given substance or material.
5.1.3 Demonstrate that regardless of how parts of an object are assembled the weight of the whole object is identical to the sum of the weight of the parts; however, the volume can differ from the sum of the volumes.
5.1.4 Determine if matter has been added or lost by comparing weights when melting, freezing or dissolving a sample of a substance.

Standard 2: Earth Science

Recognize that our earth is part of the solar system in which the sun, an average star, is the central and largest body. Observe that our solar system includes the sun, moon, seven other planets and their moons, and many other objects like asteroids and comets.

Observe, analyze and 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

Standard 3: Life Science

Observe and classify common Indiana organisms as producers, consumers, decomposers, predator and prey based on their relationships and interactions with other organisms in their ecosystem.
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Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
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Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

Standard 4: Engineering and Technology

Investigate technologies and designs that mimic human or animal musculoskeletal systems in order to meet a need.
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Investigate and analyze the purpose of prototypes and models when designing a solution to a problem and how limitations in cost and design features might affect their construction.
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Apply scientific ideas to design, test, and refine a device or model that solves a problem in the context of the musculoskeletal body system.
