Connecticut Science

# Grade 4

Adopted 2010

**Energy in the Earth's Systems**

3. **Water has a major role in shaping the Earth's surface.** 4.3
    1. Describe the role of the sun's energy (i.e., heating and cooling) in the continuous cycling of water between the earth and the atmosphere through evaporation, condensation and precipitation.
    2. Use models to demonstrate that topography causes precipitation landing on earth to move in streams and rivers from higher to lower elevations.
    3. Design and conduct simple investigations to determine how moving water (flowing downhill or in ocean waves) causes changes to the land, the coastline or the course of a stream or river.
    4. Pose testable questions and employ simple equipment and measuring tools to collect data about factors that affect erosion (e.g., type of earth material in an area, volume of moving water, slope of land, vegetation coverage).
    5. Present evidence to support a scientific claim about the relationship between the amount and speed of moving water and the size of earth materials moved (e.g., silt, pebbles, boulders).

**Science and Technology in Society**

4. **Electrical and magnetic energy can be transferred and transformed.** 4.4
    1. Construct complete (closed) and incomplete (open) series circuits in which electrical energy is transformed into heat, light, sound and/or motion energy.
    2. Draw labeled diagrams of complete and incomplete circuits and explain necessary components and how components must be arranged to make a complete circuit.
    3. Predict whether diagrammed circuit configurations will light a bulb.
    4. Develop a method for testing conductivity, and analyze data to generalize about which materials are good electrical conductors and which are good insulators.
    5. Observe magnetic effects associated with electricity and investigate factors that affect the strength of an electromagnet.
    6. Describe materials that are attracted by magnets.
    7. Design procedures to move objects and separate mixtures of solids using magnets.
    8. Investigate how magnets react with other magnets and analyze findings to identify patterns in the interactions between north and south poles of magnets.
    9. Give examples of uses of magnets (e.g., motors, generators, household devices).

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**Forces and Motion**

1. **The position and motion of objects can be changed by pushing or pulling.** 4.1
    1. Demonstrate that a force can cause an object to start moving, stop, or change speed or direction.
    2. Use measurement tools and standard units to compare and contrast the motion of objects such as toy cars, balls, model rockets or planes in terms of change in position, speed and direction.
    3. Design and conduct experiments to determine how the motion of objects is related to the mass of the object and the strength of the force applied.
    4. Describe how friction forces caused by air resistance or interactions between surface materials affect the motion of objects.
    5. Predict the effect of an object's mass on its motion.

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**Matter and Energy in Ecosystems**

2. **All organisms depend on the living and nonliving features of the environment for survival.** 4.2
    1. Give examples of ways that living and nonliving things are interdependent within an ecosystem.
    2. Draw diagrams showing how the sun's energy enters and is transferred from producers to consumers in a local land or aquatic food chain.
    3. Design and conduct simple investigations to record interactions among producers, consumers, herbivores, carnivores, omnivores and decomposers in an ecosystem.
    4. Analyze food webs to describe how energy is transferred from plants to various animals in an ecosystem.
    5. Distinguish between naturally occurring changes in ecosystems and those caused by human activity.
    6. Predict the effect an environmental change, such as drought or forest destruction, might have on the community of living things.