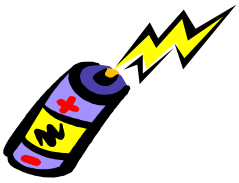
Grade 4 Science



Earth and Space

Rocks and Minerals
Weathering and Erosion

Life Science

Lifecycles
Embryology (Chicks)
Ecosystems
Heredity

Physical Science

Electricity and Magnets

Technology

Simple Machines-Legos

Grade 4 Teacher Guide
Earth Materials

Strand-Earth and Space Science

Give a simple explanation of what a mineral is and some examples, e.g., quartz, mica.

Identify the physical properties of minerals (hardness, color, luster, cleavage, and streak), and explain how minerals can be tested for these different physical properties.

Identify the three categories of rocks (metamorphic, igneous, and sedimentary) based on how they are formed, and explain the natural and physical processes that create these rocks.

Explain and give examples of the ways in which soil is formed (the weathering of rock by water and wind and from the decomposition of plant and animal remains).

Resources

Scott Foresman Science Chapter 8

FOSS Kit

Essential Questions

1. What are minerals?
2. How are sedimentary rocks formed?
3. What are igneous and metamorphic rocks?
4. How does Earth's surface wear away and change?

Assessment

Teacher created assessment

Web sites

Scott Foresman Science www.sfsuccessnet.com
FOSS Kits http://www.fossweb.com/modules3-6/index.html
BrainPop (animated) http://www.brainpop.com/

http://sln.fi.edu/fellows/payton/rocks/create/inex.html
http://ww.fi.edu/fellows/fellow1/oct98/index2.html
http://www.ivyhall.district96.k12.il.us/4th/kkhp/RockasnadMinerals/rocks.html

Volanoes:
http://www.fema.gov/kids/vlcano.htm
http://www.nps.gov/havo/

Grade 4 Teacher Guide
Structures of Life

Strand-Life Science

Classify animals according to the physical characteristics that they share.

Differentiate between observed characteristics of plants and animals that are fully inherited (e.g., color of flower, shape of leaves, color of eyes, number of appendages) and characteristics that are affected by the climate or environment (e.g., browning of leaves due to too much sun, language spoken).

Give examples of how inherited characteristics may change over time as adaptations to changes in the environment that enable organisms to survive, e.g., shape of beak or feet, placement of eyes on head, length of neck, shape of teeth, color

Describe how energy derived from the sun is used by plants to produce sugars (photosynthesis) and is transferred within a food chain from producers (plants) to consumers to decomposers.

Give examples of how changes in the environment (drought, cold) have caused some plants and animals to die or move to new locations (migration).

Describe the major stages that characterize the life cycle of the egg and chick.

Resources

Scott Foresman Science Chapter 1, 3, 4 (animals only)

4H Embryology

Essential Questions

1. What are the parts of an ecosystems?

2. How do energy and matter flow through ecosystems?

3. How are animals classified?

4. How do animals adapt?

5. What is the lifecycle of animals?

Assessment

Teacher created tests

Web sites

Scott Foresman Science www.sfsuccessnet.com
BrainPop (animated) http://www.brainpop.com/

Animal migration
http://spaceplace.nasa.gov/en/kids/poes_tracking/index.shtml
Animal Kingdom
http://www.kidport.com/RefLib/Science/Animals/Animals.htm
Animal classifications
http://www.everydayspelling.com/grade4/xcurricular/xcur4les34.html
Food chains
http://www.ecokids.ca/pub/eco_info/topics/frogs/chain_reaction/index.cfm
Habitats
http://www.scholastic.com/magicschoolbus/games/habitat/
Embryology
http://chickscope.beckman.uiuc.edu/
http://lancaster.unl.edu/4th/Embryology/movie.shtml

Grade 4 Teacher Guide
Circuits and Pathways
Electricity and Magnets

Strand-Physical Science

Electricity

Identify the basic forms of energy (light, sound, heat, electrical and magnetic)

Recognize that electricity in circuits requires a complete loop through which an electrical current can pass, and that electricity can produce light, heat and sound.

Identify and classify objects and materials that conduct electricity and that are insulators of electricity.

Magnets

Recognize that magnets have poles that repel and attract each other.

Identify and classify objects and materials that a magnet will and will not attract.

Explain how electromagnets can be made, and give examples of how they can be used.

Resources

Scott Foresman Science Chapter 13

FOSS Kit

Essential Questions

Electricity

1. How can energy be transferred from one form to another?

2. How do circuits complete a pathway to produce light, heat or sound?

Magnets

1. What are magnetic fields?

2. What materials or objects can attract or repel a magnet?

3. How is magnetism transformed to electricity?

Assessment

Teacher created tests

Web sites

Scott Foresman Science www.sfsuccessnet.com
FOSS Kits http://www.fossweb.com/modules3-6/index.html
BrainPop (animated) http://www.brainpop.com/

http://www.aecl.ca/kidszone/atomicenergy/electricity/
http://www.sciencemadesimple.com/static.html#PROJECTS

Grade 4 Teacher Guide
Simple Machines

Strand-Physical Science

Identify and explain the difference between simple and complex machines, e.g., hand can opener that includes multiple gears, wheel, wedge, gear, and lever.

Identify and explain the appropriate materials and tools (e.g., hammer, screwdriver, pliers, tape measure, screws, nails and other mechanical fasteners) to construct a given prototype safely.

Resources

Scott Foresman Science Chapter 16
LEGO Kits

Essential Questions

1. What is a machine?

2. How can machines work together?

3. What is a simple machine?

4. What is a complex machine?

Assessment

Teacher created tests

Web sites

Scott Foresman Science www.sfsuccessnet.com
BrainPop (animated) http://www.brainpop.com/
http://www.mos.org/sln/Leonardo/InventorsToolbox.html
http://www.fi.edu/pieces/knox/automaton/simple.htm
http://edtech.kennesaw.edu/web/simmach.html
http://web.org/faculty/malone_karen/simple_machines.htm

Grade 4 Teacher Guide
Engineering Design

Strand-Technology

Describe different ways in which a problem can be represented, e.g., sketches, diagrams, graphic organizers, and lists.

Identify relevant design features (e.g., size, shape, weight) for building a prototype of a solution to a given problem.

Resources

Scott Foresman Science Chapter 16
LEGO Kits
DOE Frameworks p 86, Museum of Science

Essential Questions

1. What are the steps of the design engineering process?

2. Identify relevant design features such as plans, diagrams and drawings, that can be used in the construction of prototypes and models.

Assessment

Teacher created tests

Web sites

Scott Foresman Science www.sfsuccessnet.com
BrainPop (animated) http://www.brainpop.com/

Museum of Science
http://www.mos.org/eie/engineering_design.php
Lego
http://www.lego.com/education/primary/default.asp?pagename=main_dandt&l2id=3_1&l3id=3_1_2