

SCIENCE PARENT GUIDE – UNIT 4



IMPORTANT CONCEPTS YOUR STUDENT SHOULD KNOW AND ACTIVITIES TO DO AT HOME

ROCKS, SOILS, AND FOSSILS

DESCRIPTION

Third grade Georgia Standards of Excellence in Science will engage students in obtaining, evaluating, and communicating information about the physical attributes of rocks and soils. Students will generate questions and analyze data to classify rocks by their physical attributes (color, texture, luster, and hardness). They will conduct simple tests to determine the hardness of various rocks using the Mohs Scale of Hardness. Students will examine how weathering of rocks and minerals help to create soils. They will explore the various types of soils as well as their characteristics (texture, particle size, and color). In this unit students will study fossils as evidence of life millions of years ago. Students will construct an argument from observations of fossils (authentic or reproduction) to communicate how they serve as evidence of past organisms and the environment in which they lived. Students will develop their understanding of fossils by creating models to describe the sequence and conditions required for an organism to become fossilized. Finally, they will culminate this unit by performing Project Based Learning activities to evaluate the importance of rocks, soils, and fossils in our daily lives.

KEY WORDS TO KNOW

Rock- a hard, solid material that made of minerals and is found in nature.

Property- is character or quality that something has, such as color, height, weight, etc.

Dull-not bright or shiny; not able to reflect light

Luster-a way that the surface of a mineral reflects light

Texture- a property of matter that tells how smooth or rough its surface is

Hardness- a property of a mineral or a rock; it is tested by conducting a Moh's Hardness test

Authentic: the real or actual object

Reproduction: model of the actual object

Model: a representation of something found in real life

Evidence: material that proves a point

Organism- Any living thing. Organisms carry on life processes, which include reproduction and metabolism.

Fossil- The hardened traces or remains of animals or plants naturally preserved in the ground.

Archaeologist- a scientists that examines the physical remains that humans left behind such as decaying ruins and buried objects including fossils.

Friedrich Mohs- a German mineralogist during the 1800 who invented a scale to measure mineral hardness.

Mohs' Scale of Hardness-a scale used to measure the relative hardness of a mineral by its resistance to scratching. From softest to hardest, the ten minerals of the Mohs' scale are talc (measuring 1 on the scale), gypsum, calcite, fluorite, apatite, orthoclase, quartz, topaz, corundum, and diamond (measuring 10 on the scale).

Clay- Red soil with very tiny grains or particles of rock

Loam-Soil that is a mixture of humus, sand, silt, and clay

Fossils: preserved parts or traces of animals and plants that lived in the past

Soil- loose upper layer of the Earth's surface where plants grow

Topsoil-is the loose upper layer of the Earth's surface where plants grow

Subsoil- a layer of soil just beneath topsoil and contains small rocks

Bedrock- is solid rock underneath the subsoil

Humus- The part of soil made up of broken-down pieces of dead plants and animals

Paleontologist- a scientists that studies the remains of living things (fossils) of past times.

Excavate- to dig out and remove

Sediments-material (such as stones and sand) that is carried into water by water, wind, etc.

Minerals- naturally occurring solid substance (as diamond, gold, or quartz) that is not of plant or animal origin.

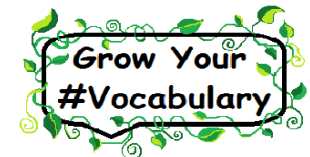
Fossilized-to become changed into a fossil

Preserve- to keep intact, or free from decay

Extinct-no longer in existence; lost or especially having died out leaving no living representatives

AT HOME VOCABULRY STRATEGIES

1. Read aloud with your child.
2. Use vocabulary words in daily conversations.
3. Build a word wall or window.
4. Play simple vocabulary games.
5. Relate words to real life experiences.



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Recommended Children's Literature (Available at your local public library or Amazon.)

If You Find a Rock by Peggy Christian
Rocks: Hard, Soft, Smooth, and Rough by Natalie M. Rosinky
Dirt: The Scoop on Soil by Natalie Rosinsky
The Amazing Dirt Book by Paulette Bourgeois
A Handful of Dirt by Raymond Bial
A Handful of Soil by Seymour Simon

Rocks and Minerals by Steve Parker
Rocks and Fossils by Ray Oliver
The Big Rock by Bruce Hiscock
Rocks and Soil: Real Size Science by Rebecca Rissman
Soil by Christin Ditchfield
Soil Geology Rocks! by Rebecca Faulkner
The Magic School Bus: Inside the Earth by Joanna Cole

ROCKS AND SOIL

Important Concepts Addressed in this Unit	Sample Questions	How You Can Help Your Child
<p>S3E1. Obtain, evaluate, and communicate information about the physical attributes of rocks and soils.</p> <p>a. Ask questions and analyze data to classify rocks by their physical attributes (color, texture, luster, and hardness) using simple tests.</p> <p>(Clarification statement: Mohs scale should be studied at this level. Cleavage, streak and the classification of rocks as sedimentary, igneous, and metamorphic are studied in sixth grade.)</p>	<ol style="list-style-type: none"> Sasha went to Lowes and saw a bag of soil that read "great for growing flowers". Which type of soil is most likely inside the bag? <ol style="list-style-type: none"> Clay Sand Loam Pebbles Soil is composed of the following materials: <ol style="list-style-type: none"> Rocks, minerals, humus Minerals, humus, wax Garbage, humus, rocks Plastic, humus, rocks 	<p>Digital Resources</p> <p>Science Curriculum STEMscopes or HMH via My Backpack</p> <p>Rock Cycle http://studyjams.scholastic.com/studyjams/jams/science/rocks-minerals-landforms/rock-cycle.htm</p> <p>Soils http://studyjams.scholastic.com/studyjams/jams/science/rocks-minerals-landforms/soil.htm</p> <p>Weathering and Erosion http://studyjams.scholastic.com/studyjams/jams/science/rocks-minerals-landforms/weathering-and-erosion.htm</p>

b. Plan and carry out investigations to describe properties (color, texture, capacity to retain water, and ability to support growth of plants) of soils and soil types (sand, clay, loam).

c. Make observations of the local environment to construct an explanation of how water and/or wind have made changes to soil and/or rocks over time.

S3E2. Obtain, evaluate, and communicate information on how fossils provide evidence of past organisms.

- a. Construct an argument from observations of fossils (authentic or reproduction) to communicate how they serve as evidence of past organisms and the environments in which they lived.
- b. Develop a model to describe the sequence and conditions required for an organism to become fossilized.

(Clarification statement: Types of fossils (cast, mold, trace, and true) are not addressed in this standard).



3. **LUSTER** describes how a rock reflects light. How would you describe this rock's **LUSTER**?
 - a. Rough
 - b. Dull
 - c. Shiny
 - d. Hard
4. A solid made of two or more minerals is called...
 - a. Wood
 - b. Plastic
 - c. A rock
 - d. Concrete
5. Which of these is a tool that we can use to classify rocks by how hard they are?
 - a. Balance
 - b. Mohs Scale
 - c. Magnet
 - d. Hands lens
6. A fossil is...
 - a. Dinosaur bones
 - b. The preserved remains of a once-living organism
 - c. Hard rocks that look like a dinosaur

7. CER-Claim-Evidence-Reasoning

Fossils can provide scientists with information about past environments. They can also determine the age of the organism. Imagine that you found two fossils in the desert.

Fossils

<http://studyjams.scholastic.com/studyjams/jams/science/rocks-minerals-landforms/fossils.htm>

Brain Pop/Brain Pop Jr. via My Backpack
www.brainpop.com

- Rocks and minerals
- Soil
- Fossils

The Nye site can be found at

<http://billnye.com>.
<http://www.fossilsforkids.com>

This site contains fossil information including a safety guide, tools of the trade, fossil history timelines and great links to other fossil sites.

<http://www.fossils-facts-and-finds.com/index.html>

Write a claim and provide evidence to support your reasoning of why you think the fossils were found in the desert.



Horseshoe Crab Fossil



Ammonite Fossil



Desert Environment

8. Which of these could be best used to model how a fossil form?
 - a. Water carrying away dirt as it flows
 - b. A plate of sand being blown away by a fan
 - c. An object buried between layers of clay
 - d. Digging a hole in a cup of sand
9. Which type of environment did this fossil live in?



- a. Desert
- b. Prairie
- c. Ocean
- d. Tundra

CHANGES TO SCIENCE STANDARDS: Students are expected to perform the practices while learning the content and understanding the crosscutting concepts.

Science and Engineering Practices

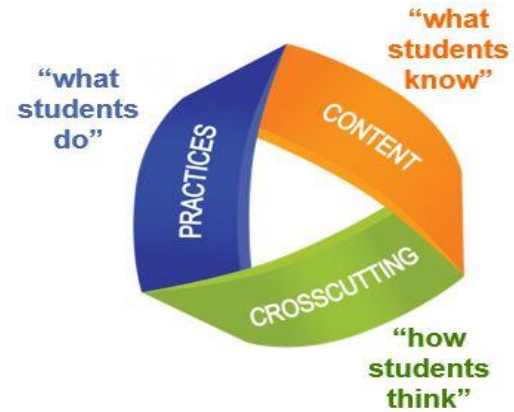
Students can use their understanding to investigate the natural world through the practices of science inquiry, or solve meaningful problems through the practices of engineering design.

Crosscutting Concepts

Provide students with connections and intellectual tools that are related across the differing areas of disciplinary content and can enrich their application of practices and their understanding of core ideas.

Core Ideas

Core ideas cover the four domains: physical sciences, earth and space sciences, life science, and engineering and technology.



Quoted text from Peter A'Hearn