

Earth Materials: The Mystery Rocks

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Science Objective

As they read this book, children will discover that scientists call rocks “earth materials,” because rocks form the Earth’s crust. There are three types of rocks: igneous, metamorphic, and sedimentary. As children learn the meaning of these three terms, they will explore how rocks are formed as well as the different properties of rocks. Children will discover that rocks are made of minerals and that some minerals cannot be broken down into other materials. Rocks are continually breaking apart and forming in the rock cycle.

iScience Puzzle: Mystery Rocks

Given three types of rocks, children will discover what type of rock each one is and learn how it was formed. They will investigate various properties of rock, including texture, color, size, weight, and hardness, to help them determine which labels to add to three types of rocks.

Objectives ► Children will:

- learn the different properties of rocks.
- compare and contrast different types of rocks.
- describe the rock cycle and how rocks are always forming and breaking apart.
- understand how erosion and weathering change rocks.

Materials

- magnifying lens
- samples of rocks
- sand

Lesson Plan

Before Reading

Investigation

Science Concepts

Pass around examples of rocks. Ask: *Do all rocks look the same? What can you tell me about them? Why is it important to know about them?*

Studying rocks tells us about how Earth was formed.

Ask: *Are all rocks hard?* Then pass around samples of sand. Tell children that sand is made of bits of rock. Ask: *How is sand like rocks? How is it different?* Record children's answers in a Venn diagram.

Rocks have different properties, including shape, color, and texture.

Discuss and list the many uses of rocks and minerals. Prompt the discussion by holding up some coins and perhaps some jewelry. Tell children that some rocks are even crushed to make powdered paint. Continue to add to the list as children read the book.

Substances have different uses. The uses are often related to their properties.

Explain that children will learn more about the rocks—the material that forms the continents, mountains, and Earth's crust. Rocks can tell us how Earth was formed. Encourage them to think about rocks in a new way as they answer the questions in the book.

During Reading

Investigation

Science Concepts

pp. 6–10: Have children record how each rock is alike and different using three overlapping circles. Provide sample rocks for children to examine, along with a form for children to record the size, shape, color, texture, and weight of each rock. Using a magnifying lens may help children observe more details.

Rocks have different properties, including shape, color, and texture.

p. 11: Tell children that rocks are also alike because they have minerals in common with the overlapping circles.

Rocks are composed of minerals. Some minerals cannot be broken down into other substances.

p. 12: Explore minerals by having children create a word web, writing Minerals in the center, and filling in outer circles with types of minerals and descriptive words.

Properties of minerals include hardness and color. Most rocks have more than one mineral.

During Reading (continued)

Investigation

p. 20: Ask: *If sedimentary rock is light in weight, do you think it is harder than igneous rock? How could you use hardness to identify rocks?* Explain that some sedimentary rocks have visible layers of sediments that have become pressed together.

pp. 21–23: Point out that sedimentary and metamorphic rocks are similar because they both have layers.

p. 24: Ask children to tell what they think might wear down rock. Ask: *How do you think sand is formed? What connections can you make between how sand is formed and how rock wears away?* Write children's answers on the board. Prompt them to name wind, water, heat, ice, and other rocks as things that help wear rock away.

pp. 28–29: Ask children to share their iScience Puzzle results. If some children changed their initial answers, invite them to explain their thought processes. Continue the exploration of rocks by having children rate different samples of rock according to hardness.

Science Concepts

Hardness is a property of rock. Geologists use hardness to help them identify minerals.

Metamorphic rocks recrystallize and form new minerals when they are subjected to heat and/or pressure. Marble is metamorphosed limestone.

Erosion and weathering caused by wind, water, ice, heat, and other rocks change rocks.

Rocks have different properties, including color, shape, and texture.

After Reading

Restate the key ideas in the book. For example, igneous, sedimentary, and metamorphic rocks are the three main types of rocks. Each type forms differently, but all rocks are composed of minerals. Rocks have different properties and different degrees of hardness. Encourage children to explain what they learned.

Investigation

Encourage children to collect some rocks and bring them to class to discuss. Have children separate the rocks according to their type or in other groups that children suggest.

Understanding Science

Rocks have different properties, including color, shape, and texture.