

# Lessons at a Glance

## Science Content: Big Ideas

The Rocks Unit concentrates on the following “big ideas” about rocks, minerals, and fossils. Along with the scientific Habits of Mind discussed on page 6, these concepts should be reinforced throughout the unit. The lessons in which each big idea is introduced or is a major focus are indicated in parentheses.

### *Lessons*

- What makes a rock a rock? (Lesson 1)
- You can learn a lot about an object (a rock or a mineral) by carefully observing and describing its properties. (Lessons 2, 5, 6, 11)
- The earth forms and changes rocks. Some of a rock’s properties are a result of how it was formed. (Lesson 3)
- Rocks are made of minerals. Some of a rock’s properties are a result of the properties of the minerals it is made of. (Lessons 4, 5, 6)
- Minerals provide many of the resources we use. (Lesson 7)
- Fossils are rocks that contain evidence of ancient life. (Lessons 8, 9, 10)
- Different types of fossils form in different ways. (Lessons 9 and 10)

### *Skill Building Activities*

- A magnifying lens makes things look larger than they really are. You can use a magnifying lens to examine objects closely and to see details that you might not see without it. (Skill Building Activity 1: Using Magnifiers)
- Observation is a powerful tool for learning about something. Detailed and accurate descriptions of your observations help you communicate them to others. (Skill Building Activity 2: Observing and Describing)
- You can use a field guide to learn about and identify things in the natural world. (Skill Building Activity 3: Using Field Guides)

## Lesson Overviews

The following overviews briefly summarize each lesson in the Rocks Unit. Core lessons are indicated with an asterisk. Suggestions for scheduling and flexible implementation are shown in gray.

### ***Lesson 0: Doing Science***

Children sharpen their awareness of scientific thinking as they conduct a self-directed exploration and then reflect on the processes they engaged in. In the context of these experiences, they are introduced to the work of scientists and to the Science Companion “I Wonder” circle, which provides a visual representation of many of the facets of scientific inquiry, exploration, and discovery.

### ***Lesson 1: What Is a Rock?\****

Children are introduced to the topics of rocks and geology as they sort a collection of rocks and non-rock objects, some of which may be difficult to classify. They discuss what makes a rock a rock and begin a class list of things they know and want to learn about rocks.

### ***Lesson 2: Properties of Rocks\****

Children generate a list of rock properties and then describe and record the properties of a single rock, including color, shape, smell, and texture. They note similarities and differences among a collection of rocks as they sort the rocks according to different properties. Children learn about using field guides to identify rocks and find out more about their properties.

You can teach parts or all of this lesson during mathematics.

### ***Lesson 3: Where Do Rocks Come From?\****

Children are introduced to the three main groups of rocks—igneous, sedimentary, and metamorphic—and learn about the earth processes that formed them. They visit three stations—one devoted to each major rock group—and look for rocks that display typical characteristics of that type of rock.

The first part of this lesson consists of a read-aloud and discussion of the book, *The Magic School Bus Inside the Earth*. Consider teaching it during a language arts or group reading time.

#### ***Lesson 4: Rocks Are Made of Minerals\****

Children learn that all rocks are made of minerals. They examine a piece of granite and identify the minerals commonly found in it. They also think about how the minerals in a rock affect its properties.

Consider teaching the sensory observation and the “Breaking Apart Granite” exploration with small groups at a station or learning center over the course of several days.

#### ***Lesson 5: Properties of Minerals\****

Children separate rocks from minerals and begin to explore mineral properties. Each child describes and records some of the properties of a single mineral. In the next lesson, children continue their observation of the same mineral by using tests to determine its hardness and streak.

#### ***Lesson 6: More Properties of Minerals\****

Children continue exploring the properties of their minerals from Lesson 5 by trying some tests to determine mineral hardness and streak.

#### ***Lesson 7: Minerals as Resources***

Children play a game to set the stage for realizing that many objects are made from minerals or mineral products. They reinforce the idea that minerals are important resources by conducting a mineral scavenger hunt.

#### ***Lesson 8: Introduction to Fossils***

Children examine several fossils and compare them to similar present-day objects. They learn that nearly all fossils are rocks that preserve the shapes and textures of former plants and animals, but generally don’t contain any original organic material.

#### ***Lesson 9: Mold and Cast Fossils***

Children examine and compare mold and cast fossils. They make models of mold and cast fossils using small objects, “rock dough,” and “rock goo” to learn about how each type of fossil is formed in nature.

Consider teaching this lesson in two sessions or having children prepare their fossils in small groups with the help of an adult.

### ***Lesson 10: Petrified Fossils***

Children discuss how petrified fossils form. They use a mineral-rich solution and sponges to make models of petrified “bones.” They excavate their model fossils and compare them with control “bones” treated with plain water.

You may want to teach this lesson in two sessions. If you don’t have access to an oven or microwave at school, you will need to use two sessions.

### ***Lesson 11: A Rock of My Own\****

Children culminate their study of rocks and minerals by choosing a rock and creating a book to describe the characteristics that make their rock special.

This lesson is project-based and will work best if implemented over several days. Many aspects of the project can be done during language arts.

#### ***Skill Building Activity 1: Using Magnifiers***

Children learn how to use a magnifying lens, like the ones supplied in the ExploraGear. There is also an extension in which children learn how to use a jeweler’s loupe.

#### ***Skill Building Activity 2: Observing and Describing***

Children practice making accurate and detailed descriptions before and after observing a familiar object. In doing so, they discover the importance of careful observation and detailed description in science.

#### ***Skill Building Activity 3: Using Field Guides***

Children learn how to use a field guide to identify and learn about a specimen. This lesson can be done with any type of field guide or specimen.

Parts or all of this lesson can be done during a class language arts period or during independent reading and writing times.