

**ATTAINMENT'S**

# 2 Early Science Teacher's Guide The Rock Cycle



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# **EARLY SCIENCE TEACHER'S GUIDE**

## **UNIT TWO: The Rock Cycle**

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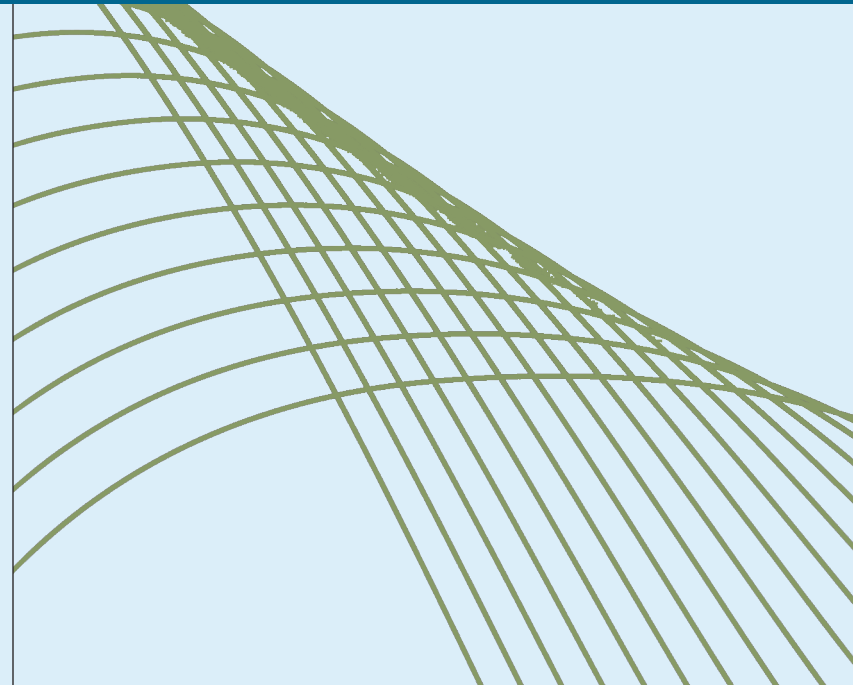


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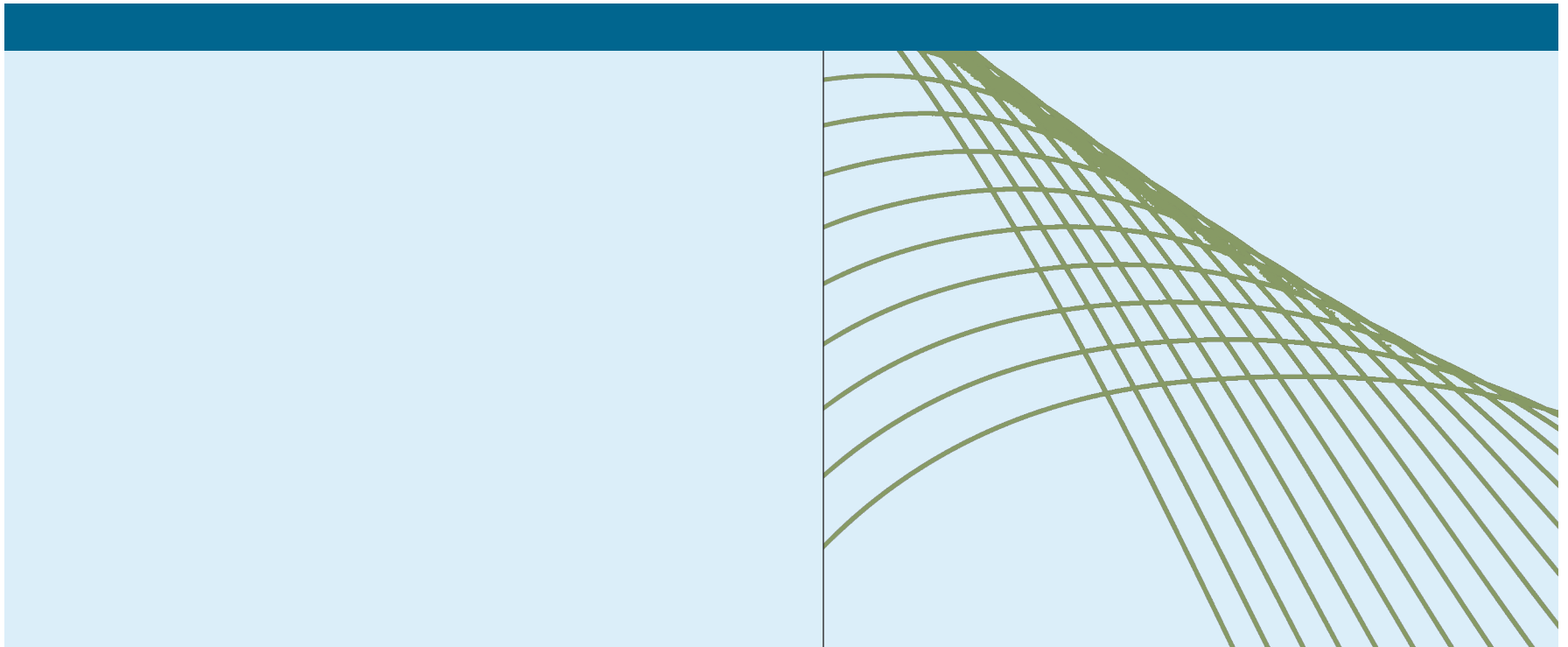
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# INTRODUCTION



## Overview

This unit reinforces the process of science inquiry and focuses on the concepts of rocks, the rock cycle, and change. The content for this unit was taken directly from elementary general science standards as listed in the National Science Education Standards. The standards that a lesson most closely aligns to are listed for each lesson and are referred to as the Standards-Based Objectives.

Skill-Building Objectives are also listed for each lesson. These are the specific objectives identified to support students' access to the Standards-Based Objectives.

## How Often to Teach a Lesson

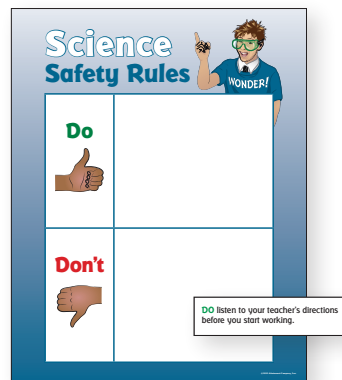
Since Ss benefit from repetition of the science concepts, all lessons are developed to be repeated. It is beneficial to students to teach them science 4 to 5 days per week, and to repeat a lesson each day for a week (i.e., to repeat the lesson 4 or 5 times). Students will benefit from the repetition and will respond with more and more independence as the lessons are repeated.

## Materials

Some materials for this unit, especially consumable materials, will need to be gathered from your home or classroom in preparation for instruction. A full materials list is provided for each lesson, listing what you need to supply versus what comes with the classroom kit.

## Safety

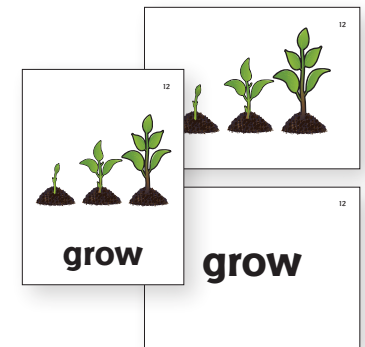
Safety is an important component in all science lessons. Students learn that the inquiry-based lessons allow them to explore the world around them, but they must be safe when working with the science materials. Science safety is addressed in every lesson and is a



critical component to address. While teaching a lesson, Velcro® the Science Safety Rule Card to the Science Safety Poster. Remove it at the end of the lesson so the poster is blank for the next lesson.

## Vocabulary Cards

The first part of the lessons requires you to teach students vocabulary they will use in the lesson. Three options are provided: Picture-Word Cards, Picture Cards, and Word Cards. For emerging readers, use the Picture-Word Cards; for students who are reading, use the Picture Cards and Word Cards. Have students identify the picture, then the text, then match text to picture. Refer to the scripts beginning on p. 94.



## System of Least Intrusive Prompts

Remember to use the least intrusive prompt (LIP) when prompting students. This system encourages correct and independent responding. The LIP hierarchy is provided on p. 103 for your convenience.

## Terms and Symbols

S



Student

**KWHL Chart** (What do we **k**now? What do we **w**ant to know? **H**ow can we find out? What did we **l**earn?)

**Time-delay procedure for prompting.** (See the full procedure and script on p. 94.)

**Example/non-example procedures for teaching science concepts.** (See the full procedures and scripts beginning on p. 95.)



## Teaching Tips

- Scripts for the time-delay procedure and example/non-example procedure are lengthy but once learned can be applied easily within lessons. Lessons indicate where to use these procedures; however, practicing the scripts and procedures ahead of time will ensure a smooth lesson. Full procedures and scripts are NOT included in the lessons but can be found on pages indicated above. In addition, visit the **Early Science** product page at [www.attainmentcompany.com](http://www.attainmentcompany.com) for a video demonstration of each procedure.
- The response terms (find, point to, choose, indicate, show, and respond) should be interpreted loosely, as some students will use an AAC device or eye-gaze board to respond.
- Always provide feedback to the student, whether or not you have prompted him or her.
- Pointing to text (also known as text point) reinforces student's literacy skills by "reading" with you. Reading can be true reading or following along by pointing to text as you read it.
- Words bolded indicate vocabulary terms from the lesson. When appropriate, match Vocabulary Cards to actual objects in the lesson or experiment.

## Lesson 7

This is a review lesson that follows a different format from other lessons in the unit. Use this lesson to help students recall and generalize the basic concepts and vocabulary of the unit.

## Special Accommodations

- Providing students with assistive technology (AT) is vital during instruction. This allows students to be active (rather than passive) participants in the learning process. It also allows students to "show what they know."
- For students who are nonverbal, augmentative/alternative communication (AAC) devices should be preprogrammed and include picture and text to represent the word or concept;

for students who eye gaze to show their response, assistive technology (AT) options and choices should be prepared.

- For students with visual impairments or those who are early symbol users, specific ideas for adaptations are provided at the end of each lesson. For more information on special accommodations, see p. 23 in the *Early Science: Implementation Guide*.



## Task Analyses

After teaching the lesson numerous times, you will become familiar enough with the scripts to use the Task Analysis (TA) at the end of each lesson to teach the lesson. The TAs summarize the steps and sequence of activities in the lessons and can be used as a lesson summary.

## Assessment

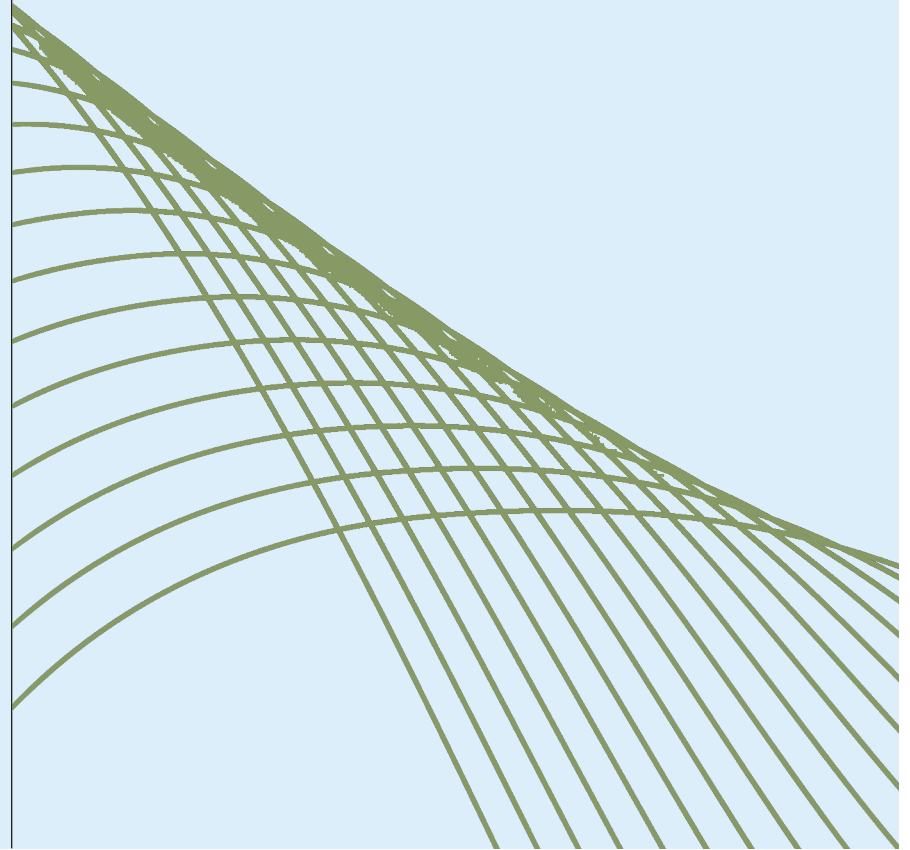
- Each lesson includes a Student Report to culminate the lesson. The Student Report can be used to track the student's mastery of vocabulary and concepts within each lesson. The Student Report is found in the student's My Science Log.
- In addition, a Unit Assessment for each unit can be found in Appendix A. These assessments allow students to demonstrate retention of the unit's vocabulary and the "big ideas" they learned.
- Most students are able to complete the Student Report or Unit Assessment by pointing to or circling the correct answer. Remember to use the same accommodations you made for instruction to allow students to "show what they know." Refer to p. 24 in the *Early Science: Implementation Guide* for more information.
- If desired, track students' performance using the Early Science Progress Monitoring Form (Appendix B).

## Unit Two Summary

Lesson	Wonder Story	Wonder Question	Concept Statement	Vocabulary	Science Safety Rule	Concept Development
<b>1</b> Rocks	Crunch	Are rocks different?	_____ are different. (Rocks)	rocks, different	1	rock, different
<b>2</b> More about Rocks	What Makes a Rock?	Is there something inside a rock?	Rocks are made of _____. (minerals)	minerals, inside	7	mineral, inside
<b>3</b> How Rocks Are Made	So Many Rocks!	Do rocks change?	Rocks _____ to make new rocks. (change)	change Review: different	4	change
<b>4</b> Soils	Worms and More Worms	What is soil made of?	Soil is made of _____ things. (different)	soil Review: different	3	soil, different
<b>5</b> Land	The Great Outdoors	What is land made of?	All _____ has rocks and soil. (land)	land, same	5	land, same
<b>6</b> Erosion	Wow! Wonderful Weather!	What changed the land?	_____ and _____ change the land. (Wind, water)	wind, water, erosion Review: land	6	Review: change

# LESSON 1

## Rocks





## Skill-Building Objectives

- 1 Identify vocabulary: rocks, different.
- 2 Discriminate: rock/not a rock, different/not different.

## Standards-Based Objectives

- 1 Students will observe and describe the properties of Earth's materials, the rock cycle, and changes in the Earth's crust.
- 2 Students will demonstrate the abilities and understanding necessary to do scientific inquiry.
- 3 Students will demonstrate the ability to think and act as scientists by engaging in active inquiries and investigations.
- 4 Students will identify the rock that is different when given three similar rocks and one that differs in color, shape, and size.
- 5 Students will identify traits of how rocks differ: hardness, size, and color.

## Materials

### Early Science Kit

- Wonder Wally Storybook: Crunch, pp. 32–34
- My Science Log, pp. 32–34
- Vocabulary Cards: 7–different, 25–rocks, distractors (e.g., 29–see, 40–water, 41–wind)
- Wonder Question Card: 7–Are rocks different?
- Concept Statement Card: 7–\_\_\_\_\_ are different.
- Science Safety Rule Card: 1–Do listen to your teacher's directions before you start working.
- KWHL Chart
- Science Safety Rules Poster
- 4 rocks of different colors, sizes, and shapes

## Materials You Supply

- Water-based marker
- Rocks of various sizes, shapes, colors, and textures in a container
- 3 non-rock items (e.g., pencil, tape, cup)
- 3 rocks with same appearance (e.g., same color, shape, and size)

## Prepare Ahead

- Preprogram AAC or organize AT for whatever Ss need to repeat the science question (Are rocks different?) and respond with yes, no, rock, different, rocks.

## Repeated Lessons

- Hold up a different rock each day to teach generalization of the concept of *rock*.

## Lesson Plan

### Engage

#### WONDER STORY

**TEACHER** Point out Wonder Wally on the cover of the Wonder Wally Storybook. Say, **Wonder Wally thinks about science in the world. He loves science and wants to learn more. He will help you learn more too. We will be reading stories with Wally and wondering with him. Let's read our story called Crunch.**

Give each S a rock to hold while you read the Wonder Story. Read the story, Crunch, to the Ss.

**STUDENT** Listens and observes.

## WONDER QUESTION

- TEACHER** At the end of the story, say, **Find the question in our story.** Give each S a turn to find the question, Are rocks different? in the story.
- STUDENT** Finds the question.
- FEEDBACK** **That's right. That's the question. Great job finding the question. Now read the question with me.**
- PROMPT** Wait for S to find the question. If needed, point out the question mark and say, **Look for the question mark at the end of the story.**
- If needed, physically guide S's hand to the question in the story and say, **Here it is. This is the question.**
- TEACHER** Hold up the Wonder Question Card and say, **Here is the question. Read this question with me.** Help Ss point to the text while you read the question once.
- STUDENT** Reads with you or points to the question text, moving left to right as you read it.
- PROMPT** If needed, physically guide the S to point left to right to the text while you read it or use an AAC device to read the question.

## WANT TO KNOW

- TEACHER** **The question in our Wonder Story asks, Are rocks different? That is what we want to know. Watch me put our question in the W row—for what we want to know—on the KWHL Chart.**



- STUDENT** Observes.

## VOCABULARY

- TEACHER** Review the Vocabulary Cards for *rocks*, *different*, and 2 distractors with the Ss. Place the 4 cards in front of the Ss and introduce them by naming what each is. Then use the time-delay procedure (Rounds 1 and 2) to have each



S point to the card for *rocks*, then *different*. (Review the full script on p. 94 if needed.)

**Round 1:** Point to the correct answer while giving the directive (0-second delay). Say, **Show me rocks.** Shuffle the cards and repeat for *different*.

Give each S a chance to find the Vocabulary Cards for *rocks* and *different*, mixing up cards as you go.

- STUDENT** Points to the correct card and says the word aloud (or activates AAC device).
- FEEDBACK** If S indicates the correct card, give praise, **Great job finding rocks (different)!**
- PROMPT** If S does not point, or points to an incorrect card, provide a prompt (see p. 94 for script).
- TEACHER** **Round 2:** With the 4 cards still in front of the Ss, say, **Show me rocks.** Wait 5 seconds for S to choose the correct answer independently. Shuffle the cards and repeat for *different*.
- STUDENT** Points to the correct card and says the word aloud (or activates AAC device).
- FEEDBACK** If S indicates the correct card, give praise, **Great job finding rocks (different)!**
- PROMPT** If S does not point, or points to an incorrect card, provide a prompt (see p. 94 for script).

## Investigate

- TEACHER** Give Ss a variety of rocks to hold, feel, touch, smell, shake, and listen to.
- STUDENT** Explores a rock.
- PROMPT** Help as needed to hold and feel a rock.
- TEACHER** Hold up a rock and ask, **What is this?**