

Overview:

In this lesson, students gain a basic understanding of how tectonic activity plays a role in the formation of an island.

Targeted Alaska Grade Level Expectations:

Science

- [3-4] SA1.1 The student demonstrates an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring, and communicating.
- [3] SD2.1 The student demonstrates an understanding of the forces that shape Earth by identifying and comparing a variety of Earth's land features (i.e., rivers, deltas, lakes, glaciers, mountains, valleys, and islands).
- [4] SD2.2 The student demonstrates an understanding of the forces that shape Earth by identifying causes (i.e., earthquakes, tsunamis, volcanoes, landslides, and avalanches) of rapid changes on the surface.
- [4] SE2.2 The student demonstrates an understanding that solving problems involves different ways of thinking, perspectives, and curiosity by identifying multiple explanations (e.g., oral traditions, folklore, scientific theory) of everyday events (e.g., weather, seasonal changes).

Reading

- [K] 1.4.1 The student restates/summarizes information by retelling or dramatizing a familiar story (not necessarily in sequence) with or without the use of props.
- [1-3] 1.4.1 The student restates/summarizes information by retelling or dramatizing a story after reading it (L).
- [4] 2.4.1 The student restates/summarizes information by retelling a story in correct sequence or identifying the correct sequence of events in a story (L).

Targeted Alaska Cultural Standards:

- E1 Culturally knowledgeable students demonstrate an awareness and appreciation of the relationships and processes of interaction of all elements in the world around them. Students who meet this standard are able to recognize and build upon the interrelationships that exist among the spiritual, natural, and human realms in the world around them, as reflected in their own cultural traditions and beliefs as well as those of others.
- E2 Culturally knowledgeable students demonstrate an awareness and appreciation of the relationships and processes of interaction of all elements in the world around them. Students who meet this cultural standard are able to understand the ecology and geography of the bioregion they inhabit.

Objectives:

The student will:

- observe models of the layers of Earth;
- define an island; and
- sequence the growth of a volcanic island.

Materials:

- Map of Alaska
- Globe
- Chocolate-covered cherries or soft-boiled egg
- Schaefer, L. M., & Felstead, C. (2006). *An island grows*. New York: Greenwillow Books.
- 8 1/2" x 11" sheets of paper
- Scissors
- Glue
- VIDEO FILES: "Earth's Layers" and "Magma"
- STUDENT WORKSHEET: "An Island Story"
- VISUAL AID: "Bogoslof Island"

Science Basics:

Islands are areas of land that are completely surrounded by water. They are smaller than continents. One way islands may form is through volcanic action. When magma reaches the sea floor, the lava that comes out of the volcano may build up enough to reach above the surface of the sea. At that point, an island is made.

The multimedia files present concepts used to explain Earth's interior.

Earth's Layers

Earth is made of four layers. The outermost layer is the crust; of all the layers, this is the thinnest. Below the crust is the mantle; this layer is solid, but high temperatures soften it and cause it to change shape. Below the mantle is the outer core, which is so hot it acts like a liquid. Finally, the hot inner core is squeezed into a solid ball by outside pressure.

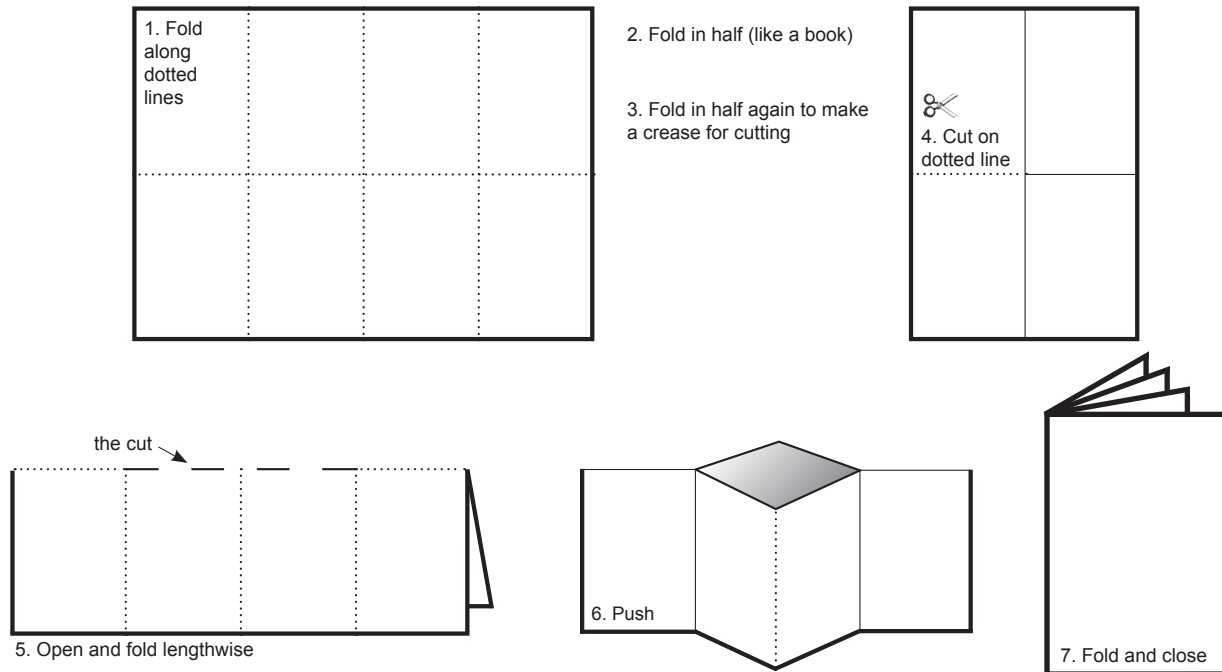
Magma

Magma is hot, molten rock that forms deep inside Earth's mantle. When magma reaches Earth's surface, it becomes lava.

Activity Procedure:

1. Explain students will learn how volcanoes form islands. Islands are areas of land that are completely surrounded by water. They are smaller than continents. Display VISUAL AID: Bogoslof Island. Explain this is a small island in the Aleutians. In 1795, this island used to be a rock where Unangan people hunted sea lions for food. Then they noticed that a large cloud formed around the rock, and they couldn't reach it by boat anymore. Finally, years later, the cloud cleared away. The Unangan no longer saw the rock they had known, but a hot volcano island. Identify this island on a map of Alaska. It is north of the Fox Islands. Teacher Note: This story was originally recorded by G.H. Langsdorff and translated in the article by L.T. Black (1981).
2. To learn about how volcanic islands are made, we first need to learn about Earth. Hold up the globe, and ask students what is inside Earth. Record responses on chart paper, or on the board.
3. Play the VIDEO FILE: "Earth's Layers," and briefly talk about the layers. Click on the layers to highlight each layer. Compare the information to recorded student responses.
4. Distribute one chocolate-covered cherry to each student. Explain a chocolate-covered cherry has layers like Earth. The chocolate shell represents the crust, and the filling represents the mantle. The cherry represents the outer core. If the cherry still had its pit in the center, that would represent the solid inner core. What would happen if the chocolate shell covering the cherry cracked? The gooey filling would come out. (NOTE: A soft-boiled egg, cut in half with a serrated knife may be substituted for the chocolate-covered cherry.)

5. Display VIDEO FILE: "Magma." Explain just like the chocolate-covered cherry, Earth has cracks where magma, a hot, gooey material is pushed towards the surface. Magma is hot, molten rock inside Earth. When it is pushed up out of the ground, it is called lava.
6. For younger students, explain you will read the story, An Island Grows, aloud to show that actions inside Earth can make changes on Earth's surface. Remind students that volcanoes are only one way an island may form.
7. Read the story aloud. At the beginning of the story, point out the sea floor. Emphasize that the sea floor is the land at the bottom of the sea. Reread as necessary.
8. Distribute tabloid-size (11 x 17 in.) sheets of paper. Guide students through the following steps to create a book.




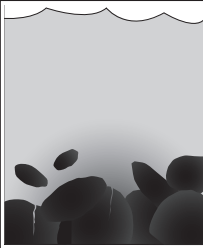

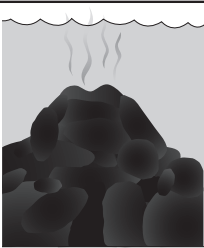
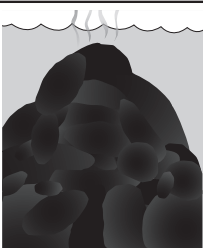
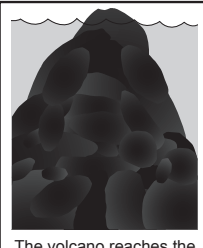
Critical Thinking: Think-Pair-Share. Ask students the following questions: 1. What is an island? 2. What does the inside of Earth have to do with islands? 3. How is an island made? After asking each question, allow time for thinking, and then ask students to share their ideas with a partner. Call on students to share their responses or their partner's response with the rest of the class.

9. Distribute scissors, glue, and STUDENT WORKSHEET: "An Island Story" to each student. Review the vocabulary of each picture, then instruct students to write or draw what an island is. Students then cut out the boxes and glue them in the correct order in their books.
10. Ask students to take books home to share with their families.

Extension Idea:

- Color the pictures in the story.
- Research different islands.

Answers:

<p>An island is...</p> <p>Answers will vary. Student's definition or illustration should show understanding that an island is land surrounded by water.</p>	 <p>Deep beneath the sea floor, magma glows.</p>	 <p>The floor shakes and cracks.</p>	 <p>A volcano erupts.</p>
 <p>Lava flows.</p>	 <p>Lava makes the volcano bigger.</p>	 <p>The volcano reaches the surface of the water. An island is made.</p>	

Lesson Information Sources:

Black, L.T. (1981). Volcanism as a factor in human ecology: The Aleutian case. *Ethnohistory*, 28,4,313-340.

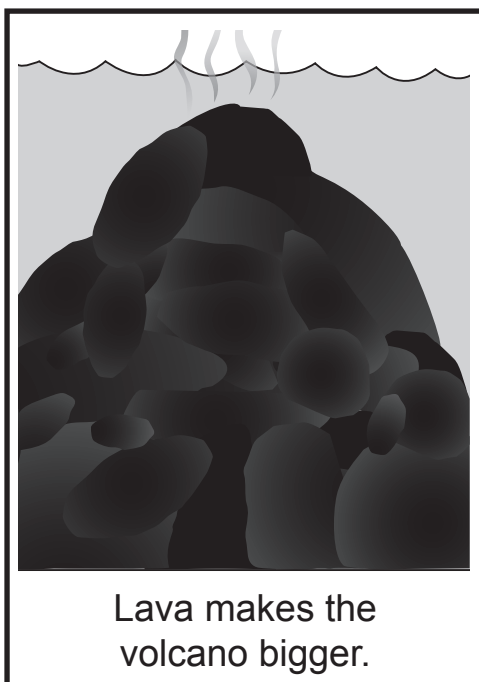
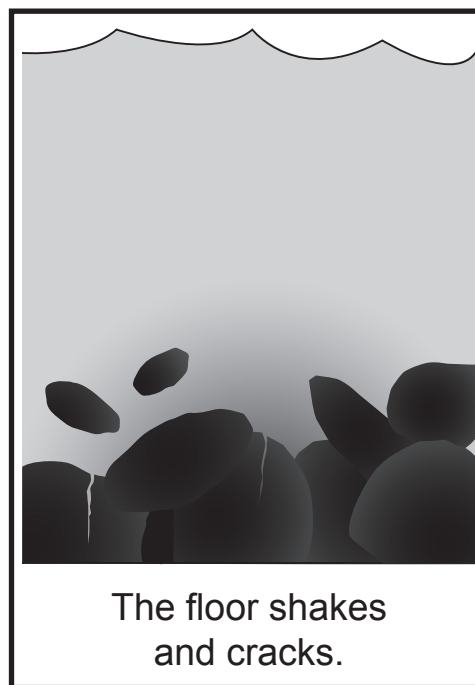
Schaefer, L. M., & Felstead, C. (2006). *An island grows*. New York: Greenwillow Books.

Name: _____

An Island Story

Student Worksheet (page 1 of 2)

Directions: Write or draw what an island is in the first box. Then cut out all the boxes and glue them in the correct order in your book to show how an island is made.



Name: _____

An Island Story

Student Worksheet (page 2 of 2)

