Name: _____ Date: _____

Lesson 1.2: Using Fossils to Understand Earth

What do fossils have to do with understanding the history of Earth? Surprisingly, geologists actually use the fossils that they find embedded in rock to help them make sense of our planet's long history. Today, you will watch a video that will help to explain how fossil evidence can help scientists learn about the history of Earth. You'll also meet Dr. Bayard Moraga, the lead curator at the Museum of West Namibia, who has an exciting geologic mystery for you to solve. You'll begin your work as a student geologist by learning more about what is underneath Earth's surface.

Unit Question

- Why are fossils of species that once lived together found in different locations on Earth now?

Chapter 1 Question

- What is the land like where *Mesosaurus* fossils are found?

Vocabulary

- cross section
- outer layer

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Warm-Up

Scientists look for fossils in rock all over the world. Fossils such as fossilized bones, footprints, or leaf prints are evidence of life from the past.

Scientist in the field, working to uncover a fossil

Sunfish fossil found in Wyoming, USA

Leaf of an extinct fern found in Antarctica

What do you already know about fossils? Describe as much as you can in the space below.

_____

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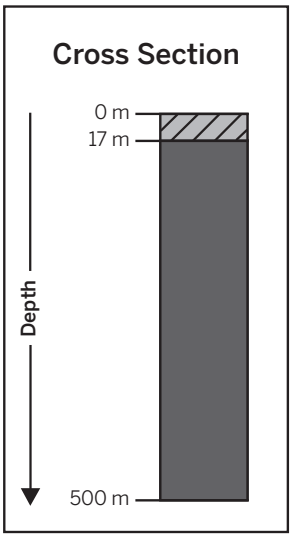
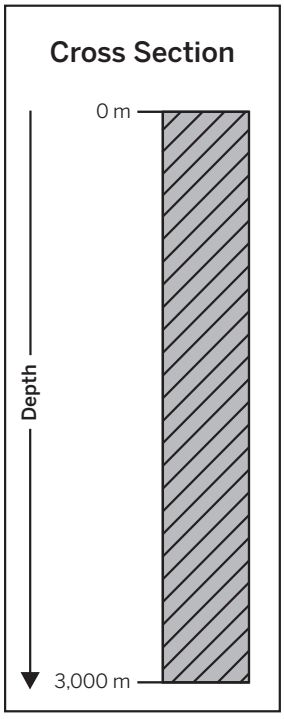
Exploring Cross Sections

Scientific Drilling Site: Petrified Forest National Park, Arizona, USA

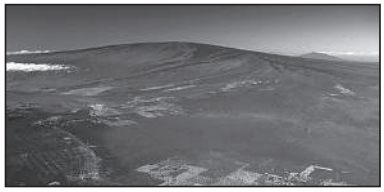


A team working on the Colorado Plateau Coring Project drilled over 500 meters into the surface of the Arizona desert. The core sample the team took revealed that underneath a very thin layer of dust and sand, the land is made of hard, solid rock. The first 17 meters of hard, solid rock was formed during volcanic eruptions. The next 483 meters was also hard, solid rock formed when sediments were cemented and compacted together at different times in geologic history.

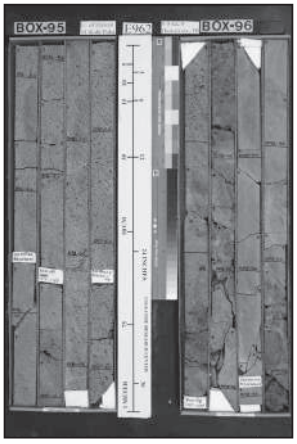
Scientific Drilling Site: Mauna Loa Volcano, Hawaii, USA



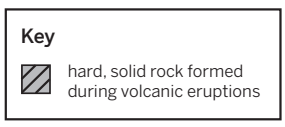
A team with the Hawaii Scientific Drilling Project drilled over 3,000 meters into the surface of the Mauna Loa Volcano. The core sample the team took revealed that underneath the surface, the volcano is made of hard, solid rock that formed when lava cooled during many different volcanic eruptions.



Mauna Loa



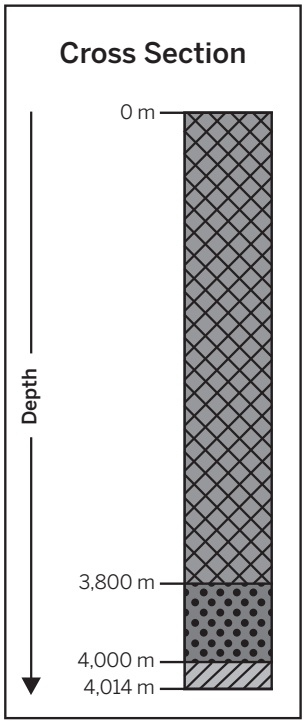
Core samples from Mauna Loa



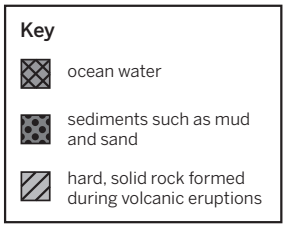
Name: _____ Date: _____

Exploring Cross Sections (continued)

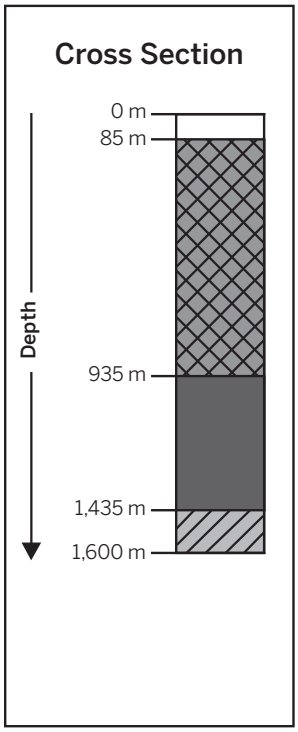
Scientific Drilling Site: Guadalupe Island, Mexico



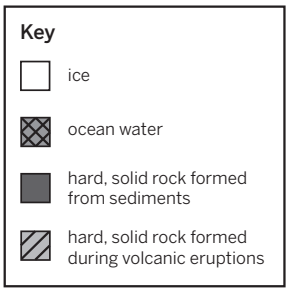
A team that worked on a scientific drilling project called Project Mohole drilled into the bottom of the ocean off the coast of Mexico. To reach the land at the bottom of the ocean, the team had to send the drill down through 3,800 meters of water. The team took a core sample of the land at the bottom of the ocean. The core sample showed that land at the bottom of the ocean is made of 200 meters of sediments such as sand and mud, and below that, there is hard, solid rock that formed during volcanic eruptions.

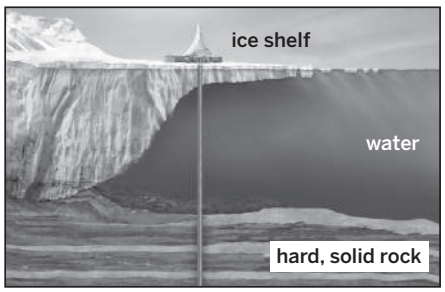


Scientific Drilling Site: Ross Ice Shelf, Antarctica



A team working on a scientific drilling project called the ANDRILL Project drilled into the surface of an ice shelf in Antarctica in order to reach the land at the bottom of the ocean below. The team had to drill through about 85 meters of surface ice, and then through 850 meters of ocean water. The team took a core sample of the land at the bottom of the ocean. This core sample is made of 500 meters of hard, solid rock that formed when sediments such as sand and mud were compacted and cemented together. Below that rock is hard, solid rock that formed during volcanic eruptions.





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Homework: Earth's Outer Layer

You have been investigating the question *What is the land like underneath Earth's surface?*

Use the map below to show your thinking about this question. Show where Earth's outer layer is made of hard, solid rock by shading those regions.