Name _____ Class _____ Date _____

CHAPTER 1 The World of Earth Science

SECTION 1

Branches of Earth Science

BEFORE YOU READ

After you read this section, you should be able to answer these questions:

- What are the four major branches of Earth science?
- What are some special branches of Earth science?

What Is Geology?

Earth is a large and complicated place. How do scientists study it? The answer is that no one scientist studies all parts of Earth. Instead, different scientists study different parts of the planet. The study of different parts of Earth is called *Earth science*. There are many different *branches*, or types, of Earth science.

Geology is one branch of Earth science. **Geology** is the study of the origin, history, and structure of Earth. It also includes the study of the processes that shape Earth. A scientist who studies geology is called a *geologist*.

In most cases, a geologist studies one specific part of the Earth. For example, *volcanologists* study volcanoes. *Seismologists* study earthquakes. *Paleontologists* study the history of life on Earth. ☑

STUDY TIP

Describe As you read this section, make a chart describing the four main branches of Earth science. In your chart, define each branch and give the term used to describe a scientist who studies it.

READING CHECK

1. Describe What do seismologists study?

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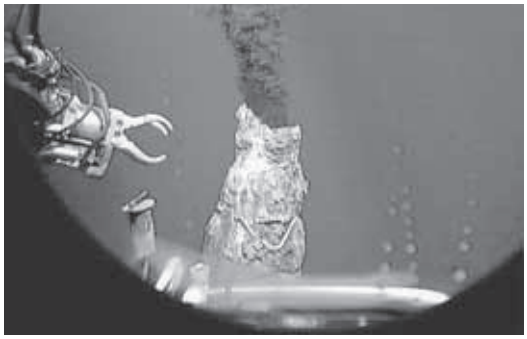
What Is Oceanography?

Another branch of Earth science is oceanography. **Oceanography** is the study of the sea. Scientists who study oceanography are called *oceanographers*.

Like geologists, oceanographers may focus on certain areas of oceanography. For example, *biological oceanographers* study the living things in the oceans. *Chemical oceanographers* study the amounts of different chemicals in ocean water.



Many oceanographers use special tools, such as this submarine, to study the oceans.

TAKE A LOOK

2. Identify What do oceanographers study?

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What Is Meteorology?

Meteorology is a branch of Earth science that deals with Earth's atmosphere, especially weather and climate. Scientists who study meteorology are called *meteorologists*. ☑

READING CHECK

3. Define What is meteorology?

Many meteorologists try to *forecast*, or predict, the weather. In most cases, weather forecasts help to make our lives more comfortable. Sometimes, meteorologists can help save people's lives by predicting severe weather, such as hurricanes and tornadoes. These predictions can warn people to leave an area before severe weather strikes.

TAKE A LOOK

4. Explain How can meteorology save people's lives?

These meteorologists are risking their lives to gather information about tornadoes. This information may help other meteorologists better predict where and when tornadoes will strike.

What Is Astronomy?

Astronomy is the study of the universe. *Astronomers* are scientists who study stars, asteroids, planets, and other objects in space.

Most objects in space are very far away. Therefore, astronomers depend on technology to help them study these objects. For example, astronomers may use telescopes to study distant stars and planets.

Critical Thinking

5. Compare What is the main difference between astronomy and other branches of Earth science?

You may wonder why astronomy is a branch of Earth science if astronomers study objects far from the Earth. The reason is that many astronomers use information about other planets and stars to learn more about the Earth. For example, some astronomers study ancient stars in the universe. The information they gather can help them to predict how changes in our sun may affect the Earth.

What Are Some Other Branches of Earth Science?

Geology, oceanography, meteorology, and astronomy are the four main branches of Earth science. However, there are many other branches of Earth science.

ENVIRONMENTAL SCIENCE

Environmental science is the study of how humans interact with the environment. Environmental scientists help people learn ways to preserve the environment and to use resources wisely. ☑

READING CHECK

6. Identify Give two things that environmental scientists can help people learn to do.

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ECOLOGY

Ecology is the study of relationships between living things and their environments. Ecologists study communities of organisms and their environments to better understand how organisms behave. Ecologists work in many fields, including agriculture and forestry.

GEOCHEMISTRY

Geochemistry combines the studies of geology and chemistry. Geochemists study the chemicals that make up Earth materials such as rocks, minerals, and soil. They can use this information to learn how the Earth materials formed. Geochemists may also study the effects of human-made chemicals on the environment.

Say It

Discuss In a small group, talk about different jobs that Earth scientists can have. Who may Earth scientists work for? What kinds of work could they do every day?

Geochemists may take rock samples and analyze them in a laboratory.

TAKE A LOOK

7. Describe What do geochemists study?

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GEOGRAPHY AND CARTOGRAPHY

Geography is the study of the surface features of the Earth, such as continents, rivers, and mountains. Many geographers work in *cartography*, or map-making. Cartographers use information from photographs and computers to make maps. They may also study the ways that areas change with time.

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Section 1 Review

SECTION VOCABULARY

astronomy the scientific study of the universe **geology** the scientific study of the origin, history, and structure of Earth and the processes that shape Earth	**meteorology** the scientific study of Earth's atmosphere, especially in relation to weather and climate **oceanography** the scientific study of the ocean, including the properties and movements of ocean water, the characteristics of the ocean floor, and the organisms that live in the ocean

1. List What are the four major branches of Earth science?

2. Infer What kind of Earth scientist would most likely study thunderstorms? Explain your answer.

3. Explain Why is astronomy a branch of Earth science?

4. Compare How is environmental science different from ecology?

5. Explain Why do astronomers depend on technology?

6. Define What is geography?