Week of April 6-10, 2020
Junior High Science
Debra Welch

Hello students! I hope all of you are staying healthy. I just want everyone to know that I am thinking of you and miss having school as normal. Remember to keep your immune systems strong! Basic directions are: You need to complete one lesson a week for only the class you were currently enrolled in and choose from the 3 choices. Choices 1 & 2 are for review of material we have already covered this year. I will start at the beginning and go through the year's material. Choice #3 will always be new work using your textbook or other handouts I include. I will make every effort to keep your work simple to do, considering that we are not learning together in the classroom. Your work should be turned in as a hard (paper) copy to the office or through email in a word or google document. My email is: debra.welch@oakland5.org. Please be sure all work has your name! If you have not turned in the assignment by the following Monday, I will need to email your parents and/or place a phone call home. Please be diligent to turn work in on time. I suggest you set up a schedule just as if you were at school and allow for the normal time period. Most assignments I send you will take less time than our normal 40 minutes. Comments will be made on paper copies and returned to you. If you send in homework answers as an email I will reply to your email and give my comments/reflections of your work. I will be supplying you with the necessary notes or you will need to use your book to find the answers. If you have any questions feel free to email me and I will get back to you by email during my office hours. If you can't email feel free to call the office and leave me a message. Good Luck and stay healthy!

Class	Choice 1	Choice 2	Choice 3 (Enrichment)
8th Grade Life Science	Use text p6-27 and fill out notes handout p33-35; review Branches of Science	Do Worksheet: What is Scientific Inquiry? Review your notes from Chapter 1.	Read the Notes on **Viruses** (Ch 2-3) p52-55 in text. Fill out Note-taking worksheet from text
6th Grade General Science	Read Section 1: What is Earth Science? Do questions on page 8, 1-8	Use Section 1 reading as notes and: Write a description of each branch of Earth Science. Give the tools used to study each branch.	Read in Ch 5 -Weather p116-125 and answer questions on pg 125, 1-5
		"What is Earth Science?"	
		(same rdg material for Choice 1)	

Choice 1 and 2 Welch Engineering 6th Grade 4/6-12 p91

SECTION 1

What Is Earth Science?

Key Ideas	Key Terms	Why It Matters
❯ Describe two cultures that contributed to modern scientific study. ❯ Name the four main branches of Earth science. ❯ Discuss how Earth scientists help us understand the world around us.	**Earth science** **geology** **oceanography** **meteorology** **astronomy**	Earth scientists help us understand our place in Earth's history and in the universe. They can also help us gain access to Earth's resources and use these resources wisely.

For thousands of years, people have looked at the world around them and wondered what forces shaped it. Throughout history, many cultures have been terrified and fascinated by seeing volcanoes erupt, feeling the ground shake during an earthquake, or watching the sky darken during an eclipse.

Some cultures developed myths or stories to explain these events. Modern science searches for natural causes and uses careful observations to explain these same events and to understand Earth and its changing landscape.

The Scientific Study of Earth

Scientific study of Earth began with careful observations. Scientists in China began keeping records of earthquakes as early as 780 BCE. The ancient Greeks compiled a catalog of rocks and minerals around 200 BCE. Other ancient peoples, including the Maya, tracked the movements of the sun, the moon, and the planets at observatories like the one shown in **Figure 1.** The Maya used these observations to create accurate calendars.

Earth science the scientific study of Earth and the universe around it

For many centuries, scientific discoveries were limited to observations of phenomena that could be seen with the unaided eye. Then, in the 16th and 17th centuries, the inventions of the microscope and the telescope made seeing previously hidden worlds possible. Eventually, the body of knowledge about Earth became known as Earth science. **Earth science** is the study of Earth and of the universe around it. Earth science, like other sciences, assumes that natural events, or phenomena, can be explained through careful observation and experimentation.

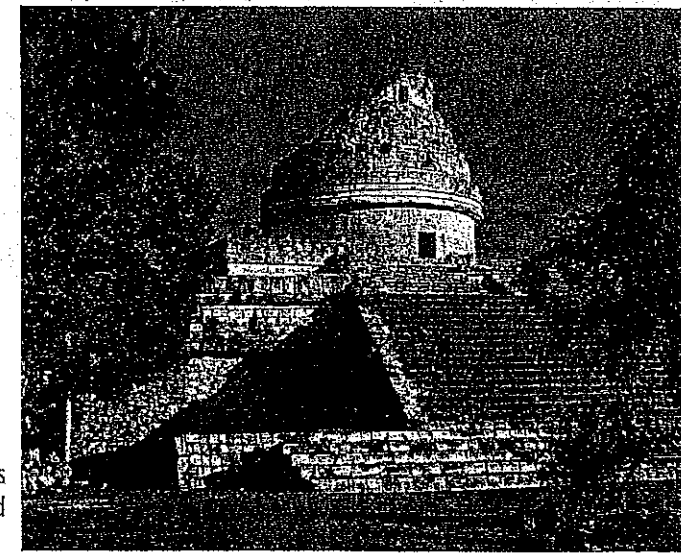


Figure 1 El Caracol, an observatory built by the ancient Maya of Central America, is one of the oldest known observatories in the Americas. Mayan calendars include the celestial movements that the Maya tracked by using observatories.

Choice 1 and 2 D. Welch 6th
4-4 | 4-10 pg 2

Branches of Earth Science

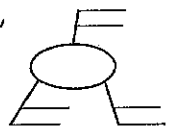
The ability to make observations improves when technology, such as new processes or equipment, is developed. Technology has allowed scientists to explore the ocean depths, Earth's unseen interior, and the vastness of space. Earth scientists have used technology and hard work to build an immense body of knowledge about Earth.

Most Earth scientists specialize in one of four major areas of study: the solid Earth, the oceans, the atmosphere, and the universe beyond Earth. Examples of Earth scientists working in these areas are shown in **Figure 2.**

READING TOOLBOX

Spider Map

Create a spider map that summarizes the branches of Earth science. Use the green heads in this section as the legs of your spider map, and add one or two branches to each leg.



geology the scientific study of the origin, history, and structure of Earth and the processes that shape Earth

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

Academic Vocabulary

technology (tek NAHL uh jee) tools, including electronic devices

Geology

The study of the origin, history, processes, and structure of the solid Earth is called **geology.** Geology includes many specialized areas of study. Some geologists explore Earth's crust for deposits of coal, oil, gas, and other resources. Other geologists study the forces within Earth to predict earthquakes and volcanic eruptions. Some geologists study fossils to learn more about Earth's past. Often, new knowledge forms new areas of study.

Oceanography

Oceans cover nearly three-fourths of Earth's surface. The study of Earth's oceans is called **oceanography.** Some oceanographers work on research ships that are equipped with special instruments for studying the sea. Other oceanographers study waves, tides, and ocean currents. Some oceanographers explore the ocean floor to obtain clues to Earth's history or to locate mineral deposits.

Figure 2 Fields of Study in Earth Science

Geologists who study volcanoes are called volcanologists. This volcanologist is measuring the properties of moving lava.

This astronomer is linking a telescope with a specialized instrument called a spectrograph. Information gathered will help her catalog the composition of more than 100 galaxies.

This meteorologist is studying ice samples to learn about past climate. Studying past climate patterns gives scientists information about possible future changes in climate.

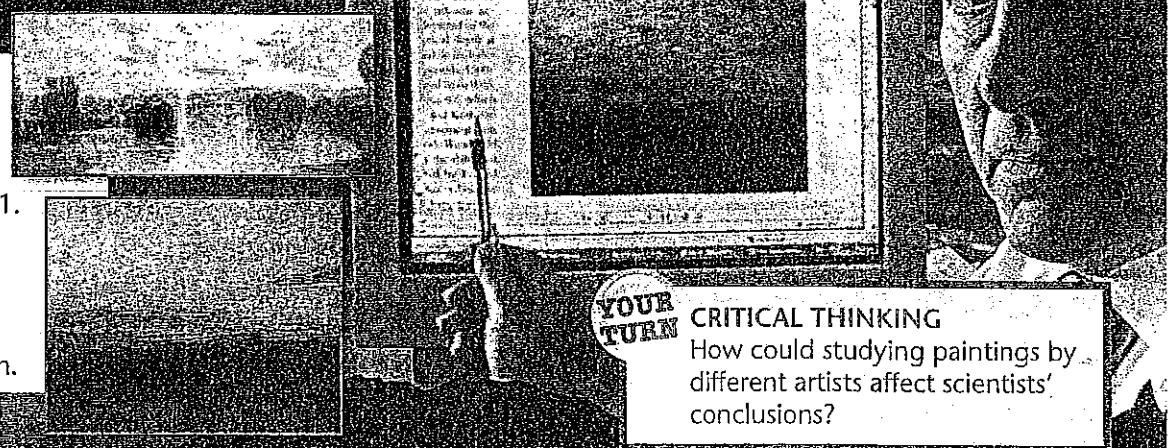
Choice. 1 and 2 D. Welch 6th grade pg 3

Why It Matters

More than a Pretty Picture

EYE ON THE ENVIRONMENT

Scientists use a variety of instruments and methods to study Earth. For example, common methods for studying climate change include analyzing ice cores and tree rings. Now, one innovative scientist has turned instead to art. Scientists know that volcanic ash in the atmosphere blocks sunlight, which causes temperatures to drop. Could painting shed light on past temperatures?



J.M.W. Turner made the top painting three years before a volcanic eruption in the Philippines in 1831. He made the bottom painting in 1833. The redder sunset in the bottom painting was caused by volcanic ash.

YOUR TURN **CRITICAL THINKING**
How could studying paintings by different artists affect scientists' conclusions?

Meteorology

The study of Earth's atmosphere is called **meteorology**. Using satellites, radar, and other technologies, meteorologists study the atmospheric conditions that produce weather. Many meteorologists work as weather observers and measure factors such as wind speed, temperature, and rainfall. This weather information is then used to prepare detailed weather maps. Other meteorologists use weather maps, satellite images, and computer models to make weather forecasts. Some meteorologists study *climate*, the patterns of weather that occur over long periods of time.

meteorology the scientific study of Earth's atmosphere, especially in relation to weather and climate

astronomy the scientific study of the universe

Astronomy

The study of the universe beyond Earth is called **astronomy.** Astronomy is one of the oldest branches of Earth science. In fact, the ancient Babylonians charted the positions of planets and stars nearly 4,000 years ago. Modern astronomers use Earth-based and space-based telescopes as well as other instruments to study the sun, the moon, the planets, and the universe. Technologies such as rovers and space probes have also provided astronomers with new information about the universe.

SCILINKS
www.scilinks.org
Topic: Branches of Earth Science
Code: HQX0191

Reading Check **What information is used for weather maps?**
(See Appendix G for answers to Reading Checks.)

Choice 1 and 2 D. Welch 6th 4-6/4-10 pg 4

Figure 3 These meteorologists are risking their lives to gather information about tornadoes. If scientists can better predict when tornadoes will occur, many lives may be saved each year.

Environmental Science and Earth Science

Some Earth scientists study the ways in which humans interact with their environment in a relatively new field of science called *environmental science*. Many fields of study, such as Earth science, biology, and the social sciences, contribute to environmental science. The goal of environmental science is to understand and solve problems that result from how we use natural resources and how our actions affect the environment.

The Importance of Earth Science

Natural forces not only shape Earth but also affect life on Earth. For example, a volcanic eruption may bury a town under ash. And an earthquake may produce huge ocean waves that destroy shorelines. By understanding how natural forces shape our environment, Earth scientists, such as those in **Figure 3**, can better predict potential disasters and help save lives and property.

The work of Earth scientists also helps us understand our place in the universe. Astronomers studying distant galaxies have come up with new ideas about the origins of our universe. Geologists studying rock layers have found clues to Earth's past environments and to the evolution of life on this planet.

Earth provides the resources that make life as we know it possible. Earth also provides the materials to enrich the quality of people's lives. The fuel that powers a jet, the metal used in surgical instruments, and the paper and ink in this book all come from Earth's resources. The study of Earth science can help people gain access to Earth's resources, but Earth scientists also strive to help people use those resources wisely.

Section 1 Review

Key Ideas

1. **Discuss** how one culture contributed to modern science.
2. **Name** the four major branches of Earth science.
3. **Describe** two specialized fields of geology.
4. **Describe** the work of oceanographers and meteorologists.
5. **Explain** how the work of astronomers has been affected by technology.

Critical Thinking

6. **Analyzing Ideas** How have Earth scientists improved our understanding of the environment?
7. **Analyzing Concepts** Give two examples of how exploring space and exploring the ocean depths are similar.

Concept Mapping

8. Use the following terms to create a concept map: *Earth science, geology, meteorology, climate, environmental science, astronomy,* and *oceanography.*