

Directions: Read the passage below and answer the question(s) that follow.

## Geology

**(1)** Geology is the scientific study of Earth. Geologists study the planet—its formation, its internal structure, its materials, its chemical and physical processes, and its history. Mountains, valleys, plains, sea floors, minerals, rocks, fossils, and the processes that create and destroy each of these are all the domain of the geologist. Geology is divided into two broad categories of study: physical geology and historical geology.

**(2)** Physical geology is concerned with the processes occurring on or below the surface of Earth and the materials on which they operate. These processes include volcanic eruptions, landslides, earthquakes, and floods. Materials include rocks, air, seawater, soils, and sediment. Physical geology further divides into more specific branches, each of which deals with its own part of Earth’s materials, landforms, and processes. Mineralogy and petrology investigate the composition and origin of minerals and rocks. Volcanologists study lava, rocks, and gases on live, dormant, and extinct volcanoes. Seismologists use instruments to monitor and predict earthquakes and volcanic eruptions.

**(3)** Historical geology is concerned with the chronology of events, both physical and biological, that have taken place in Earth’s history. Paleontologists study fossils (remains of ancient life) for evidence of the evolution of life on Earth. Fossils not only relate evolution, but also speak of the environment in which the organism lived. Corals in rocks at the top of the Grand Canyon in Arizona, for example, show a shallow sea flooded the area around 290 million years ago. In addition, by determining the ages and types of rocks around the world, geologists piece together continental and oceanic history over the past few billion years. Plate tectonics (the study of the movement of the sections of Earth’s crust) adds to Earth’s story with details of the changing configuration of the continents and oceans.

*“Geology.” U\*X\*L Encyclopedia of Science. Edited by Rob Nagel. Farmington Hills, Mich.: Gale Cengage Learning, 2007. (2007)*

**1** Read the sentence from the passage, “Geology.”

**Geology is divided into two broad categories of study: physical geology and historical geology.**

What purpose does this sentence serve in the structure of the entire text?

- A. It defines each category of geology for the reader with multiple details about what each one entails.
- B. It indicates the organizational structure of the remainder of the text by naming what each paragraph will be about.
- C. It demonstrates the contrasts between the two types of geology and what each kind of geologist studies.
- D. It clearly explains the perspective of the author: that geology is a worthy category of study.

**2** Which of the following things would be studied within historical geology? Select **all** the options that apply.

- A. volcanic eruptions
- B. shallow seas
- C. corals
- D. fossils
- E. instruments
- F. continents and oceans

Directions: Answer the following question(s) relating to the passage titled "Geology".

- 3 What is one difference between physical and historical geology?
- A. Physical geology focuses on materials and processes on the surface of the Earth, while historical geology examines both physical and biological processes.
  - B. In physical geology, scientists study corals and fossils, but in historical geology, they examine plate tectonics and the changes that have taken place with continents and oceans.
  - C. There are more kinds of physical geologists than there are historical geologists.
  - D. In historical geology, there are more branches of science dedicated to the earth's materials, landforms, and processes. In physical geology, there are not as many branches.
- 4 What is a central idea of the passage "Geology?"
- A. Without geologists, we would be unable to understand the make-up of our planet and the evolution of life on Earth.
  - B. Geologists determine the ages and types of rocks around the world, and this helps them understand more about how Earth has evolved.
  - C. Geology is a highly diversified science that allows us to learn about the physical and biological history of the Earth.
  - D. Studying volcanoes and fossils scientists to contribute to the body of work that makes up geology.
- 5 Which sentence from the passage best supports the answer to Question 4?
- A. Physical geology is concerned with the processes occurring on or below the surface of Earth and the materials on which they operate. (paragraph 2)
  - B. Volcanologists study lava, rocks, and gases on live, dormant, and extinct volcanoes. (paragraph 2)
  - C. Mountains, valleys, plains, sea floors, minerals, rocks, fossils, and the processes that create and destroy each of these are all the domain of the geologist. (paragraph 1)
  - D. Historical geology is concerned with the chronology of events, both physical and biological, that have taken place in Earth's history. (paragraph 3)
- 6 You have read the passage "Geology." Use evidence from the text to write an essay explaining why the study of geology is important.