

Geologic History of Earth Packet #1

Name: _____ Date: _____

Instructions: Read the text and follow the directions to answer the questions.

Introduction

The kinds of plants and animals that have lived on Earth have changed over time. Prehistoric humans hunted woolly mammoths. Long before humans, dinosaurs roamed our planet. Before that, all life was in the ocean.

Make a prediction:

1. How do we know about the things that lived long ago?

2. How do we know when things lived?

Evidence of Past Life

You have probably heard of fossils. You may think of fossils as old bones that have turned to rock. This is not completely incorrect. Plants don't have bones, but plants can leave fossils. Footprints or burrows left behind by animals can become fossils. A fossil is any physical evidence of a plant or animal that lived long ago.

Before those who discovered fossils understood them completely, people noticed something interesting. They noticed that the same kinds of fossils were always found together in the same layer of rock. In fact, rock layers were identified by their unique fossils. This fossil fern is evidence of a plant that lived millions of years ago.



3. Highlight the definition of *a fossil*.
4. What are some different types of fossils?

5. Why do you think it is important that the same kinds of fossils were found in the same layer of rock?

Which came first?

Eventually, people figured out that fossils formed when rock formed. The fossils in the rock represent the plants and animals that lived during that time. If different layers of rock have different fossils, this means that they formed at different times. They formed when different plants and animals were alive. Fossils form in sedimentary rock. Sedimentary rock is formed when sediments, tiny bits of broken rock, are laid down by moving air, water, or ice.

6. Since sedimentary rock is formed when “tiny bits of broken rock are laid down by moving air, water, or ice”, what do you think the word “sediment” means?

7. How do we know that the fossils of plants and animals found in a layer of rock are all from the same time period?

Stratigraphy

Erosion and uplift of Earth's surface reveal ancient rock layers (strata) and fossils that are clues to Earth's major geologic events. The study of rock layers (strata) is called stratigraphy. Over the long history of Earth, layers of sediment and rock have been deposited. They were deposited one on top of the other, preserving the clues to the past. Sometimes the remains of plants and animals get buried in these layers and become fossilized. Geologists

studied portions of these rock layers and discovered several patterns that are useful in interpreting geologic cross sections:

a. Geologic processes that occur today are the same that operated in the past.

Geologists compared marks in old rock layers and noticed that the same structures are seen in present rock layers. Geologists concluded that the processes that are now operating on Earth must be the same processes that operated in the past. Thus, when a section of ancient exposed rock layer shows repeated layers of basalt, geologists might conclude that volcanic activity occurred many times during its geologic history.

b. The oldest rock layers are at the bottom, and the youngest layers are on top

Younger sediments are deposited over older sediments. In a sequence of layers that have not deformed, the oldest layer is on the bottom and the youngest layer is on top.

c. Index fossils can identify the age of rock layers.

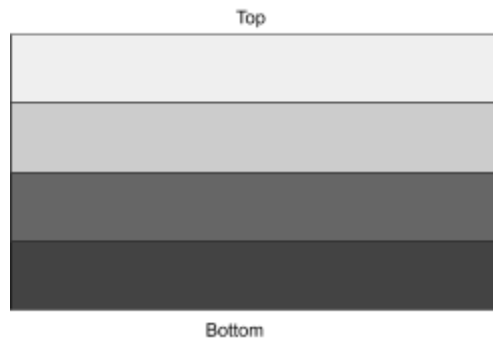
Certain fossils are organisms that lived only a short time. These index fossils become markers for that specific time period. Trilobites lived at a different time than ammonites and belemnites. Finding a trilobite fossil in a rock tells you the rock was formed in the Paleozoic era.

8. What are strata? Why are they important to geologists?

9. Define stratigraphy in your own words.

10. Explain why it is significant that “geologic processes that occur today are the same that operated in the past.

11. Look at the diagram below, what could you say about the relative age of the layers of rock?



12. What is an index fossil and how do scientists use them?
