

Rank the seven individuals in this photo from oldest to youngest.

Figuring out how or why something is older or younger than something else is a concept called **relative age**. Relative dating is used by geologists, scientists who study the Earth, to put things in the order that they happened. This is commonly called a sequence. We might use clues like size, facial features, or even clothing to sequence people, and geologists use many clues to determine things like the relative age of fossils or rock layers in the Earth.

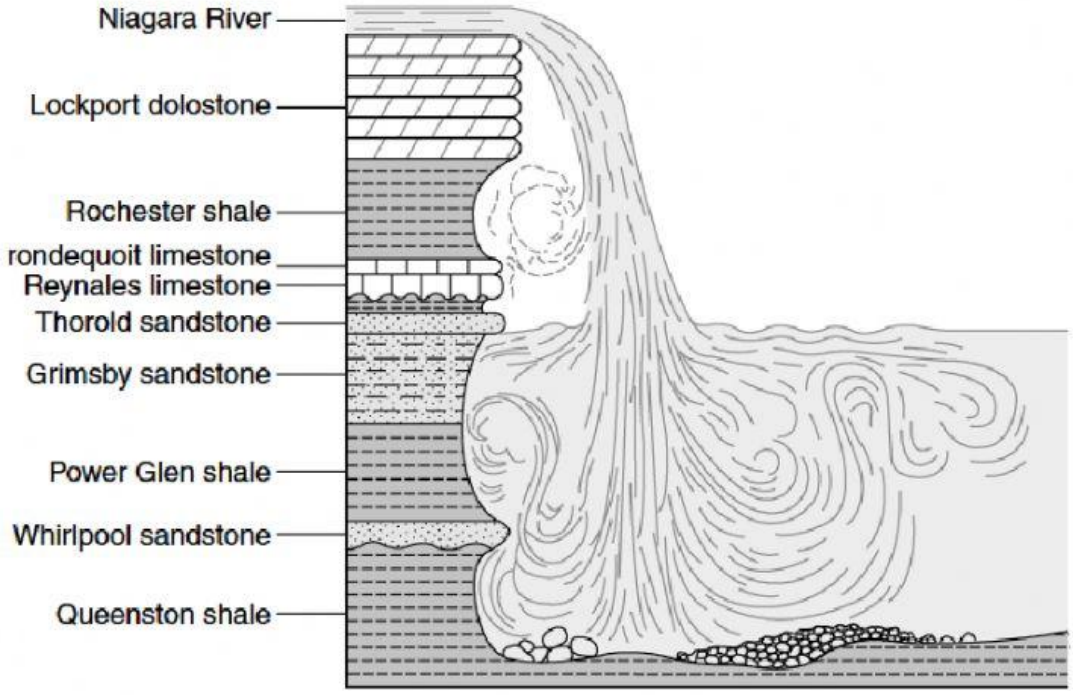
But, sometimes sequence is not enough. You may want to know exactly when or how long ago an event took place. This is known as numerical, or **absolute time**. If you say that the Earth and solar system formed about 4.6 billion years ago, you are expressing an absolute age. Absolute age always includes a number and a unit of time, such as years, days, or seconds. We'll be learning more later in the unit about absolute aging techniques.

When geologists study the Earth, they frequently use relative age in determining what happened in Earth's history. Below, you'll learn about some techniques and strategies that scientists use to help them piece together Earth's history. The principles you're going to learn about below to help you

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understand how to determine relative age are: **superposition, uniformitarianism,** and **horizontal originality**.

Superposition:



You just saw an illustration of the concept of **superposition.**

Define superposition below:

_____

_____

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Uniformitarianism:

Geologists often say 'the present is the key to the past' when discussing uniformitarianism. What do you think they might mean?

Define uniformitarianism below:

_____

_____

Horizontal Originality:

Define horizontal originality below:

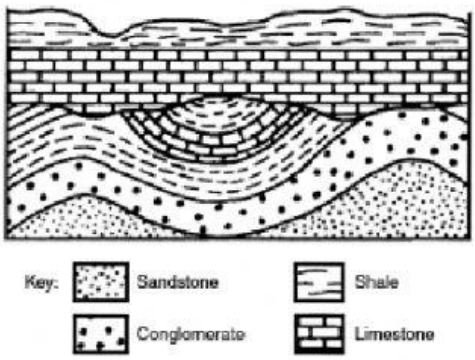
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*Note: If you observe tilted rock layers, that usually means something happened **after** the layers of rock were deposited.

Practice:

1.)

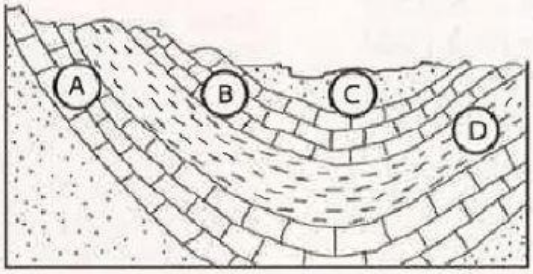


What kind of rock was deposited first?
(1) sandstone (2) conglomerate (3) shale
(4) limestone

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2.)

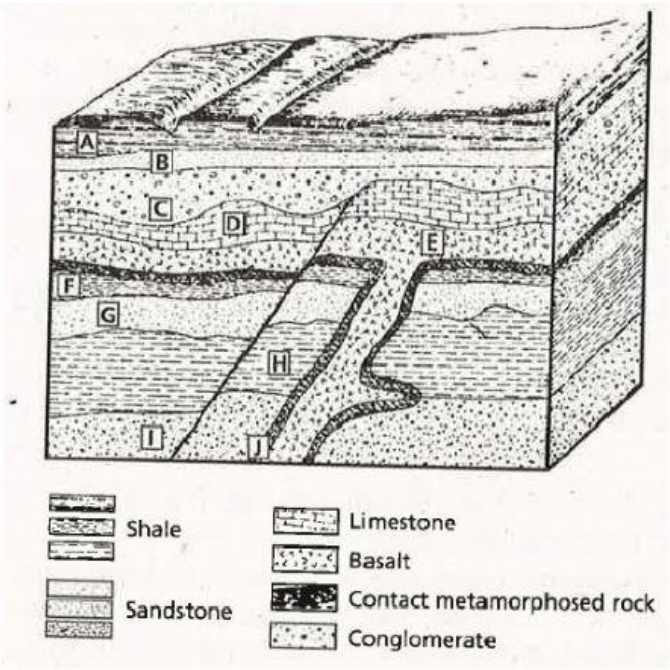
The following diagram represents a cross-sectional view of a portion of Earth's crust showing sedimentary rock layers that have not been overturned. The letters identify the specific layers.



Which rock layer is probably the oldest?

(1) A (2) B (3) C (4) D

3.)

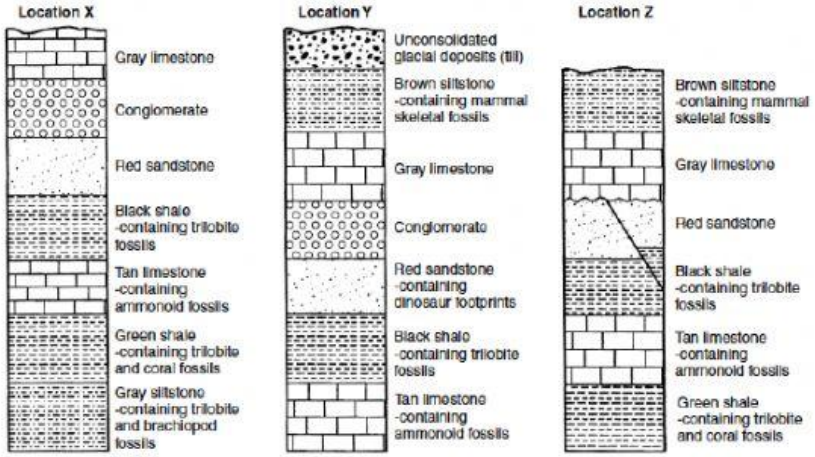


Which is the most recently formed rock?

(1) A (2) B (3) C (4) D

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4.)



Which rock layer is probably oldest?

(1) gray siltstone
(2) green shale
(3) tan limestone
(4) brown siltstone

5.) Which definition matches up with the definition of **uniformitarianism**:

a) The processes occurring today are the same processes that have occurred throughout Earth's history.
b) the geologic processes that the oldest rock layers are at the bottom of a rock layer, and the newest rock layers are located at the top
c) that deposition layers always appear to be deposited in flat layers or surfaces
d) the study of the layers of the Earth

6.) Which definition matches up with the definition of **superposition**:

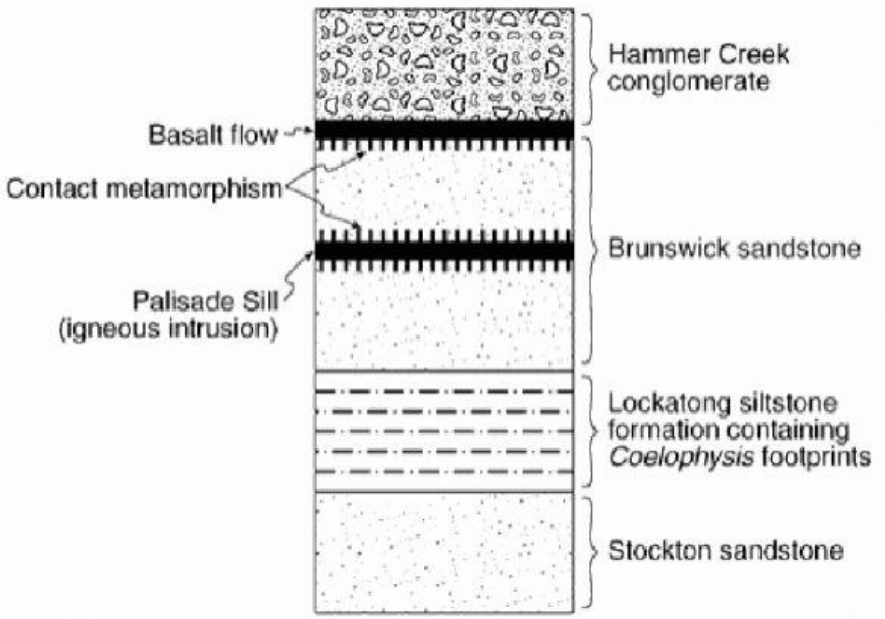
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c) that deposition layers always appear to be deposited in flat layers or surfaces
d) the study of the layers of the Earth

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7.) Which definition matches up with the definition of **horizontal originality**:

a) The processes occurring today are the same processes that have occurred throughout Earth's history.
b) the geologic processes that the oldest rock layers are at the bottom of a rock layer, and the newest rock layers are located at the top
c) that deposition layers always appear to be deposited in flat layers or surfaces
d) the study of the layers of the Earth

8.) Base your answer to the following question on The cross section below, which shows several rock formations found in New York State. The rock layers have not been overturned.



How does this cross section indicate that the Stockton sandstone is the oldest rock layer?

_____

_____

9.) What is the difference between relative and absolute dating?

_____

_____

_____

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