

Name: _____

Date: _____

Period: 1 2 3 4 5 6 7

Relative Dating

Essential Question: How are the relative ages of rock measured?

Vocabulary:

- **Relative Dating:** any method of determining whether an event or object is older or younger than other events or objects.
- **Superposition:** a principle that states that younger rocks lie above older rocks if the layers have not been disturbed.
- **Unconformity:** a break in the geologic record created when rock layers are eroded or when sediment is not deposited for a long period of time.
- **Fossil:** the trace or remains of an organism that lived long ago, most commonly preserved in sedimentary rock.
- **Geologic Column:** an ordered arrangement of rock layers that is based on the relative ages of the rocks and in which the oldest rocks are at the bottom.

What is Relative Dating?

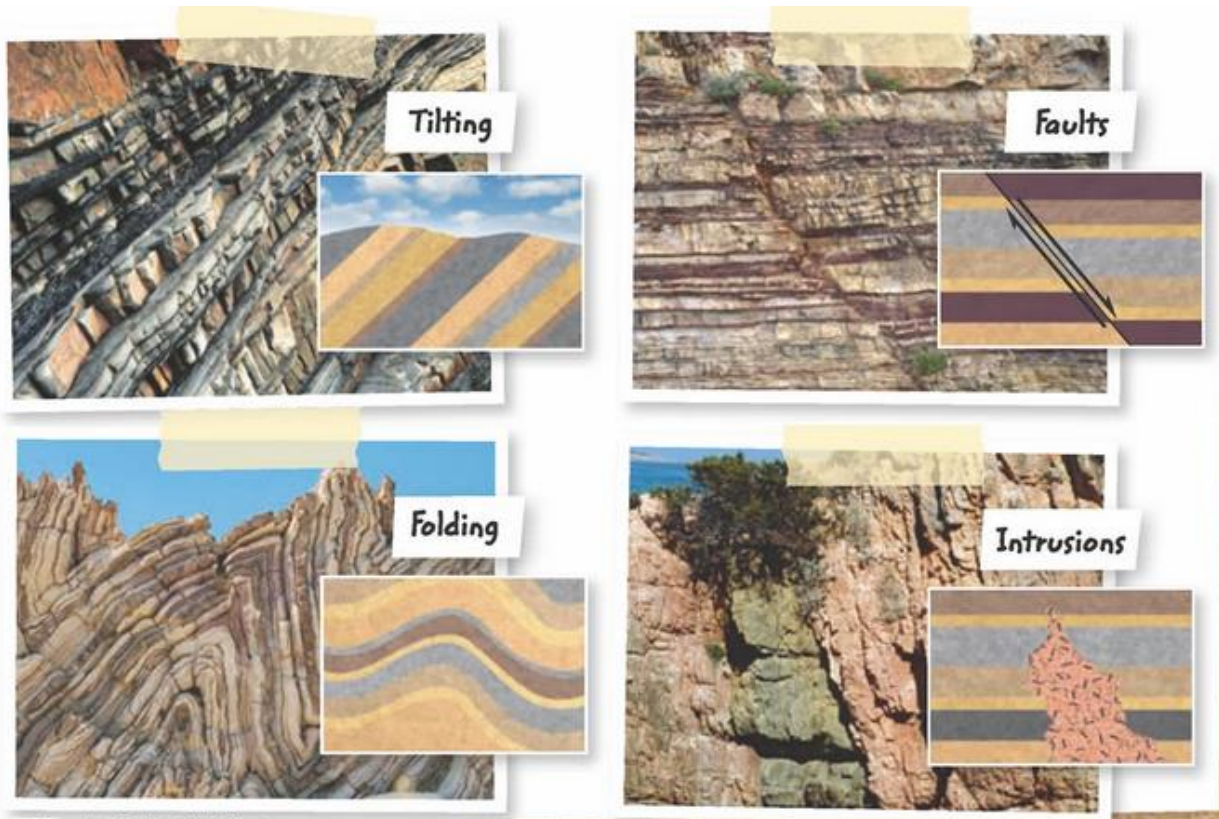
1. Scientists find out the order of events that happened on Earth
2. Use rock and fossils for relative dating
 - a. Determine which object is older or younger
3. Use different pieces of information about rocks to determine relative age of rock layers

How Are Undisturbed Rock Layers Dated?

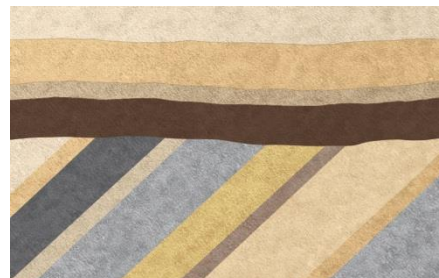
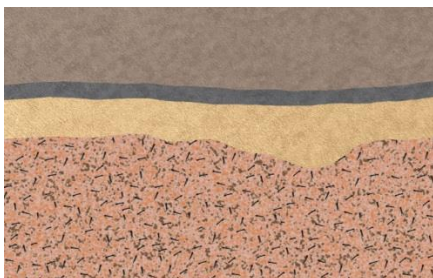
1. Sedimentary rock forms when new sediment is deposited on top of older rock.
 - a. Piles layer up over time
 - b. Young layers on top of old layers
 - c. Scientists use the order of rock layers to date the rock in each layer
2. Law of Superposition
 - a. Younger rock lies above older rocks if undisturbed
 - b. Like stacking pictures

How Are Sedimentary Rock Layers Disturbed?

1. Forces in Earth can disturb rock layers in various ways.
 - a. Tilting happens when Earth's forces move rock layers up or down unevenly. The layers become slanted.
 - b. Folding is the bending of rocks that can happen when rock layers are squeezed together.
 - Older layers may end up on top of younger layers.
 - c. Fault: break or crack in Earth's crust where rocks can move
 - d. Intrusion: igneous rock that forms when magma is injected into rock and then cools and becomes hard.

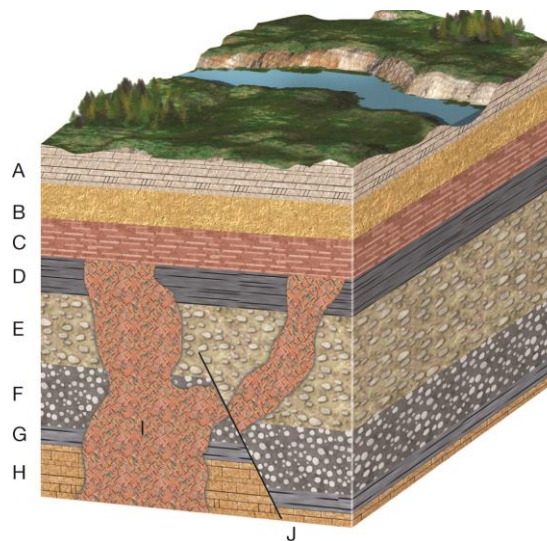


2. Finding relative ages is complicated when an entire layer of rock is missing
 - a. Unconformity: missing layer or rock; gap in the geologic record
 - b. Formed when rock layers are eroded or when sediment is not deposited for a long period of time.



How Are Rock Layers Ordered?

1. Law of Crosscutting Relationships
 - a. A fault or body of rock (intrusion) must be younger than any feature or layer of rock that the fault or rock body cuts through
2. Law of Superposition and Law of Crosscutting Relationships help scientists figure out how rock layers formed.
 - a. Used to find relative ages of features on Mars
 - Age of craters
 - b. Example

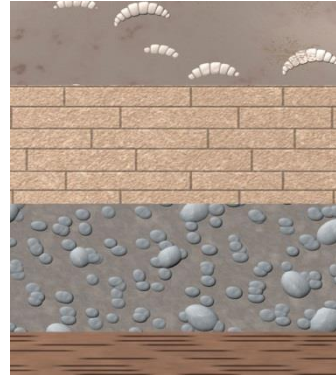
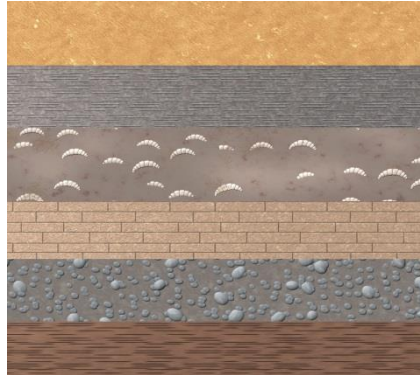


How Are Fossils Used to Determine Relative Ages of Rocks?

1. Fossils: preserved traces or remains of organisms that lived long ago
2. Most often preserved in sedimentary rock.
3. Show change over time as organisms evolve
 - a. Scientists used this to find the relative ages of rocks
 - b. Rock containing fossils of organisms similar to ones we see today are likely younger than rocks with fossils or primitive organisms

How Are Geologic Columns Used to Compare Relative Ages of Rock?

1. Relative dating done by comparing the relative ages of rock layers in different areas
2. Geologic Column: ordered arrangement of rock layers based on relative ages of rock, with oldest rocks at the bottom
3. Scientists used this information to make geologic time scale of Earth's history



Essential Question Review:

- How are the relative ages of rock measured?
