

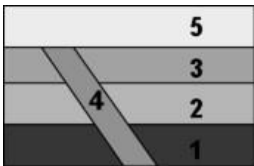
RELATIVE DATING WORKSHEET

Principles of Geology:

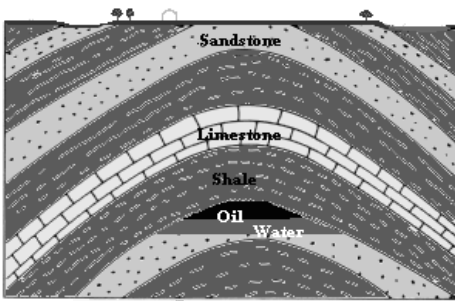
- **Law of Superposition:** The youngest layer of rock is on the top. The oldest layer of rock is on the bottom
- **Law of Original Horizontality:** All sedimentary rocks are deposited flat initially. If you find them at an angle, they have been moved
- **Law of Cross-cutting relationships:** igneous rocks or faults that “cut” into other rocks are the youngest. (the “other rocks” had to be there before they could get cut by anything)



1. Which of these layers is the youngest? _____
2. How can you tell? _____
3. What principle of geology does this relate to? _____

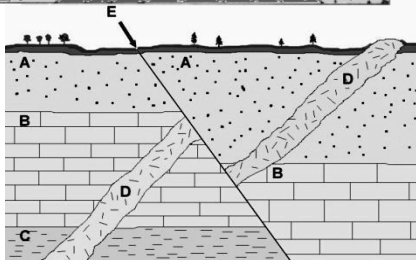


4. When did layer “4” occur? _____
5. How can you tell? _____
6. What principle of geology teaches that concept? _____



7. What happened to these layers of rock (if anything)? _____

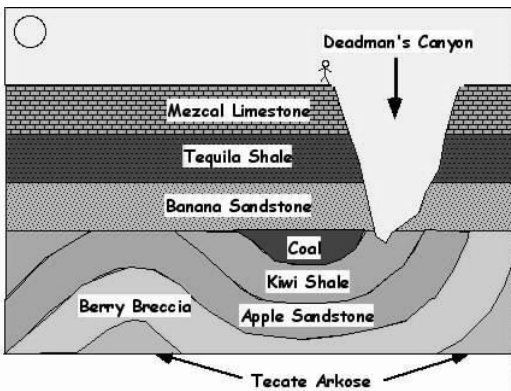
8. Which principle of geology did you use to determine what happened? _____



9. What happened first: the igneous pluton D or the earthquake fault line E? _____

10. Which rock layer was put down *last* (A, B, C, or D) _____

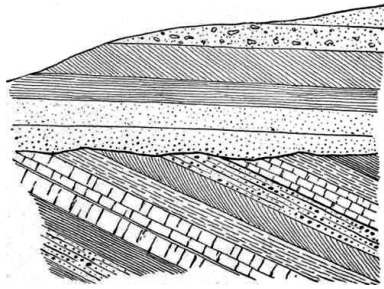
11. Which way did the rocks on the right move? (upward or downward)? _____



12. Which happened first: the Coal layer, the Banana Sandstone, or the erosion of Deadman’s canyon? _____

13. What happened to the top of the curvy rocks beneath the Banana Sandstone? _____

14. Why are the rocks on the bottom folded but the top ones are not? What do you think could have caused this? _____



15. What do you think caused the layers on the bottom to tilt upward?

Why are the layers on top not tilted? _____

16. Which law states that rocks are always deposited flat first?



17. This rock has a vein of lava rock that squeezed it's way in through the crack.

18. Which principle of geology would help you to know that the vein of lava rock is the youngest? _____

1. List the rock layers from youngest to oldest relative ages.

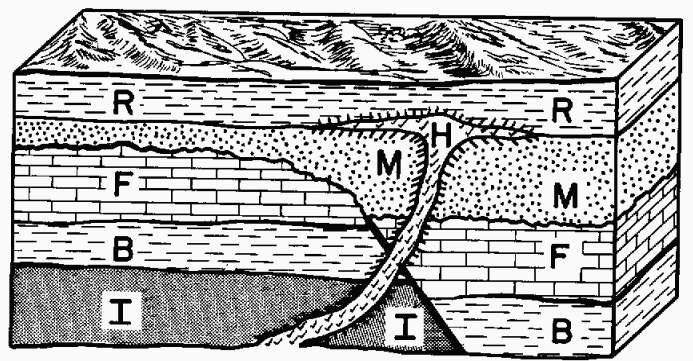
2. How does the rock layer H compare to rock layer M? **Why?**

3. How come the rock layers on the left side of the picture do not line up with the rock layers on the right side of the picture?

4. When did the event described in #3 relatively occur? **Why?**

5. If a particular fossil was found in Rock Layer F (on the left side of the picture) and another fossil was found in rock layer M on the right side of the picture, which one would be older? **Why?**

6. Which rock layer would you NOT expect to find fossils? **Why?**



Archaeologists use different methods to date artifacts and sites. Dating methods can be divided into two categories: Radiometric dating and relative dating.

- **Radiometric dating** methods try to find a specific year or time period for a site or event (Keywords: dates, specific events, and time period names).
- **Relative dating** means that an artifact or site's age is compared to other artifacts and sites (Keywords: older, newer, before, after, etc).

Directions: Put an "RA" next to the examples of absolute dates and an "RE" next to examples of relative dates.

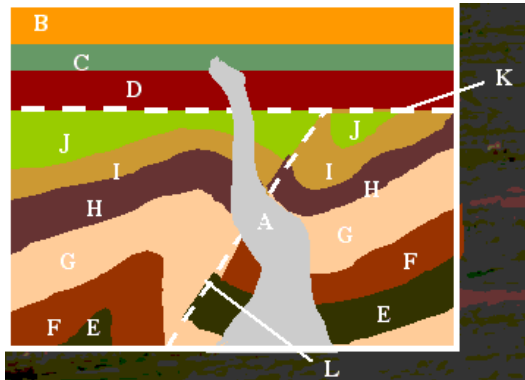
- | | |
|--|--|
| 1.) A house built in 1805 _____ | 4.) Pyramid with the most recent form of Mayan writing on the wall _____ |
| 2.) The oldest tomb in the Valley of the Kings _____ | 5.) Bronze Age Axe head from England _____ |
| 3.) Charred wood from the Great Chicago Fire _____ | 6.) Barn before the one currently standing _____ |

Put these layers in order of when they happened.

_____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____

Oldest

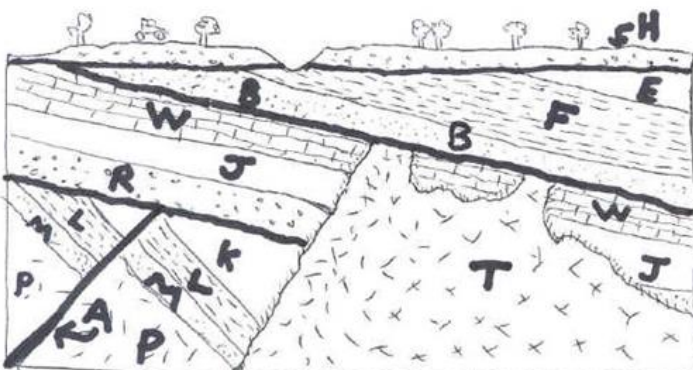
Youngest



_____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____

Oldest

Youngest

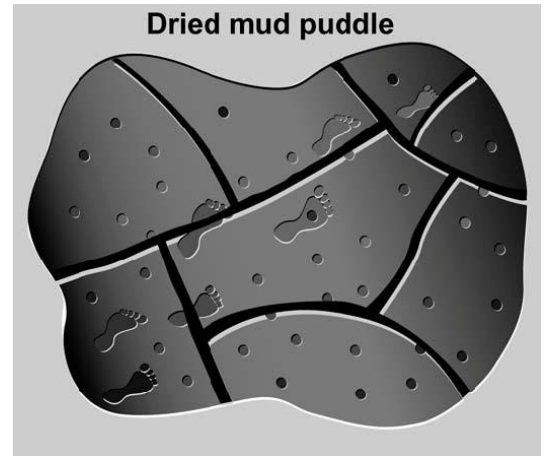


Sequencing events after a thunderstorm

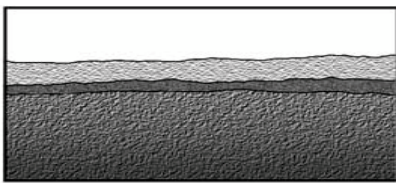
Carefully examine this illustration. From the clues in the illustration, sequence the events listed above in the order in which they happened.

It contains evidence of following events:

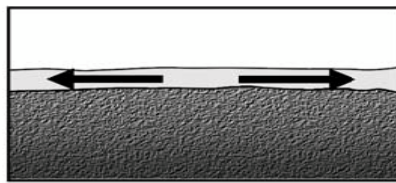
1. _____ The baking heat of the sun caused cracks to form in the dried mud puddle.
2. _____ A thunderstorm began.
3. _____ The mud puddle dried.
4. _____ A child ran through the mud puddle.
5. _____ Hailstones fell during the thunderstorm.



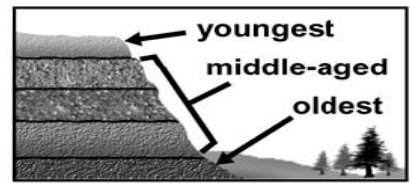
Match each principle to its explanation. Write the letter of the explanation in the space provided under each graphic.



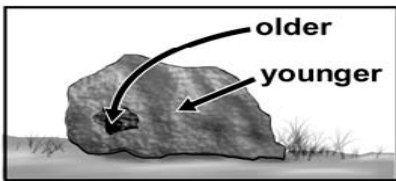
_____ **Original Horizontality**



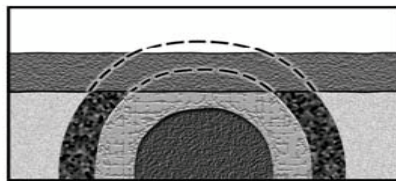
_____ **Lateral Continuity**



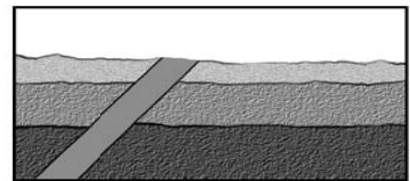
_____ **Superposition**



_____ **Inclusions**



_____ **Unconformities**



_____ **Cross-Cutting Relationships**

Explanations:

- a. In undisturbed rock layers, the oldest layer is at the bottom and the youngest layer is at the top.
- b. In some rock formations, layers or parts of layers may be missing. This is often due to erosion. Erosion by water or wind removes sediment from exposed surfaces. Erosion often leaves a new flat surface with some of the original material missing.
- c. Sediments are originally deposited in horizontal layers.
- d. Any feature that cuts across rock layers is younger than the layers.
- e. Sedimentary layers or lava flows extend sideways in all directions until they thin out or reach a barrier.
- f. Any part of a previous rock layer, like a piece of stone, is older than the layer containing it.