

Name: \_\_\_\_\_ Hr: \_\_\_\_\_

## Relative Dating Activity

How can you determine the sequence of past events?

*Earth is very old, and many of its features were formed before people came along to study them. For that reason, studying Earth now is like detective work—using clues to uncover fascinating stories. The work of geologists and paleontologists is very much like the work of forensic scientists at a crime scene. In all three fields, the ability to put events in their proper order is the key to unraveling a hidden story.*

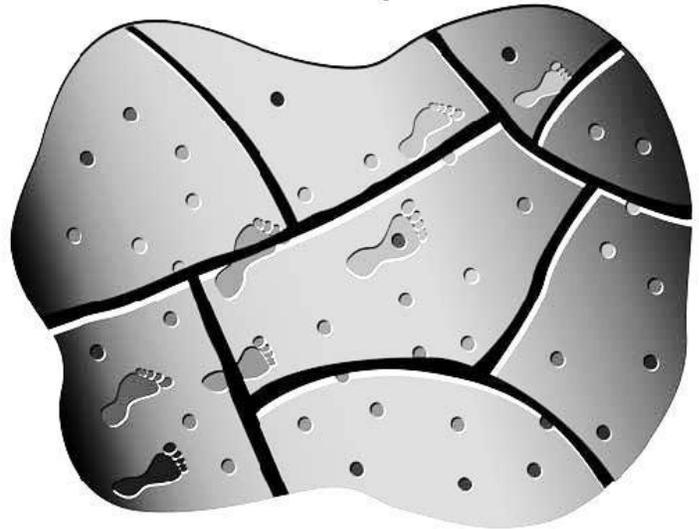
### Sequencing Events After a Thunderstorm

Carefully examine this illustration.

*From the clues in the illustration, sequence the events listed below in the order in which they happened.*

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.

**Dried mud puddle**

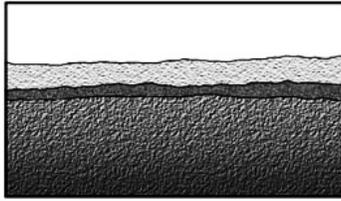


### Basic Geological Principles

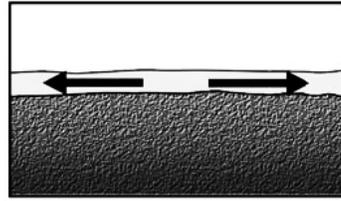
*Relative dating is an Earth Science term that describes the set of principles and techniques used to sequence geologic events and determine the relative age of rock formations. Below are some explanations of the geological principles that geologists use.*

- 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.

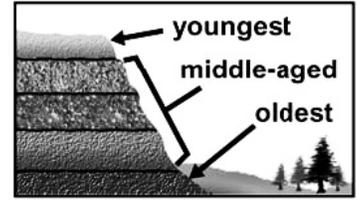
Match each principle to its explanation. Write the letter of the explanation from the previous page in the space provided under each graphic.



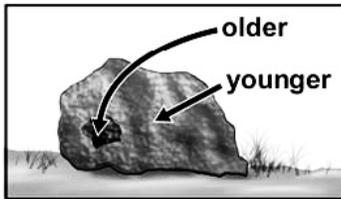
Original Horizontality



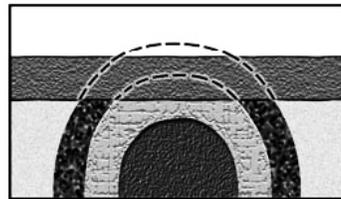
Lateral Continuity



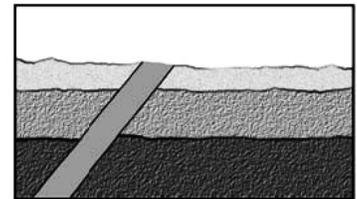
Superposition



Inclusions



Unconformities

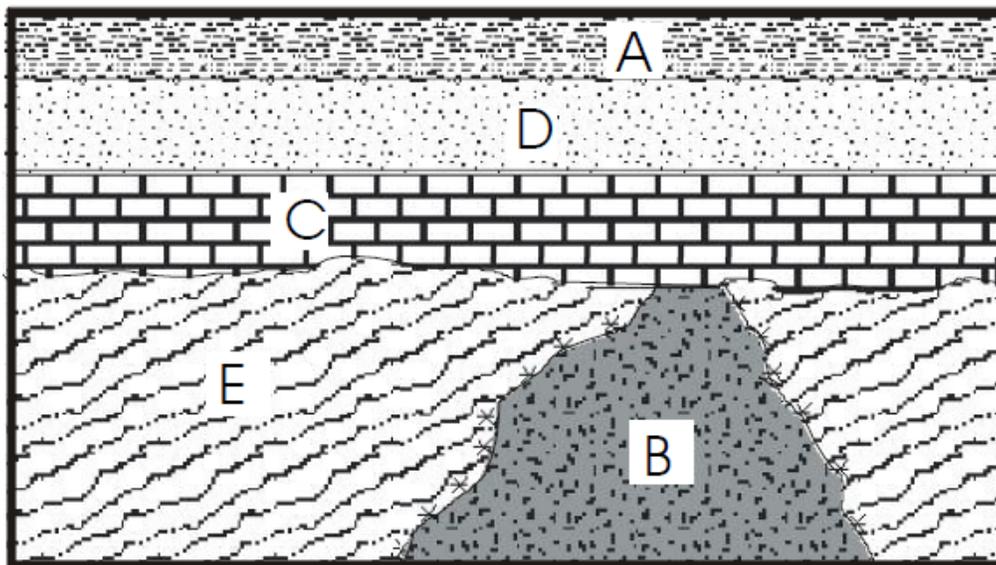


Cross-Cutting Relationships

### Sequencing Events In A Geologic Cross-Section

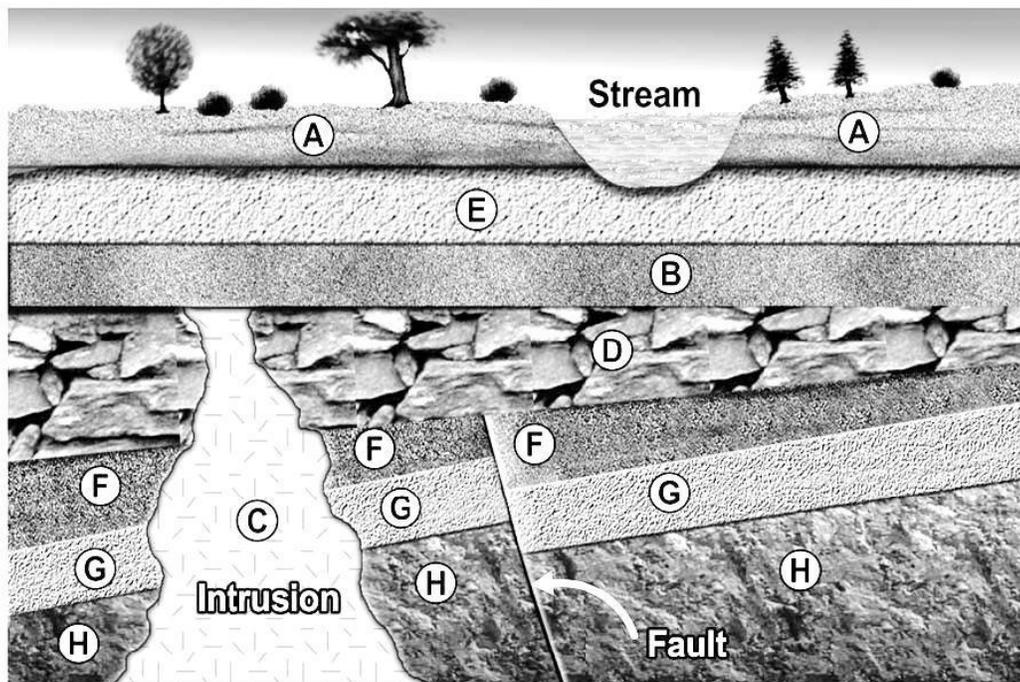
Understanding how a geologic formation was created with its many layers begins with the same time-ordering process you used in the first part of the activity. Geologists use logical thinking and principles like the ones described above to determine the order of events for a geologic formation. Cross-sections of Earth, like the ones shown below, are our best records of what has happened in the past.

Put the rock bodies illustrated below in order based on when they formed.



-----	Youngest
-----	
-----	
-----	
-----	Oldest

Rock bodies in the following cross-section are labeled A through H. One of these rock bodies is an intrusion. Intrusions occur when molten rock called magma comes up into layers from below. The magma is always younger than the layers that it cross-cuts. Likewise, a fault is always younger than the layers that have faulted. A fault is a crack or break occurs across rock layers, and the term faulting is used to describe the occurrence of a fault. The broken layers may move so that one side of the fault is higher than the other. Faulted layers may also tilt.



List the order that the layers were deposited:

Youngest \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Oldest \_\_\_\_\_

19. Relative to the other rock bodies, when did the fault occur? (between which two other rock bodies?) Which geological principle supports your answer?

20. Compared to the formation of the rock bodies, when did the stream form? Which geological principle supports your answer?