Relative Dating using CORRELATION-

Name_____hr__

Background:

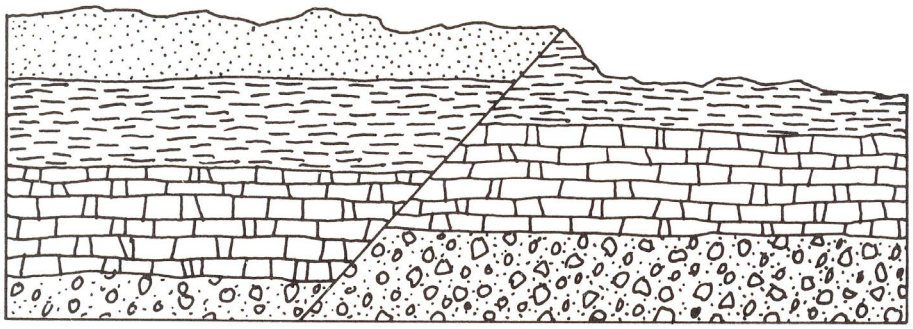
When observing a road-cut, the different **strata** (layers) of rocks become obvious. Geologic events such as deposition, erosion, volcanism and faulting are preserved in the rock and it is possible to determine the sequence of events from oldest to most recent. Sequencing events establishes the relative age of a **stratum** (layer).

The process of showing that rocks or geologic events occurring at different locations are the same age is called **correlation**. Index fossils and similar rocks types help geologists establish correlations between rock outcrops that are far apart. An **outcrop** is the part of a **rock** formation that appears above the surface of the surrounding land.

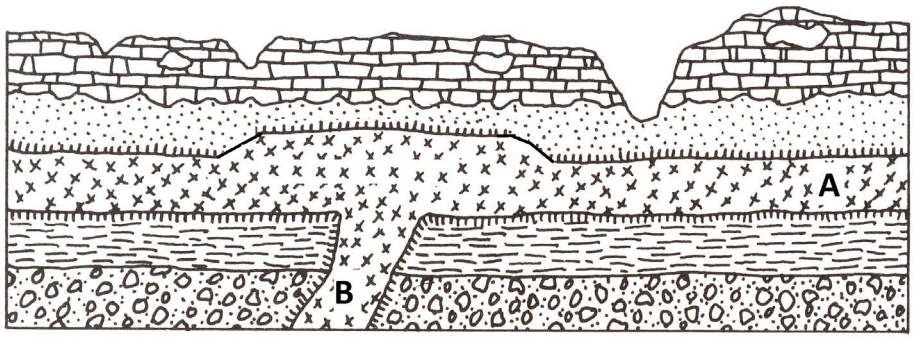
Procedure A:

From the two cross-sections below, determine the sequence of events and order them from youngest to oldest. In addition to determining the relative age of the different strata, you need to determine the relative age of the cross-cuttings and inclusions.

1.



2.



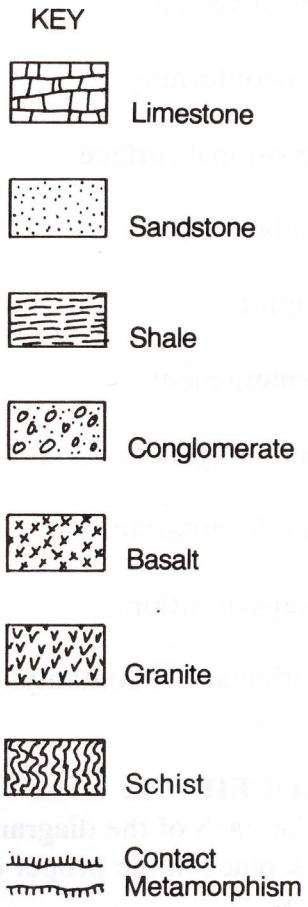


Diagram #1

Youngest layer/event= _____

_____

_____

_____

Oldest layer/event = _____

1. What does the diagonal line in diagram 1 represent?
2. How is the Law of Superposition used to determine relative age of strata?
3. Why is the age of a fault younger than the rock in which it is found?

Diagram #2

4. Which is older the conglomerate or the shale? _____
5. Which is older the basalt or the shale? _____
6. Which is older the sandstone or the basalt? _____
7. What is another name for the basalt rock formation in diagram 2?

_____

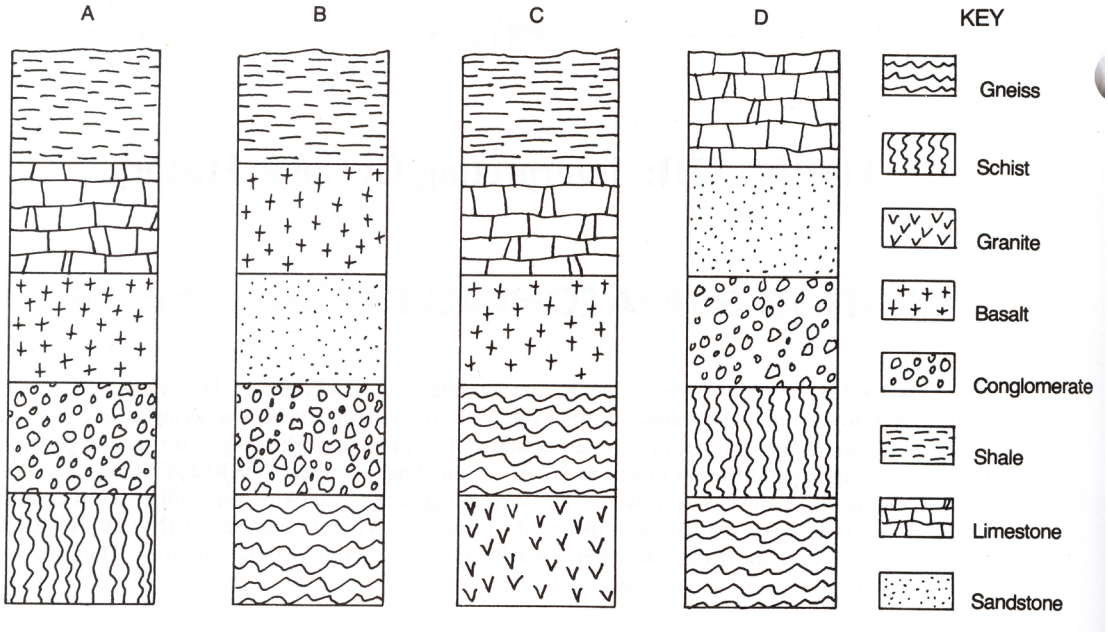
8. What is the name for portion A in diagram 2? _____
9. What is the name for portion B in diagram 2? _____
10. Explain how an older rock layer could appear on top of a younger rock layer.

_____

11. In Diagram 2 the uneven top of the sandstone indicates what kind of unconformity? _____

Procedure B:

Below are cross-sections from four different locations in New York State. Reconstruct the complete sequence of events and label the sequence by writing 1-8 on the appropriate layer. 1 = oldest/first to be laid down and 8 = youngest/most recent to be laid down. Assume that the oldest rocks are on the bottom and the youngest are on the top. Each rock type is used only once (eight strata total).



1. In procedure B, there were only 5 layers of rock in each of the different locations in New York, yet we know that there were at least 8 layering events. What 2 things could have happened to cause these locations to only have 5 layers?
   _____ or _____
2. Which rock layers seem to be missing in sample B?

_____ _____ _____

3. What could have happened to those layers? _____ or _____

4. Which rock layers above occurred due to magma flow? (2)

_____ _____

5. Which rock layers occurred due to compaction and cementation? (4)

_____ _____ _____ _____

6. Which rock layers occurred due to heat and pressure? (2)

_____ _____