

**REGENTS EARTH SCIENCE**  
Earth History: Rules of the Road Cut

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

Period: \_\_\_\_\_

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Interpreting Earth's history can be a challenging task. It is difficult to know exactly how old a particular rock layer or fossil is. However, what we CAN determine fairly easily is the *relative* order of events, and even how a local or regional environment has changed over time. The following is a guide to the Power Point ([geotime.ppt](#)) presentation from class, but this sheet also includes some practice problems for determining the "order of events" in Earth's history.

**Part 1: The "RULES of the ROAD CUTS"**

Relative Dating: \_\_\_\_\_

\_\_\_\_\_

Absolute Dating: \_\_\_\_\_

\_\_\_\_\_

Uniformitarianism: \_\_\_\_\_

\_\_\_\_\_

➤ **Laws of Earth History**

Superposition: \_\_\_\_\_

\_\_\_\_\_

Cross-cutting: \_\_\_\_\_

\_\_\_\_\_

Igneous Intrusion: \_\_\_\_\_

\_\_\_\_\_

Included Fragments: \_\_\_\_\_

\_\_\_\_\_

**Figure 1.** This picture shows a road cut with 3 rock layers. The top and bottom layers are metamorphic, while the middle layer is a coarse-grained igneous rock that intruded.



**Examine the diagram and the caption to the left. Layers A, B and C are labeled.**

1. Which layer is the youngest? \_\_\_\_\_
2. Which layer is the oldest? \_\_\_\_\_
3. Which "rules" above helped you to determine this? \_\_\_\_\_  
\_\_\_\_\_
4. Where was this rock section when the intrusion occurred? How do you know?  
\_\_\_\_\_

Unconformity: \_\_\_\_\_

\_\_\_\_\_

**Angular:** tilting occurred    **Disconformity:** 2 sections, beds parallel, missing layers    **Non-conformity:** different rock types

5. Practice identifying the ORDER or SEQUENCE of events. Label the layers 1-11, with 1 being the oldest.

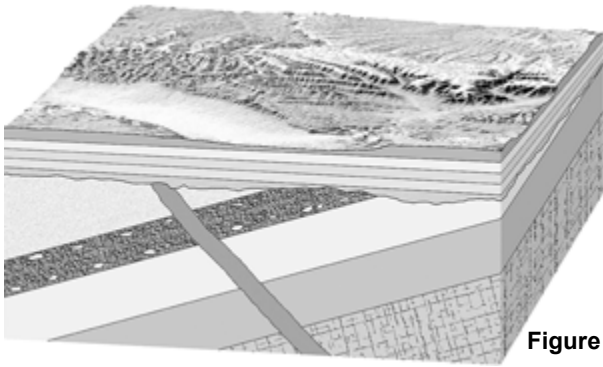


Figure 2.

6. Which "rules" come into play with this section?

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

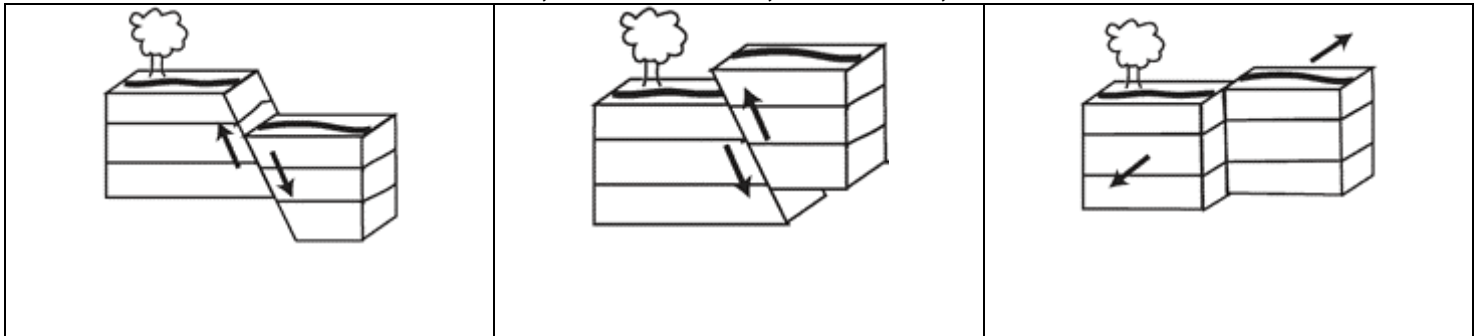
7. Now, describe the environmental conditions that caused this particular sequence. **First, layers 1-\_\_\_ were deposited,**  
**followed by \_\_\_\_\_**  
**\_\_\_\_\_ weathering and erosion are now occurring.**

**Part 2: Folds and Faults**

Another thing to keep in mind when interpreting the relative history of a body of rock is structural change. In other words, the motions of plates cause crack and bends in the rock layers. Identifying *which* layers are cracked/bent, and which ones are not can be an enormous key in developing the relative geologic history of an area.

Fault: \_\_\_\_\_ Fold: \_\_\_\_\_

**LABEL THE FAULT TYPE, HANGING WALL, FOOT WALL, AND TYPE OF STRESS!**



**Part 3: Practice**

Arrange the layers from oldest to youngest using the columns below. Be sure to put the oldest layer at the bottom.

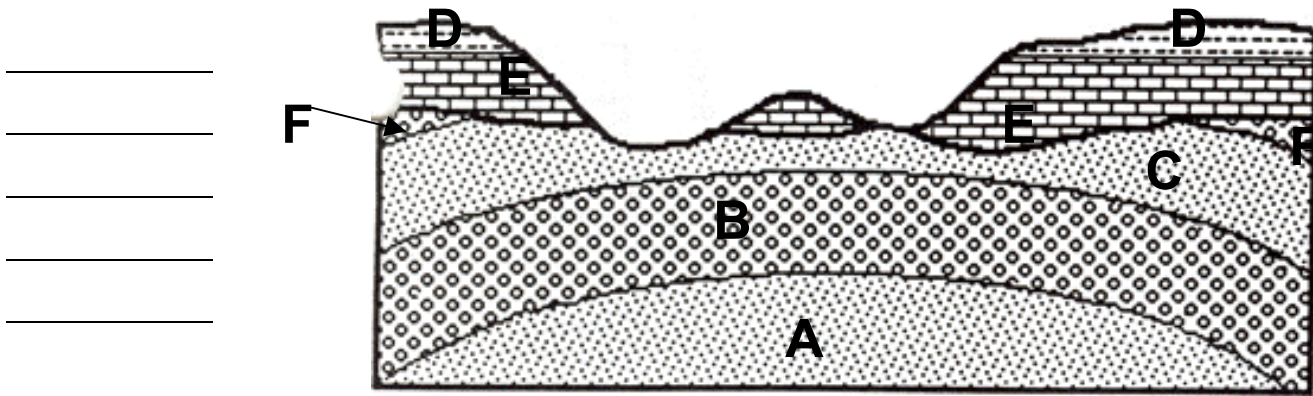


Figure 3.

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Determine the relative ages of each sequence below using the **Key to Rock Types**. Write the name of each rock type in the space provided from oldest to youngest, beginning with the oldest on the bottom.

**Key to Rock Types**

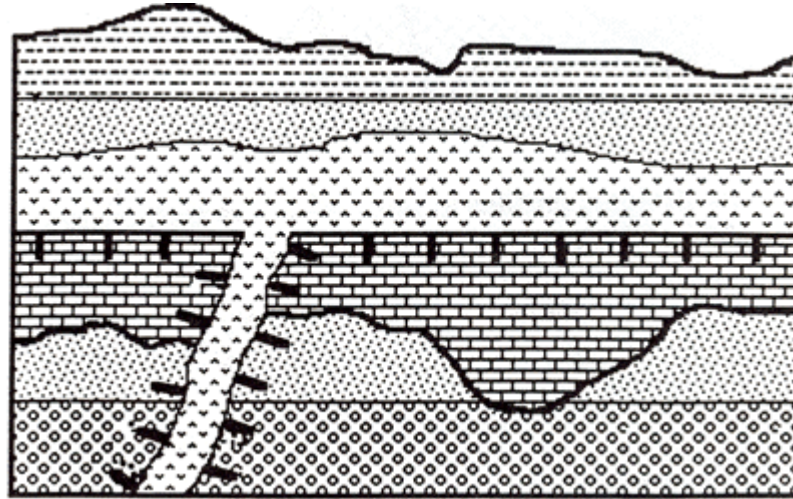
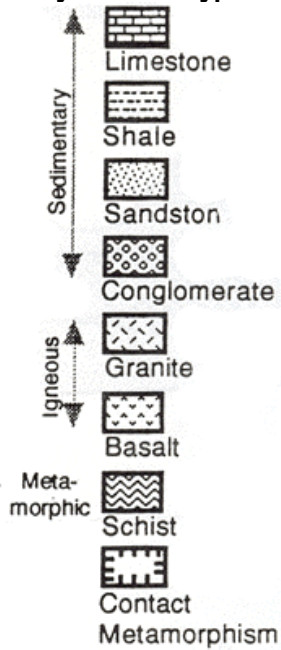


Figure 4.

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For the next section, order the sequence, but also write the appropriate **process** that occurred at each arrow ( → ) along the column. Processes include **contact metamorphism, erosion, intrusion, faulting, folding, or tilting**.

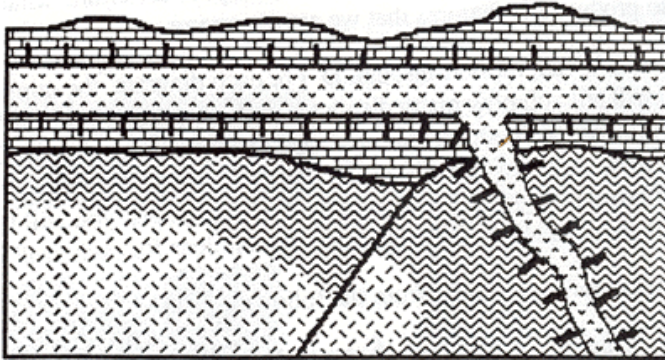


Figure 5.

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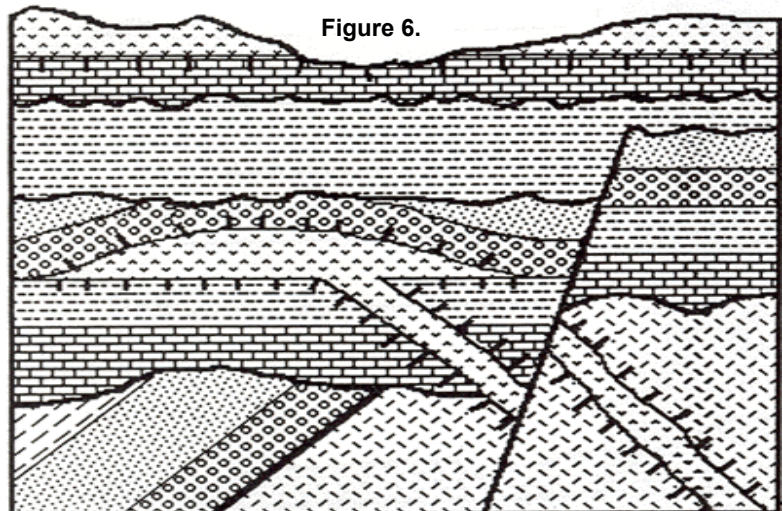


Figure 6.