The History of Rock and Roll

Purpose

Students will explain how thousands of layers of sedimentary rock can confirm the long history of the changing surface of Earth and the changing life forms whose remains are found in successive layers, although the youngest layers are not always found on top, because of folding, breaking, and uplifting of layers.

Materials

For the teacher: transparency of Black Line Master (BLM) *The History of Rock and Roll*, overhead projector, magazines
For each student: copy of BLM *The History of Rock and Roll*
For each pair of students: 4 or 5 different colored blocks of modeling clay; plastic knife; various small items, such as seashells, to represent fossils

Activity

A. Pre-Activity Preparation

Arrange a stack of magazines in order of date of publication, with the oldest issues on the bottom.

B. Pre-Activity Discussion

1. Direct students' attention to the stack of magazines and ask a volunteer to look at the order of dates from bottom to top.
2. Discuss how this stack of magazines has been building up year after year, with the oldest magazines lying on the bottom and new magazines being placed on the top of the pile.
3. Explain to students that rock layers are much like the stacked magazines, with the oldest layers on the bottom and the most recent layers on top.
4. Tell students that this describes the principle of superposition, which states that younger rocks lie above older rocks in undisturbed sequences.

C. Activity

1. Divide students into pairs and distribute the different colored modeling clay, a plastic knife, and seashells to each pair.
2. Tell students that each color of clay represents a layer of rock. Have the class designate which color (layer) is the oldest and which is the youngest so that the models are consistent.

(continued)

INCORPORATING TECHNOLOGY

Direct students to the following Web site where they will get an online tour of fossils: www.ucmp.berkeley.edu/education/explorations/tours/fossil.

EXTENDING THE ACTIVITY

Arrange for students to visit a local area where they can view exposed rock strata, such as along State Road 37 between Morgan County and Monroe County. Have them try to find unconformities and explain their origins.

Standards Links
7.3.8, 7.5.2

Activity (continued)

3. Have students use the clay to make models of different layers of rocks. Tell students to think of the seashells as fossils and have them insert the seashells into each layer of "rock."
4. Direct students to look at the layers of "rock" and "fossils" they created. Ask students: "Which fossils would you say are the oldest? Which are the youngest? How do you know?"
5. Discuss how geologists use the principle of superposition to date rock layers and the fossils found in the layers.
6. Explain that, most often, the fossils found in the top layers are the youngest while the fossils found in the bottom are the oldest.

D. Rock and Roll

1. Show students the overhead of the BLM *The History of Rock and Roll* and have them compare their models to each diagram on the overhead.
2. Ask students: "How could you change your models to look like these diagrams?" Distribute a copy of the BLM to each student.
3. Direct students to represent each of the disturbances using their clay models. Make sure that students make clean cuts in the clay with the plastic knife.
4. Monitor students as they work and ask questions, such as: "How would you know the relative age of a fossil if the rock layers were disturbed? How do you think rocks layers get disturbed?"
5. Discuss how the youngest layers will not always be found on top because of folding, breaking, and uplifting of layers caused by internal forces of Earth.
6. Explain that geologists study rock layers much in the same way the students did in class to determine the age of layers and understand how the layers became disturbed.

Classroom Assessment

Basic Concepts and Processes

At the conclusion of the activity, ask questions, such as the following:

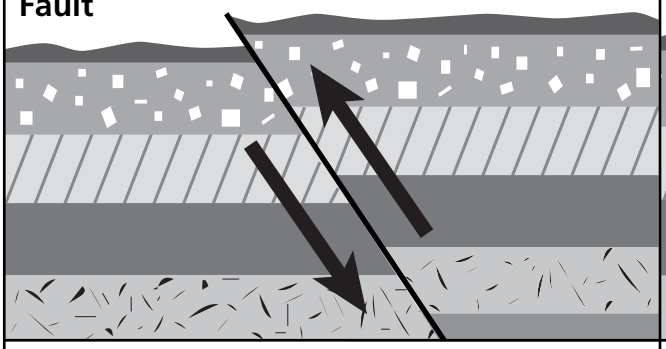

How do rock layers confirm the history of the changing surface of Earth?


How do you know the youngest layers are not always found on top?

Name: _____

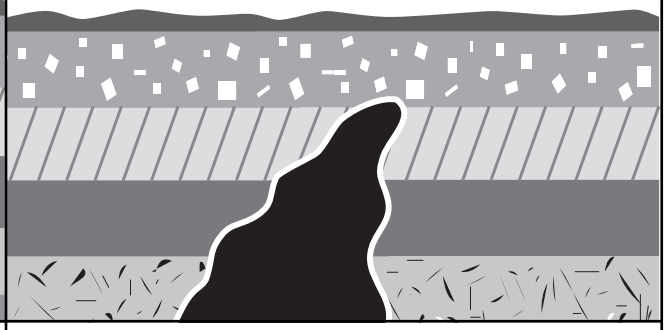
THE HISTORY OF ROCK AND ROLL

Fault



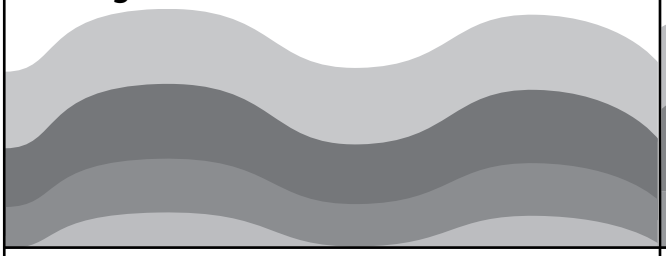
- A break in Earth's crust where blocks of the crust slide relative to one another

Intrusion



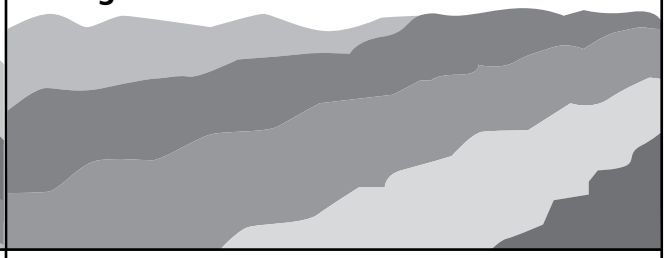
- Molten rock from Earth's interior squeezes into existing rock and cools

Folding



- Rock layers bend and buckle from Earth's interior forces

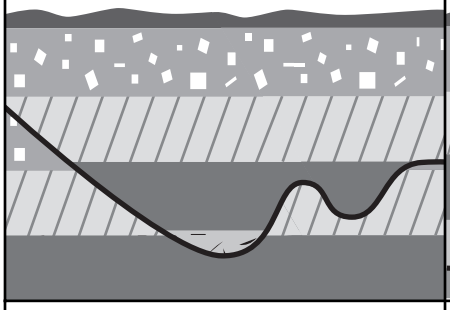
Tilting



- Internal forces in Earth slant rock layers without folding them

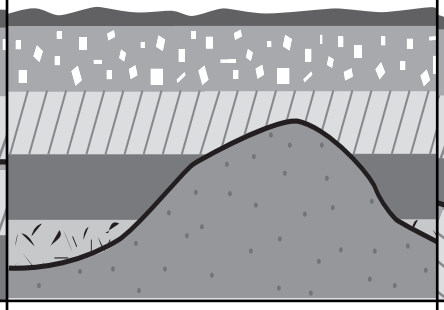
Unconformities

Disconformity



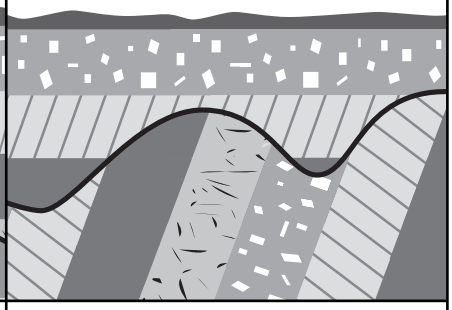
- Part of a sequence of parallel rock layers is missing, showing a time gap.

Nonconformity



- Sedimentary rock layers lie on top of an eroded surface of non-layered igneous or metamorphic rocks

Angular Unconformity



- Exists between horizontal rock layers and rock layers that are tilted or folded. Tilted/folded layers were eroded before new horizontal layers formed above

THE HISTORY OF ROCK AND ROLL

Teacher Directions

Make an overhead transparency of the BLM *The History of Rock and Roll* to show to the class. Distribute one copy of the BLM to each student and have students use the BLM as a guide to model each rock layer disturbance with their modeling clay.

Answer Key

Not applicable.