

Types of Faults

Name _____

Date _____

Per _____

Task: Using the cards and pictures provided, examine four types of faults and match them with the stress cause.

Materials:

- 3 X 5 cards that have been marked and cut to simulate the hanging and foot walls of a fault
- Ruler

Background: Earthquakes can occur almost anywhere but most are centered along or near fault lines. When an earthquake occurs, the blocks of land on either side of the fault line will generally move either up or down, right or left, or a combination of both. Geologists can tell, based upon the relative movement on either side of the fault, which type of stress has been applied. The knowledge gained from examining the movement along a fault over time may result in more earthquake resistant building techniques.

Procedure and results:

To complete this activity, you will use a 3 X 5 card that has been cut diagonally with the halves labeled A and B. The card is arranged into 3 horizontal layers, an upper white one, a middle red one, and a bottom white one. Each layer is to represent layers of rock in the Earth's crust.

Part 1:

1. Fit the pieces of the card together and measure the length along the long axis of the card. Record your measurement in cm. _____
2. Slice the B side of the card down along the fault plane (the diagonal cut in the card) until the red layer is even with the bottom of the A side of the card. Now measure and record the length of the card in cm. _____

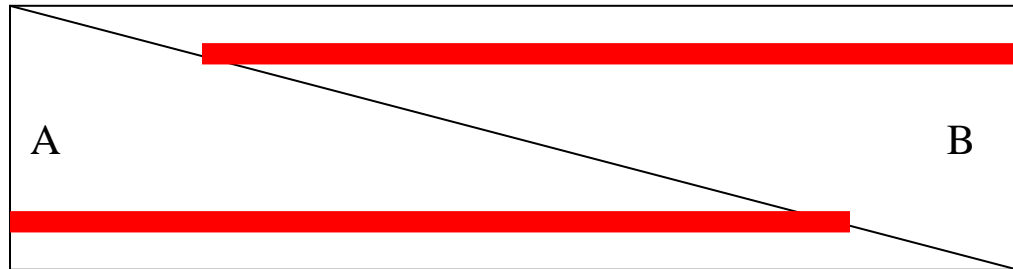
3. Has the card been compressed or extended?_____. On the back of this page, sketch the card pieces in this position. On your sketch, label the hanging wall and the foot wall. Draw a pair of arrows above your diagram to show which way the stress has been applied to this fault.
4. Has the hanging wall moved up or down relative to the foot wall?_____
5. Label your sketch as a **Normal Fault**.

Part 2:

1. Slide the card pieces along the fault plane in the opposite direction until the red layer of side B is even with the top of the A side of the card. Measure the length and record it in cm._____
2. Has the card been compressed or extended?_____ On the back of this paper, sketch the card pieces in this position. On your sketch, label the hanging wall and the foot wall. Draw a pair of arrows above your diagram to show which way the stress has been applied to this fault.
3. Has the hanging wall moved up or down relative to the foot wall?_____
4. Label your sketch as a **Reverse Fault**.

Part 3:

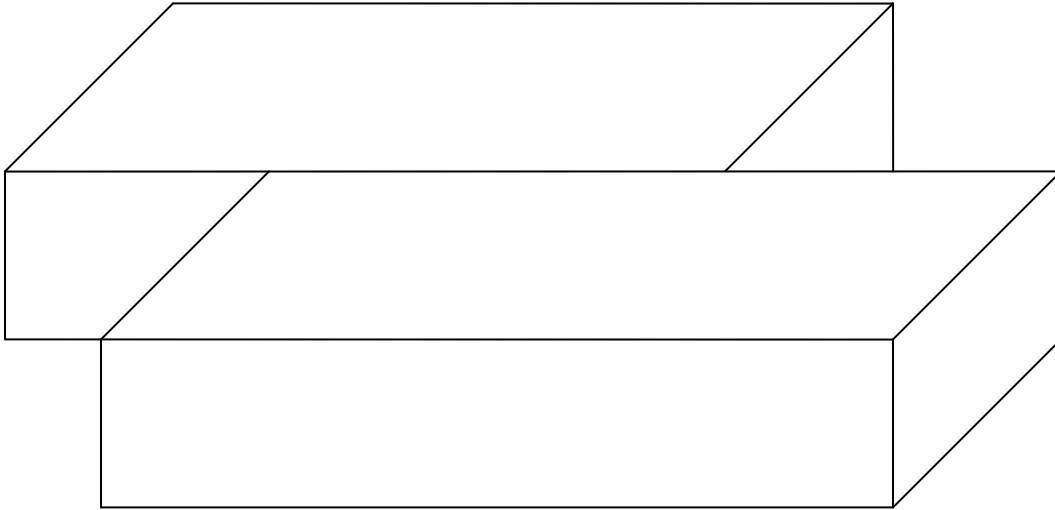
1. The fault shown below represents a very low angle version of the two types of faults that you have just illustrated.
- 2.



2. Label the hanging and foot walls on the diagram. Has the hanging wall moved up or down relative to the foot wall? _____
3. Draw arrows above the diagram to show which direction stress has been applied. Label this diagram as a **Thrust Fault**.

Part 4:

1. Illustrated below is a fourth type of fault. In this type of a fault, little or no vertical movement occurs and the blocks of rock move horizontally past each other. Given this type of movement, does this type of fault necessarily have a hanging wall and a foot wall? _____
2. Use arrows to show which direction stress has been applied.



3. Label this diagram a **Strike-slip Fault**.

Conclusion:

1. For each feature shown below, list which type or types of faults you would expect to find given the type of stress being applied:

Subduction zone ----- _____

The Himalaya Mountains where India has joined Asia _____

Nevada, Utah, and Southern Idaho (they're being stretched) _____

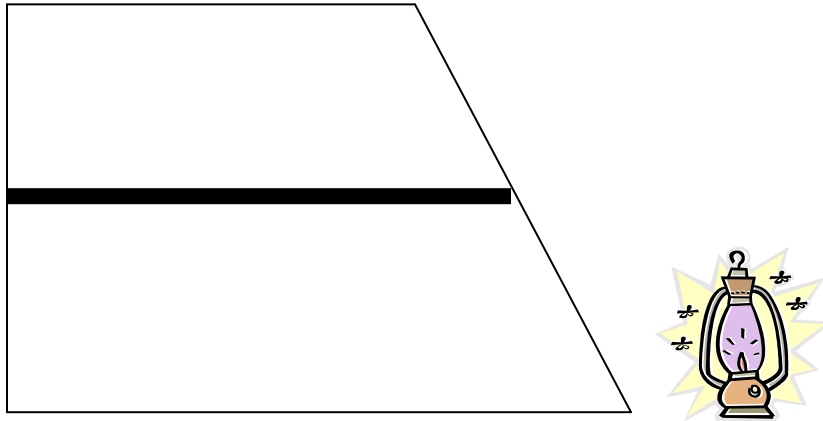
The San Andreas Fault in California----- _____

Where exotic terranes have joined Idaho----- _____

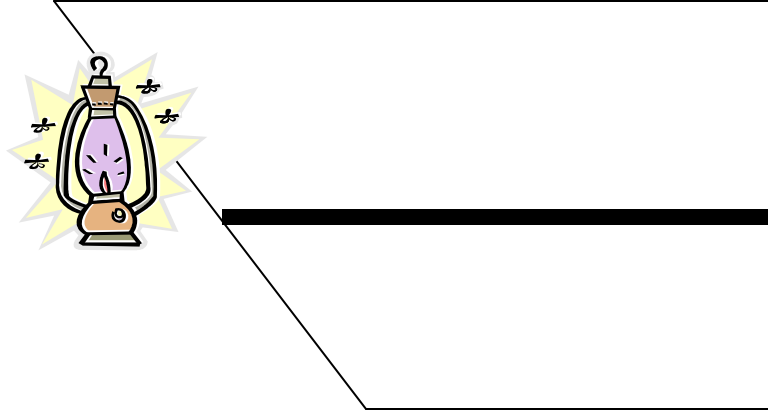
2. Suggest two reasons why you believe faults and the understanding of faults are important to society. (Please use complete sentences and be serious)

Teacher notes for Types of Faults Activity

This activity requires some prior preparation. You will need 12-15 3X5 cards prepared ahead of time to represent blocks of material on either side of a fault. Use a marker to draw a thick colored line through the center of the card to divide the card into 3 “rock layers.” You will also need to either produce an overhead showing the hanging and foot walls or find an internet picture to project to the students.



I use a picture similar to this one to show a foot wall. A miner in a tunnel with a wall slanting this direction will need to put the lantern at the foot of the wall since it will not hang. Others like the idea that a miner can place his foot on the wall. Either way.....



I use a picture similar to this one to illustrate a hanging wall since a miner can hang a lantern from a tunnel wall with this type of slant.

After the activity is completed, I will show an overhead displaying the 4 basic fault types covered in the activity. There are a number of internet pictures also available. I then drill students regarding hanging and foot wall, whether the hanging wall moves up or down, the type of stress applied, etc. This leads in nicely to the Borah Peak Activity.