

Name _____

A Model of Three Faults

Background Information: Faults are often (but not always) found near plate boundaries. Each type of fault is often related to specific types of plate movements.

- ⊗ **Normal faults** are often associated with **divergent** boundaries.
- ⊗ **Thrust faults** are often associated with **convergent** boundaries.
- ⊗ **Strike-slip faults** are often associated with **transform** boundaries.

The stresses and strains in the earth's upper layers have many causes: thermal expansion and contraction, gravitational forces, solid-earth tidal forces, specific volume changes because of mineral phase transitions, etc. Faulting is one of the various manners of mechanical adjustment or release of such stress and strain.

Materials:

Scissors	Model	Map pencils
Construction paper	Glue	

Procedure:

1. Color the fault model according to the color key.
2. Paste or glue the fault model onto a piece of construction paper.
3. Cut out the fault model and fold each side down to form a box with the drawn features on top.
4. Tape or glue the corners together. This box is a three dimensional model of the top layers of the Earth's crust.
5. The dashed lines on your model represent a fault. Carefully cut along the dashed lines. You will end up with two pieces..

Coloring Key

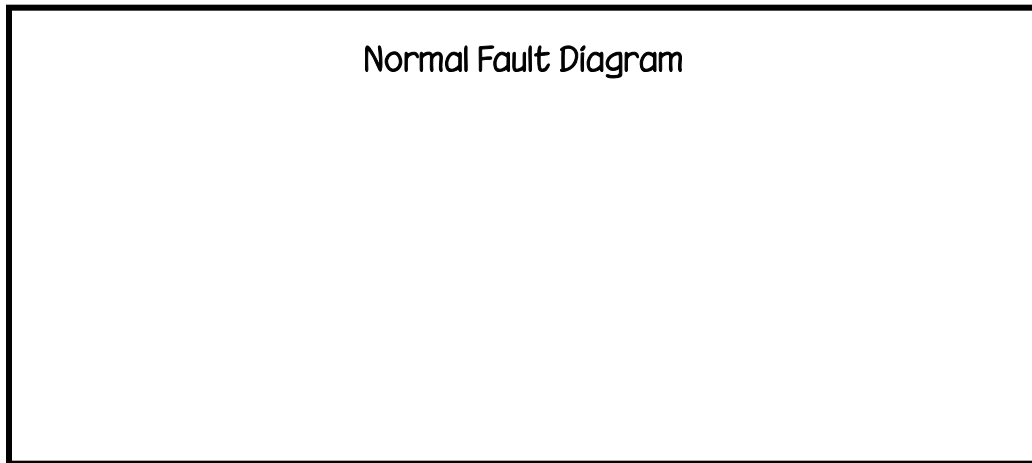
Rock Layer X - green	Rock Layer Z - red	Road - black	Grass - green
Rock Layer Y - yellow	River - blue	Railroad tracks - brown	

Adapted from: USGS Learning Web – A model of Three Faults
<http://interactive2.usgs.gov/learningweb/teachers/faults.htm>

Modeling the Faults:

Normal Fault:

1. Locate points A and B on your model.
2. Move point B so that it is next to Point A.
3. Observe your model from the side (its cross-section).
4. Draw the normal fault as represented by the model you have just constructed.



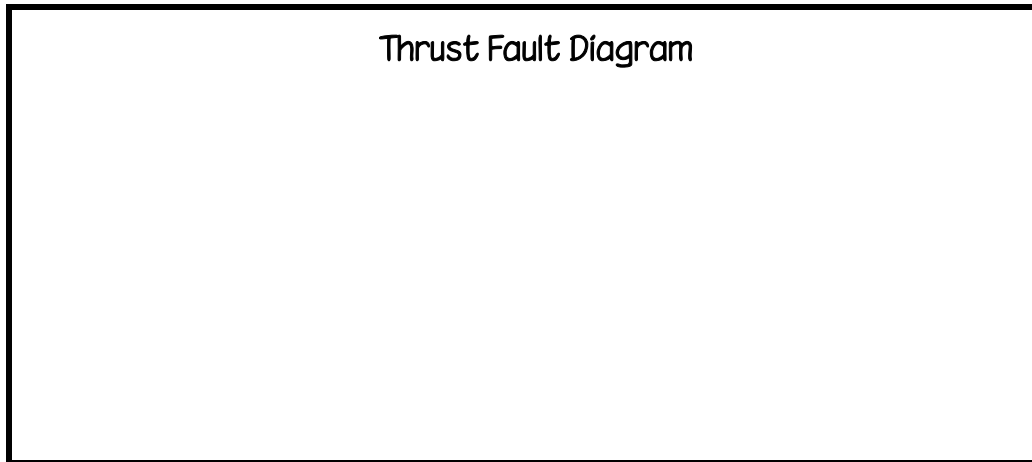
Questions:

1. Which way did point B move relative to point A?
2. What happened to rock layers X, Y and Z?
3. Are the rock layers still continuous?
4. What likely happened to the river? The road? The railroad tracks? Explain your answer.

*Adapted from: USGS Learning Web – A model of Three Faults
<http://interactive2.usgs.gov/learningweb/teachers/faults.htm>*

Thrust Fault:

1. Locate points C and D on your model.
2. Move Point C next to point D.
3. Observe the cross-section of your model.
4. Draw the thrust fault as represented by the model you have just constructed.



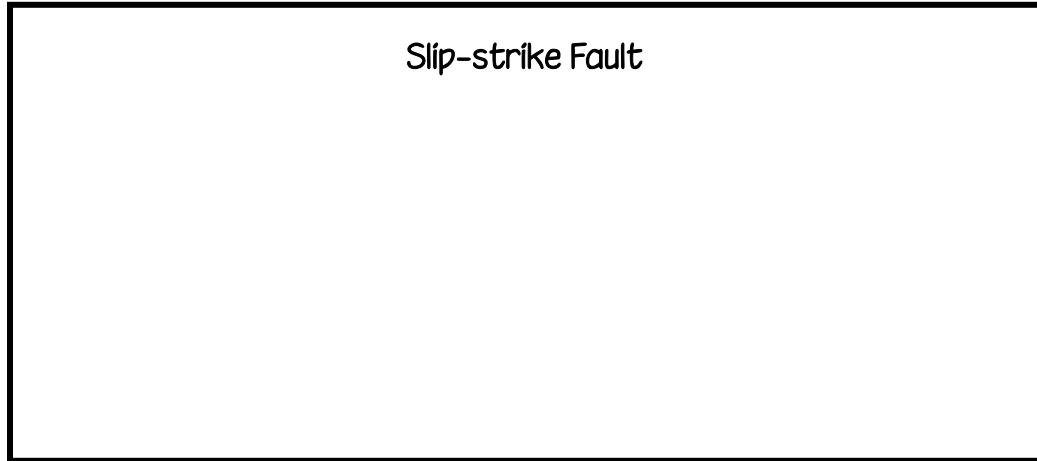
Questions:

1. Which way did point D move relative to point C?
2. What happened to rock layers X, Y and Z?
3. Are the rock layers still continuous?
4. What likely happened to the river? The road? The railroad tracks? Explain your answer.

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Strike-slip Fault:

1. Locate points F and G on your model.
2. Locate points F and G on your model.
3. Move the pieces of the model so that point F is next to point G.
4. Draw an overhead view of the surface as it looks after movement along the fault.



Questions:

1. If you were standing at point F and looking across the fault, which way did the block on the opposite side move?
2. What happened to rock layers X, Y, and Z?
3. Are the rock layers still continuous?
4. What likely happened to the river? The road? The railroad tracks? Explain your answer.