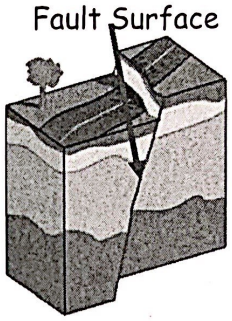
Name: _____ Date: _____ Period: _____

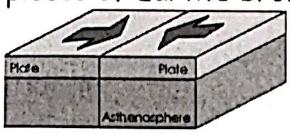
Make-a-Fault Activity

Background Information:

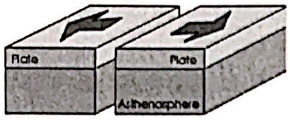


Normal fault

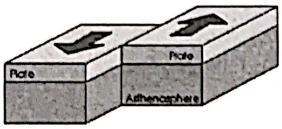
Faults are where earthquakes occur, and are essentially planar breaks in tectonic plates caused through the huge stresses involved in massive land forms interacting. Because of how they form, most faults occur near tectonic boundaries. During an earthquake, rock suddenly moves along these faults, relieving stress. Tectonic plates are pieces of Earth's broken crust that can interact with each other.



Convergent

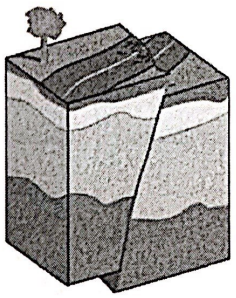


Divergent

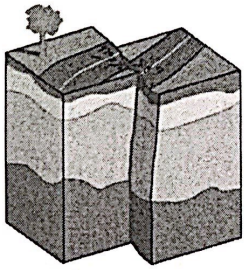


Transform

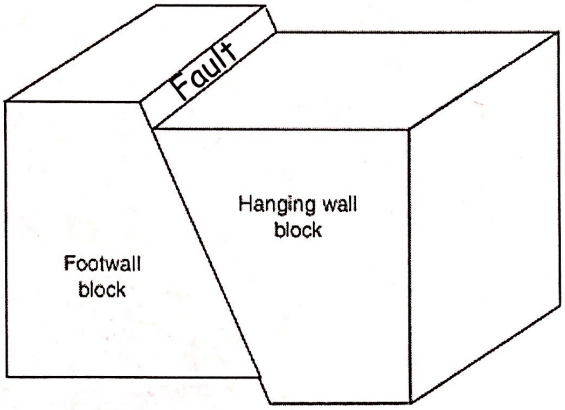
Plate boundaries, the edges of tectonic plates that interact with each other, cause faults to form and move. ***Divergent*** boundaries are where tectonic plates are pulling apart from each other, causing ***Normal*** faults. ***Convergent*** boundaries, which involve the plates moving together, cause ***Reverse*** faults. ***Transform*** boundaries are formed when plates move past each other, causing ***Strike-Slip*** faults.


Reverse fault

- ***Normal* faults** occur in *extensional* environments: Divergent Boundaries are pulling apart, causing the Hanging Wall to be *pulled down* the fault during an earthquake.
  - *Tensional* forces occur here (pulling forces).
- ***Reverse* faults** occur in *compressional* environments: Convergent Boundaries pushing together, causing the Hanging Wall to be *pushed up* the fault during an earthquake. The Footwall is pushed below the Hanging Wall.
  - *Compressional* forces occur here (pushing forces).

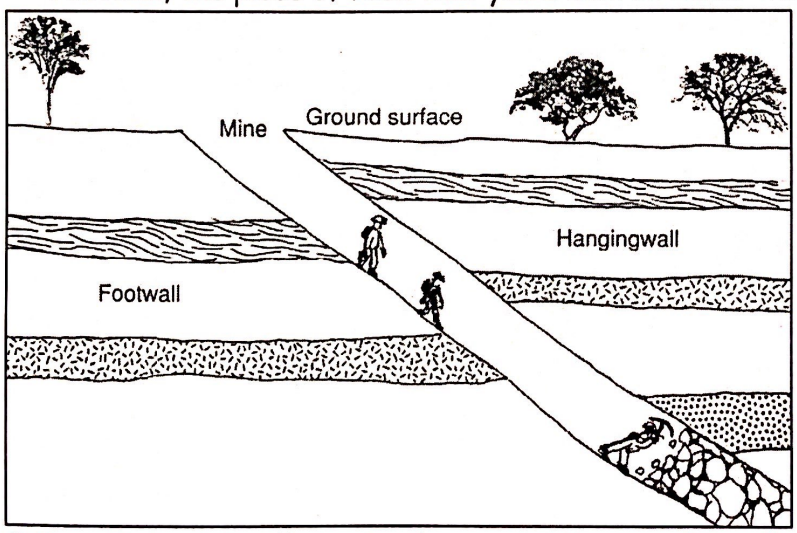

Strike-slip fault

- ***Strike-Slip* faults** occur in neither extensional nor compressional environments. These occur when tectonic plates *slip past* each other: Transform Boundaries. Since neither "wall" is pushed above or below the fault, there is no hanging or foot wall! The San-Andreas Fault is a perfect example.
  - *Shearing* forces occur here (ripping forces).



There are two pieces to *Normal* and *Reverse* faults:

- **Hanging Wall**, the piece of rock that *hangs* above the fault.
- **Footwall**, the piece of rock that you'd walk on *below* the fault.



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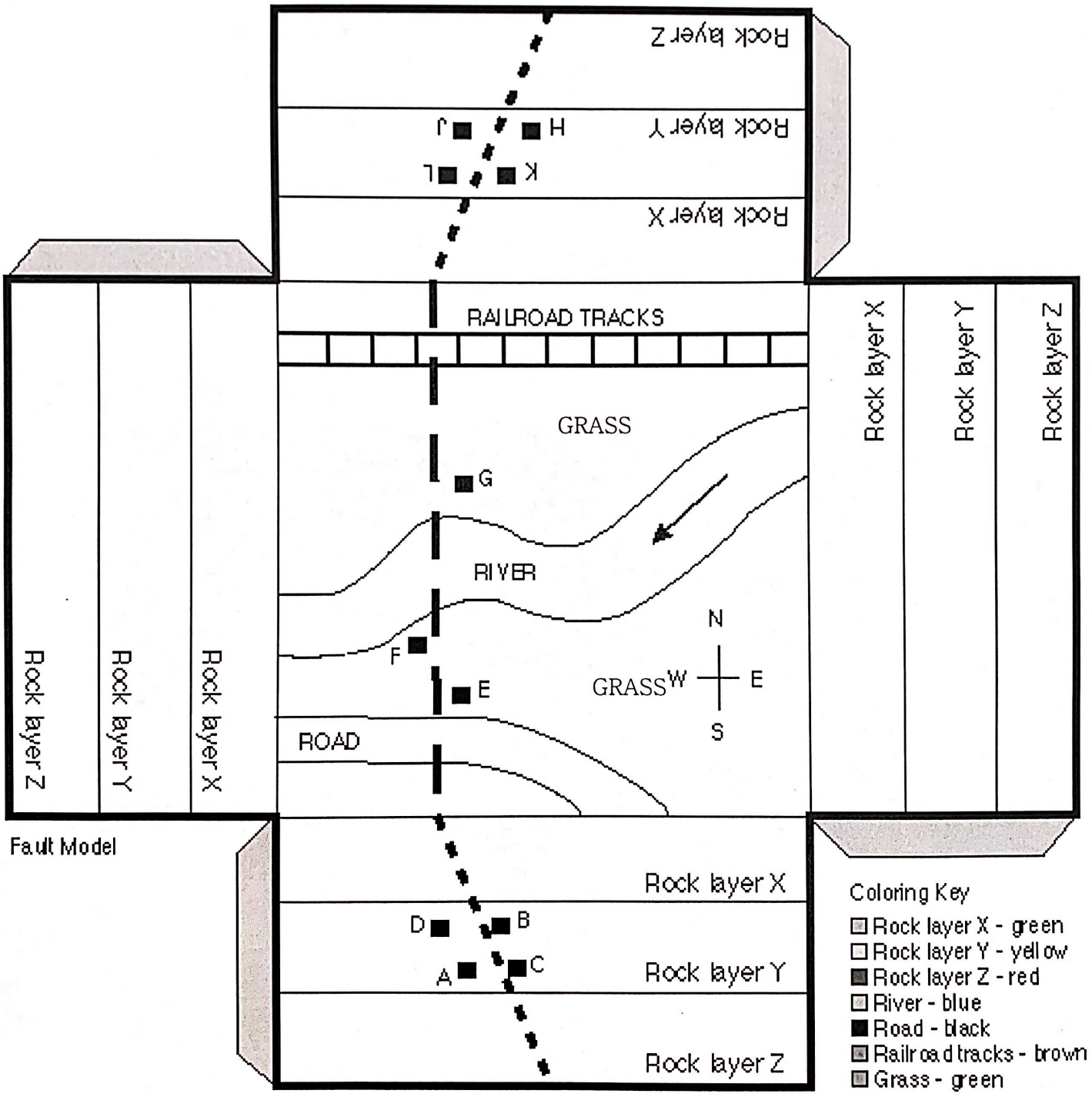
Directions:

5. Color each layer on the pattern below as according to the key provided.
6. Cut the pattern out of the paper, and fold it according to the instructions provided on it.
7. Glue or tape on the tabs. Cut the 3D shape into two pieces by cutting along the dotted line.
8. Be sure to match the rock layers across the footwall and hanging wall block. The layers should match initially so that when the fault "ruptures" displacement will be visible.



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Normal Fault: Put your Hanging Wall and Footwall together so that the layers are matched and even. Gently pull the Hanging Wall down the fault, and push the Footwall up the fault. *Draw and label* what you see, including letters and layers!

Reverse Fault: Put your Hanging Wall and Footwall together so that the layers are matched and even. Gently push the Hanging Wall up the fault, and pull the Footwall down the fault. *Draw and label* what you see, including letters and layers!

Strike-Slip Fault: Put your Hanging Wall and Footwall together so that the layers are matched and even. Gently pull each block past each other horizontally, breaking the road. *Draw and label* what you see, including letters and layers!

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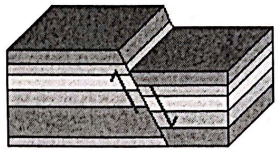
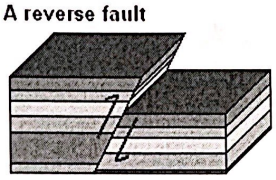
Fault and Tectonic Boundaries Questions

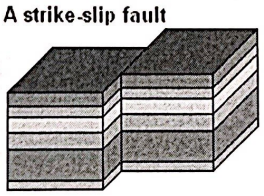
11. When you created and drew the Normal Fault, which set of points rose on the fault: Points A and D or Points B and C?



12. When you created and drew the Reverse Fault, which set of points rose on the fault: Points H and K or Points J and L?



13. When you created and drew the Transform Fault, what happened to the river, road, and train tracks?



14. What type of fault is important when convergent boundaries are building mountains, such as the Himalayans or Appalachians?

15. What type of fault is important when divergent boundaries are building Mid-Ocean Ridges, in which tectonic plates move apart, allowing magma to push up between them?

16. Which of the faults lead to, are involved in, or participate in subduction (one plate pushing below another)?

17. Which type of fault built the volcanoes of the Mid-Atlantic Ridge?

18. Which type of fault is important in Transform Boundaries, such as the San Andreas Fault?

19. Which type of fault is frequently involved in building the Andes Mountains?

20. For each fault type, name the forces involved.
    a. Normal fault:

    b. Reverse fault:

    c. Transform fault: