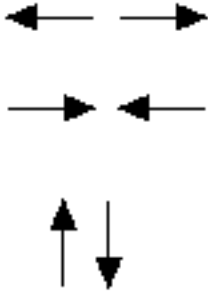


**Reading Guide for
Ch. 9: Earth Structures (p. 290)**

Stress and Strain (p. 292)

Label the type of stress illustrated below:



Types of Deformation (p. 292)

Below are three statements about the deformation of a substance. Label it as elastic, brittle, or plastic and defend your choice and briefly explain your logic:

1) I pushed in on the ball and the surface bend inward, but as soon as I stopped pushing, the ball returned to the same shape.

2) You create a spherical ball of “Silly Putty” and set it on the table. One hour later it is a flattened disk, but no one has touched it.

3) The drinking glass rolled off the table and broke into many pieces when it hit the floor.

Other Factors Affecting Rock Deformation (p. 293)

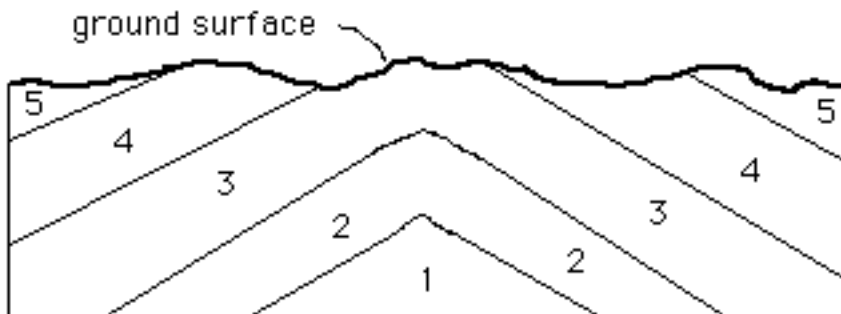
You should be familiar with the ways in which temperature, pressure and time affect the behavior of rock.

Interpreting Deformed Rocks (p. 294)

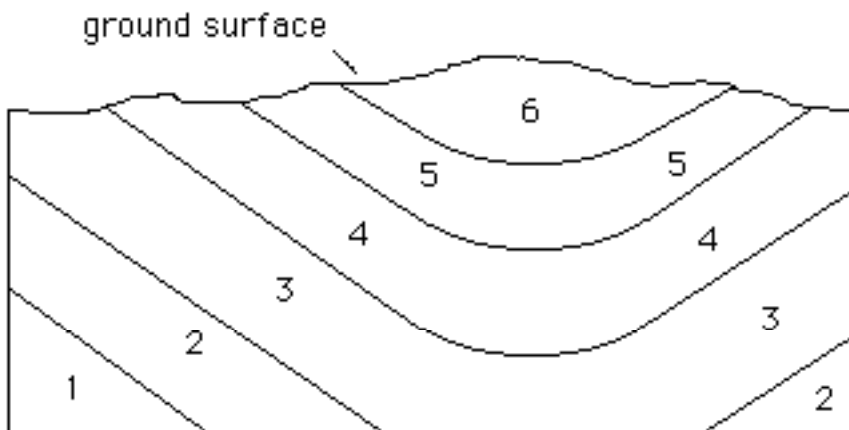
Use your own words to explain the concept of strike and dip to a person who is not in the class.

Folds (p.295)

Label the types of folds in the diagrams below:



Notice in the cross-section above, that layer 3 is older than layer 5. We find that the oldest rocks on **on the ground surface** in this type of fold are in the middle of the fold, whereas the youngest rocks are in the middle of the fold illustrated below.



On page 299, figure 9-11 illustrates the patterns created by a plunging fold. If you fly across the United States you may be able to see patterns created by plunging folds. They are most easily observed from the air. Sometimes it is difficult to visualize the plunge of the axis of the fold. Try folding a single piece of paper into an anticline or a syncline and then “tip” the axis of the fold to form the plunging fold. See me if you have questions.

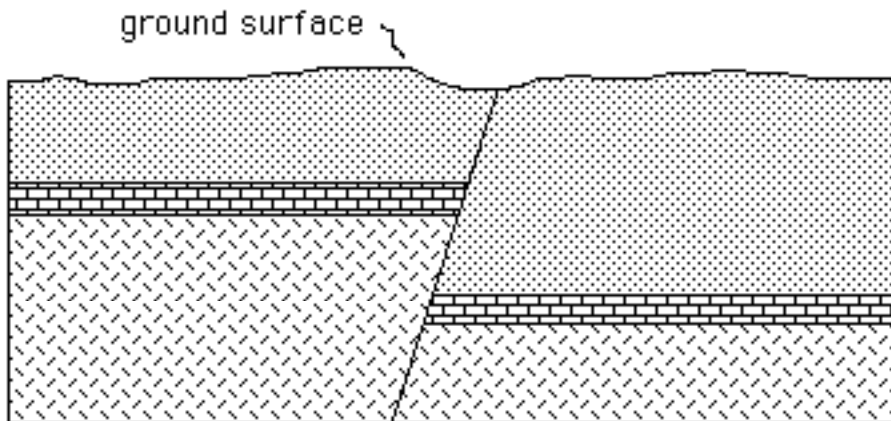
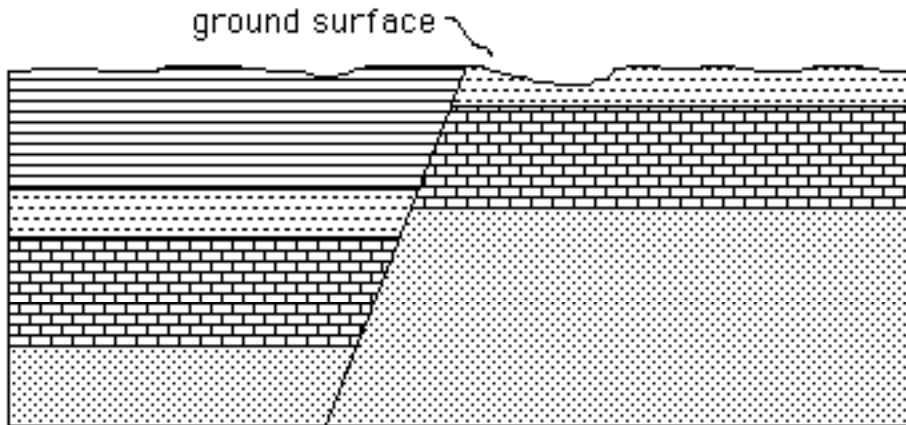
Faults (p.301)

Folds are created by compression or vertical uplift, but faults can be formed from stress that is tensional, compressive, or from shear forces. These different force directions produce different types of faults.

In strike-slip faults, the displacement is along the strike of the fault. In dip-slip faults, the displacement is along the dip of the fault. I find the students can usually identify strike-slip faults easily, but the dip-slip faults are more difficult. Try to remember that normal faults are created by tensional stress, while reverse and thrust faults are created by compression.

You can work through hanging wall, footwall explanation in the text or use another method I will explain in lecture. My method is to examine the type of stress that cause the fault and then label the fault based on the stress direction. If an individual layer has been pulled apart, the forces were tensional and the fault is a normal fault. The opposite is true for a reverse fault.

Try to label the type of faults in the diagrams below:



What is the difference between a reverse fault and a thrust fault?

Plate Tectonics and Faulting (p. 307)

In chapter 1 you learned that there are divergent, convergent, and transform plate boundaries. What type of fault will be associated with each type of plate boundary? Give a location where we find that type of fault/plate boundary.

Divergent:

Convergent:

Transform:

The Highlight 9-2 (p.311) on fossil fuels is interesting, but I will not test you over this information.