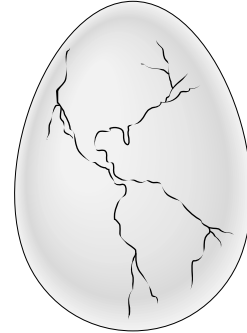




## Cracks in the Hard-Boiled Earth

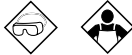
The Earth's crust is made up of large plates that are in constant motion. As two adjacent plates move in two different directions, one of three types of *plate boundaries* is formed: *divergent*, *convergent*, or *transform* boundaries. Identifying these plate boundaries helps scientists better understand the processes occurring in the Earth. It can also serve a practical purpose, such as predicting earthquakes.



In this lab, you will use a hard-boiled egg to model the motion of crustal plates on the Earth's surface.

### MATERIALS

- hard-boiled egg
- paper towels
- thin paintbrush
- small bottle of food coloring
- magnifying glass



### USEFUL TERMS

**convergent boundary**  
the boundary between two tectonic plates that push directly into one another

**divergent boundary**  
the boundary between two tectonic plates that move away from one another

**transform boundary**  
the boundary between two tectonic plates that slide past each other



### Ask a Question

What effects does the movement of crustal plates have on the Earth's surface?

### Conduct an Experiment

1. Place the egg on the paper towel, and lightly tap the egg in different places to produce cracks of various lengths and sizes. Be careful not to tap too hard.
2. Dip the paintbrush in the food coloring, and trace a number of the large cracks to make them more visible.
3. Sketch both the front and rear views of the egg in the space provided on page 68, and show where the cracks are located. (See the illustration above.)
4. Gently squeeze the egg until slight movement occurs between the pieces of the shell. Use the magnifying glass to help you see the motion. You should be able to distinguish at least three types of motion between the pieces of the shell. Squeeze the egg in different ways to create these types of motion. Indicate on your sketch the motion of the eggshell pieces.

### Analyze the Results

5. What do the egg and the pieces of shell represent?

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Cracks in the Hard-Boiled Earth, continued

**Egg Sketches**

Front view of egg	Rear view of egg

**6.** What do the cracks in the shell represent?

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**7.** Describe the patterns created by the cracks in the shell.

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**Cracks in the Hard-Boiled Earth, continued**

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8. Describe the three types of motion and their effects on the pattern of cracks.

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9. Relate these three types of motions to the three types of plate boundaries mentioned on page 67.

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**Draw Conclusions**

10. Look up the definitions for the following landforms:

- caldera
- volcano
- mountain range
- aquifer
- rift valley
- delta
- strike-slip fault
- cirque

Which of these landforms can be associated with the three types of plate boundaries? Identify the type(s) of motion.

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