Plates can move in different directions. In the last activity, you explored what happens to the earth’s surface as two plates move apart. Plates can also collide or slide past each other. Find out how these plate motions are similar to or different from spreading plates.

**CHALLENGE**

What happens as the earth’s plates collide or slide past each other?

**MATERIALS**

- For each pair of students: access to a computer
- For each student: 1 Student Sheet 48.1, “Other Plate Directions”

The movement of the earth’s plates has changed the surface of the earth. The Himalayan mountains, above, were formed by the collision of two plates.
PROCEDURE

1. Choose a direction in which Plate 1 will move.
   
   **Note:** Do not repeat Activity 47, “Spreading Plates,” by selecting the arrow pointing left (←).

2. On Student Sheet 48.1, “Other Plate Directions,” circle the directions in which Plate 1 and Plate 2 will move and record the type of boundary (either convergent, divergent, or transform) that you are investigating.

3. Click on the **SEE PLATES OVER TIME** button. If you are investigating a convergent boundary, record the type of lithosphere (continental or oceanic) on the same line of Student Sheet 48.1 as the Type of Boundary.

4. Use the **PICK TIME** button to set the simulation to run for 20 million years.

5. Click on the **RUN** button and observe what happens. You may want to repeat the simulation or run it for different periods of time so that you can make better observations.

6. Record your observations on Student Sheet 48.1.

7. If you selected a convergent boundary, click on the button labeled **WHAT IF TWO OCEANIC PLATES COLLIDE**? and repeat Steps 4–6. If you did not select a convergent boundary, go on to Step 8.

8. Reset the simulation by clicking on the **HOME** button.

9. Repeat Steps 1–8, but select a new direction in which Plate 1 will move.

ANALYSIS

1. Why do the geological processes that occur at convergent boundaries vary?

2. In this activity, which type of boundary modeled:
   
   a. the formation of the Himalayan mountains?
   
   b. the formation of Greenland, a volcanic island country in the northern Atlantic Ocean?
3. In your science notebook, make a table like the one below. Identify the scientific term for each type of plate boundary and then place a ✓ to identify what is likely to happen at each type of plate boundary.

<table>
<thead>
<tr>
<th>Types of Plate Motion</th>
<th>Scientific Term for Boundary Type</th>
<th>Earthquakes</th>
<th>Volcanoes</th>
<th>Mountain Formation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colliding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sliding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spreading</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Imagine that your parents ask you what you are learning in school. In your own words, explain:
   a. the theory of plate tectonics and
   b. how earthquakes, volcanoes, and mountain formation are related to plate tectonics.

   Be as specific as you can.

5. Reflection: Do you think the world’s continents and oceans will look the same in the future as they do now? Why or why not?

EXTENSION

In this activity, you investigated the movement of plate boundaries in which the edges of the plate margin were straight. Find out what happens along a transform boundary when there is a bend in the plate. On the home page of the SEPUP Plate Motion computer simulation, click on the button that says extension: BENT PLATE BOUNDARIES. How do changes to the earth’s surface at the bent transform boundary compare to the straight transform boundary you investigated in this activity?