**Activity Description & Estimated Class Time**

During this 1-class-period activity, students assemble a blank puzzle to represent the Earth. The individual puzzle pieces represent the tectonic plates. They use the puzzle to explore the relationship of the plates to continents and geographic features such as mountain ranges and ridges on the sea floor. They learn that the puzzle pieces represent independent plates that slowly move over long periods of time. Given this information, the class speculates about why features such as mountains and ridges might be located where they are.

**Correlations to NC Science Standards**

ESS.6.2.2 Construct an explanation to illustrate how the movement of lithospheric plates can create geologic landforms and cause major geologic events such as earthquakes and volcanic eruptions.

**Learning Target**

Students will demonstrate knowledge and understanding of:

- the Earth's crust is made of plates
- features like mountains and volcanoes are often found along these ridges.

**Brief Science Background**

Earth's crust is not a single continuous surface but is broken into large, continent-sized independent pieces known as plates. Because the surface of the Earth is built from these plates, they are called "tectonic" from the Greek word "to build." The edges of these independent pieces of Earth's crust roughly correspond to the shapes of the continents. They are even more closely aligned to geographic features such as mountain ranges, volcanoes, seismic activity, and undersea ridges.

## Plate Tectonics

**Materials**

**Materials for groups of 2 students**

- One set of tectonic puzzle pieces
- One sandwich bag to store collected puzzle pieces.
- Plate Tectonics Student Activity Sheet (SD 3), 1 for each student

**Preparation**

1. Have tectonic puzzle sets ready to hand out.
2. Be ready to project Tectonic Plates with Continents (SD 1) and Tectonic Plates with Mountains and Ridges (SD 2).
3. Assemble a puzzle to see what students will be doing. After punching out the pieces, find the side of the cardboard pieces that is shinier. Turn all pieces shiny-side-up. You will notice that the pieces do not fit perfectly or interlock, requiring some care to join them.

**Procedure**

1. Tell students that you have a puzzle for them to solve related to Earth's crust, but don't give any other specifics or mention plate tectonics as this is an exploration for the students.

**Procedure cont.**

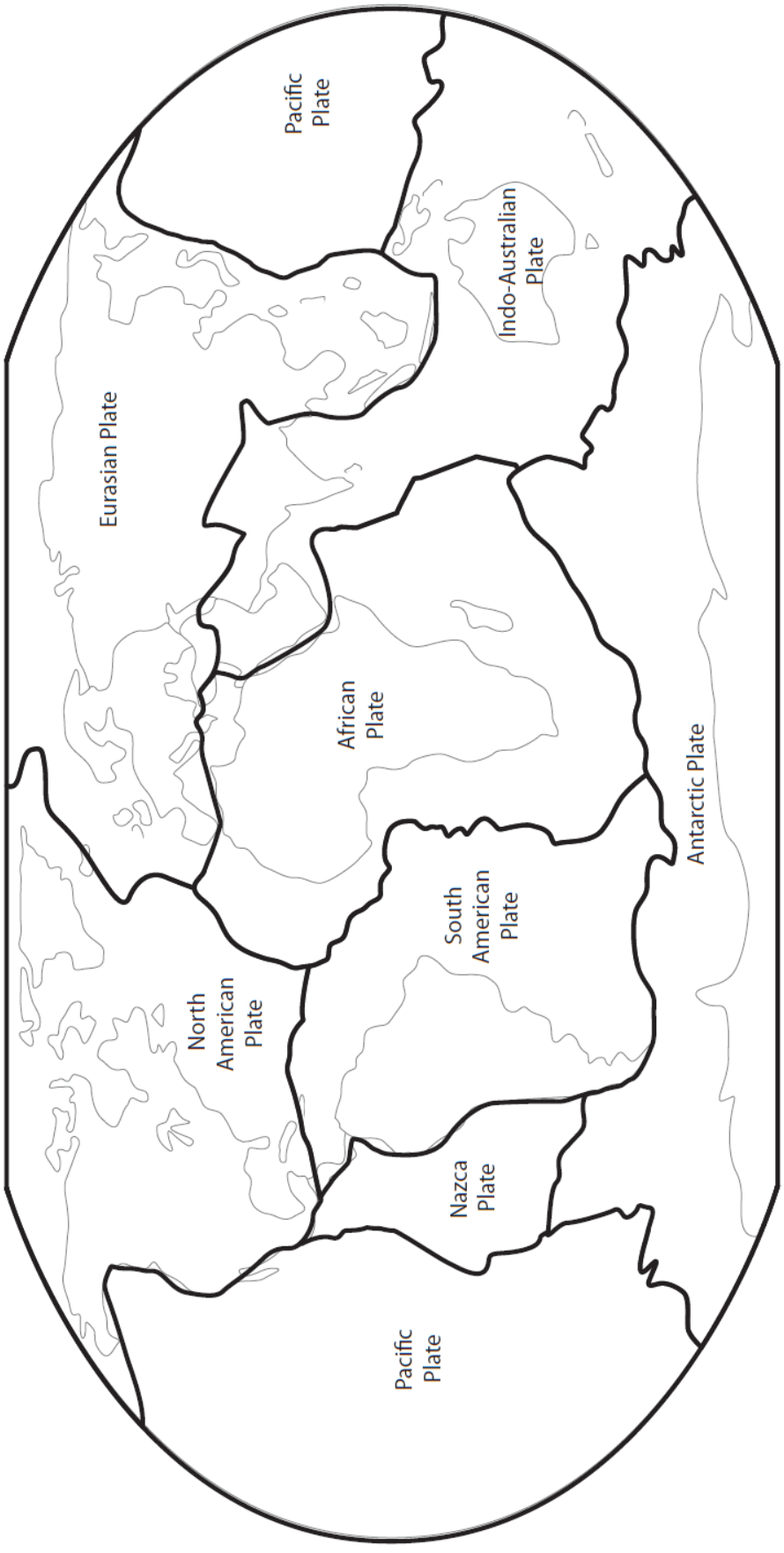
2. Give each pair of students a set of pieces and ask students to find the shinier side of the puzzle pieces and turn them all shiny-side-up. Let students know that the pieces do not fit perfectly. There will be small spaces between them when assembled.
3. When everyone has assembled a puzzle, give each student a copy of Plate Tectonics Student Activity Sheet, SD 3. Have students answer question 1. Discuss their ideas but avoid trying to correct students or directly teach information here.
4. Project Tectonic Plates with Continents, SD 1. Now that students have this new information, have students answer question 2 on SD 3 and then discuss their ideas as a class. Refer to the projected image as students give ideas.
   Accept answers as speculation but ask students to explain their thinking. Students might notice that the puzzle shapes somewhat follow continents but do not exactly line up with them.
5. Now, explain that the puzzle pieces represent **tectonic plates**. Define the term **tectonic plate** as independent pieces of the earth's crust. Ask students to write the term and its definition on SD 3.
6. Project Tectonic Plates with Mountains and Ridges SD 2. Ask students to answer question 4 on SD 3. You may need to explain the symbols for the ocean ridges and mountain ranges. Discuss students' ideas without directly teaching information. Ask students to explain their thinking and use evidence from their puzzle and SD 2 to support their ideas. Students may notice that several mountain ranges and ocean ridges line up with or cross puzzle piece boundaries. Students will learn more about tectonic plates, their movements, and the visible results of those movements in coming lessons. There is no need to go into depth about this at this time.

**Content Connection**

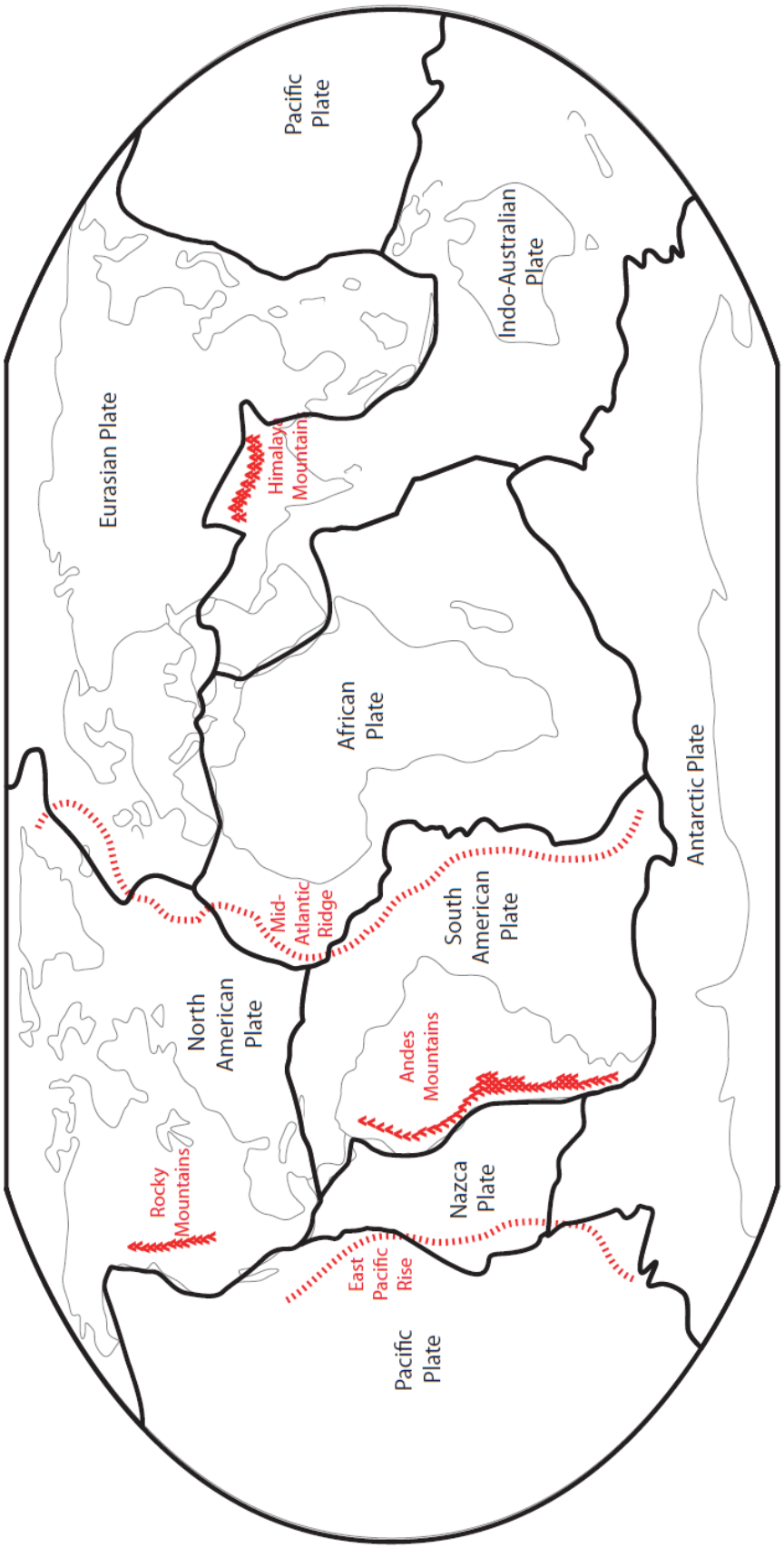
1. Get the class to summarize what we have learned so far by answering question 5 on SD 3.
   A sample answer might look like this:
   The surface of the earth is made up of pieces called tectonic plates that are similar to the continents. Mountain ranges and ocean ridges occur roughly along the lines where these pieces come together.
2. Have students answer question 6 to predict the next days' lessons and ask students to return puzzle pieces to the sandwich bag for later use.

**SD 1**

# Tectonic Plates with Continents



**SD 2** Tectonic Plates with Mountains and Ridges



# SD 3 Plate Tectonics Student Activity Sheet

Name:

1. After you assembled the puzzle, what did you notice about it? What do you think these pieces represent? Explain your thinking.

2. After looking at SD 1 with your teacher, what do you notice? What do you think the pieces represent?

3. Write the scientific term and definition for the "puzzle pieces" given by your teacher.

4. What geographic features do you see on SD 2? Where are they located? Do you notice any patterns?

5. Use 2-3 good sentences to explain the main pieces of information you have learned today.

6. Why do you think this information is important?