

Plate Tectonics Activity

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- Overview:** Plate tectonics influences the topography of Earth through convection movement and through secondary processes like volcanoes and earthquakes. Through this interactive activity, students will make predictions on plate boundary movements and the landforms those interactions produce.
- Targeted Grade Levels:** 9th through 12th
- 2023 Science Standards:** ESS.EES.2: Analyze how the geosphere is shaped by plate tectonics and the rock cycle.
ESS.EES.2.2: Analyze and interpret data to predict locations of volcanoes and earthquakes based on plate boundaries.
- Objectives:**
1. To learn about Earth's crustal plates, called tectonic plates
 2. To use models to explain how plate tectonics influences topography
 3. Use data to predict the location of volcanoes and earthquakes based on tectonic plate boundaries
- Estimated Time:** 50 minutes
- Materials:** Color maps of Earth's tectonic plates (either on paper or displayed on screen)
Activity sheets and handouts contained with this document
- Teacher Background & Prep:** Students should have prior knowledge of:
- The types of tectonic plates (oceanic, continental)
 - The types of plate boundaries/plate interactions (convergent, divergent, transform)
 - The types of landforms created via each type of plate boundary interaction
- How It Works:**
1. Each student will be assigned a tectonic plate (see plate name page); have students display their plate assignment so other students can see it (make multiple copies of the plate names if you have a full class)
 2. Students will fill out the pre-activity questions on the handout provided. You can work together as a class to answer the matching question #3 on the pre-activity question sheet.
 3. Set a timer for 5 minutes and tell students to move around the room to find a student with a plate that borders/is adjacent to their own plate and answer the activity questions
 4. Do this step 2 more times so that each student has a chance to talk to, and answer questions with, a total of 3 other students with bordering plates
 5. If students are having difficulties finding adjacent plates or answering questions, offer assistance to keep the activity moving
 6. An answer key is provided on the last page for the pre-activity questions

Plate Tectonics Activity

Pre-Activity Questions

1. What is the name of your assigned tectonic plate?
2. What are the names of 3 plates that border/are adjacent to your plate? (these are the plates that you'll be looking for)
 - a.
 - b.
 - c.
3. Match the following landforms to the type of plate boundary interaction that causes them (plate boundary interactions may be used more than once, and each landform can have more than one answer):

Landform	Plate Boundary Interaction
Earthquake _____	a. Transform
Island Arc _____	b. Oceanic/Continental Convergent
Mid-Ocean Ridge _____	c. Oceanic/Oceanic Convergent
Volcanic Mountains _____	d. Continental/Continental Convergent
Non-Volcanic Mountains _____	e. Oceanic/Oceanic Divergent
Seafloor Trench _____	f. Continental/Continental Divergent
Rift Valley _____	

GAME #1

1. My plate name is: _____

The bordering plate name is: _____

2. Our plate boundary is:

- a. Oceanic – Oceanic
- b. Continental – Continental
- c. Continental – Oceanic

3. Our plate movement is:

- a. Convergent
- b. Divergent
- c. Transform

4. The landforms that will be formed between our two plates are (circle all that apply):

Volcanic Mountains
Mid-ocean Ridge
Rift Valley
Seafloor Trench

Non-volcanic Mountains
Earthquake
Island Arc

5. Do a bit of internet research to see if there is a specific named landform that is in the area of this plate boundary (there might not be a named landform if it's in the middle of an ocean).

GAME #2

1. My plate name is: _____

The bordering plate name is: _____

2. Our plate boundary is:

- a. Oceanic – Oceanic
- b. Continental – Continental
- c. Continental – Oceanic

3. Our plate movement is:

- a. Convergent
- b. Divergent
- c. Transform

4. The landforms that will be formed between our two plates are (circle all that apply):

Volcanic Mountains
Mid-ocean Ridge
Rift Valley
Seafloor Trench

Non-volcanic Mountains
Earthquake
Island Arc

5. Do a bit of internet research to see if there is a specific named landform that is in the area of this plate boundary (there might not be a named landform if it's in the middle of an ocean).

GAME #3

1. My plate name is: _____

The bordering plate name is: _____

2. Our plate boundary is:

- a. Oceanic – Oceanic
- b. Continental – Continental
- c. Continental – Oceanic

3. Our plate movement is:

- a. Convergent
- b. Divergent
- c. Transform

4. The landforms that will be formed between our two plates are (circle all that apply):

Volcanic Mountains
Mid-ocean Ridge
Rift Valley
Seafloor Trench

Non-volcanic Mountains
Earthquake
Island Arc

5. Do a bit of internet research to see if there is a specific named landform that is in the area of this plate boundary (there might not be a named landform if it's in the middle of an ocean).

<p>Plate Name</p> <p>Pacific Plate</p>	<p>Plate Name</p> <p>Indian Plate</p>
<p>Plate Name</p> <p>Antarctic Plate</p>	<p>Plate Name</p> <p>North American Plate</p>
<p>Plate Name</p> <p>Eurasian Plate</p>	<p>Plate Name</p> <p>Nazca Plate</p>
<p>Plate Name</p> <p>Arabian Plate</p>	<p>Plate Name</p> <p>Australian Plate</p>
<p>Plate Name</p> <p>South American Plate</p>	<p>Plate Name</p> <p>African Plate</p>
<p>Plate Name</p> <p>Caribbean Plate</p>	<p>Plate Name</p> <p>Filipino Plate</p>

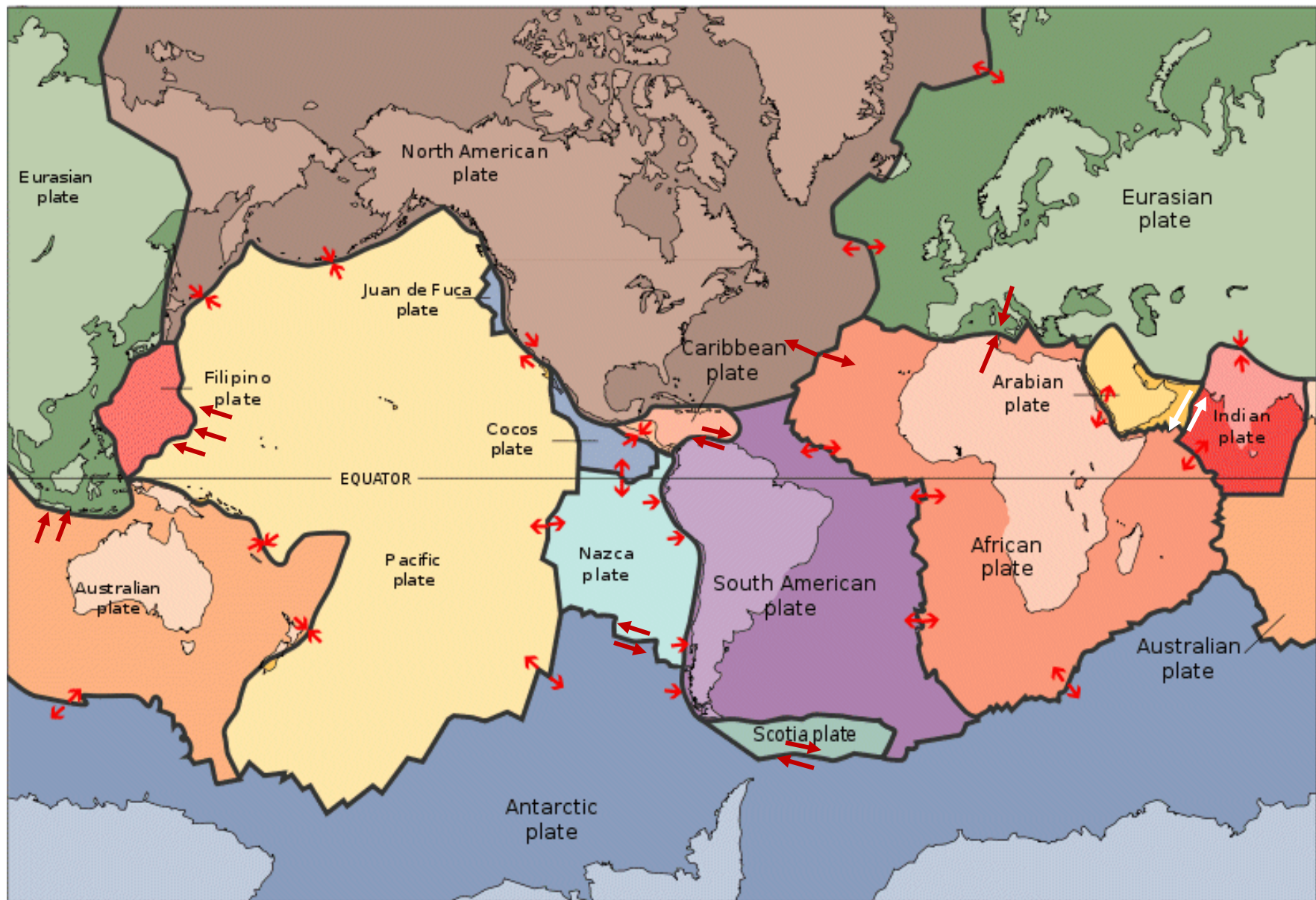
Answer Key for the Pre-Activity Questions

1. What is the name of your plate? **Answers will vary**

2. What are the names of 3 plates that border/are adjacent to your plate? **Answers will vary**

3. Match the following landforms to the type of plate boundary interaction that causes them (plate boundary interactions may be used more than once, and each landform can have more than one answer):

Landform		Plate Boundary Interaction
Earthquake	a, b, c, d	a. Transform
Island Arc	c	b. Oceanic/Continental Convergent
Mid-Ocean Ridge	e	c. Oceanic/Oceanic Convergent
Volcanic Mountains	b	d. Continental/Continental Convergent
Non-Volcanic Mountains	d	e. Oceanic/Oceanic Divergent
Seafloor Trench	b, c	f. Continental/Continental Divergent
Rift Valley	f	




Convergent


Divergent


Transform