



Plate Tectonics Tennis Ball Globe

Envisioning continental movements occurring in the theory of plate tectonics can be difficult, especially if it is portrayed only in two dimensions. In this activity, you will create a model to visualize the continental plates in their true orientation, on a 3-dimensional globe.

Suggested Ages: 6th – 12th Graders

Materials

- Printouts, an old tennis ball, scissors, glue, and crayons or markers

Guiding Questions

- What do you already know about plate tectonics? What is something new you learned while doing this activity?
- Sometimes it is difficult to see clear boundaries with the continents and the oceans. What scientific data is needed to accurately locate boundaries?
- Do tectonic plates move? Why or why not?
- Look at the Interpretive Map of Tectonic Plates. What are the different types of plate boundaries? Where can you find each kind on the map?
- What are the differences between 2- and 3-dimensional? Can you name 2- and 3-dimensional objects? What are similarities and differences between a 2-dimensional map and a 3-dimensional globe?
- What are some links between geography, art, and geometry?

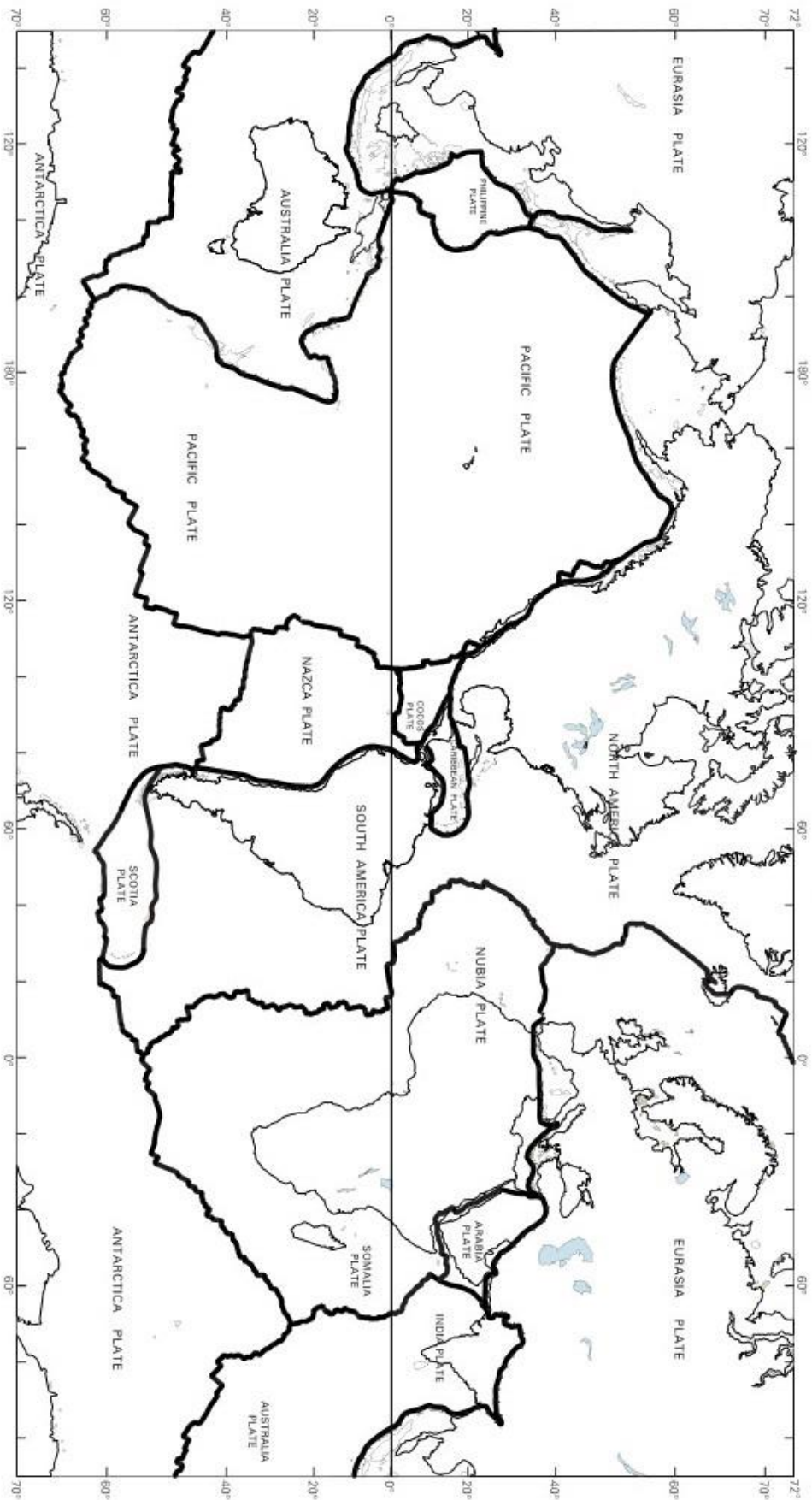
Activity Instructions

- Print out the Simplified Plate Tectonics Map and the Plate Tectonics Tennis Ball Globe documents.
- Study the Simplified Plate Tectonics Map, and color the plates different colors. (Try not to color adjacent plates the same color.)
- Using the Simplified Plate Tectonics Map as a guide, use a dark color to outline the plate boundaries on the Plate Tectonic Tennis Ball Globe. As you color, use the key to identify which kind of boundaries you see between the different plates.
- Color the tectonic plates, and cut out the Plate Tectonics Tennis Ball Globe.
- Apply glue on the equator of the globe, and center it on the tennis ball. Wrap it around so the edges touch and the flaps (the areas by the North Pole and the South Pole) do not overlap.
- Working your way around the tennis ball, glue the flaps down while trying to line up the pieces.
- Cut out the Plate Tectonics Tennis Ball Globe base, and glue the tabs together to form a ring. Place the globe on the base for displaying.

References- USGS “This Dynamic Planet: A Teaching Companion”

https://volcanoes.usgs.gov/vsc/file_mgr/file-139/This_Dynamic_Planet-Teaching_Companion_Packet.pdf

Simplified Plate Tectonics Map



— Plate boundary - Known area between two plates.

Some plate boundaries, such as the North America - South America boundary, are not shown because scientific data are inadequate to determine precise locations. See the This Dynamic Planet Map insert for more information about these regions.



Cut out globe base.
Glue tab A to tab B.

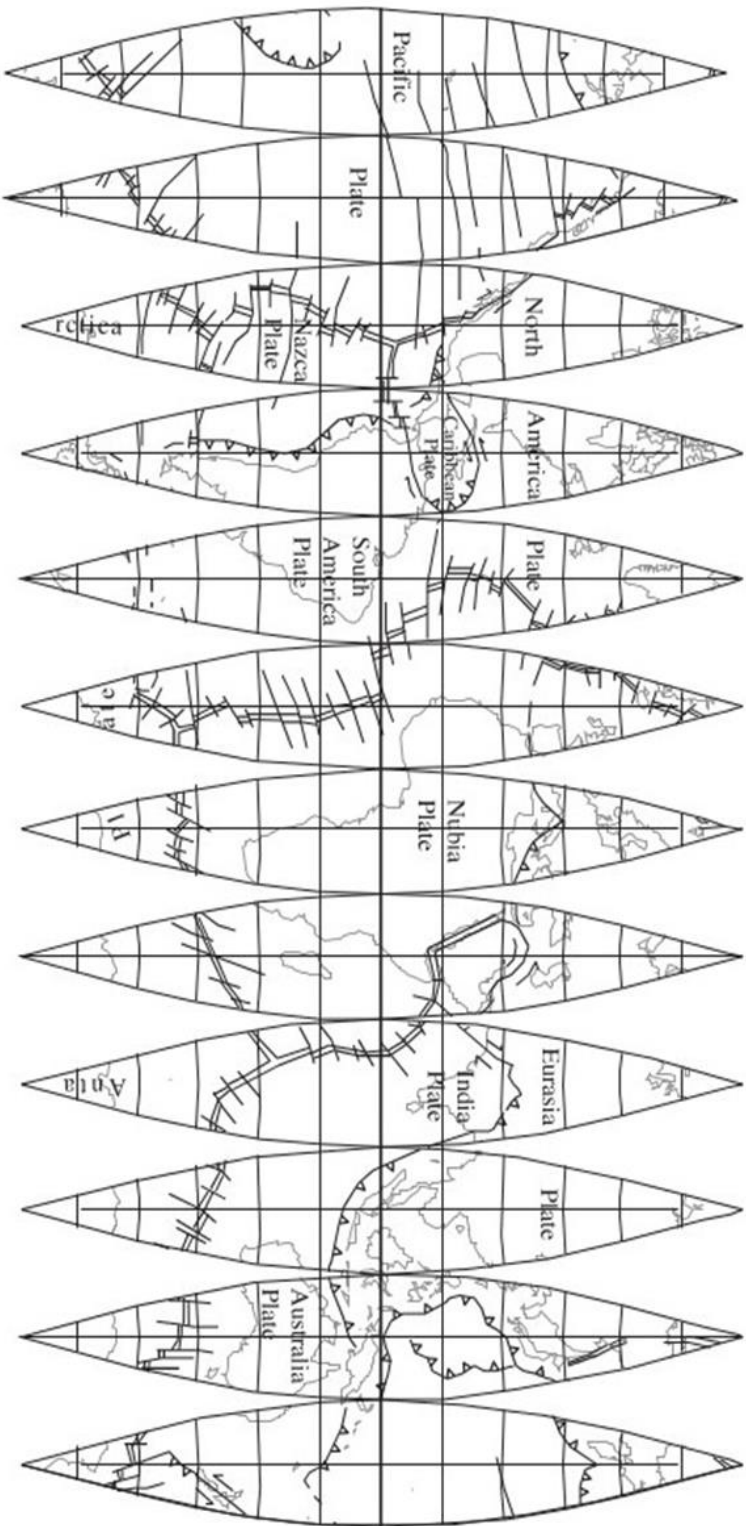
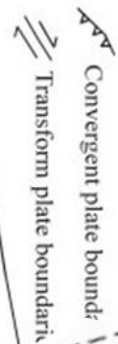
Plate Tectonics Tennis Ball Globe



The Earth's Major Tectonic Plates

<http://volcanoes.usgs.gov/about/edu/dynamicplanet>

Globe made by _____



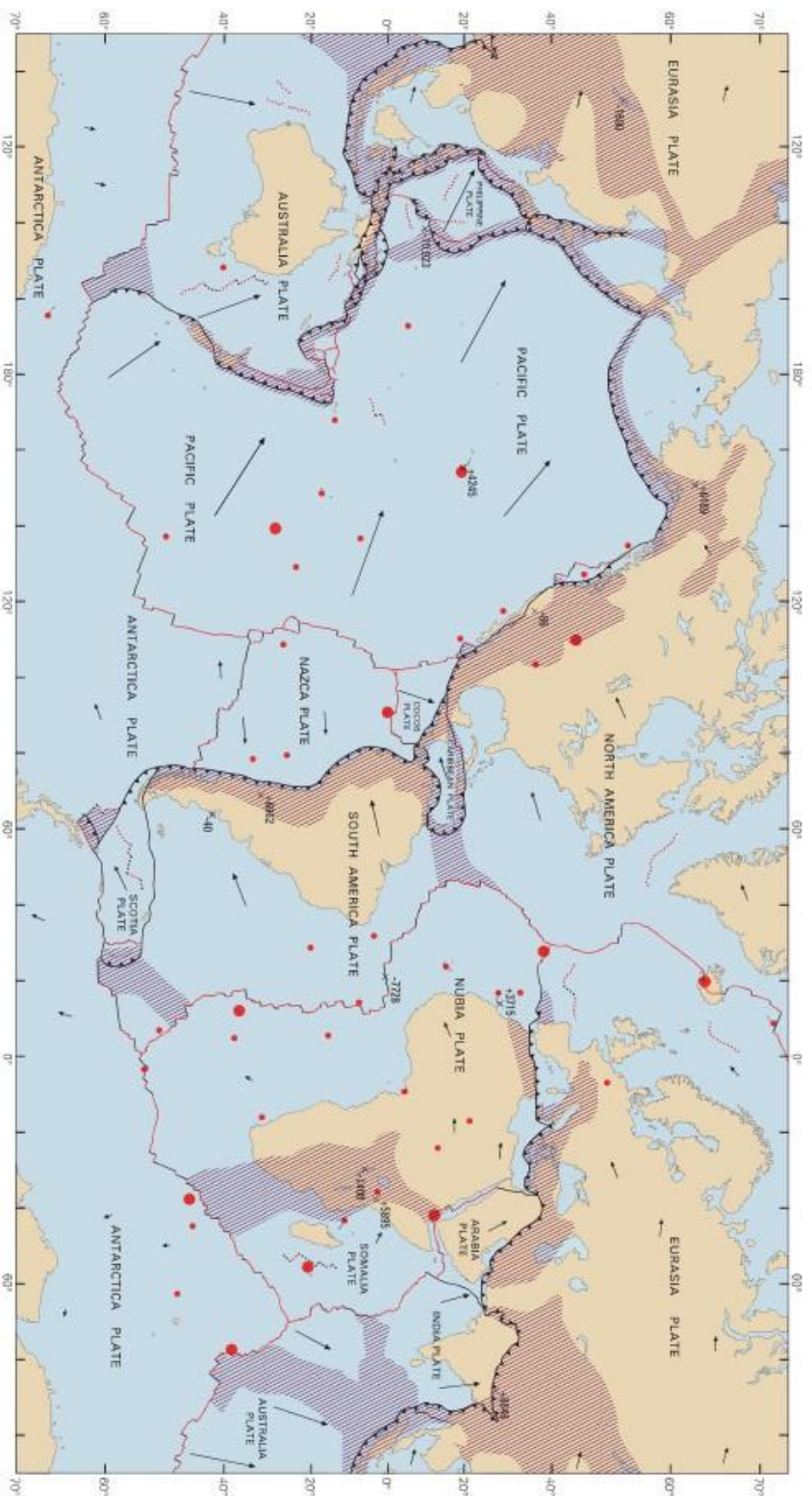
Divergent plate boundary - Where new crust is generated as the plates pull away from each other.



Convergent plate boundary - Where crust is recycled as one plate dives under another (in the direction shown by sawteeth).



Transform plate boundary - Where crust is neither produced nor consumed as plates slide horizontally past each other.



INTERPRETIVE MAP OF PLATE TECTONICS

- Divergent plate boundary—Where new crust is generated as the plates pull away from each other
- Convergent plate boundary—Where crust is recycled as one plate dives under another (in the direction shown by sawtooth)
- Transform plate boundary—Where crust is neither produced nor consumed as plates slide horizontally past each other
- Selected fossil boundary—Former plate boundary, now inactive: evidence that plate boundaries are not permanent
- Diffuse boundary zone—Broad belt in which deformation occurs over a wide region (from Gordon, 2000); may encompass one or more smaller plates
- Selected hotspots—Larger symbol indicates major hotspot; smaller symbol indicates minor hotspot
- Plate motion—Length of arrow is roughly proportional to the rate of plate motion (longer=faster; see main map for details)
- x⁴²⁸⁶ Elevation—Highest (+) and lowest (-) points, in meters, on four largest continents and in two oceans



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