



Large Plate Puzzle

5-12

modified from Larry Braile, Purdue University



Key Points:

- Develop and understanding of earth's plates and distribution
- Explore plate motions and plate interactions along boundaries

Prerequisite:

Basic knowledge of earth's plates, lithosphere, asthenosphere, heat within earth, three types of plate boundaries: divergent, convergent, and transform

Questions for Students:

See <http://www.eas.purdue.edu/~braile/edumod/platepuzz/platepuzz.htm>

Discussion Answers for Presentation

Everyone identify their plate and tell what direction it is moving, how fast, and what kinds of boundaries.

1. East Pacific Rise (between Pacific and Nazca plates) has the highest rate of movement at 158mm/yr
2. Antarctic plate is slowest at 8-12mm/yr since surrounded on all sides by spreading centers.
3. Spreading centers have largest velocities.
4. Convergence: S. America - Nazca plates
Western Pacific - Eurasian
Indian - Eurasian
Australian - Eurasian

Divergence: Mid-Atlantic Ridge
East Pacific Rise
Antarctica - everything

Transform: Pacific - N. American plates
Transform faults along ridges
5. a) Australia has a few earthquakes because it is in the middle of a plate far away from the boundaries.

b) Himalayan Mtns. From two continental plates converging. Only continent-continent collision.

c) Plate boundary on West

d) vulcanism

e) beginning of spreading center

f) continental rifting - Africa

g) Scotia Plate (Pacman plate) growing East as S. America is subducting under it

volcanoes start at 100km depth, and the volcanoes are close to the subduction zone, so it is a steeply dipping plate

volcanoes on overriding plate

relative convergence rate

age-bouyant-young heavy-old

h) Juan de Fuca moving East

spreading center on West side with most motion being taken up by JDF plate

volcanoes on continent is evidence of subduction