



## 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