Chapter 17 Geo Questions  KEY  Name _____________________ Per _____

Ch 17.1, page 447

1. What early evidence suggested that Earth’s continents might be moving?
   Matching coastlines of continents on either side of the Atlantic Ocean
2. How do ancient glacial deposits in Africa, India, Australia, and South America support the idea of continental drift?
   The deposits indicate the continents were once located near the poles.
3. How did Alfred Wegener use rock and fossil evidence to support his hypothesis?
   Rock types – rocks with similar features were found on continents now separated by oceans (Appalachian mountains)
   Fossils – fossils of land animals on different continents that couldn’t have traveled across the ocean (Mesosaurus, Labyrinthodont)
   Climate – plant fossils indicative of climates different from those today (coal in Antarctica, Glossopteris found in S.A., Africa, India, Australia, Antarctica)
4. Why was Wegener’s hypothesis rejected by most scientists of the early 1900s?
   Wegener couldn’t explain the forces behind the moving continents.
5. Oil deposits approximately 200 million years old have been discovered in Brazil. Where might geologists find oil deposits of a similar age?
   Africa

Ch 17.2, page 454

1. How do ocean ridges and deep-sea trenches support the theory of seafloor spreading?
   Ocean ridges are places where new rock is formed; trenches are places where it is destroyed
2. Explain how ocean-floor rocks and sediments are evidence of seafloor spreading.
   Age – rock new the ridge is young, rock near the trench is old
   Thickness – rock near the ridge is thinner, rock near the trench is thicker
3. Compare and contrast normal magnetic polarity and reversed magnetic polarity.
   Both are orientations of Earth’s magnetic field. Normal fields have the same polarity as today's field, while reversed fields have the opposite polarity.
4. Explain how an isochron map of the ocean floor supports the theory of seafloor spreading.
   Isochron map shows the age of the ocean-floor crust increases with distance from the ridge. It also shows the symmetry on both sides of the ridge.

Ch 17.3, page 459

1. Explain the theory of plate tectonics.
   The theory of plate tectonics states that Earth’s lithosphere is broken into large slabs called tectonic plates, which are in constant motion. Many of Earth’s surface features form as the result of interactions among these plates.
2. Explain what happens at the three types of plate boundaries. Sketch each.
   Divergent – move apart (ocean ridges, Great Rift Valley in East Africa)
Convergent – come together  
Transform – slide past horizontally

3. What geologic features are associated with each type of convergent boundary?
   Oceanic-Oceanic – subduction zones, trenches, volcanic islands (Mariana Trench and Mariana Islands in West Pacific Ocean)
   Oceanic-Continental – trenches and volcanic arcs (Peru-Chile Trench and Andes Mountains along the western coast of South America)
   Continental-Continental – folded mountain ranges (Himalayas in India)

4. Where do transform boundaries most commonly occur?
   Along ocean ridges (San Andreas Fault is an exception)

Ch 17.4, page 463

1. Make and label a diagram that explains the process of convection.

2. What are the relationships among mantle convection, ocean ridges, and subduction zones?
   Upward mantle convection is thought to be associated with ridges, while downward mantle convection is associated with subduction zones.

3. Hypothesize what might happen to mantle convection currents beneath a continental-continental convergent boundary.
   Initially it would be a downward mantle convection (convergent boundary). After the continents collide, an insulating layer of continental crust is formed. This may cause the underlying mantle to warm up, stop the downward flow, and perhaps give rise to an upward mantle flow.

4. How have earthquake data been used to explore the size of convection currents in the mantle?
   Earthquake data have been used to generate images of Earth’s interior. These images provide information about past plate movements.