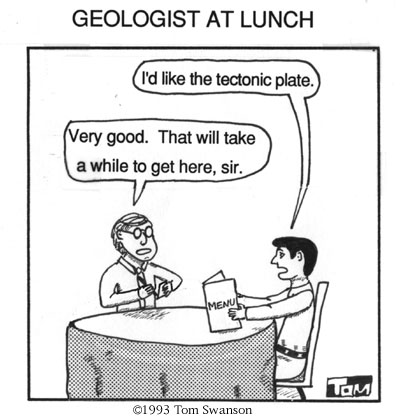
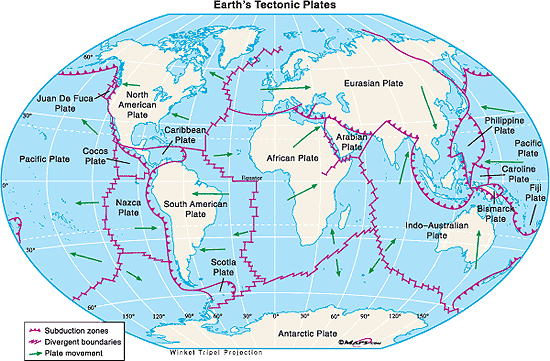
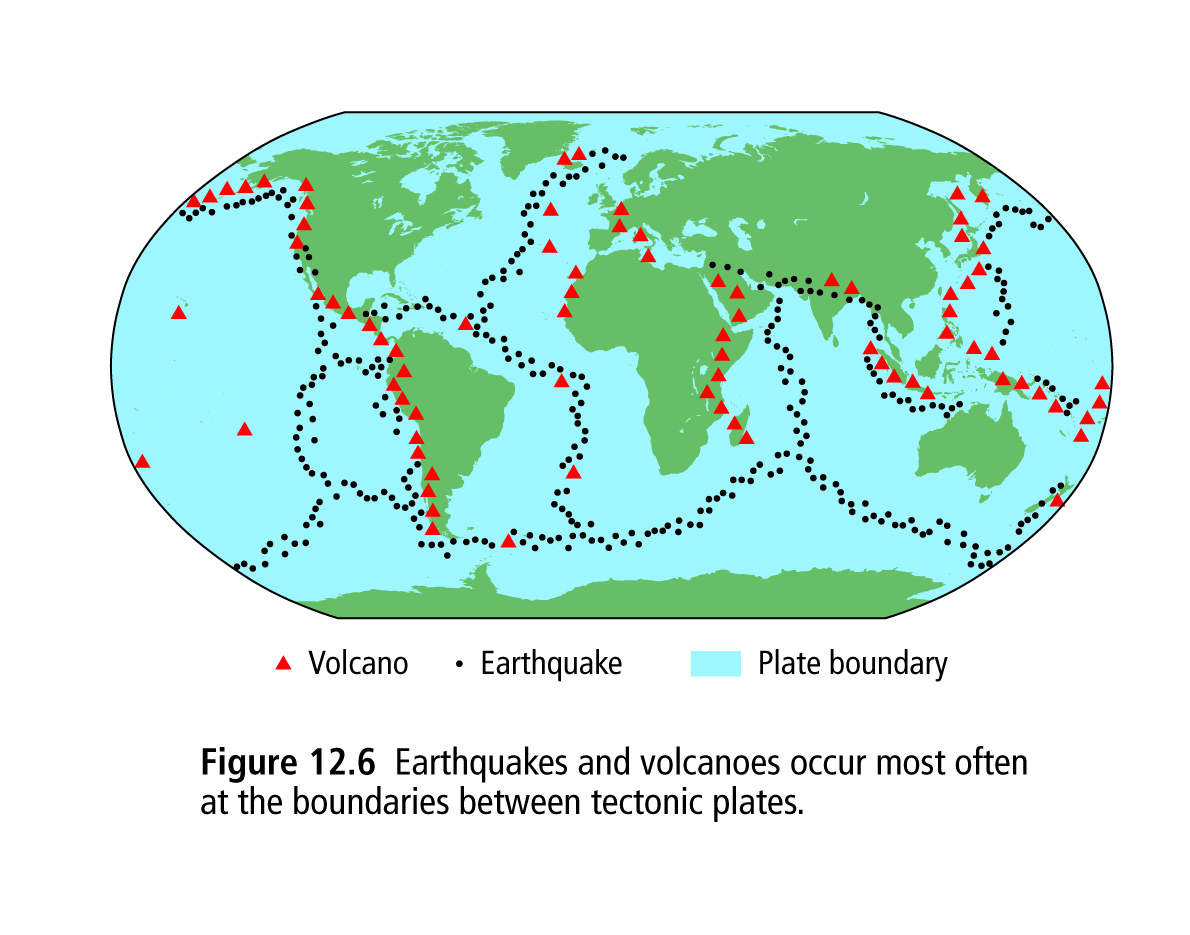
**Tectonic Plates**

**What are Plate Tectonics?**

* massive chunks of rock that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* the tectonic plates \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on the Earth’s \_\_\_\_\_\_\_\_\_\_\_\_\_

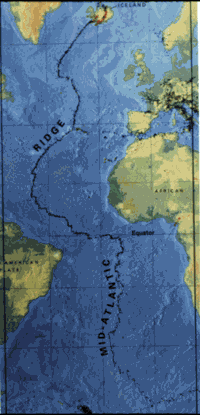


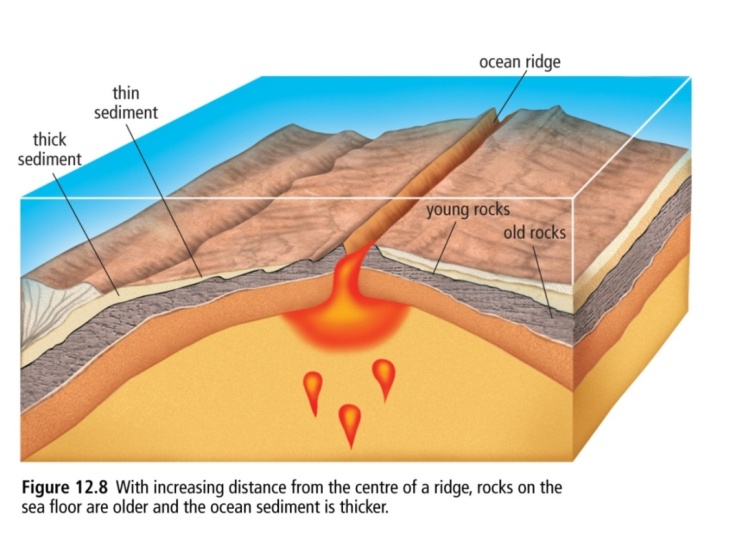
**How can we tell tectonic plates move?**

* several pieces of **evidence** including:
  + existence and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + existence of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + existence of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + existence of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

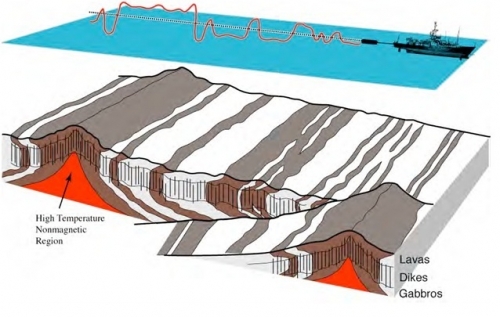
**Earthquakes and Volcanoes**

* occur at plate boundaries (the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
* appear to occur when \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **stationary objects cannot collide!!!**
* Suggests that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Ocean Ridges**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Example = Mid-Atlantic Ridge
* can be explained if the plates at the bottom of the ocean are moving apart
  + as plates move apart, a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (molten rock below Earth’s surface) then rise through the gap, cools and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_and mountains
  + Rock \_\_\_\_\_\_\_\_\_the ridge is \_\_\_\_\_\_\_\_\_\_\_\_\_\_/new rock and thin. Rock \_\_\_\_\_\_\_\_\_\_ away from the ridge is \_\_\_\_\_\_\_\_\_\_\_ and thick.

**What is magnetic striping? – (Paleomagnetism evidence)**

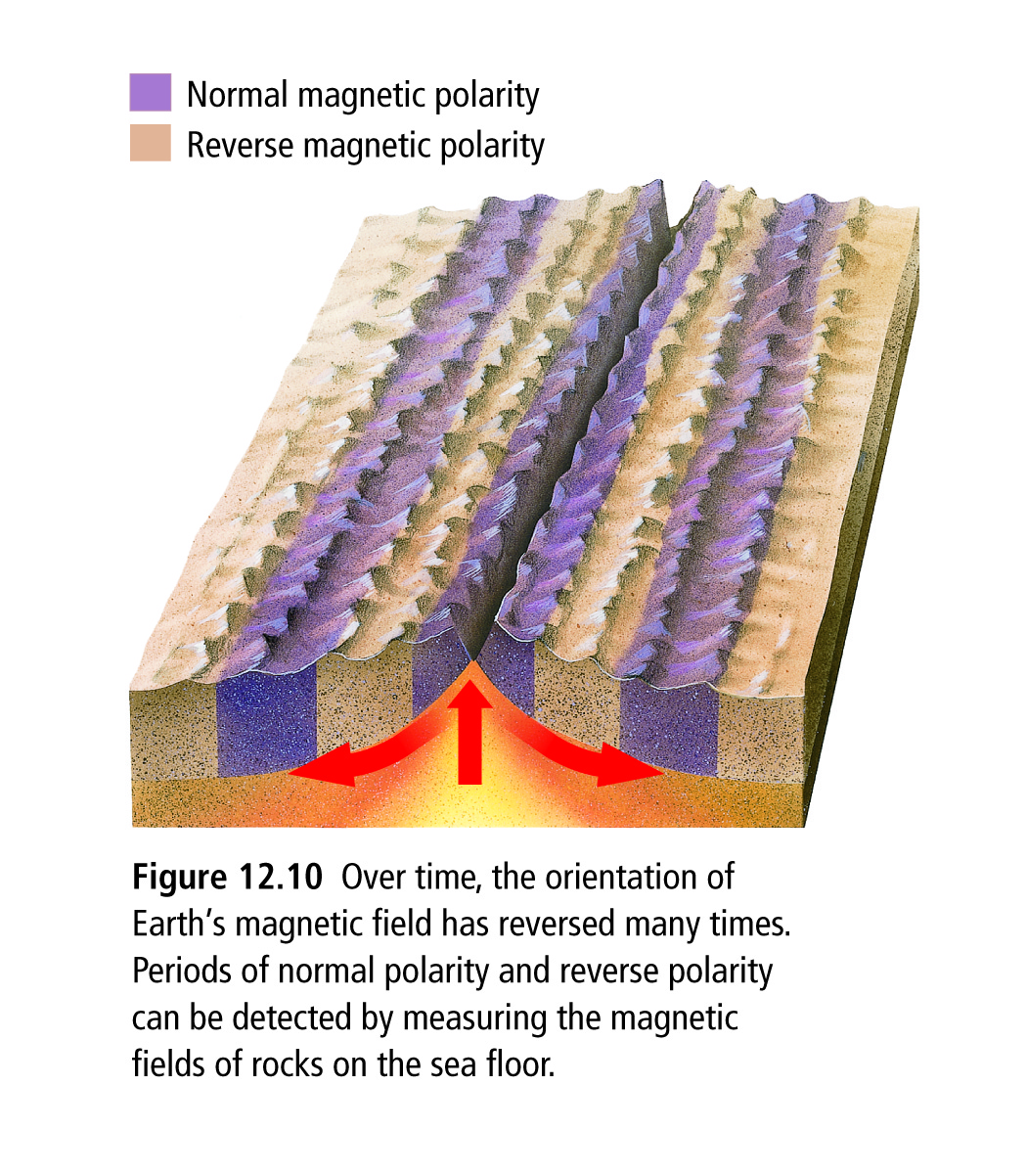
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at the bottom of the ocean that have alternating \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

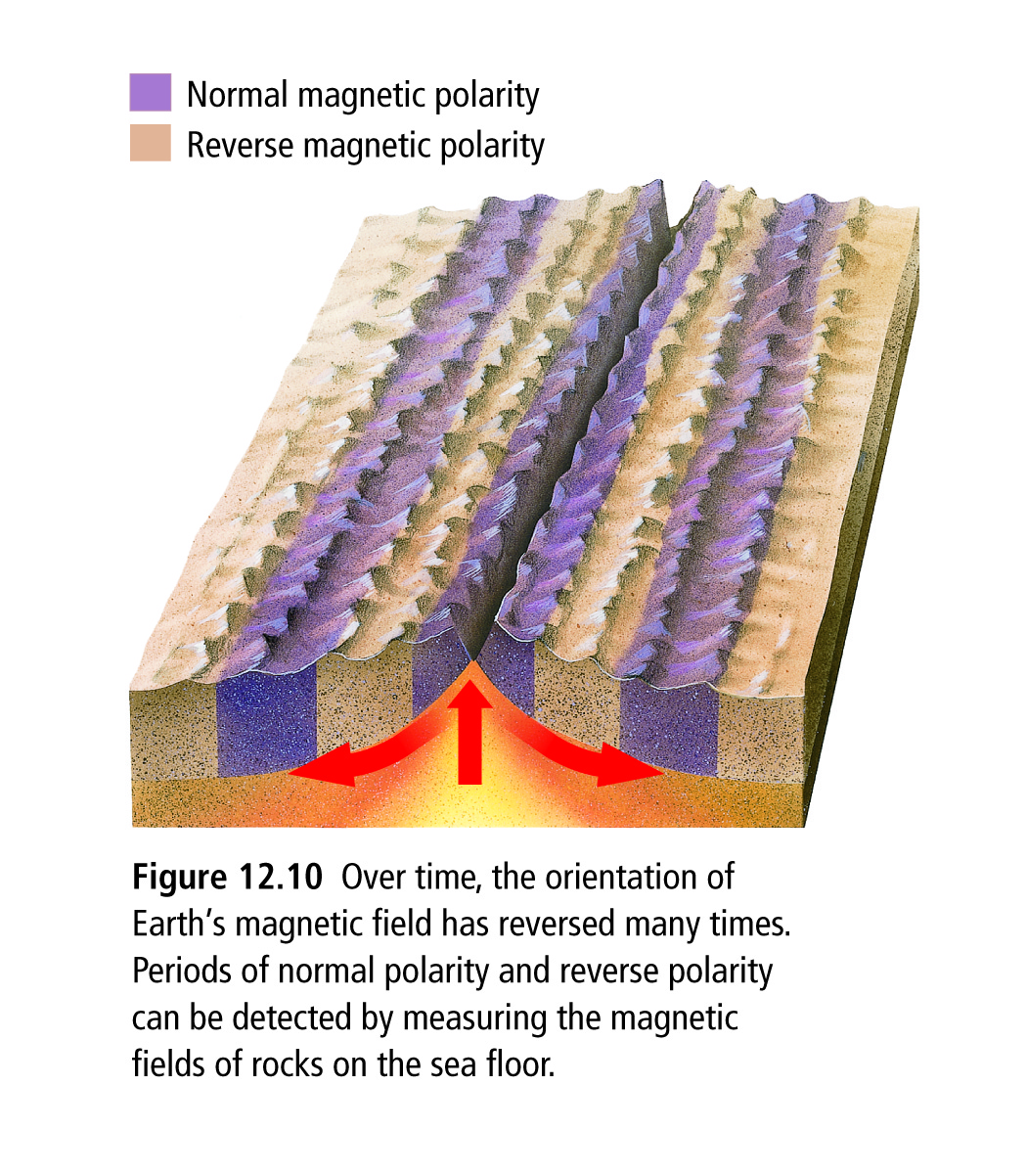
**Magnetic striping**

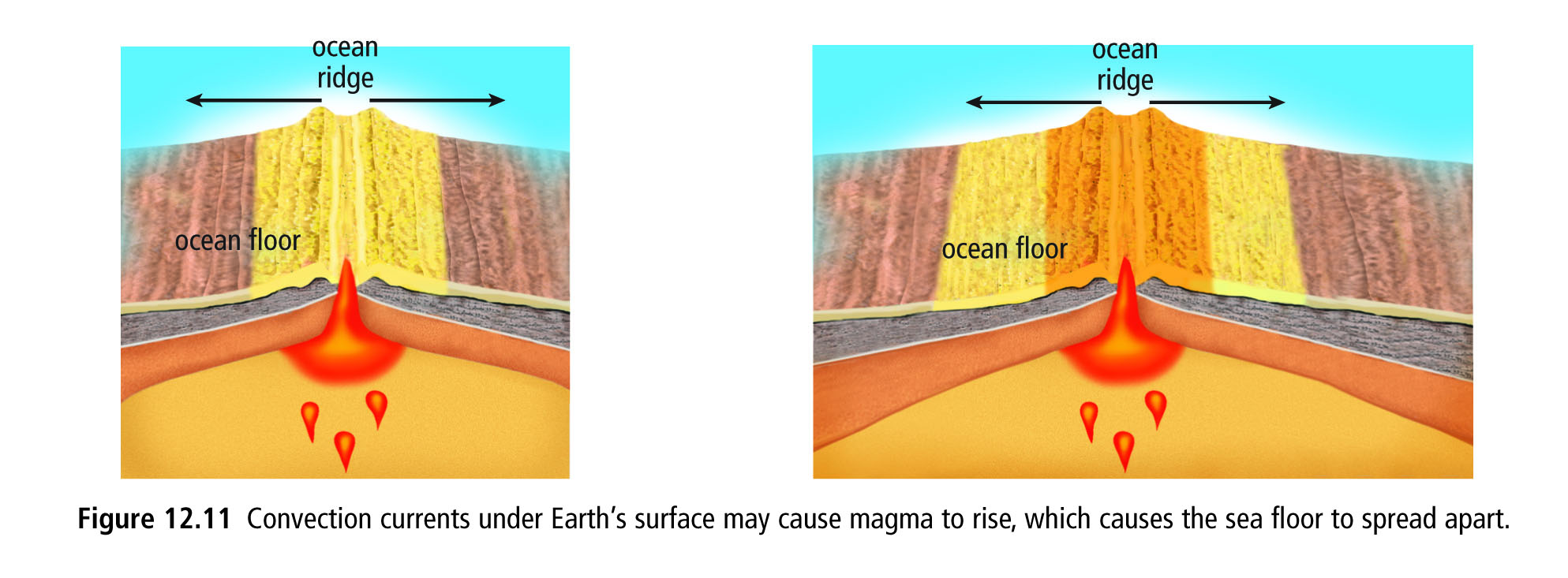
* can be explained if the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as the

Earth’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_





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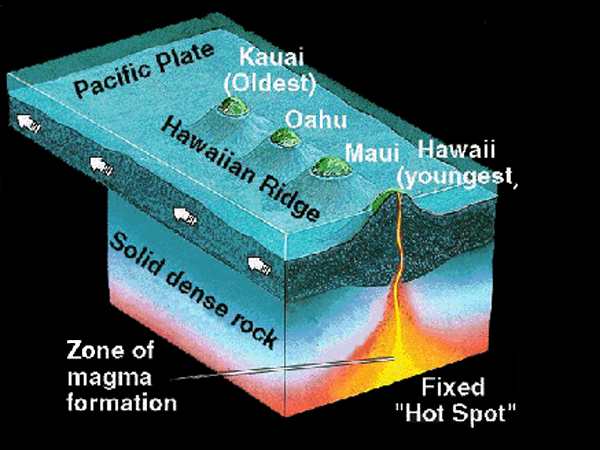
**Sea floor spreading**

* ocean ridges and magnetic striping suggest that the \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_or moving apart
* in other words, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Volcanic Island Chains**

* are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that are formed when \_\_\_\_\_\_\_\_ reaches the Earth’s surface and \_\_\_\_\_
* can be explained if plates move over a \_\_\_\_\_\_\_\_\_\_\_\_\_\_
* hotspots = an area where \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

cools and forms new rock .

* hotspots are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the Earth’s molten core
* as the plate moves, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* as a new portion of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ until eventually you get a chain of islands

**For example, the Hawaiian Islands**

* form as the Pacific Plate moves North East over a hot spot\
* Typically, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

because the older island has been eroded away over time by the ocean and weather.

**Summary of evidence that suggests that tectonic plates can move**

* Earthquakes and Volcanoes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Ocean ridges \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Magnetic stripes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Island chains\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

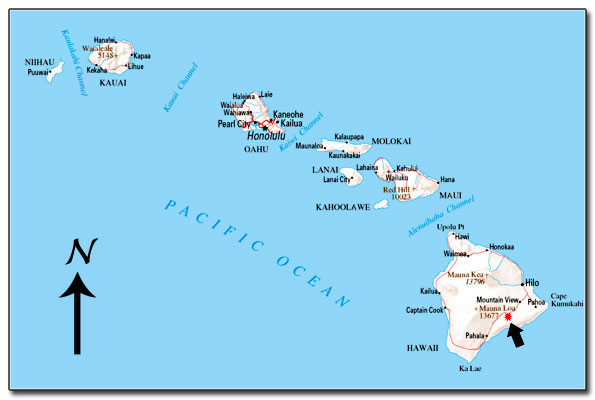
**Plate Tectonic Theory**

* is a unified theory that came out of the above evidence
* states that the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

that float and continually \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* came about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Wegener’s Continental Drift Theory
  + supported Wegener’s theory as it \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - finally silenced Wegener’s critics because he now had evidence to suggest that the continents were once together in a supercontinent (jigsaw puzzle fit of continents, fossils, geological structures, paleoglaciation and coal deposits) **and** evidence to support/explain how continents could drift (plate tectonics)
      1. Plate tectonics refers to the fact that the surface of Earth is broken into several large "plates" which ride along on what resembles a giant conveyer belt of rock.  
           
         Using this analogy, what would be the beginning of the conveyer belt?

1. Tectonic plate edges
2. Hot spots
3. Ocean ridges
4. Earthquakes
   * + 1. Which of the following is **not** a piece of evidence to support plate tectonics?
5. Sediments on the ocean floor are much thicker close to ocean ridges than near continents
6. Long stripes of iron-rich basalt rock with reversing polarity run parallel to ocean ridges
7. Ocean floor samples taken near oceanic ridges is much younger than ocean floor samples taken near continents
8. Much of Earth's volcanic and earthquake activity occurs along the boundaries of tectonic plates
   * + 1. Which part of the plate tectonic theory explains what actually makes the plates move?
9. Volcanoes
10. Sea floor spreading
11. Paleomagnetism
12. Earthquakes



* + - 1. The Hawaiian Islands formed over a hot spot in the ocean floor. Which direction is the ocean floor moving in this location?

1. Southwest
2. Southeast
3. Northwest
4. Northeast
   * + 1. New rock is created at ocean ridges, pushing the older ocean floor away from the ridge. What causes the new rock to form?
5. Convection currents in the magma below the ocean floor
6. Volcanic eruptions
7. Earthquakes in the ocean crust
8. Movement of the ocean crust over hot spots
   * + 1. The theory of continental drift named a key part of this idea *Pangaea*. What is *Pangaea*?
9. One of the ancient animals that helped Wegener prove that fossils from different continents originally came from the same location
10. The hot spot which gave rise to the Hawaiian Islands, among others
11. The underwater ocean range in the middle of the ocean
12. A supercontinent that existed in Earth's distant past

**Chapter 12 Vocabulary: LOTS of BIG words!**

Asthenosphere

Continental Drift Theory

Crust

i. Continental crust

ii. Oceanic crust

Density

Earthquake

Epicenter

Fault

Focus

Geologic time

Hot spot

Inner core

Lithosphere

Magnetic polarity

(normal, reverse)

Magnetic reversal

Magnetometer

Mantle

Mantle convection

Mantle plume

Mid-ocean ridge

Mountain range

Outer core

Paleoglaciation

Plate boundary

i. Convergent

ii. Divergent

iii. Transform

Plate Tectonic Theory

Primary waves (P-waves)

Ridge push

Rift valley

Seafloor spreading

Secondary waves (S-waves)

Seismogram

Seismograph

Seismometer

Slab pull

Spreading ridge

Subduction

Subduction zone

Supercontinent

(e.g. Pangea)

Surface waves (L-waves)

Tectonic plate

Transform fault

Trench

Volcanic belt

Volcanic island arc

Volcanoes