

## Section 12.2 Features of Plate Tectonics

### Interpreting Illustrations Layers of the Earth Page 218

1. (a) Crust
- (b) Upper Mantle
- (c) lower mantle
- (d) Outer Core
- (e) Inner Core

2.

Layer	Thickness	State	General composition
(a) inner core	1216 km	solid	iron, nickel
(b) outer core	2270 km	liquid	iron, nickel
(c) lower mantle	2225 km	solid	magnesium, iron
(d) upper mantle	660 km	solid, molten	iron, magnesium
(e) crust	5–60 km	solid, brittle	granite, basalt

3. The lithosphere is the layer made up of the crust and the uppermost mantle while the asthenosphere is a partly molten layer in Earth's upper mantle just below the lithosphere.

### 4. Comprehension Features of plate tectonics Page 219

1. Geologists believe that the asthenosphere is heated by radioactive decay from large quantities of radioactive elements such as uranium.
2. Scientists hypothesize the mantle convection is one of the driving forces behind plate movement.
3. A rift valley occurs on land, while a spreading ridge occurs in the ocean.
4. The heavy oceanic plate will dive deep under the lighter continental plate in an event known as subduction.
5. Earthquakes and volcanic eruptions occur at subduction zones.

6. (a) divergent



(b) convergent



(c) transform



7.

Geographic location	Plate interaction
1. East African Rift	divergence
2. Juan de Fuca plate	oceanic-continental convergence
3. Islands of Japan	oceanic-oceanic convergence
4. Himalayan mountains	continental-continental convergence
5. San Andreas Fault	transform fault

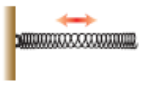


8. Subduction does not occur when continental plates collide. The plates have similar densities so this prevents either one from being forced down into the mantle.

**Applying Knowledge**

**Seismic waves, earthquakes, and volcanoes**

Page 220

1.

Seismic wave	Abbreviation	General diagram of wave	Description of action	Type of material it travels through	Speed it travels at
primary wave	P		ground squeezes and stretches	solids, liquids, gases	fast
secondary wave	S		ground motion is perpendicular to direction of wave travel	solids, but not liquids	slower
surface wave	L		rolling action	solids	slowest

2. A seismometer is a device that measures the amount of ground motion caused by an earthquake.

3. Magnitude is a number that rates the strength (energy) of an earthquake. Higher magnitude numbers indicate larger, more devastating earthquakes.

4. The Richter scale is often used to measure the magnitude of an earthquake.

5. The focus is the location inside Earth where an earthquake starts, and the epicentre is the point on Earth's surface directly above the focus.

6. Shallow focus occurs 1–70 km below the surface, intermediate focus occurs 70–300 km below the surface, while deep focus occurs at depths greater than 300 km.

7.

Geographic location	Type of volcano	Description of events
Mount Garibaldi volcano	composite	repeated eruptions at subduction zone
Anahim Volcanic Belt	shield	located over hot spot
Krafla volcano	rift eruptions	rift eruptions along cracks in lithosphere