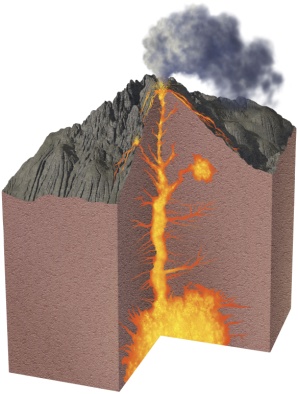
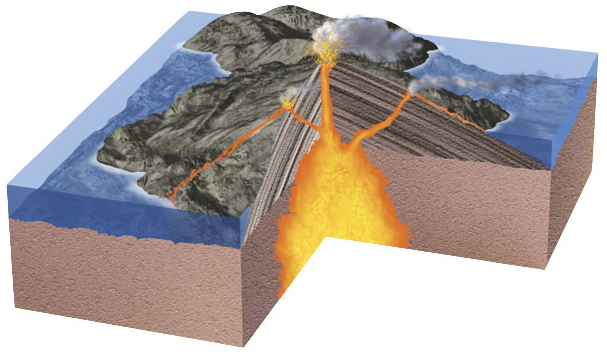
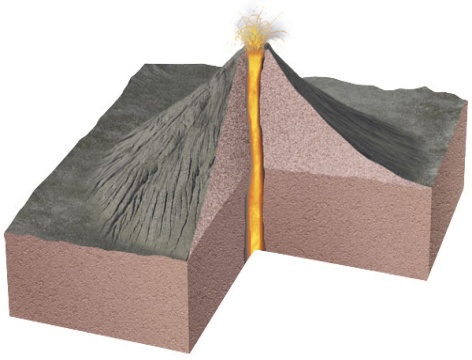
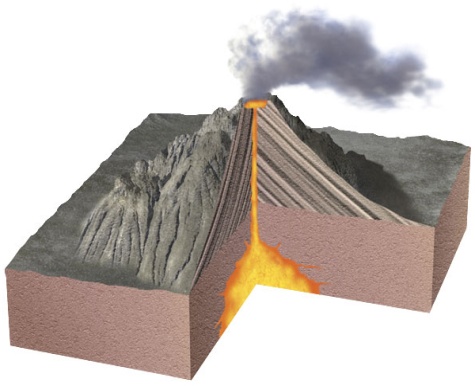
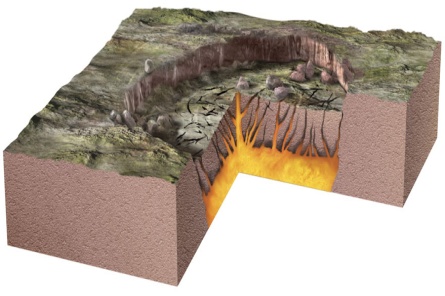
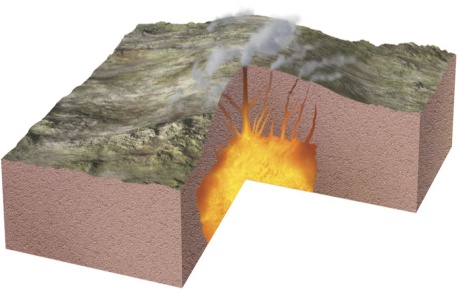
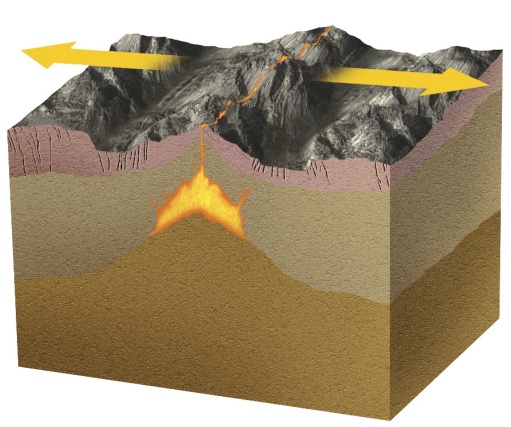
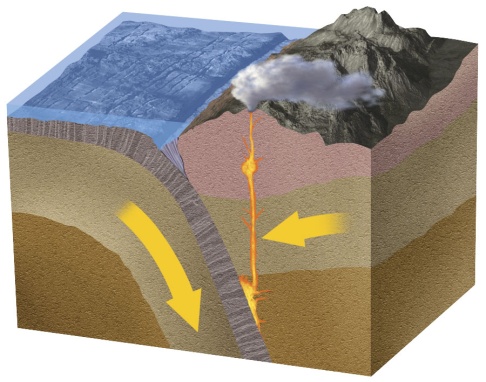
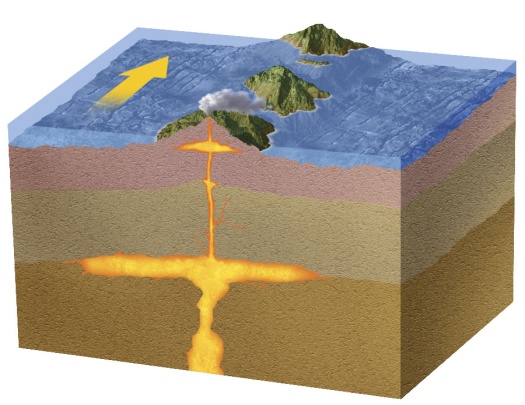
Unit 4 Lesson 4 Volcanoes Notes

1. What is a volcano?
   1. A **volcano** is any place where gas, ash, or melted rock come out of the ground.
   2. Many volcanoes are *dormant*, meaning an eruption has not occurred in a long period of time.
   3. Volcanoes form as rock below Earth’s surface melts. The melted rock, called **magma**, is less dense than solid rock, so it rises to the surface.
   4. **Lava** is magma that has reached Earth’s surface. Lava and ash erupt from a **vent**, or an opening of a volcano.
   5. 
2. What are the kinds of volcanic landforms?
   1. The location of a volcano and composition of magma determine the type of volcanic landforms created.
   2. Volcanic landforms include shield volcanoes, cinder cones, composite volcanoes, lava plateaus, craters, and calderas.
   3. Volcanic mountains are built from materials ejected from a volcano.
   4. The shape and explosiveness of a volcano depend on the lava’s *viscosity*, or resistance to flow.
   5. *Pyroclastic material*, or hot ash and bits of rock, may also be ejected into the atmosphere.
   6. Shield Volcanoes
      1. *Shield volcanoes* are volcanoes with broad bases and gently sloping sides.
      2. They are the result of mild eruptions.
      3. 
   7. Cinder cones
      1. *Cinder cones* are small volcanoes with steep slopes.
      2. They form from ash and pieces of solidified lava that fall around a small vent.
      3. 
   8. Composite Volcanoes
      1. *Composite volcanoes* are built from alternating layers of hardened lava flows and pyroclastic material.
      2. They generally develop into large, steep mountains.
      3. 
   9. Fissures
      1. Fissure eruptions happen when lava flows from giant cracks, or *fissures*, in Earth’s surface.
      2. Because fissures have no central opening, lava flows out the entire length of the fissure.
      3. Fissure eruptions produce a flattened layer of cooled lava called a *lava plateau*.
   10. Craters
       1. A *volcanic crater* is an opening or a depression at the top of a volcano.
       2. A crater is caused by eruptions.
   11. Inside the volcano, molten rock can form an expanded area of magma called a *magma chamber*
   12. When the magma chamber empties, the roof of the chamber can collapse, leaving a large basin-shaped depression called a *caldera*.
   13. 
3. Where do volcanoes form?
   1. **Tectonic plates** are giant sections of lithosphere on Earth’s surface. Volcanoes can form at plate boundaries or within the middle of a plate.
   2. At *divergent plate boundaries*, where two plates are moving away from each other, fissure eruptions are likely to occur.
   3. At *hot spots*, which are far from any plate boundaries, shield volcanoes, fissure eruptions, and cinder cones can occur.
   4. Convergent plates
      1. At *convergent plate boundaries*, composite volcanoes can occur.
      2. Composite volcanoes produce the most violent eruptions.
      3. The *Ring of Fire* is a name for the numerous explosive volcanoes that form on convergent plate boundaries surrounding the Pacific Ocean.
   5. Divergent plates
      1. At divergent boundaries, the crust stretches and gets thinner.
      2. As a result, the pressure on the mantle rock below decreases, and magma rises through fissures in the lithosphere.
      3. Divergent plate boundaries create fissure eruptions and shield volcanoes.
      4. Most divergent boundaries are on the ocean floor. When eruptions occur in these areas, undersea volcanoes develop. These volcanoes and other processes lead to the formation of a long, underwater mountain range known as a *mid-ocean ridge*.
      5. When a divergent boundary is located in the middle of a continent, the crust stretches until a rift valley is formed.
      6. 
   6. At convergent boundaries, one plate usually sinks beneath the other. The mantle above the sinking plate can melt to form magma.
   7. The magma rises to the surface and forms volcanoes.



* 1. Magma at convergent boundaries has a high concentration of fluids, which form gas bubbles.
  2. Because the magma has a high viscosity, the bubbles cannot escape easily. As the bubbles expand, the magma rises faster.
  3. Eventually, the magma erupts explosively, forming composite volcanoes or calderas.
  4. **Hot spots** are locations far from plate boundaries where a *mantle plume,* a column of extremely hot mantle rock, rises and produces volcanoes.



* 1. Chains of volcanoes can form over time as a tectonic plate moves over a mantle plume.

1. Living Near a Volcano
   1. Many people around the world live near a volcano because the surrounding soils are fertile for growing a variety of crops.
   2. Volcanic rocks can be used in making jewelry, concrete, water filtration systems, and other applications.
   3. However, an eruption can produce destructive earthquakes, fire, ash, and lava flows, destroying property and taking lives.