Volcanoes

A. Terms to Know
   1. Volcanism – the movement of magma toward or onto the surface of the Earth
   2. Volcano – an opening in Earth's surface that often forms a mountain when **strata** or layers of lava and volcanic ash erupt and build up

B. How Volcanoes erupt/Parts of a Volcano
- magma experiences a rise in temperature or a drop in pressure and becomes less dense that the rock around it
- magma from a **magma chamber** deep in the earth is slowly forced upward toward the surface
- magma travels through an opening called a **central vent**
- once magma reaches the surface it becomes **lava**
- as it flows out, it cools quickly and forms layers of **extrusive igneous rock**
- the **crater** is the steep walled depression around a volcano's vent

C. Where Volcanoes Form

   1. Divergent Plate Boundary
      - occurs when the plates move apart form each other
      - where plates separate, they form long, deep crack called **rifts**
      - as more lava flows, it builds up the sea floor
      - sometimes there is enough buildup to form an island **(Iceland)**

   2. Convergent Plate Boundary
      - occurs when plates move together
      - one plate is pushed under another **(Subduction)**
      - as one plate moves deeper into the earth it melts due to increased temperature
      - two results are a **trench** and a **volcano**
      - **Mt. Saint Helens** is an example

   3. Hot Spots
      - some areas of the mantle are hotter than others
      - these hot sports melt rock which is forced upward toward the crust as magma
      - magma melts through the crust to form a volcano
      - over time those build up enough to form **the Hawaiian Islands**

D. Types of Eruptions
   1. violent – Mt. Saint Helens
   2. gentle & quiet – Hawaiian Islands, Iceland

E. Factors that determine the type of volcanic eruption
   1. Composition of magma
   2. Temperature of magma
   3. Dissolved Gases in magma

Composition	Silica Content	Viscosity (fluidity)	Gas Content	Tendency to form Pyroclastics	Volcanic Landform
Balsitic Magma	Least (- 50%)	Least	Least (1 – 2%)	Least	Shield Volcanoes Some Cinder Cones
Andesitic Magma	Intermediate (- 60%)	Intermediate	Intermediate (3 – 4%)	Intermediate	Cinder Cones Some Composite Cones
Rhyolitic Magma	Most (- 70%)	Greatest	Greatest (4 – 6%)	Greatest	Composite Cones Some Volcanic domes

F. Types of Volcanoes
1. Shield Volcano – broad volcano with gently sloping sides (Hawaiian Islands)

2. Cinder Cone – steepest-sided, loosely packed volcano formed from tephra (Sunset Crater)

3. Composite Cone – volcano with fairly steep sides, formed from alternating layers of tephra and lava (Mt. St. Helens, Mount Rainier)

G. What Comes Out of a Volcano
1. Tephra – **4 types**
   - Ash – fine/small in size
   - Lapilli – small to medium in size
   - volcanic bombs – medium to coarse in size
   - volcanic blocks – coarse to large in size

2. Lava – **3 types**
   - Basaltic flow – fluid lava flow
   - Pahoehoe flow – lava flow that wrinkles
   - Aa flow – lava flow with rough edges

H. Additional Terms to Know
1. dike – magma hardened in a vertical crack **(Pluton)**
2. sill – magma hardened in a horizontal crack **(Pluton)**
3. laccoliths – lens shaped structure composed of viscous magma **(Pluton)**
4. batholiths – largest pluton, mountain that forms form layers of lava and ash **(Pluton)**
5. stock – formed the same way as a batholith but it is much smaller in size **(Pluton)**
6. volcanic neck – solid magma core exposed when volcano cone erodes away **(Pluton)**
7. caldera – a volcano that has had its top collapse forming a large depression that often fills with water (ex. Crater Lake, Mount Kilauea)
8. lahar – a mudflow as a result of a volcano

Be able to identify pictures of plutonic features.