

Unit 1 (Q4): Volcanoes Study Guide

Summary:

- We think of volcanoes as a type of mountain, and most are. All volcanoes are weak spots in the crust that erupt **LAVA, TEPHRA**, gases, and steam.
- Like earthquakes, volcanoes are powered by **PLATE TECTONICS**, and occur at **CONVERGING** boundaries, **DIVERGING** boundaries, and **HOT SPOTS**. Volcanoes are most common along the Pacific Ocean's **RING OF FIRE**.
- Volcanoes form when **MAGMA** welling up from the mantle (or from melted, **SUBDUCTED**, oceanic crust) rises through the Earth until it finds a weak spot and erupts onto the surface.
- Volcanic eruptions can trigger earthquakes and tsunamis, and earthquakes can trigger volcanoes. Millions of people live close by **ACTIVE** volcanoes along coastlines throughout the world. The dangerous hazards of large volcanic eruptions can kill thousands of people and even change climate worldwide.

Magma / Eruption / Volcano Types:

Magma Type	Eruption Type	Volcano Type
Mafic "runny" magma	Quiet	Lava field, shield volcano, composite volcano (<i>sometimes</i>)
Felsic "sticky" magma	Explosive	Cinder cone, composite volcano (<i>usually</i>)

Flash Card Vocabulary: volcano, Ring of Fire, hot spot, viscosity, magma chamber, pyroclastic flow, lahar, geothermal activity, magma vs lava, pahoehoe vs aa, crater vs caldera, dormant vs extinct vs active, shield vs cinder vs composite (stratovolcano)

Advanced Vocabulary: vent (main, side), pipe (neck), sill, dike, mafic magma, felsic magma, quiet eruption (effusive, Hawaiian), explosive eruption, lava field (plateau), tephra, scoria, fissure, lava tube (lava cave)

Review Vocabulary: converging boundary, subduction, diverging boundary, transform boundary, Ring of Fire, megathrust earthquake, mantle plume

Concepts:

- Where do volcanoes occur? Where are they the most common? Do volcanoes occur along transform plate boundaries, like the San Andreas Fault in Southern California?
- How common are super volcanic eruptions? How likely is it that the Yellowstone Caldera will erupt in our lifetimes?
- As volcanoes are so dangerous, why do millions of people live so close to them?
- What are the hazards you should be aware of during a volcanic eruption?
- What is erupted onto Earth's surface during a quiet eruption? What kind of volcanoes or volcanic landforms do quiet eruptions form?
- What is erupted during an explosive eruption? What landforms to these eruptions form?
- Does Idaho have active volcanoes? Where are most of Idaho's volcanic features found?
- Understand the "anatomy" of a volcano.
- Understand how the different types of magma lead to different eruption types and different types of volcanoes.
- How does viscosity affect magma and lava? What is the difference between mafic and felsic magma, between pahoehoe lava and aa lava?
- Understand the four basic volcano types, how they are formed, what they are made of, and how they erupt.

