

## **Earth Science: Benchmark 2 Study Guide**

**Standard 3.0 – Students know plate tectonics operating over geologic time has changed the patterns of land, sea, and mountains on Earth's surface.**

3.b (6 questions on benchmark) know principal structures that form at 3 different plate boundaries.

### **WHAT YOU NEED TO KNOW:**

- What are the 3 plate boundaries?
- What structures form at convergent boundaries?
- What structures form at divergent boundaries?
- What structures (if any) form at transform or transverse boundaries?

3.c (3 questions on benchmark) know how to explain the properties of rocks based on physical and chemical conditions under which they formed, including tectonic processes.

### **WHAT YOU NEED TO KNOW:**

- What is igneous rock, how does it form and what are its physical properties?
- What is metamorphic rock, how does it form, and what are its physical properties?
- What is sedimentary rock, how does it form, and what are its physical properties?
- What is the role of tectonic processes in the formation of igneous, metamorphic and sedimentary rock?

3.d (4 questions on benchmark) know why and how earthquakes occur and the scales used to measure their intensity and magnitude.

### **WHAT YOU NEED TO KNOW:**

- What are the forces working to cause an earthquake?
- At what type of plate boundary do earthquakes typically occur?
- What is the difference between a seismograph and a seismogram?
- What is the difference between the epicenter and the focus of an earthquake?
- What are P-waves, S-waves and Surface waves, and in what order do they occur?
- What is the difference between an earthquake's intensity and its magnitude?
- What scale is used to measure intensity?
- What scale is used to measure magnitude?

3.e (7 questions on benchmark) know two kinds of volcanoes, one with violent eruptions producing steep slopes and the other with voluminous lava flows producing gentle slopes.

### **WHAT YOU NEED TO KNOW:**

- What are the 2 major types of volcanoes (not including Cinder Cone Volcanoes)?
- What type of volcano is the typical volcano with steep slopes and violent eruptions?
- Where do “Composite Cone” volcanoes typically form?
- How do “Composite Cone” volcanoes typically form?
- What type of volcano has large lava flows and gentle slopes like in Hawaii?
- Where do “Shield” volcanoes typically form?
- How do “Shield” volcanoes typically form?

Standard 9.0 – Students know the geology of California underlies the state's wealth of natural resources as well as its natural hazards.

*9.a (6 questions on benchmark) know the resources of major economic importance in California and their relation to California's geology.*

**WHAT YOU NEED TO KNOW:**

- What are the resources of major economic importance in California?
- What economic minerals contribute most to California's economy?
- How does gold and silver mined in California form?
- Where in California can gold, silver and iron be found?
- How are evaporites (like boron minerals) formed?
- Where in California do evaporites form?
- How did California's oil and natural gas form?
- What is most of the freshwater in California used for?
- How did the soil of California's Central Valley become so fertile?
- What is an Aqueduct and the “California Water Project”?
- Where does most of California's freshwater come from?
- Where does most of Southern California's freshwater come from?
- What makes California a good place for “Geothermal” energy?

*9.b (6 questions on benchmark) know the principal natural hazards in different California regions, and the geological basis of those hazards.*

**WHAT I NEED TO KNOW:**

- What are the major natural hazards in California?
- Where do earthquakes typically occur in California?
- What is liquefaction and why does it happen?
- Where in California are people most in danger of Volcanic activity?
- What geologic formation/natural hazards are typical of Long Valley Caldera and Lassen Peak?
- What is the main reason for flooding in California?
- What is a tsunami and what causes it?
- Why are the causes of mudslides in California?