

# Chapter 12 Earthquakes Review Key

## Section 1 Review Answers

1. Elastic rebound happens when pieces of the crust that have been stretched out of shape by stress suddenly snap back to their original shapes. The motion of the pieces of crust releases energy, which causes the ground to shake in an earthquake.
2. At plate boundaries, plate edges are moving relative to one another. The movement of the plates puts stress on the rocks at the plate edges. The stress can build up and cause the rock to move, producing earthquakes.
3. P waves move the ground parallel to the direction that the wave is moving. S waves move the ground perpendicular to the direction the wave is moving. P waves can travel through solids, liquids, and gases, but S waves can travel only through solids. P waves move more quickly than S waves.
4. Shadow zones are spots on Earth's surface where one type of seismic wave does not reach. They exist because P waves and S waves bend as they travel through different materials. The bending prevents the waves from reaching some parts of Earth.

## Section 2 Review Answers

1. A seismograph is a machine that records seismic waves on a seismogram.
2. The same earthquake can have a different intensity in different places. Many factors affect the intensity of an earthquake in an area. For example, the first city might have been farther from the epicenter than the second city was.
3. Seismographs from several places record the P waves and S waves from the earthquake. A computer analyzes the seismograms from the different areas. It determines how far away each area is from the epicenter. It uses this information to determine where the epicenter is.
4. The student should draw S waves and surface waves on the Shaketown seismogram that are farther apart (and farther from the P waves) than they are in the seismogram from Quakeville.

## Section 3 Review Answers

1. An earthquake causes the ocean floor to drop. A huge amount of water drops with the ocean floor. The dropping of the water starts a series of huge waves. The waves get taller as they move closer to shore, and they become a tsunami.
2. A seismic gap is an area along a fault zone that has not had a strong earthquake in a long time. Scientists think that strong earthquakes are likely to occur along a seismic gap.
3. The shaking from the earthquake can cause the building's walls to collapse. If the building is on soft soil, the building may fall over.
4. Possible answers: They may have found natural gas or water in cracks in the rocks. They also may have found broken or shattered rocks. If they looked at the level of the ground, they may have seen that it was tilted.
5. first column: Possible answer: put bottled water, a radio, and other supplies in an earthquake kit; make a plan with your family about where you will meet second column:

Possible answer: stay away from heavy things that may fall; stay under a desk, in a doorway, or in a car third column: Possible answer: check for fires; be prepared for aftershocks

## **Chapter 13 Volcanoes**

### **Section 1 Review Answers**

1. Possible answer: Volcanism is any process that involves magma coming to Earth's surface.
2. first row, from left to right: An oceanic plate collides with another plate and sinks into the mantle.; The sinking plate releases fluids into the rock above it, causing the rock to melt. second row, from left to right: Hot spots; As the plume rises, the pressure on it decreases. The decreased pressure causes the rock to melt. third row: Mid-ocean ridges
3. A volcano forms when magma erupts on Earth's surface. A pluton forms when magma cools and hardens below Earth's surface.
4. The student should circle three dots that are not near plate boundaries.

### **Section 2 Review Answers**

1. Mafic lava is less viscous than felsic lava. In addition, felsic lava tends to contain more dissolved gases than mafic lava does. Because felsic lava is viscous, the gases cannot easily escape. Instead, they cause the lava to explode.
2. Lapilli and volcanic blocks are both types of pyroclastic material made from pieces of solid rock. Lapilli have diameters between 2 mm and 64 mm. Volcanic blocks have diameters greater than 64 mm.
3. Magma rises and erupts on Earth's surface. This partially empties the magma chamber below the volcano. The volcanic cone collapses inward into the magma chamber, leaving behind a pit. This pit is the caldera.
4. An explosive eruption would be more likely to increase the steepness of a volcanic cone. In a quiet eruption, the lava flows and spreads out over a large area. In an explosive eruption, pyroclastic material piles up much higher. That's why cinder cone volcanoes have steeper sides than shield volcanoes.
5. To predict volcanic eruptions, scientists must first recognize patterns in earthquakes, ground movement, and gas composition around a volcano. By studying volcanoes that are not erupting, scientists can figure out these patterns so they will be better able to predict if the volcanoes will erupt again.