

Name \_\_\_\_\_

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Write your notes  
about what you are  
reading in this space.

## Science Shorts -8

### The Ring of Fire and Plate Tectonics

In the 1960's, scientists studied the area known as the Ring of Fire. The Ring of Fire is a horseshoe-shaped zone that stretches along the rim of the Pacific Ocean. It is 25,000 miles (40,000km) long. Even though this seems like a large area, it is only about one percent of the Earth's surface. So why do half the world's active volcanoes and eighty percent of the earthquakes occur in this zone? It is called plate tectonics.

The Earth's crust is not formed in one huge piece. It is divided into large sections of rock called tectonic plates. Tectonic plates are like giant rafts drifting in slow motion. They move just a few inches per year. The Earth's plates bump into each other. When they do this, one of the plates sinks beneath the other plate. This is called the process of subduction. The grinding movements of subduction cause many earthquakes and volcanoes to occur. Earthquakes and volcanoes occur on the edges of the tectonic plates. Many tectonic plates surround the Ring of Fire area.

Over a million earthquakes a year rattle the Earth. Thousands of the earthquakes happen along tectonic plates in the Ring of Fire. Where the tectonic plates meet, there are large faults, or breaks, in the Earth's crust. Faults are where most earthquakes occur. For example, the San Andreas Fault in California is 650 miles (1,040km) long. It is a common place for earthquakes.

Half of the 1,500 active volcanoes occur along the Ring of Fire. Volcanoes happen when magma breaks through weak areas or cracks in the tectonic plates. This can happen violently in an explosion. Or it can happen more slowly, causing lava to pour out of the volcano. Mount St. Helens in the state of Washington erupted violently in 1980. The volcano Kilauea, on the island of Hawaii, has been erupting since 1983. Lava slowly runs into the ocean, where it cools and hardens into rock.

Tsunamis are giant waves that can travel thousands of miles. After an earthquake or volcano erupts, a shock wave can ripple into the nearby ocean. This is what starts a tsunami moving. They can travel up to 500 miles per hour! As they get closer to shore, they slow down and get taller. The biggest tsunami in history came after Indonesia's Krakatoa volcano erupted in 1883. Thirty-six thousand people died from this giant wave. Along the Ring of Fire, earthquakes, volcanoes and tsunamis are constantly changing the Earth.

Fill in the bubble to answer each question or complete each sentence.

1. What are tectonic plates?
  - Ⓐ magma beneath the Earth's surface
  - Ⓑ giant waves
  - Ⓒ rafts floating on the ocean
  - Ⓓ huge slabs of rock on the Earth's surface
  
2. The edge of one plate sinking beneath the edge of another plate is a process called \_\_\_\_\_.
  - Ⓐ tectonics
  - Ⓑ subduction
  - Ⓒ faults
  - Ⓓ eruption
  
3. An earthquake occurs along a fault. What is a fault?
  - Ⓐ a break in the Earth's crust
  - Ⓑ a giant raft
  - Ⓒ the grinding movements of the plates
  - Ⓓ lava pouring into the ocean
  
4. Where do most of the world's volcanoes occur?
  - Ⓐ New Zealand
  - Ⓑ North America
  - Ⓒ the Philippines
  - Ⓓ along the Ring of Fire
  
5. Where do most earthquakes and volcanoes happen in the Ring of Fire?
  - Ⓐ in the middle of the Pacific Ocean
  - Ⓑ in the northern part of the zone
  - Ⓒ along the edges of the tectonic plates
  - Ⓓ along the coast of California
  
6. What causes the Ring of Fire's earthquakes and volcanoes?
  - Ⓐ Earth's plates bump into each other.
  - Ⓑ Earth's plates get heavy.
  - Ⓒ Earth's plates get too light.
  - Ⓓ Earth's plates move too slowly.
  
7. What are tsunamis?
  - Ⓐ volcanoes
  - Ⓑ earthquakes
  - Ⓒ new volcanic islands
  - Ⓓ giant waves