

# Explore Earthquakes!

## phenomenal science

**Have you ever felt an earthquake?** If you have, you'd know it's a sickening feeling. It seems impossible that the entire earth can move so dramatically, but during an **earthquake** it actually does.

So how does the ground shake and move the way it does during an **earthquake**? In order to answer that question, it's important to know exactly what is happening. An **earthquake** is a vibration that travels through the earth's crust. **A volcanic eruption, a large meteor impact, or any sort of big underground explosion** can create that vibration.

The most common cause of **earthquakes** are the earth's **tectonic plates**. These plates are in constant motion and when they bump into one another it can cause underground vibrations. Each year, more than *three million earthquakes* are an after effect of **tectonic plates** moving.

There are three different ways for plates to interact with each other. In a **normal fault**, the plates are separating. In a **reverse fault**, the plates are running into each other. In a **slip fault**, the plates move in opposite directions, with one plate sliding against the other. **Slip faults** cause the most dramatic **earthquakes**. The edges of these plates can actually lock together as they slide against each other, building up pressure. Then, in an instant, the pressure releases.

When the shift occurs in the earth's crust, the energy radiates **seismic waves**. These waves are like waves of water in a pond, but here the waves radiate through the earth and make the ground shake. There are three kinds of waves: **P waves, S waves, and L waves**. **P waves** cause the thud in the beginning of the quake, while **S waves** and **L waves** cause the most damage because they both move plate foundations.

The largest **earthquake** ever registered on earth measured 9.5 on the **Richter scale**. **Earthquakes** that register at 3 aren't usually felt by humans. For us to feel an **earthquake**, it must measure around 5 on the **Richter scale**.

## Historical Earthquakes

1811

### Madrid Missouri Quakes

These earthquakes happened along the Mississippi river, lasting for months. These quakes actually caused the river to run backwards.

1906

### San Francisco Earthquake

One of the most famous US disasters, the fires started by this earthquake actually did more damage than the quake itself.

1970

### Ancash Earthquake

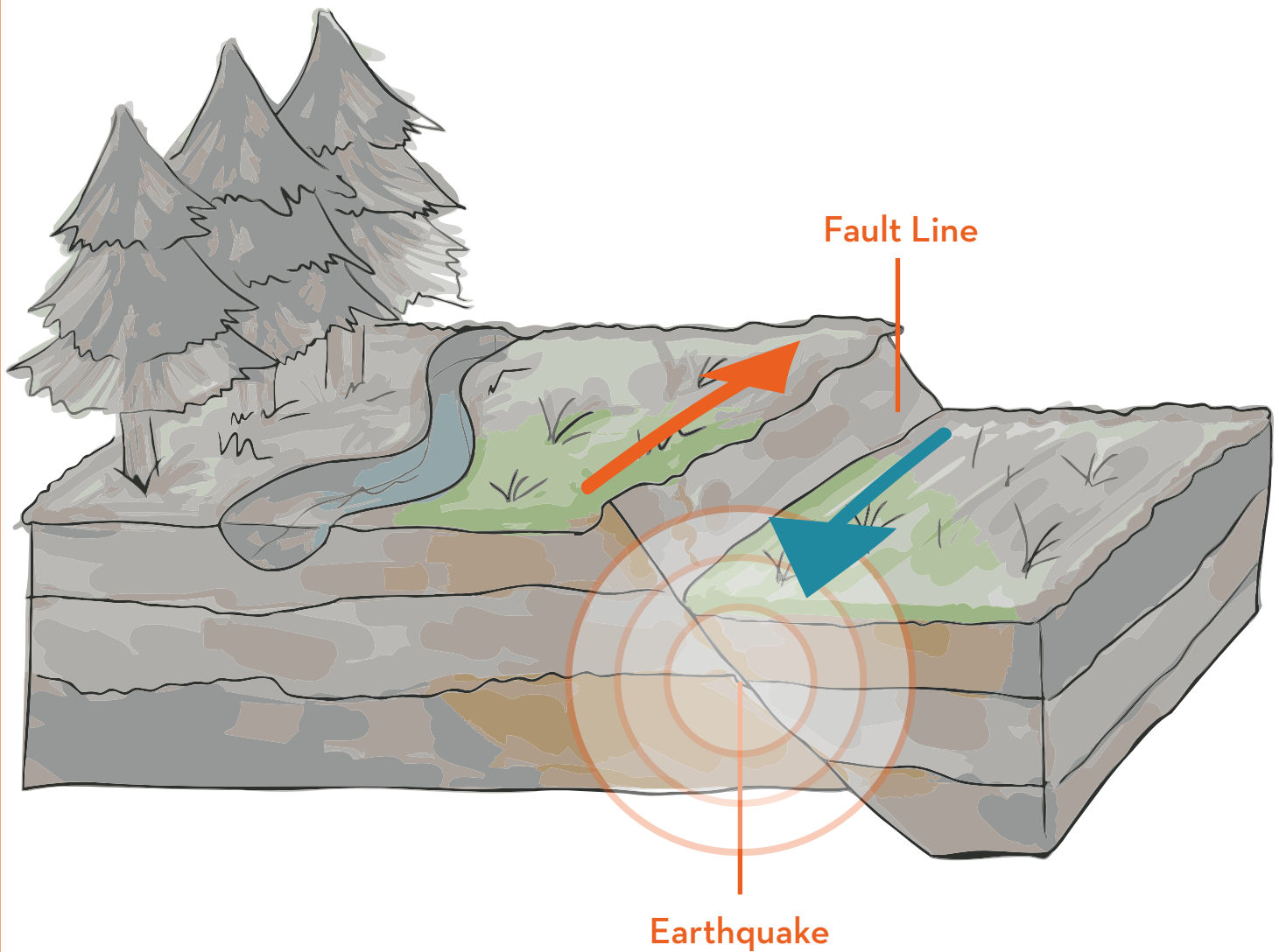
One of the biggest earthquakes ever recorded, the Ancash earthquake caused landslides, destroyed homes and took away many lives. This quake hit 7.8 on the Richter scale.

## Safety Tips

- 1 Stay away from windows.
- 2 Stay indoors.
- 3 Take cover under a sturdy piece of furniture.
- 4 Secure shelves and heavy objects against the wall.
- 5 Plan an earthquake preparation kit with your family.
- 6 If advised to evacuate, do so immediately.
- 7 Stay away from electrical wires.

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**After reading the article on earthquakes, please answer the following questions:**

Name two different events that would cause an earthquake. \_\_\_\_\_

What are the three ways tectonic plates interact with each other? \_\_\_\_\_

What are seismic waves? \_\_\_\_\_