An earthquake is the sudden movement of one tectonic plate past another, along a fault. Because of friction, faults resist the forces trying to move the plates apart.

The pressure builds up, and rocks become deformed from the stress. Eventually the stress causes the fault to break. The ground shakes violently. The pressure is released as energy that moves in waves. These waves help us to measure an earthquake.

There are several ways to measure the size of an earthquake. The most scientific measurement is the Richter scale. This scale was developed by Charles Richter in the 1930's. Although it is used to measure the magnitude of earthquakes, it is not an instrument. It is a mathematical formula.

Earthquakes generate seismic waves that travel on and below the earth's surface. These waves are detected by an instrument called a seismograph. A mechanical seismograph has a pen attached to a heavy weight. It is suspended over a moving roll of paper. The paper is attached to a frame which is bolted to the ground. As the ground shakes, the paper moves back and forth. The pen marks the waves as squiggles on the paper.

A print out from a seismograph is called a seismogram. It looks like a lie detector test. As the paper rolls, most of the seismogram will be a flat line. When the ground shakes, the zigzags made by the pen become larger.

A seismologist is a scientist who studies earthquakes. They use the seismogram to determine how strong the earthquake was according to the Richter scale. This scale uses a logarithmic scale based on ten.

You have probably heard of an earthquake measuring 6.5 or 7.2 on the Richter scale. Each whole number on the scale represents a magnitude ten times greater than the one before it.

The strength of an earthquake can be compared to the energy released when blowing up dynamite. A magnitude 1 earthquake is like blowing up six ounces of TNT.

A magnitude eight quake is like blowing up six million tons of TNT! Luckily, most earthquakes are 2.5 or less. Most people can't feel these small tremors.

The Richter scale helps scientists classify earthquakes. Classes range from minor to great. A minor quake is 3 to 3.9 on the scale. Light is 4 to 4.9. Moderate is 5 to 5.9. 6 to 6.9 is considered strong. A major earthquake measures 7 to 7.9. An earthquake measuring 8 or more is classified as great. Luckily, a great earthquake only occurs once every five to ten years.

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Measuring Earthquakes

By Mr. Schain

Name _____________________________  Date ___________________

1. The Richter scale is:
   - ☑ An instrument
   - ☐ A seismograph
   - ☐ A mathematical formula

2. What is a seismograph used for?
   ________________________________________________________________
   ________________________________________________________________

3. A print out from a seismograph is called a:
   - ☑ Seismogram
   - ☐ Seismic wave
   - ☐ Seismologist

4. How does each whole number on the Richter scale compare to the one before it?
   ________________________________________________________________
   ________________________________________________________________

5. An earthquake with a magnitude of 8 on the Richter scale is like blowing up how much TNT?
   - ☑ Six million tons
   - ☐ Six ounces
   - ☐ Six tons

6. How often does a great earthquake occur?
   ________________________________________________________________
   ________________________________________________________________