

## Earthquakes

The Earth's structure consists of four main layers: the solid inner core, the liquid outer core, the mantle, and the thin outer crust on which we live. The crust is fractured into approximately twelve major tectonic plates and several smaller ones. Driven by convection currents within the mantle – caused by intense heat from the Earth's core – these plates are in constant, slow motion.

Plate boundaries are classified into three types. Constructive boundaries occur where plates diverge, allowing magma to rise and form new crust. Destructive boundaries form where one plate is forced beneath another in a process called subduction, often producing volcanoes as well as earthquakes. Conservative boundaries exist where plates slide horizontally past each other. The famous San Andreas Fault in California is an example of this type.

Earthquakes occur when built-up stress along a fault line is suddenly released. The point of origin underground is the focus (also called the hypocentre), and the epicentre is located on the surface directly above. Energy travels outward as seismic waves, of which there are different types: P-waves (primary) and S-waves (secondary) travel through rock at different speeds.

Seismologists use seismometers to detect these waves, and results are displayed on a seismograph. Earthquake strength is quantified using the Richter Scale or Moment Magnitude Scale. Regions situated along major plate boundaries, known as seismic zones, such as the Pacific Ring of Fire, are particularly vulnerable to seismic activity.

## Questions

1. Name the four layers of the Earth's structure.
2. How many major tectonic plates does the Earth have?
3. What drives the movement of tectonic plates?
4. What happens at a constructive plate boundary?
5. What is subduction?
6. What type of boundary is the San Andreas Fault?
7. What is a fault line?
8. What is another name for the focus of an earthquake?
9. Name the two types of seismic wave mentioned in the article.
10. Why do you think the Pacific Ring of Fire might experience a large number of both earthquakes and volcanoes?



Text D Quiz



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