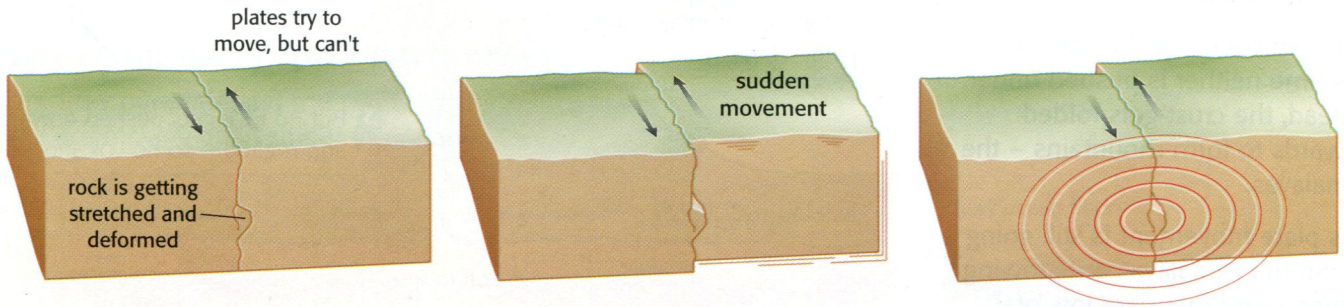


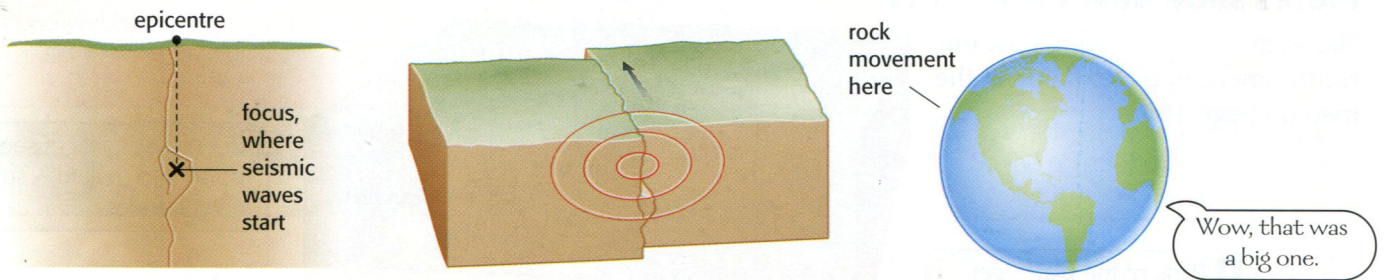
## What is an earthquake?



When two plates are sliding past each other, parts get locked like teeth. Enormous tension builds up.

Suddenly, rock gives way. The plates lurch forward. Tension is released, and waves of energy ...

... called **seismic waves** travel in all directions. The **earthquake** is the vibrations they cause.



The **focus** of the earthquake is the point where the rock gives way. The **epicentre** is directly above it on the Earth's surface.

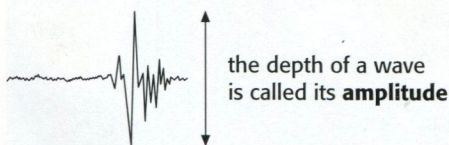
As the rocks settle into their new positions, there will be lots of smaller earthquakes called **aftershocks**.

A large earthquake and its aftershocks can be detected thousands of kilometres away, on the other side of the Earth.

Any large rock movement will cause an earthquake. That explains why earthquakes occur along the edges of plates. But even the collapse of an old mine shaft can cause a small one.

## How are earthquakes measured?

- ◆ Earthquakes are measured using machines called **seismometers**.
- ◆ A graph of the vibrations is called a **seismograph**. This is part of one:



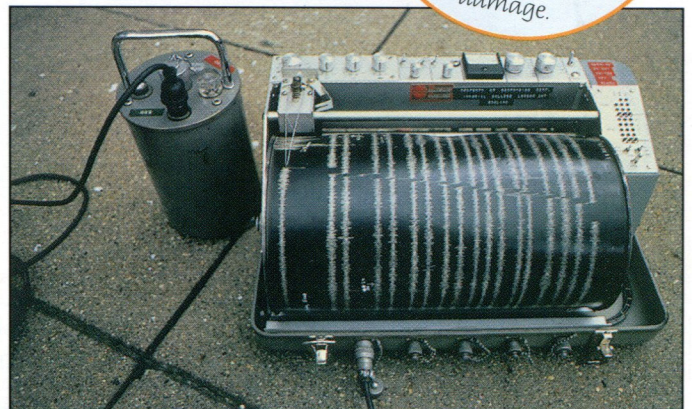
The more the ground shakes to and fro, the greater the amplitude of the waves.

- ◆ You can tell where the epicentre of an earthquake was, by comparing seismographs recorded at different places.

**Did you know?**

- ◆ There are over 1 million earthquakes a year.
- ◆ Around 20 a year cause severe damage.

▼ A portable seismometer.



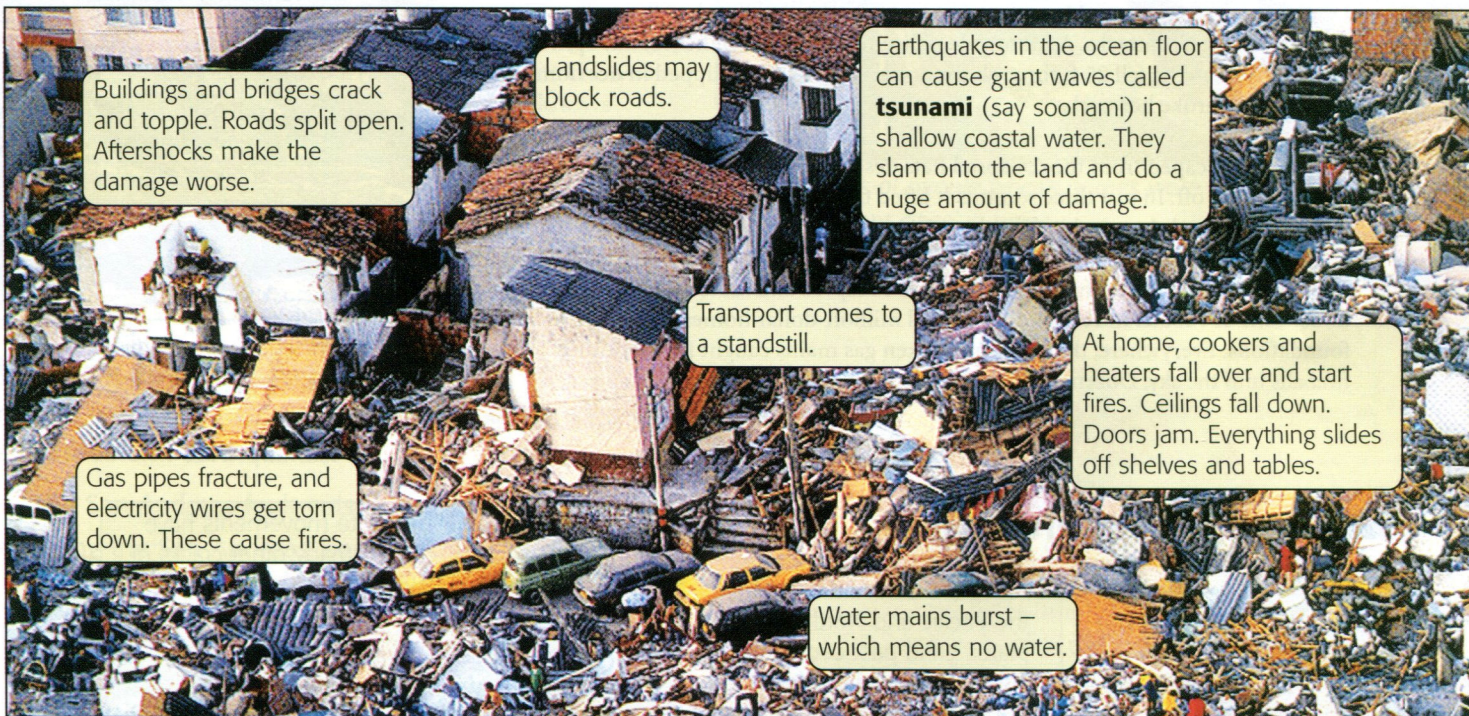
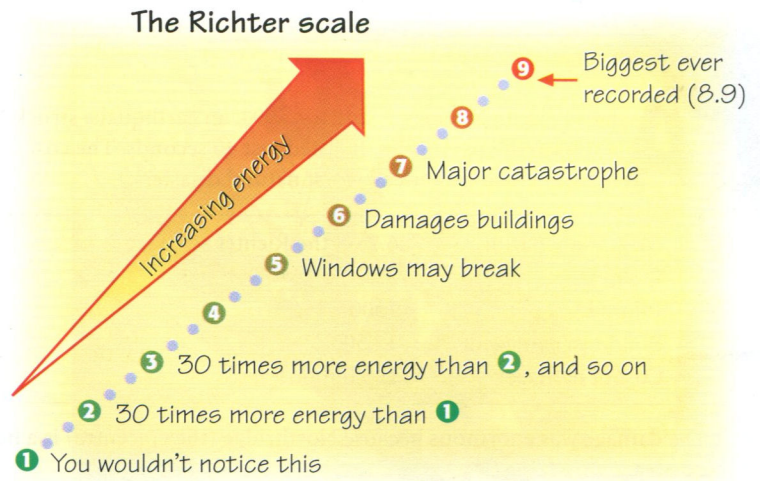
## How big?

- ◆ The amount of energy released in an earthquake is called its **magnitude**.
- ◆ It is measured on the **Richter scale**.
- ◆ An increase of 1 on this scale means a 10-fold increase in the *amplitude* of the waves and a 30-fold increase in their *energy*.

So far, no earthquake has measured more than 8.9 on the Richter scale. Rock usually gives way before it can store up this much energy!

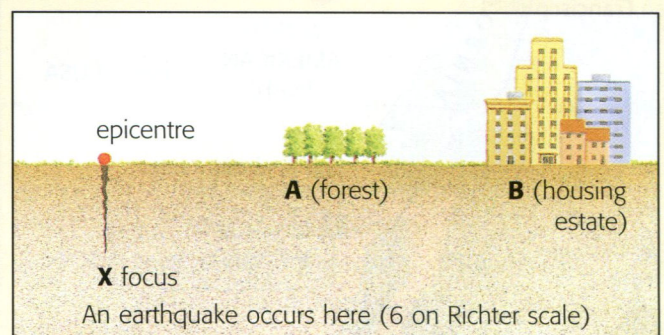
## What harm can earthquakes do?

A large earthquake makes everything shake. So ...



## Your turn

- 1 Why do earthquakes happen so suddenly?
- 2 Write out and complete these.
  - a A seismic wave is ...
  - b The focus of an earthquake is ...
  - c The epicentre of an earthquake is ...
  - d The magnitude of an earthquake means ...
  - e A seismograph is ...
- 3 Look at the diagram on the right.
  - a Will the vibrations be stronger at A, or at B? Why?
  - b Will the damage be greater at A, or at B? Explain.
  - c Will an earthquake of magnitude 7 do more damage than this one, or less? Why?



- 4 An earthquake can occur at any time of day. At which time might an earthquake do more harm at B above?
 

at 5 am                      at 9.30 am

 Explain your answer.