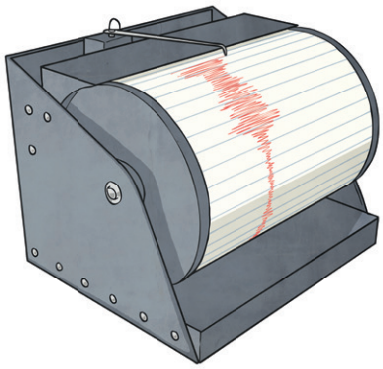
Earthquakes

The Earth's Crust

The Earth's crust and the top of the mantle have about twenty tectonic plates, which are like jigsaw pieces covering the Earth. These plates are always moving and bumping into each other. The edges of the plates are called 'plate boundaries', which are made up of faults. These faults are where most of the world's earthquakes occur. As the plates move, the edges get stuck because they are not smooth, but the rest of the plate keeps moving. When the force is too much, it slips and bumps and that causes an earthquake. A bit like when you pull something which gets caught, you pull it some more until it comes free with a big force.



Seismograph

A seismograph (say: size-mo-graf) is a special piece of equipment that records earthquakes. Seismometers are securely fastened to the Earth, so when the ground starts to shake, the instrument's case moves too. What doesn't move is a weight that hangs on a string inside the case. When there is an earthquake, the case shakes with the ground but the weight does not, and it draws a line to show how much the ground shook. Scientists use seismograms (graphs produced by the seismograph) to measure how big each earthquake is.

Interesting Fact

In 2009, in a place called L'Aquila in Italy, there was an earthquake that killed 309 people. In relation to the earthquake, a case went to court and it was decided that it was the fault of six Italian scientists who should have known it was coming and warned people. They were sent to prison for manslaughter (killing someone without planning or being hateful) but argued their case and won, so they did not have to go to prison after all.

You could try to find out:

1. How earthquakes are measured.
2. How easy they are to predict.
3. About other cases where prison sentences have been handed out in unusual circumstances.
4. How you go about arguing a decision made by a court.

Questions About Earthquakes

1. How many tectonic plates are there?

There are...

2. What are plate boundaries?

Plate boundaries are...

3. What does it mean when we say 'predicting earthquakes'?

Predicting earthquakes means...

4. Describe what causes earthquakes.

Earthquakes are caused by...

5. What is a seismograph?

A seismograph is...

Questions About Earthquakes

Answers

1. **How many tectonic plates are there?**

   There are twenty tectonic plates.

2. **What are plate boundaries?**

   Plate boundaries are the edges of the Earth's tectonic plates.

3. **What does it mean when we say 'predicting earthquakes'?**

   Any answer that suggests: Predicting earthquakes means using scientific measures to make a good guess when something might happen

4. **Describe what causes earthquakes.**

   Any answer that suggests: Earthquakes are caused by the plates moving, rubbing and bumping together.

5. **What is a seismograph?**

   Any answer that suggests: A seismograph is a special piece of equipment that records earthquakes by drawing them.

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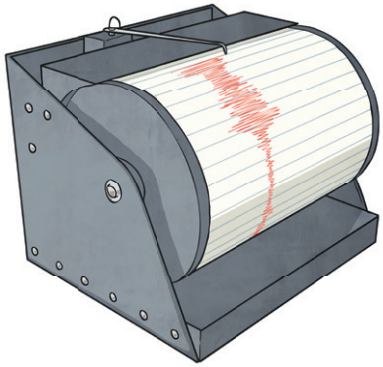

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Interesting Fact

Six Italian scientists were convicted of manslaughter (killing someone without planning or being hateful) and sent to prison for not predicting (knowing it was coming and warning people) the 2009 L'Aquila earthquake in which 309 people died. They argued against their cases and won, so were eventually not sent to prison.

You could try to find out:

1. How earthquakes are measured.
2. How easy they are to predict.
3. About other cases where prison sentences have been handed out in unusual circumstances.
4. How you go about arguing a decision made by a court.

Questions About Earthquakes

1. Which layer of the Earth do the tectonic plates make up and how many are there?

They make up...

2. What are plate boundaries?

Plate boundaries are...

3. Where in the world do earthquakes take place?

Earthquakes take place...

4. Describe what causes earthquakes.

Earthquakes are caused by...

5. Which part of the seismograph moves? The case or the weight on a string?

The part of the seismograph that moves is...

Questions About Earthquakes

Answers

1. **Which layer of the Earth do the tectonic plates make up and how many are there?**

   They make up the Earth's crust and there are about twenty.

2. **What are plate boundaries?**

   Plate boundaries are the edges of the Earth's tectonic plates.

3. **Where in the world do earthquakes take place?**

   Any answer that suggests: Earthquakes take place within faults / areas where the plate boundaries meet.

4. **Describe what causes earthquakes.**

   Any answer that suggests: Earthquakes are caused by the plates rubbing against each other and getting stuck before coming free with a large force/jolt.

5. **Which part of the seismograph moves? The case or the weight on a string?**

   The part of the seismograph that moves is the case.

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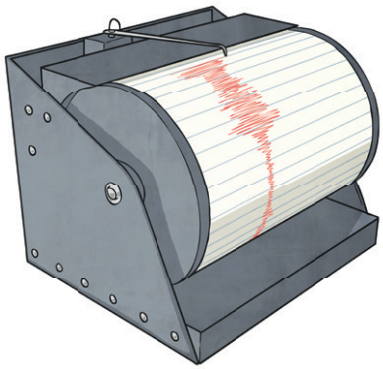

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Interesting Fact

Six Italian scientists were convicted of manslaughter and sent to prison for failing to predict the 2009 L'Aquila earthquake in which 309 people died. They appealed their cases successfully and were eventually not sent to prison.

You could try to find out:

1. How earthquakes are measured.
2. How easy they are to predict.
3. About other cases where prison sentences have been handed out in unusual circumstances.
4. How the appeals process works.

Questions About Earthquakes

1. On what do the tectonic plates float on and how many tectonic plates are there?

2. What can plate boundaries do when they are near each other?

3. What is a 'fault'?

4. Describe what causes earthquakes.

5. What is a seismograph?

6. How does a seismograph work?

Questions About Earthquakes

Answers

1. **On what do the tectonic plates float and how many are there?**

   The Mantle and there are about twenty.

2. **What can plate boundaries do when they are near each other?**

   Any answer from:
   - Crash into each other
   - Rub against each other
   - Move further apart
   - Get caught and stuck
   - One moves under the other

3. **What is a 'fault'?**

   Any answer that suggests: The line/crack/gap between plates.

4. **Describe what causes earthquakes.**

   Any answer that suggests: The plates get stuck whilst they are trying to move and eventually as they are freed, they cause a jolt which shakes the earth around it.

5. **What is a seismograph?**

   Any answer that suggests: A seismograph is a special piece of equipment that records earthquakes by drawing them.

6. **How does a seismograph work?**

   Any answer that suggests: Seismometers are securely fastened to the Earth, so when the ground starts to shake, the instrument's case moves too. What doesn't move is a weight that hangs on a string inside the case. When there is an earthquake, the case shakes with the ground but the weight does not, and it draws a line to show how much the ground shook.