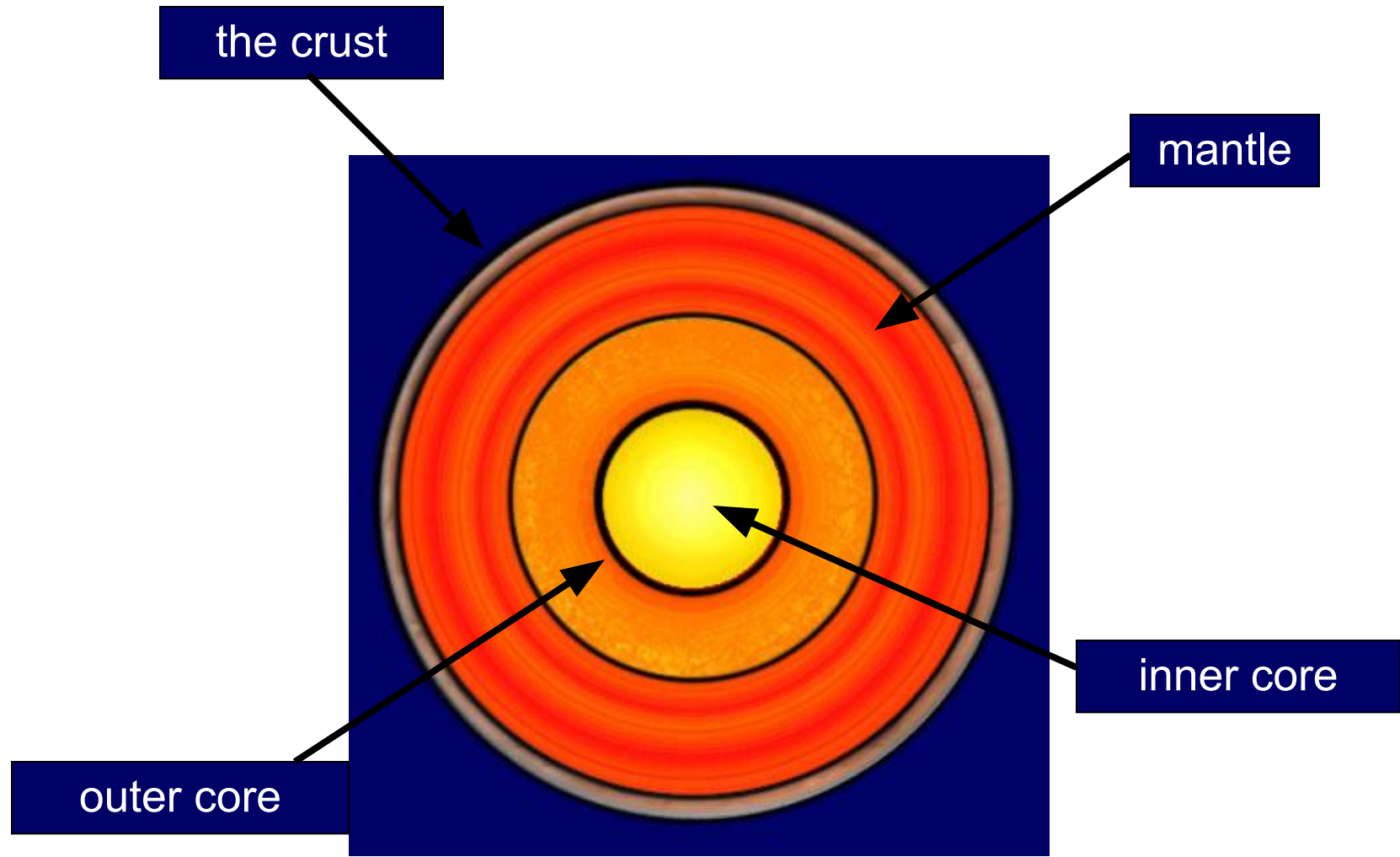
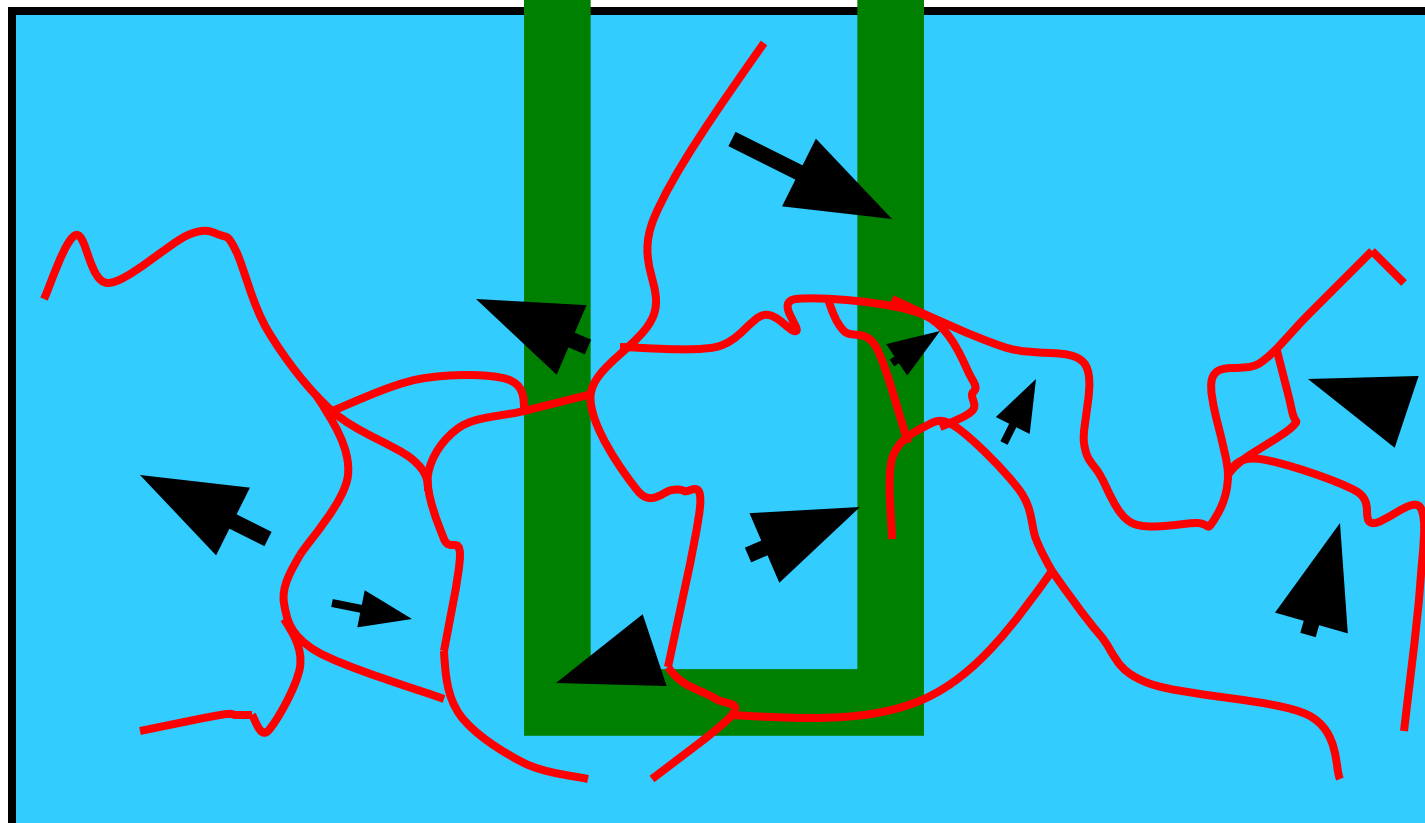


KS4 Earth's Structure



Structure of the Earth



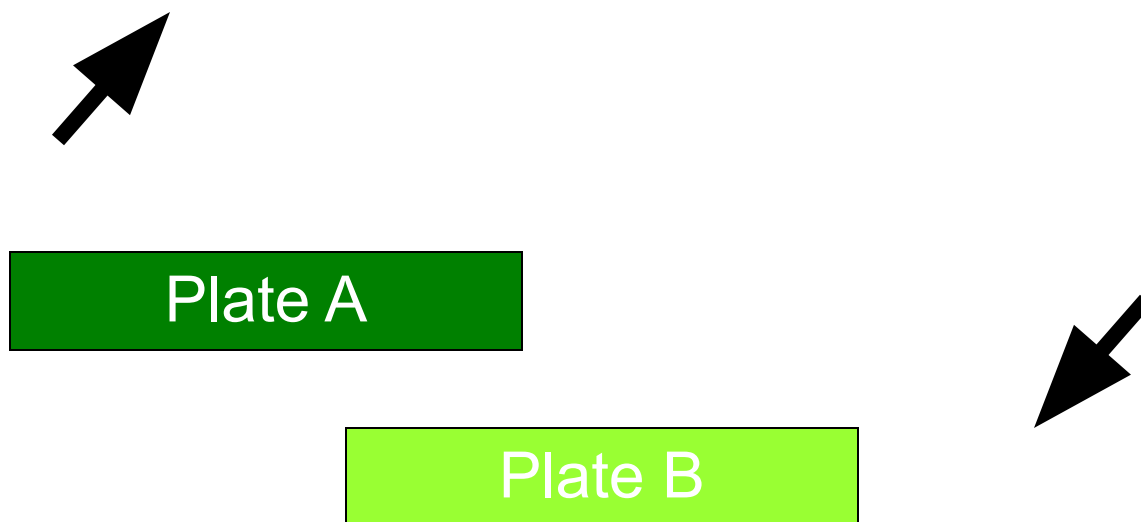


The Earth's crust consists of several sections called tectonic plates. Where they meet is called a plate boundary. Convection currents in the mantle move these tectonic plates. In some locations the tectonic plates are moving towards each other, in others they are moving away from each other and in others they are moving past each other.



Plate boundaries 1

When two plates slide past each other, they don't do it smoothly. The large friction forces involved mean that strain builds up and the plates move suddenly when the strain gets too much.



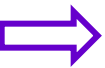
This sudden movement of plates is called an earthquake and it can be very destructive.



Plate boundaries 1



Why do earthquakes happen?



Epicentre of an earthquake



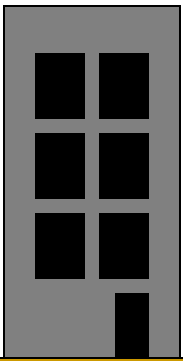
During an earthquake the two types of wave that are released from the epicentre are primary waves (p-waves) and secondary waves (s-waves).

Primary or p-waves are the fastest. They are longitudinal in nature and when they hit the surface they make objects and buildings vibrate vertically. They can travel through solids and liquids.

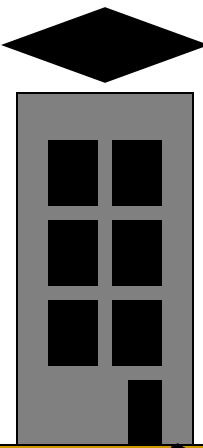
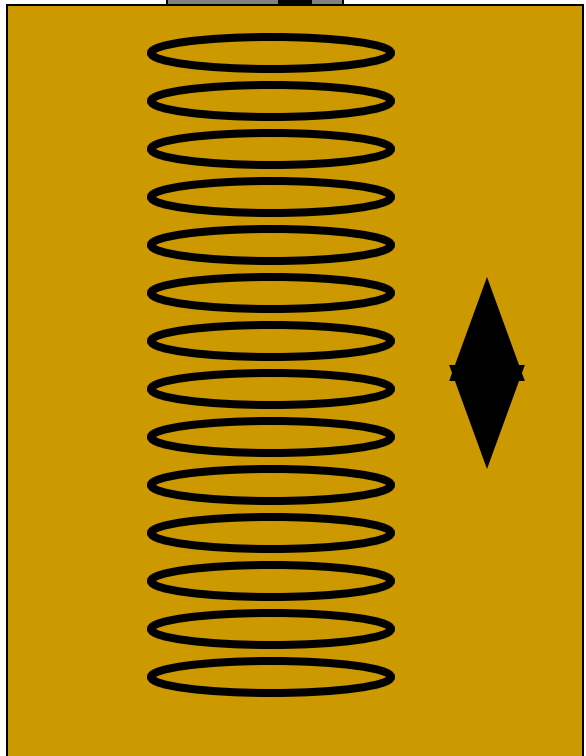
Secondary or s-waves are the slowest. They are transverse in nature and when they hit the surface they make objects and buildings vibrate horizontally. They can only travel through solids.



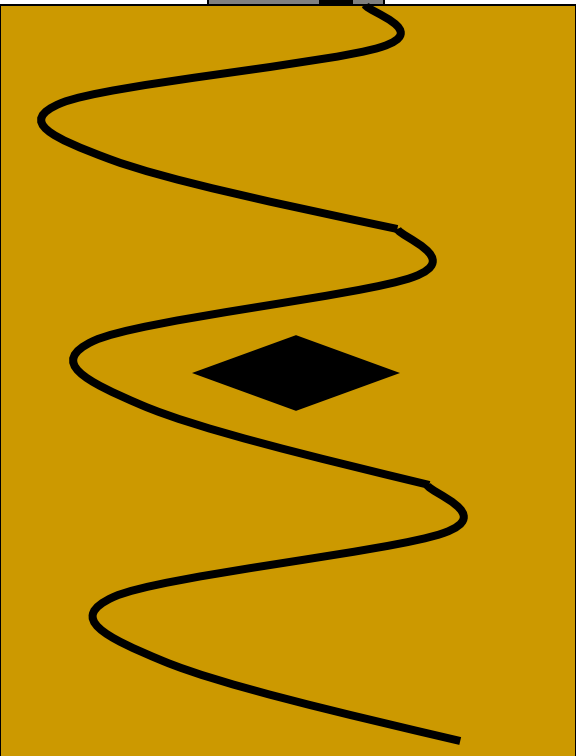
S-waves..... Shake



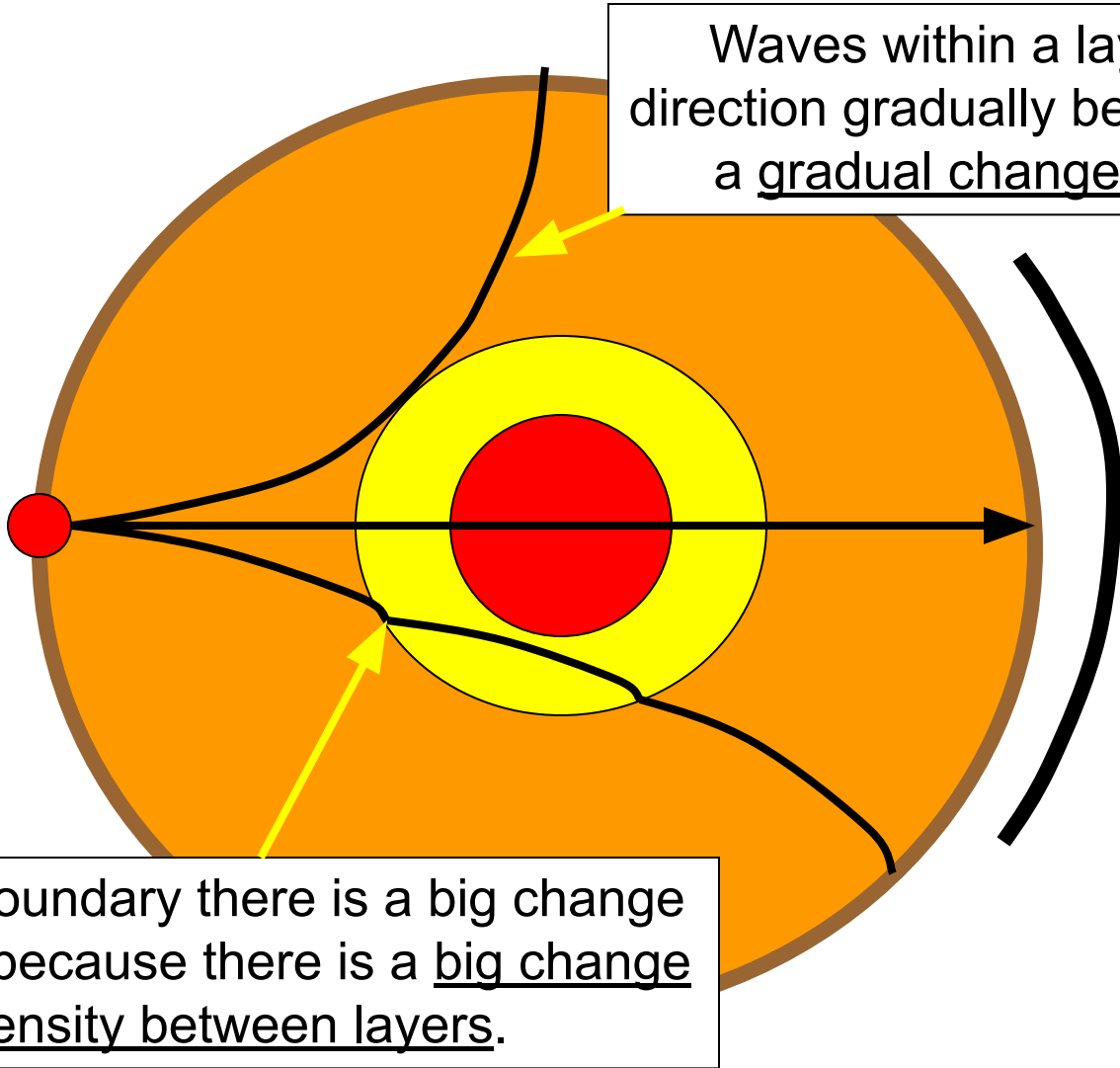
P-waves arrive first and shake building vertically.
Little damage is caused.



S-waves arrive next and shake building horizontally.
This can cause a lot of damage.



Seismic waves

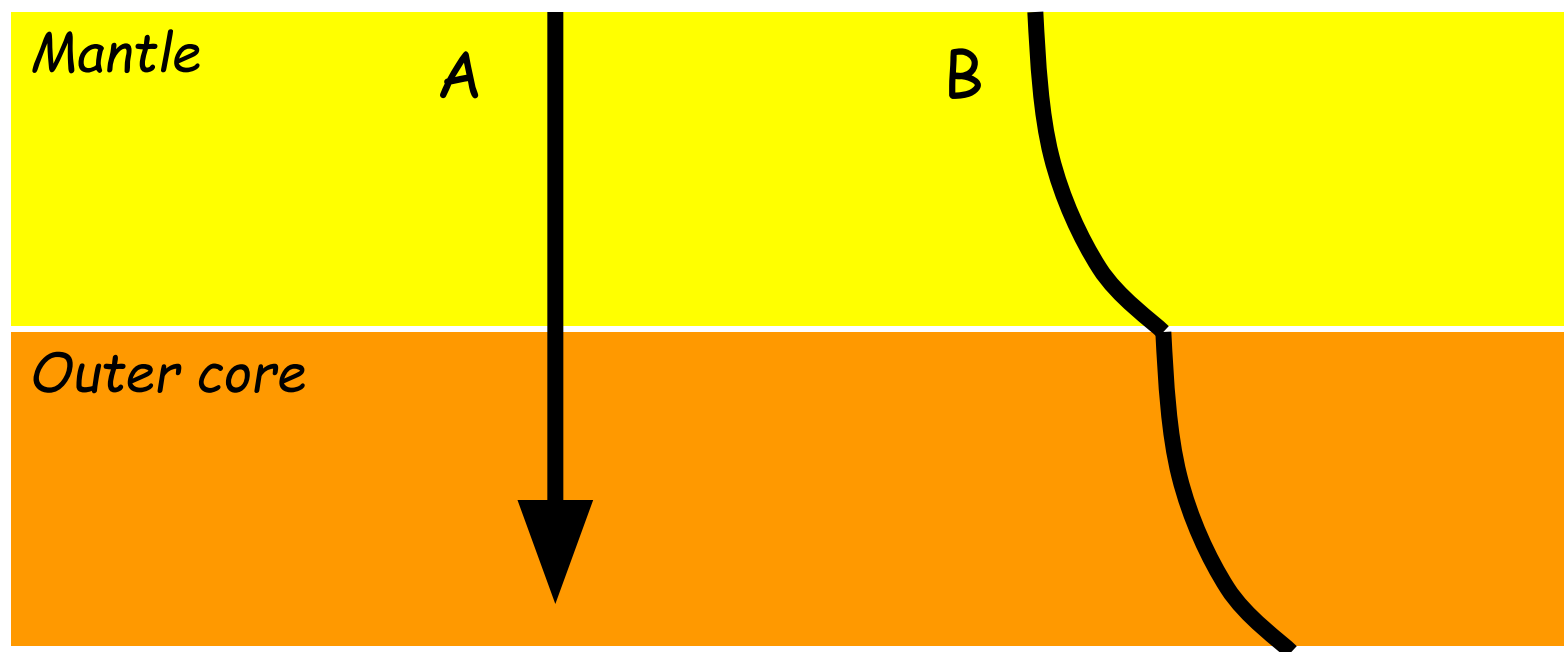


Waves within a layer change direction gradually because there is a gradual change in density.

S wave shadow
only p waves received here

At a layer boundary there is a big change in direction because there is a big change in density between layers.

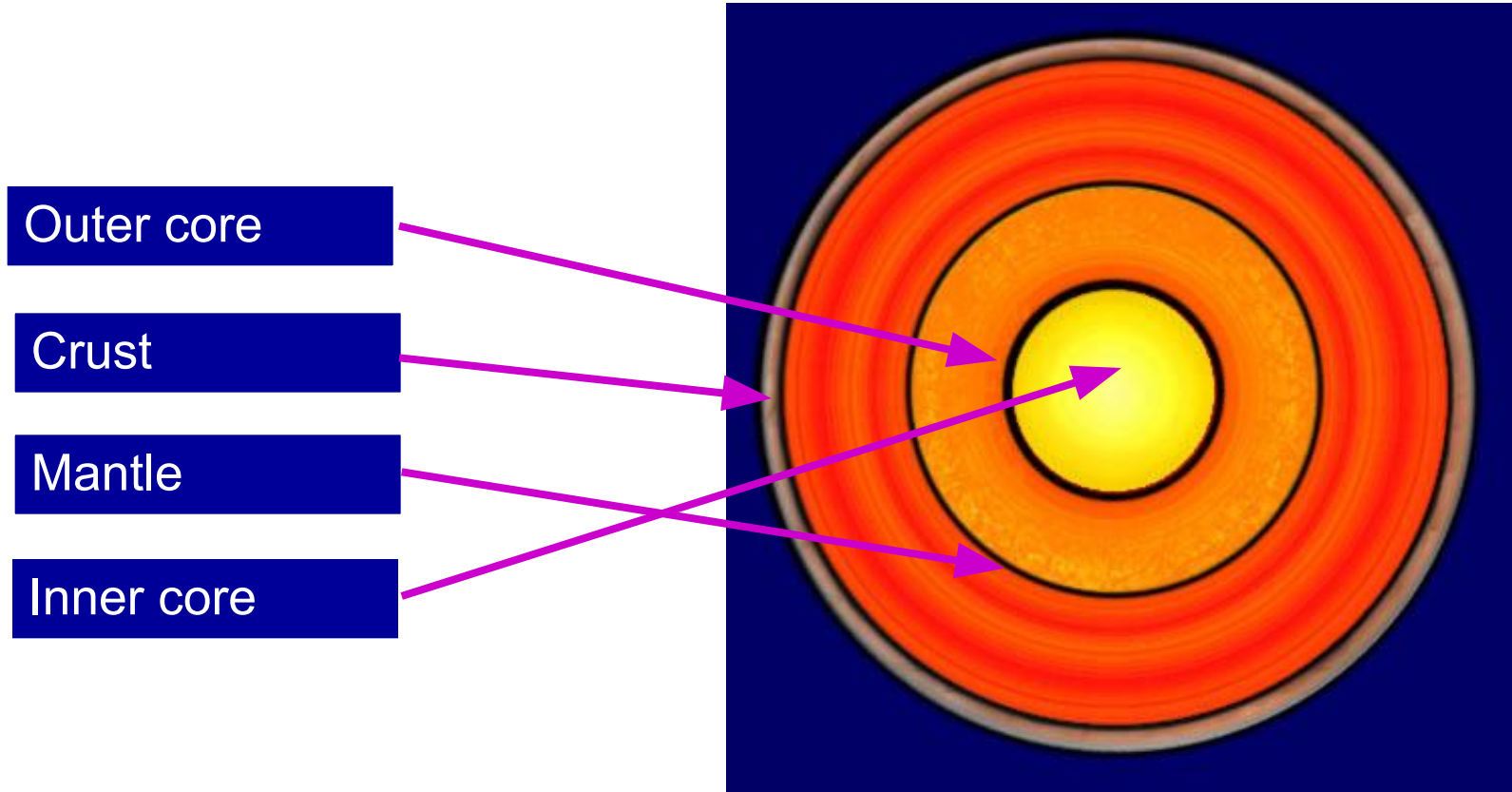




1. What type of wave is A? How do you know?
2. Explain the path of wave B in terms of density.
3. What is the s wave shadow?

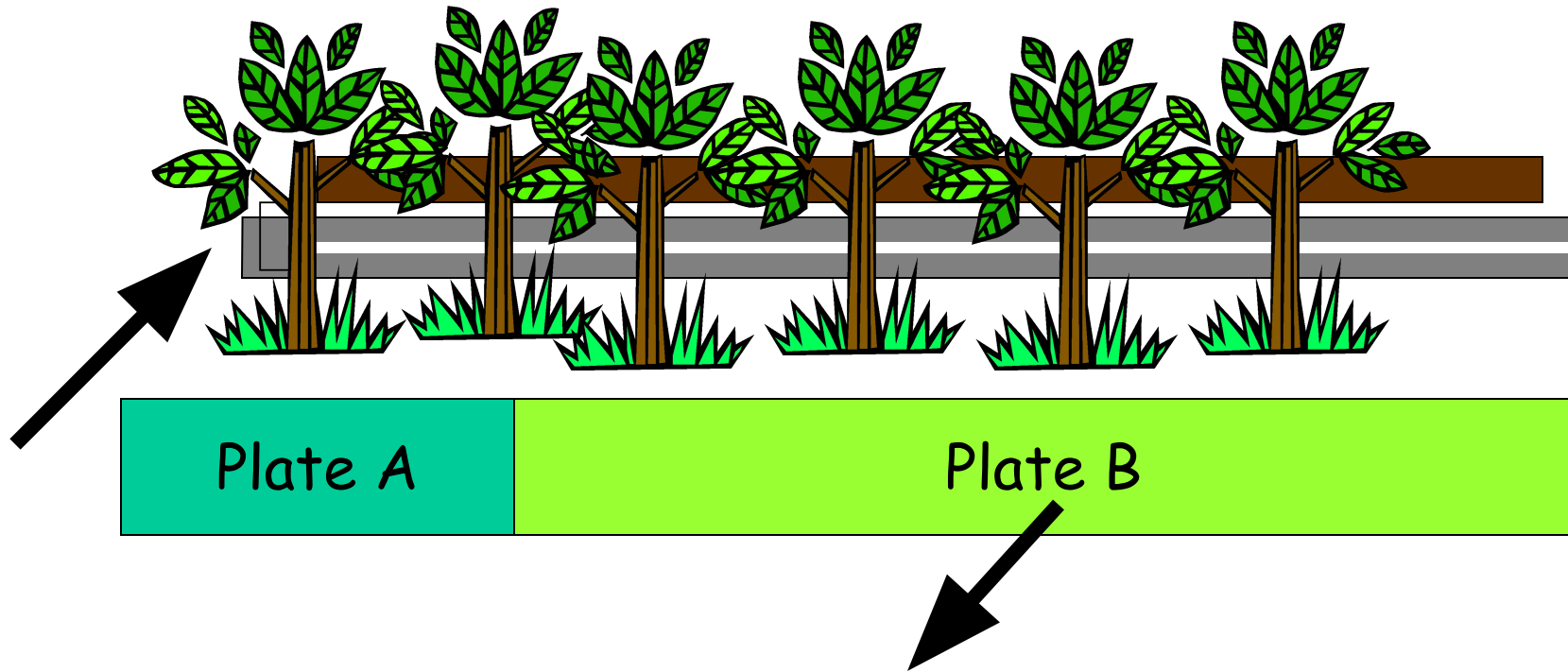


Attach labels to the correct part of the diagram.



Task 3 – Tectonic plates

An earthquake has occurred in the area shown in the picture below. Draw what the location would look like after the earthquake if the plates moved in the directions indicated by the arrows.



Match the word with the description:

Epicentre

The faster seismic wave, that is longitudinal and makes buildings vibrate up and down.

Primary waves

The location where the shift in plates occurred producing seismic waves.

Secondary waves

The slower seismic wave, that is transverse and makes buildings shake from side to side.



Fill in the table below:

	P wave	S wave
Type of wave		
Speed		
Media can travel through		
Damage caused on surface		



Plate boundaries 2

What happens when an oceanic plate and a continental plate collide?

The thinner, more dense oceanic plate is driven down into the mantle.

This is known as
SUBDUCTION!

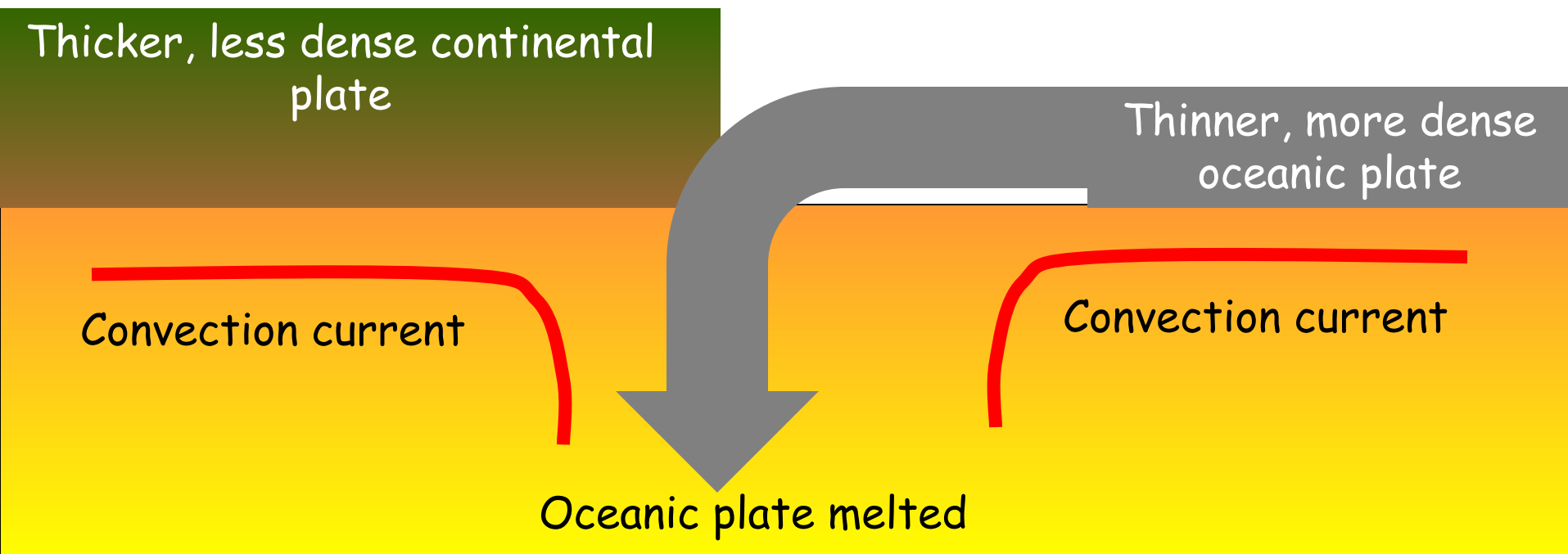


Plate boundaries 2



Plate boundaries 3

What happens when oceanic plates move apart due to convection currents in the Earth's mantle?

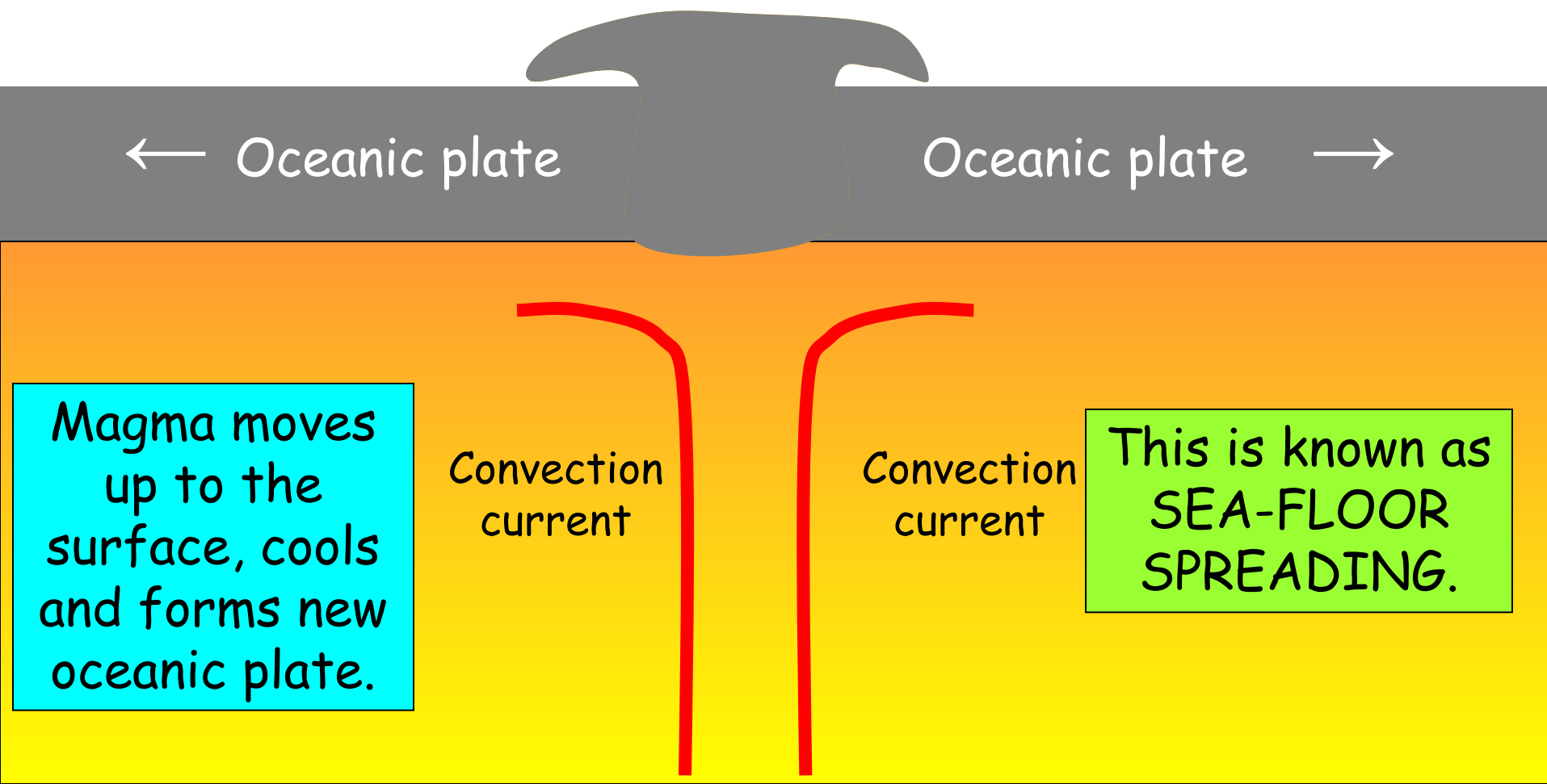


Plate boundaries 3



Match the word with the description:

Subduction

Sea-floor
spreading

Friction

The force that causes earthquakes.

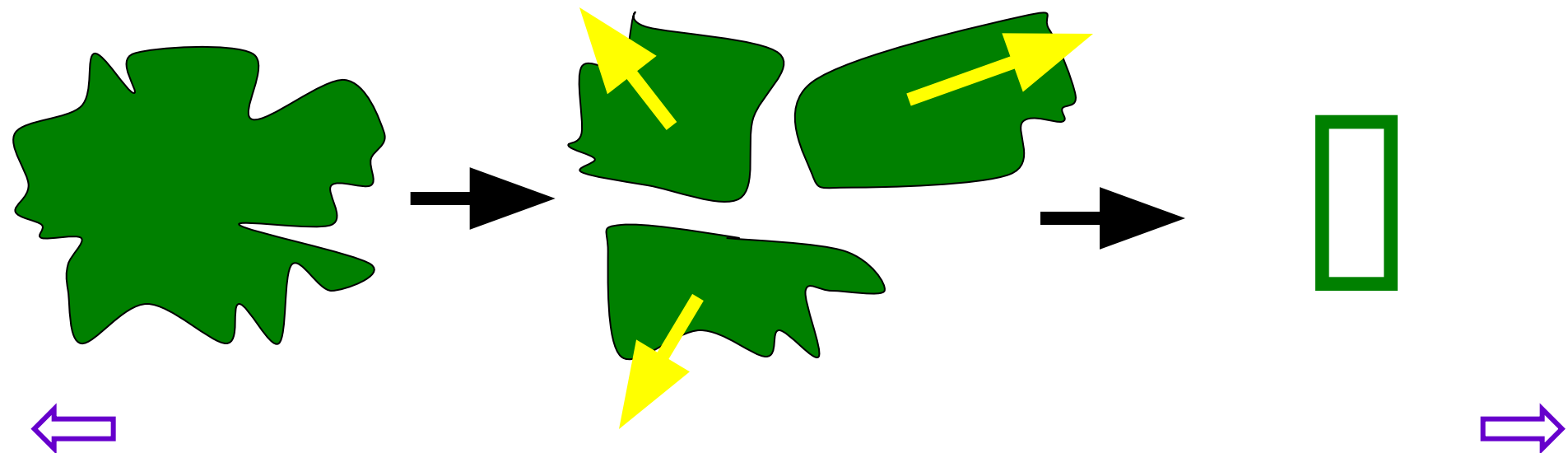
When oceanic plate is pushed down into the mantle as it collides with continental plate.

When two oceanic plates move apart to create new crust.

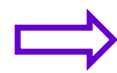


It is thought that the continents were once joined together in a huge super-continent called *Pangaea*.

Over millions of years the continents drifted apart because the tectonic plates they were on moved apart due to convection currents in the Earth's mantle.



Continental Drift

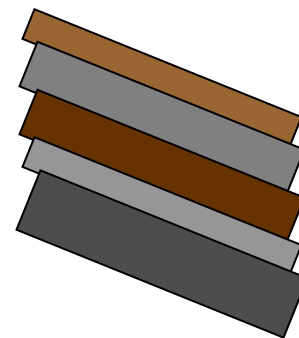


Evidence for continental drift theory:

1. The shapes of the continents fit like a jigsaw.
2. The rock strata on separated continents are identical.
3. The fossil records on separated continents are identical.



Continent A



Continent B

