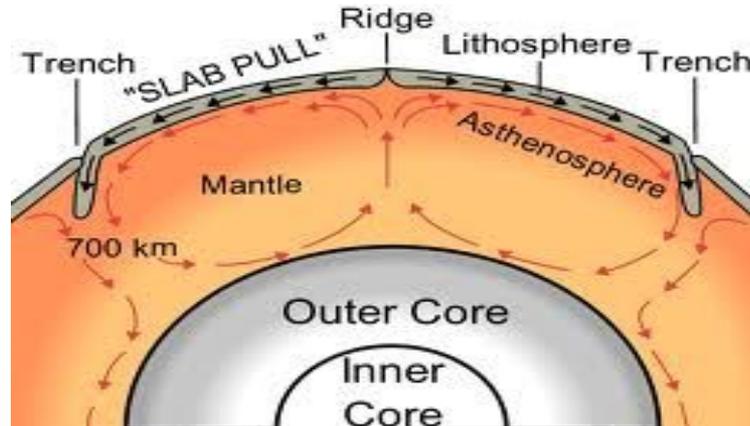


Pair-Share

What layers of the Earth have convection currents?

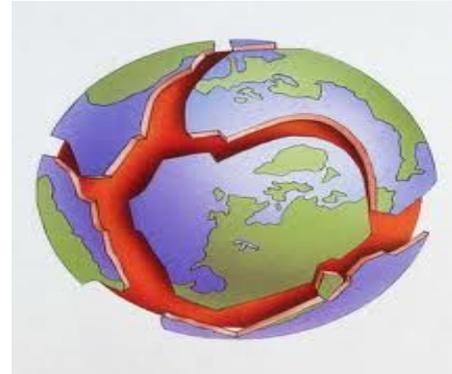
The asthenosphere (mantle) and the outer core



Objective

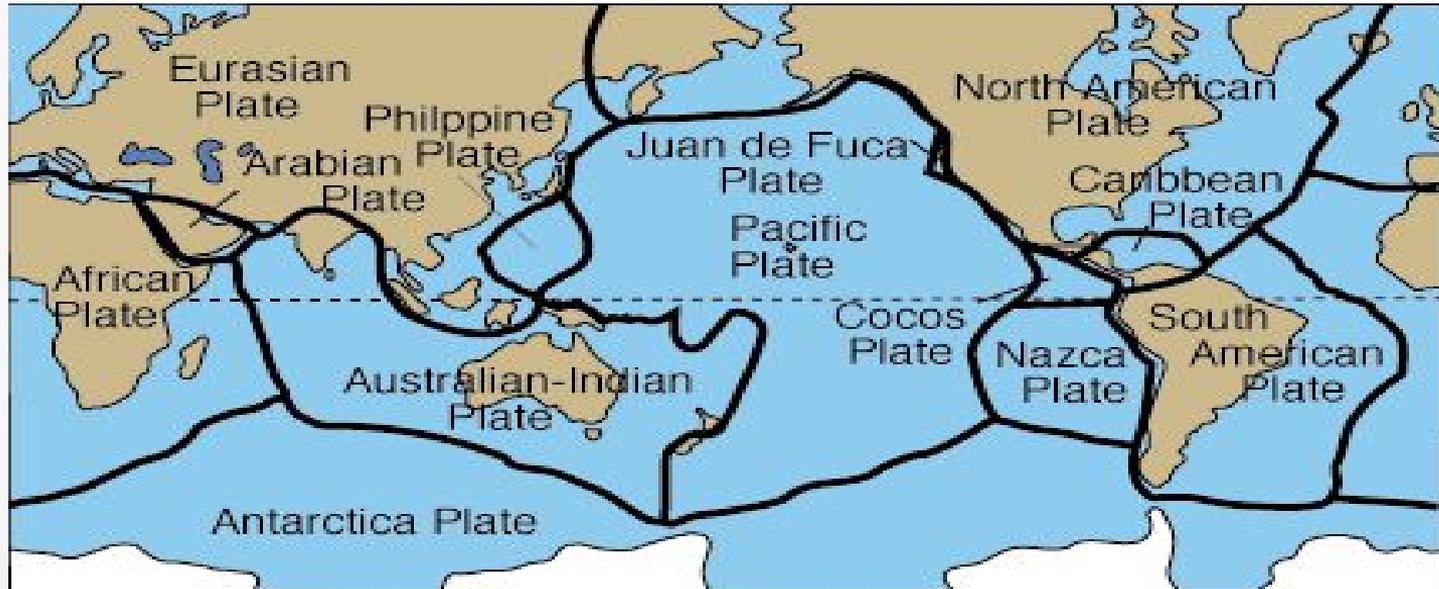
Today, we will be able to explain the geologic events that occur at plate boundaries.

Earth's lithosphere is broken up into pieces.

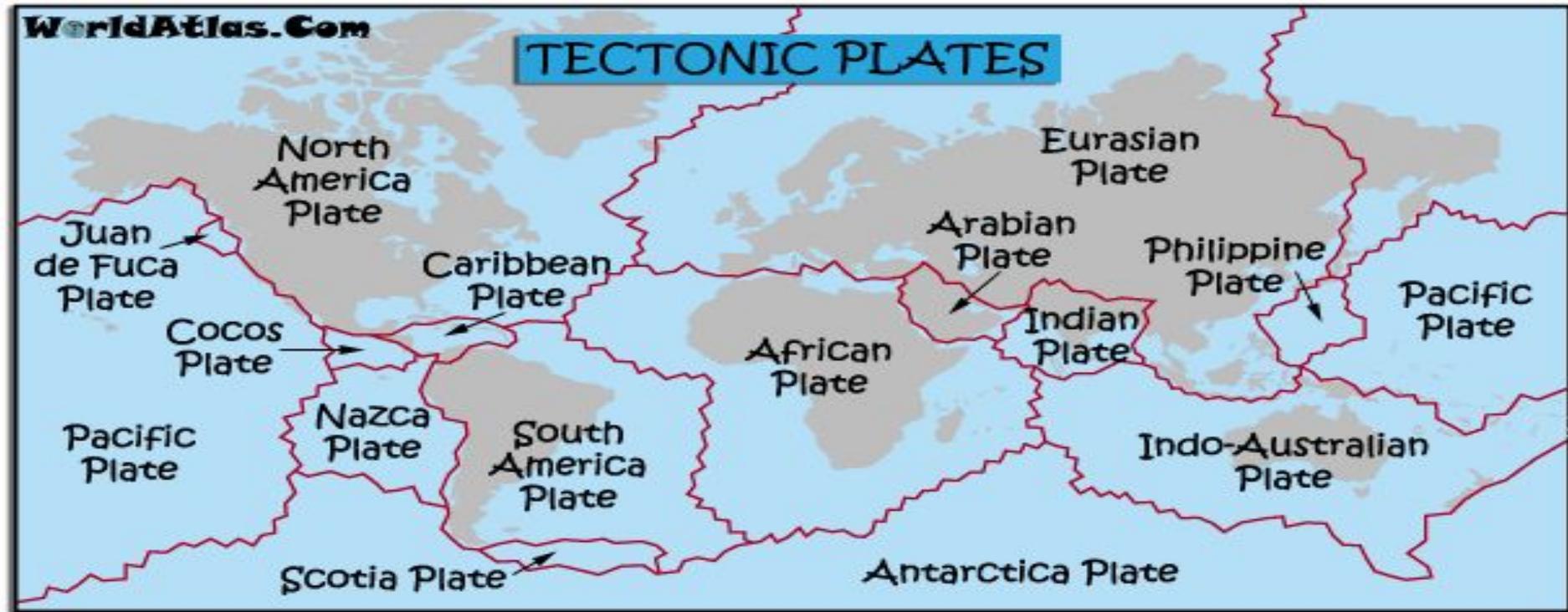


piece

- A plate is a section of the **lithosphere** that can carry **continents, ocean floor, or both.**
 - Plates float on the **asthenosphere.**

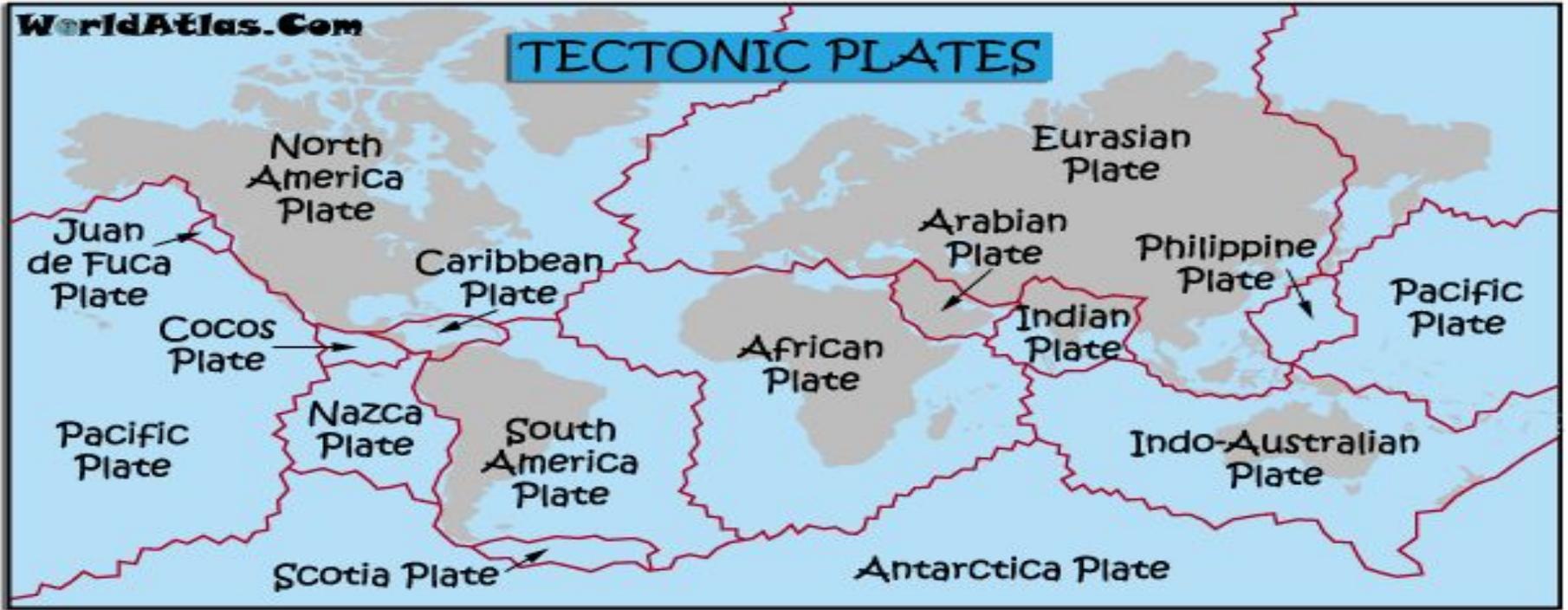


Highlight the word “plate” in your notebook.

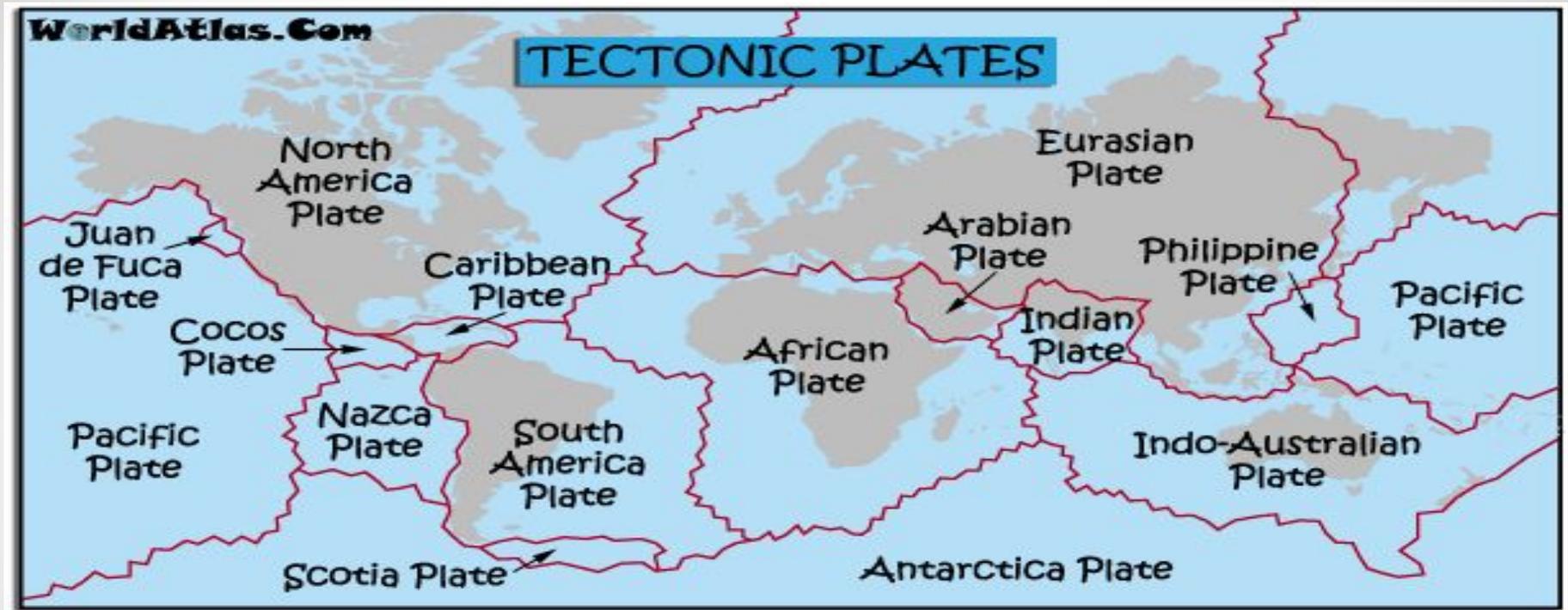


Name one plate that mainly carries continents

TECTONIC PLATES

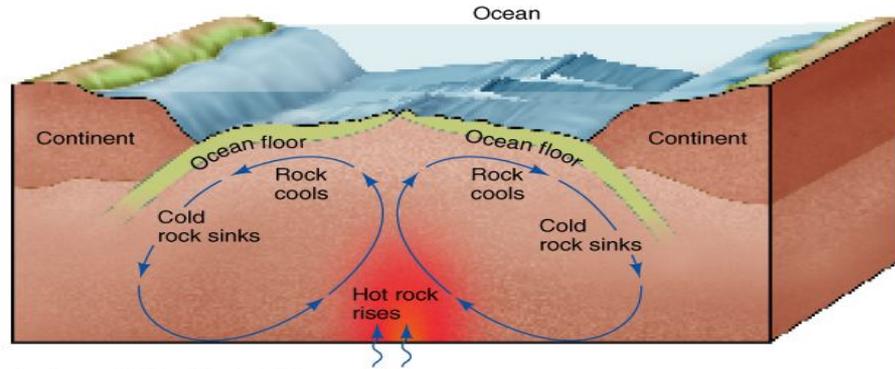


Name one plate that carries only oceans



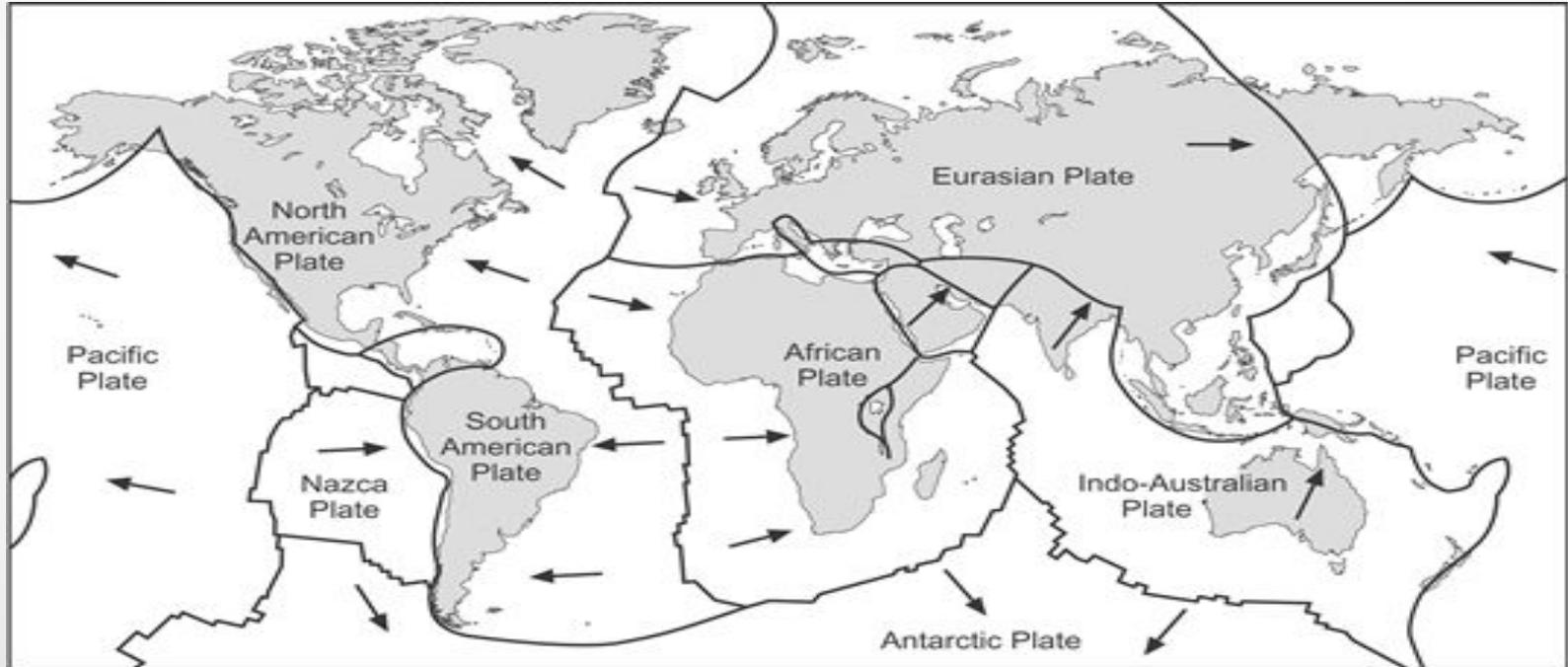
Name one plate that carries continents and oceans.

- Plate tectonics is the theory that lithospheric **plates** slowly **move** because of **convection currents in the mantle**.
 - As the asthenosphere moves, **the plates move**.
 - It explains the **formation, movement, and subduction** of Earth's plates.



Highlight the words “Plate Tectonics” in your notebook.

- As plates move, they change the Earth's surface.
- Plates move at a rate of 1-24 cm per year causing major geologic events.



Pair-share

What causes plates to move?

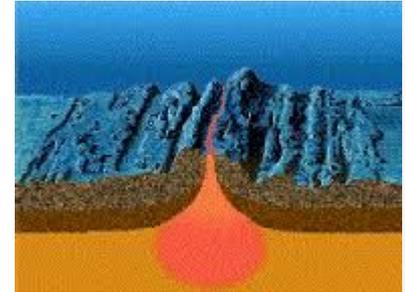
Convection currents in the asthenosphere
cause plates to move

Major geologic events include :

❑ deep-ocean trenches

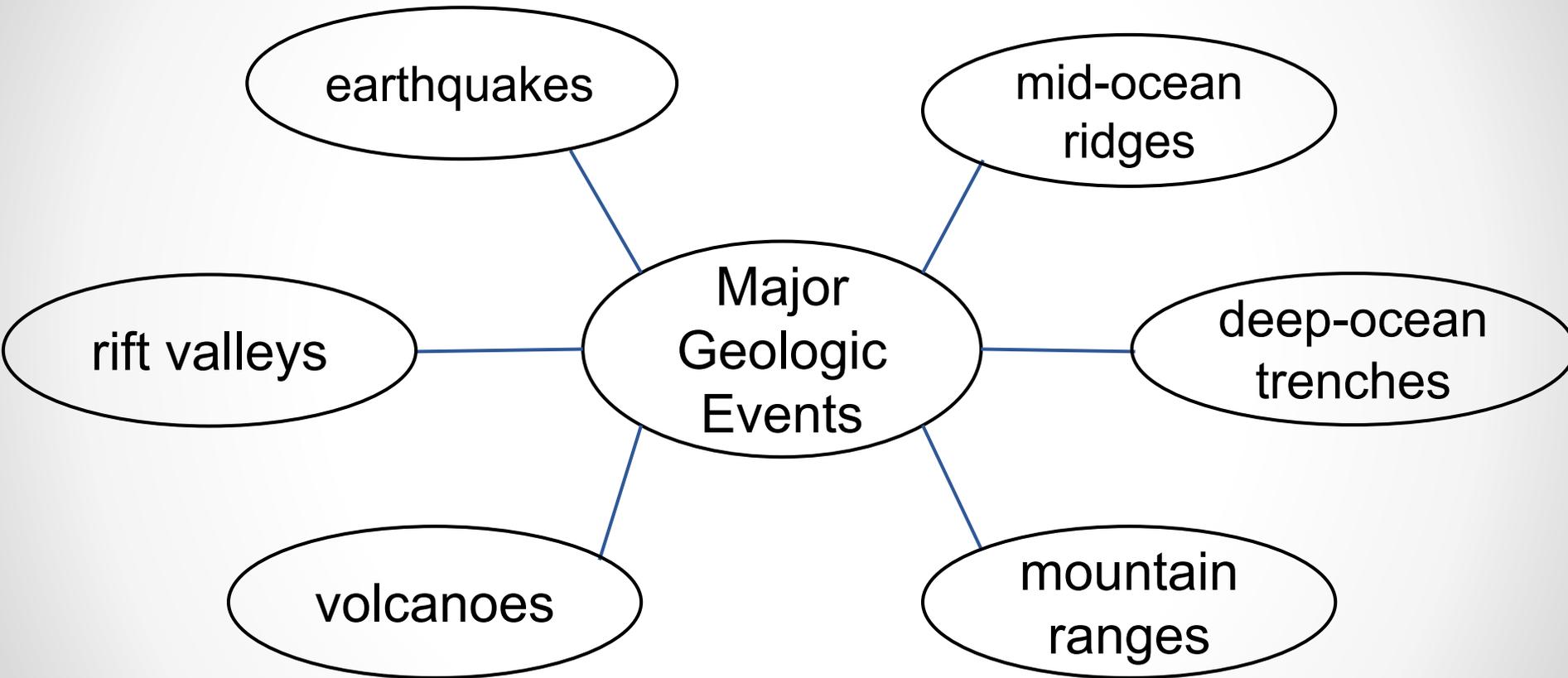


❑ mid-ocean ridges



❑ rift valleys





earthquakes

mid-ocean
ridges

deep-ocean
trenches

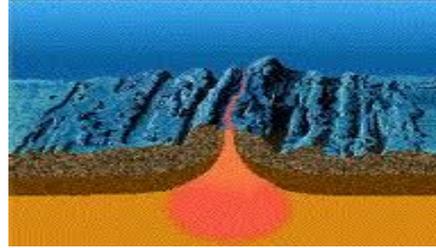
mountain
ranges

volcanoes

rift valleys

Major
Geologic
Events

- A plate boundary is the area where **two plates meet**.
- Different geologic events occur along different plate boundaries.



Highlight the words “plate boundary” in your notebook.

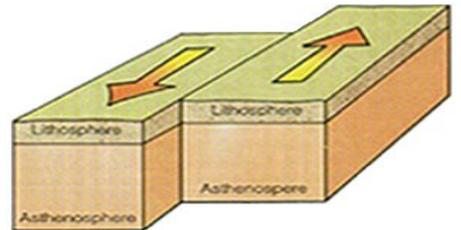
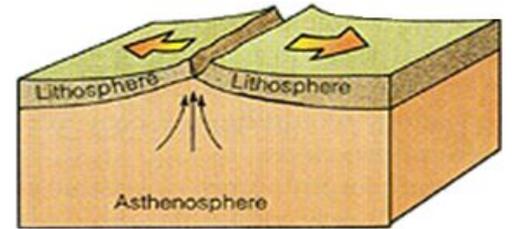
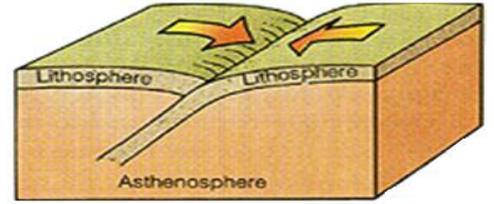
- A fault is a **break** or **crack** in the **crust**.
 - Faults form along plate boundaries.
 - Earthquakes occur at fault lines.



Highlight the word “fault” in your notebook.

There are three types of plate boundaries:

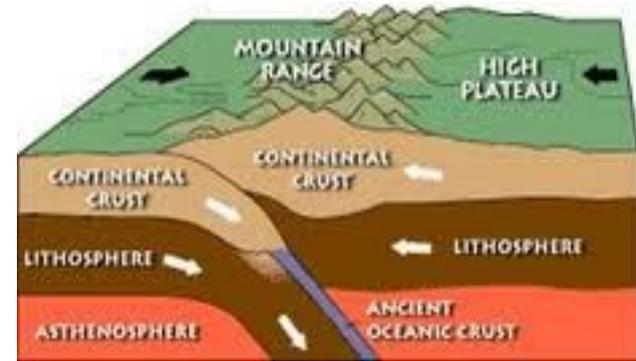
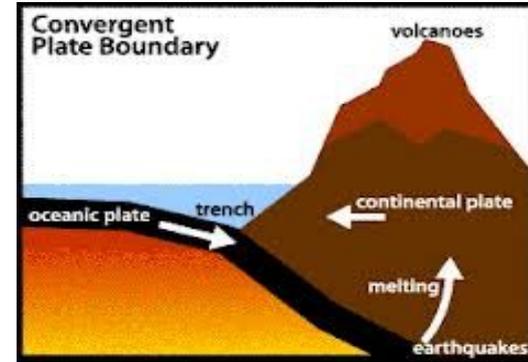
1. Convergent boundaries – two plates collide **push together**.
2. Divergent boundaries – two plates **move away** from each other.
3. Transform boundaries – two plates **slide past each other**.

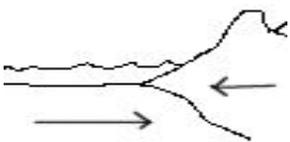


Type of Plate Boundary	Description	Geologic Event (s)	Example(s)	Sketch
Convergent Boundary	1. Continental + Oceanic crust = 2. Continental + Continental crust =			
Divergent Boundary				
Transform Boundary				

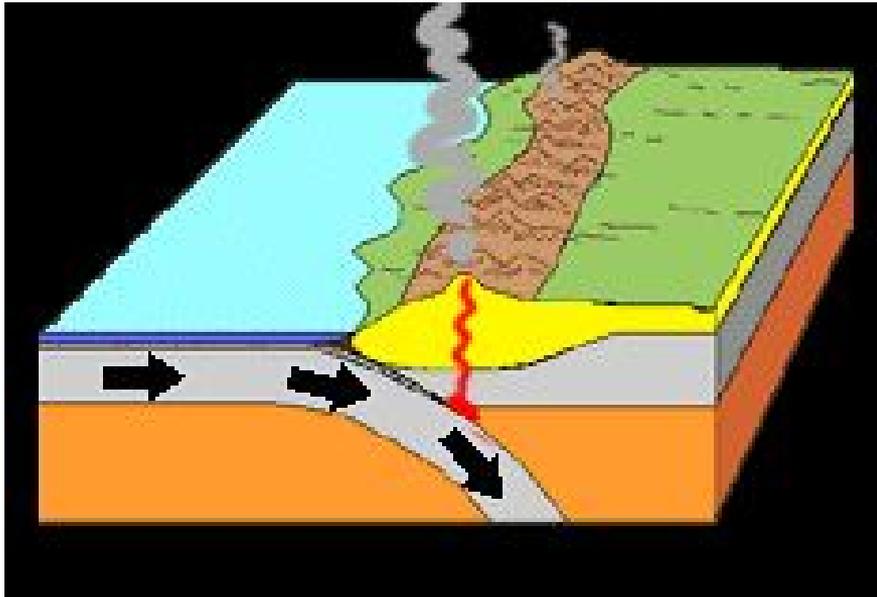
The places where plates hit each other are called **convergent boundaries**. When an oceanic plate hits a continental plate, the edge of the continental plate rises up and the edge of the oceanic plate bends down into the earth. This results in a deep-ocean trench where subduction occurs. This can also form a mountain range or volcanoes on land.

When two continental plates collide¹, they squeeze the crust upwards, creating large mountain ranges. The best example of this is the Himalayan Mountain Range. Convergent boundaries also cause earthquakes.

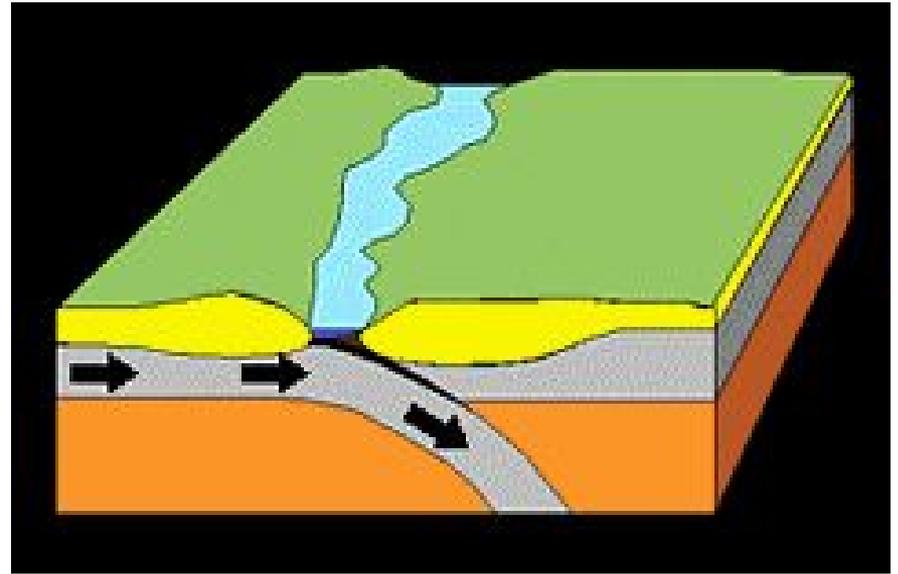


Type of Plate Boundary	Description	Geologic Event	Example (s)	Sketch
Convergent Boundary	<p>1. Continental + oceanic plate = <u>continental plate rises and oceanic crust sinks into mantle</u></p> <p>2. Continental + continental plate = <u>crust is squeezed upwards</u></p>	<p>1. deep-ocean trench, mountains, volcano, earthquake</p> <p>2. Mountains, earthquake</p>	Himalayas	
Divergent Boundary				
Transform Boundary				

Continental and oceanic crust



Continental and continental crust

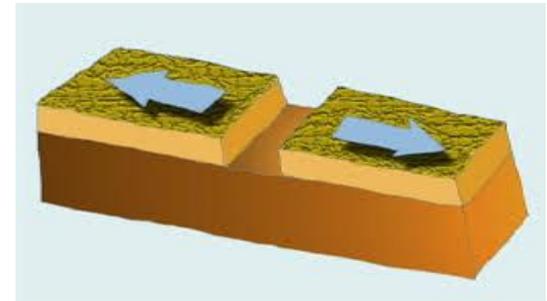
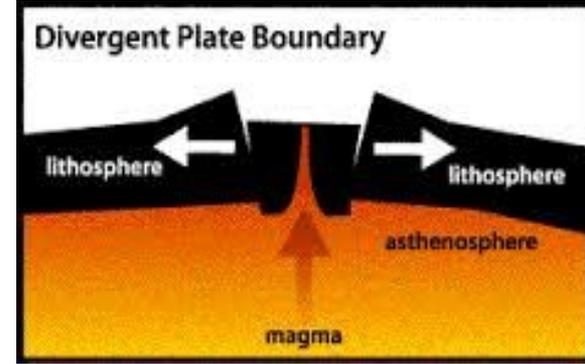


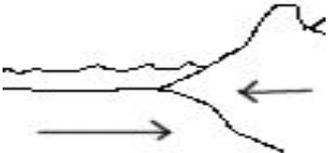
Example: Himalayan Mountain Range



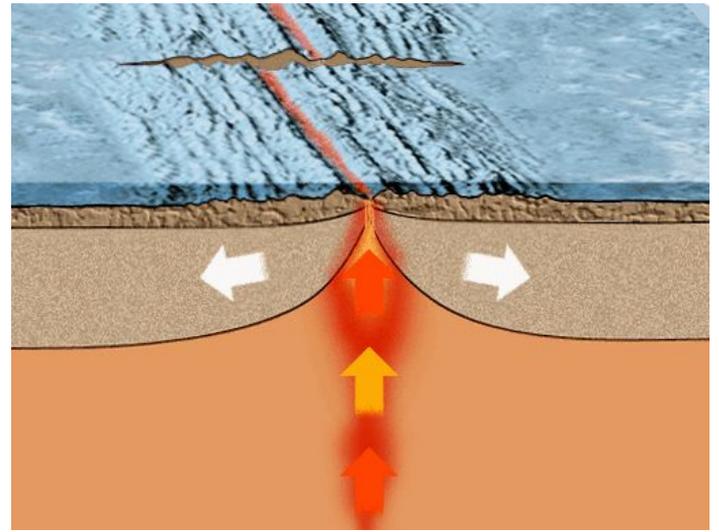


The places where plates move apart are called **divergent boundaries**. When the lithosphere is pulled apart, it breaks and causes cracks in the crust. Magma² flows upward to fill the cracks. Most spreading boundaries occur along mid-ocean ridges where sea-floor spreading happens. However, spreading boundaries can also occur on land. As the plates move away from each other, they create cracks in the crust, which makes a deep valley called a rift valley. If the magma reaches the surface, a volcano is formed. The Mid-Atlantic Ridge is the best example of a divergent boundary in the ocean and Mount Kilimanjaro is the best example on land. Divergent boundaries also cause earthquakes.



Type of Plate Boundary	Description	Geologic Event(s)	Example(s)	Sketch
Convergent Boundary	1. Continental + oceanic plate: Continental plate rises and oceanic plate sinks. 2. Continental + continental: crust is squeezed upwards	1. deep-ocean trench, mountains, volcanoes, earthquakes 2. mountains, earthquakes	Himalayas	
Divergent Boundary	<ul style="list-style-type: none"> • lithosphere pulled apart • Crack forms in crust. • Lava fills the crack. 	<ul style="list-style-type: none"> - Mid-ocean ridge (ocean) - Rift valley (land) - volcano (land) - earthquakes 	Mid-Atlantic Ridge Mount Kilimanjaro	
Transform Boundary				

Mid-ocean ridge with sea-floor spreading

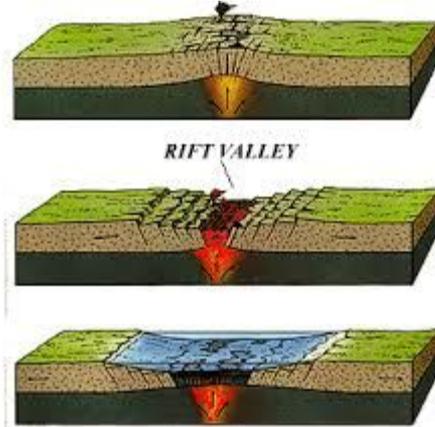


rift
valley

Examples:



Great Rift Valley



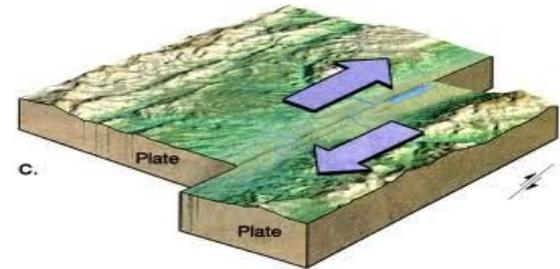
Mount Kilimanjaro

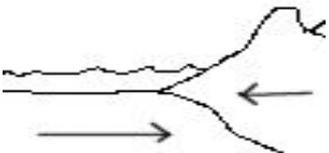
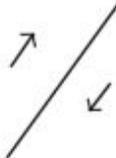


Mid-Atlantic Ridge

Transform Boundaries

The places where plates slide past each other are called **transform boundaries**. As the plates on either side of a transform boundary slide past each other, they often get stuck. The process of two plates moving past each other causes the pressure to build then suddenly move. This causes a fault line where earthquakes will occur. The most famous transform boundary is the San Andreas Fault in California.



Type of Plate Boundary	Description	Geologic Event(s)	Example(s)	Sketch
Convergent Boundary	<p>1. Continental + oceanic plate: Continental plate rises and oceanic plate sinks.</p> <p>1. Continental + continental: crust is squeezed upwards</p>	<p>1. deep-ocean trench, mountain, volcano, earthquake</p> <p>2. mountain, earthquake</p>	Himalayas	
Divergent Boundary	<ul style="list-style-type: none"> plates move apart crack forms in the crust lava fills the crack 	<ul style="list-style-type: none"> - mid-ocean ridge (ocean) - rift valley (land) - volcano (land) - earthquakes 	<ul style="list-style-type: none"> - Mid-Atlantic Ridge - Mount Kilimanjaro 	
Transform Boundary	<p>Plates slide past each other and get stuck</p> <p>Pressure builds until plates move</p>	earthquakes	San Andreas Fault	



Example:

San Andreas Fault



Pair-Share

What happens at a convergent boundary?

At a convergent boundary the plates collide.

Pair-Share

What happens at a divergent boundary?

At a divergent boundary the plates move
apart.

Pair-Share

What happens at a transform boundary?

At a transform boundary the plates slide past each other.