

بخش 4

نظریه زمین ساخت صفحه ای

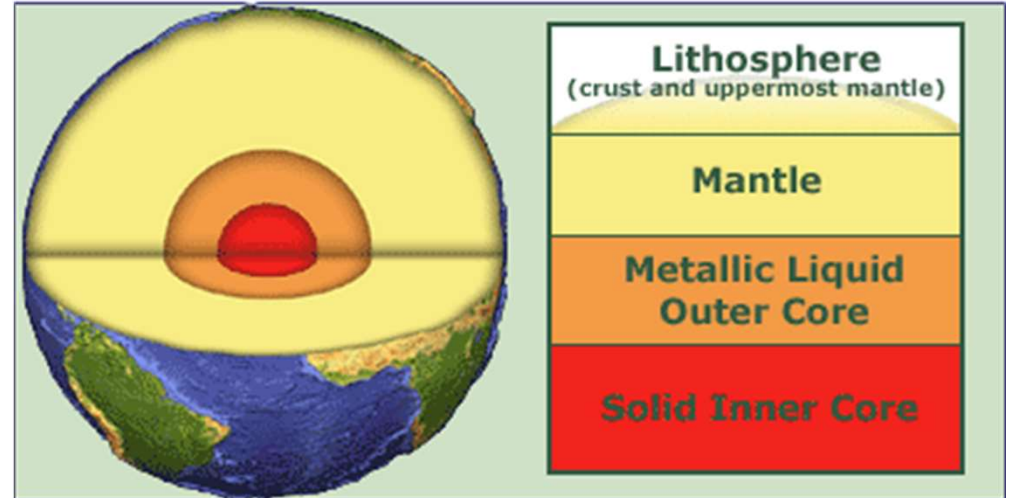
The Theory of Plate Tectonics

نظریه زمین ساخت صفحه ای

1. What is the theory of plate tectonics?
2. What are the three types of plate boundaries?

صفحات چه هستند؟ What are Plates?

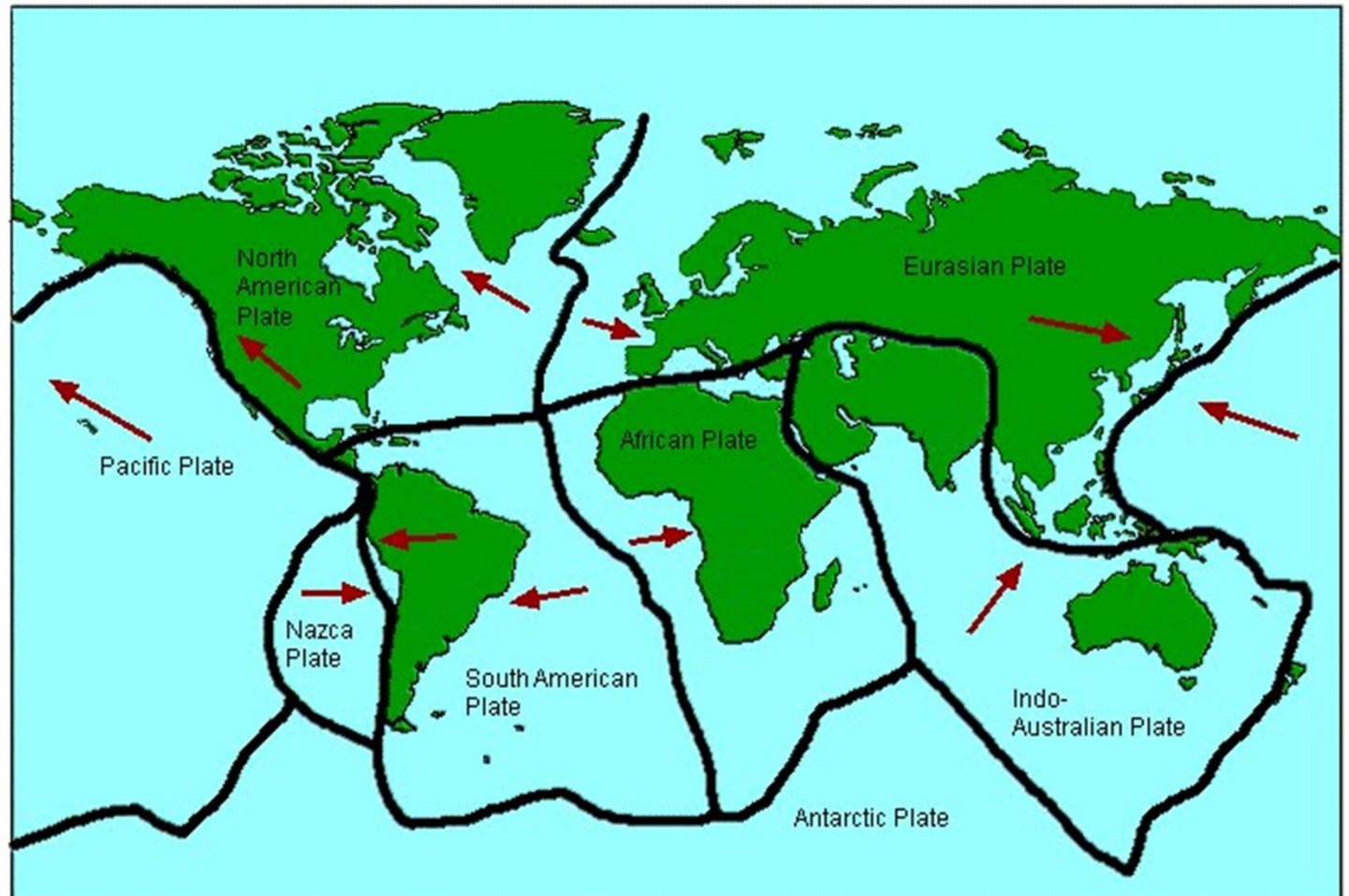
- The Earth's crust and upper mantle (Lithosphere) are broken into sections called plates



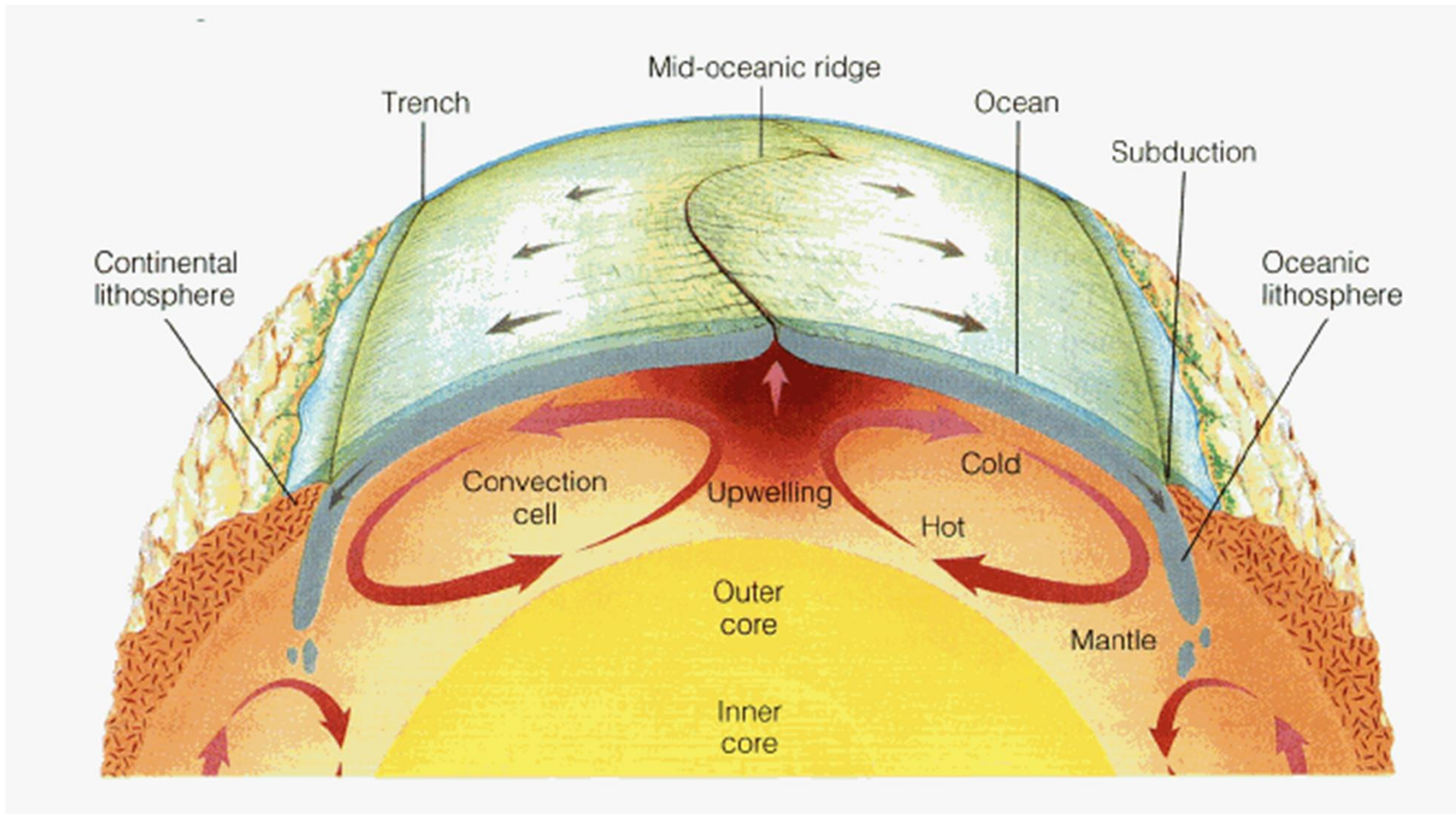
What is the Theory of Plate Tectonics?

The theory that pieces of Earth's lithosphere are in constant motion, driven by convection currents in the mantle.

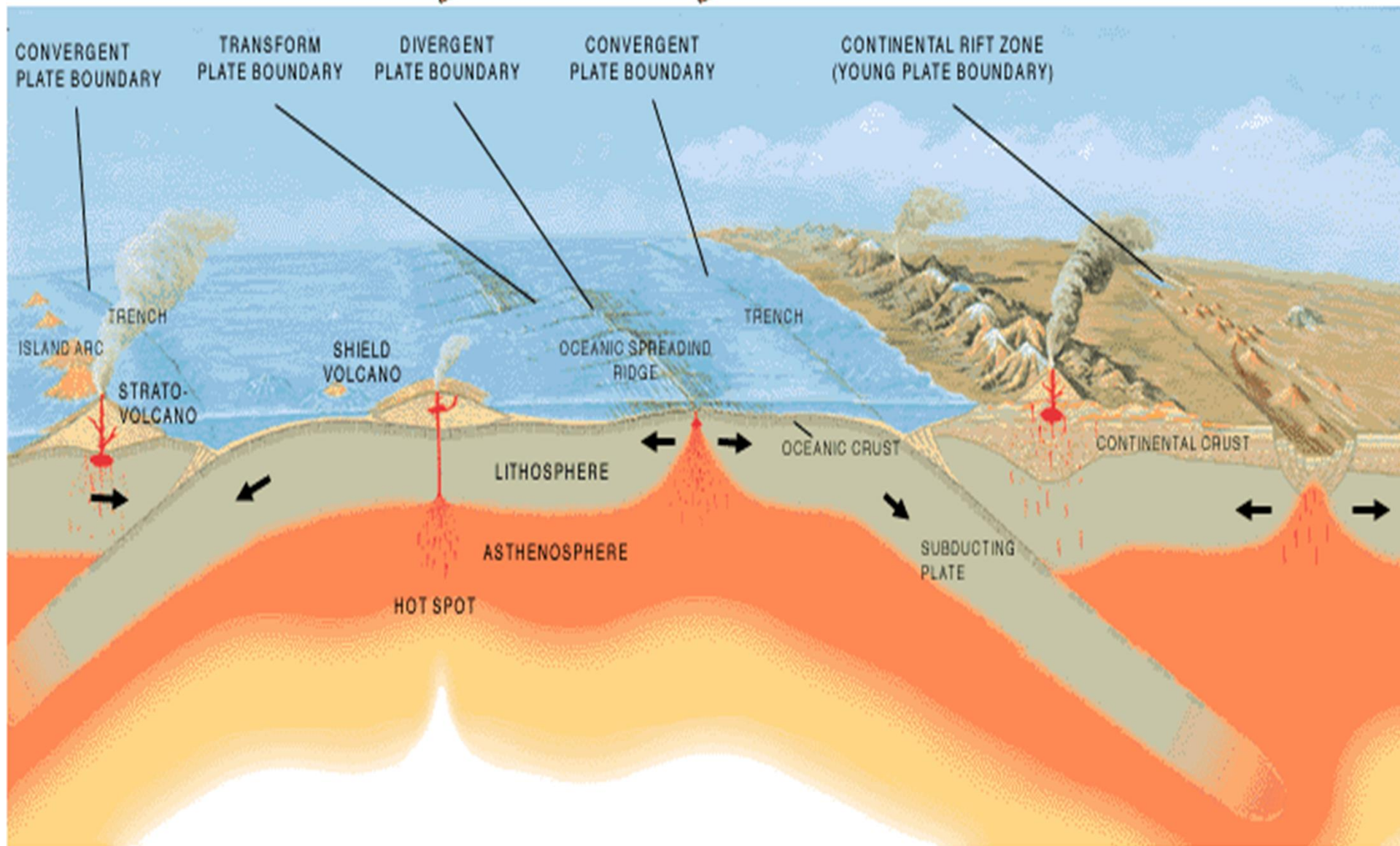
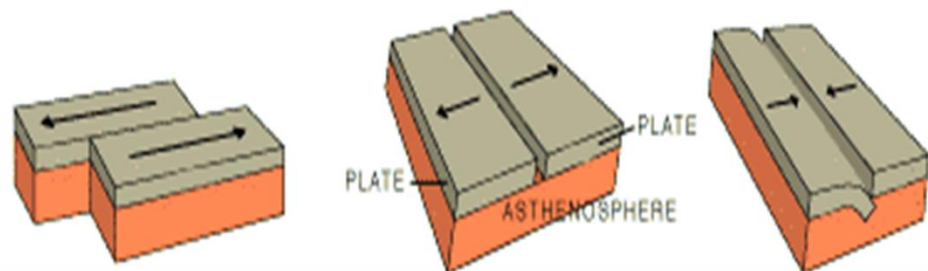
- Plates move slowly in different directions
- Cause different geologic events (like earthquake, volcano, etc.)



What makes the plates move?



Convection Currents in the mantle move the plates as the core heats the slowly-flowing asthenosphere (the elastic/plastic-like part of the mantle).



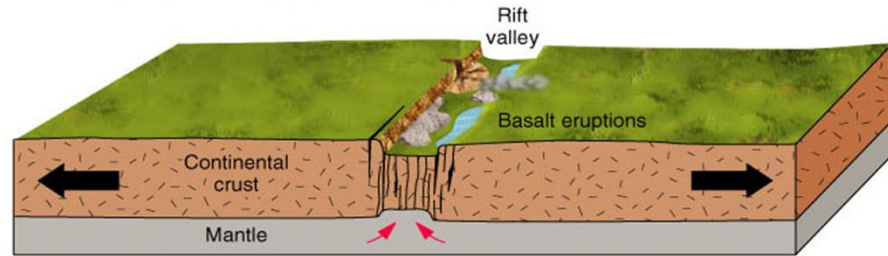
What are the three types of boundaries?

- **Divergent Boundaries** مرزهای واگرا
- **Convergent Boundaries** مرزهای همگرا
- **Transform Boundaries** مرزهای ترانسفورم

A different type of plate movement occurs along each type of boundary.

Divergent Boundaries مرز های واگرا

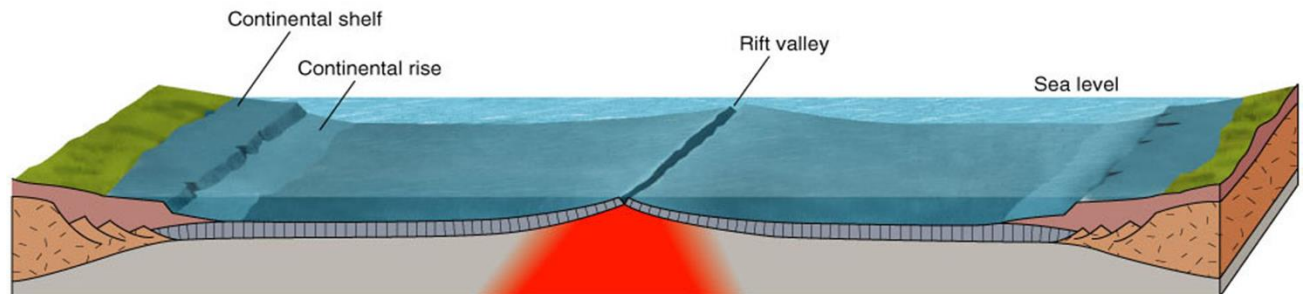
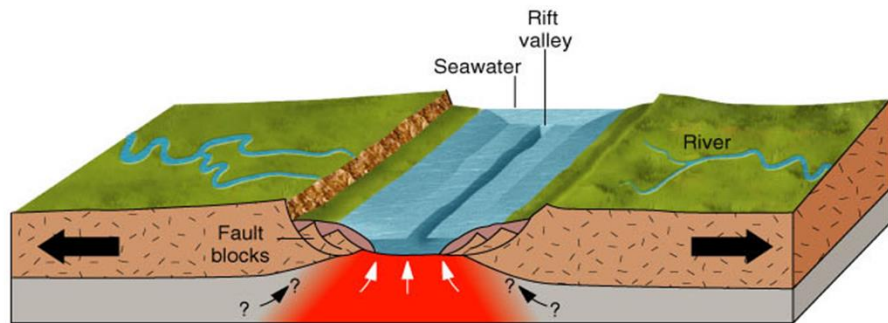
A plate boundary where two plates move away from each other.



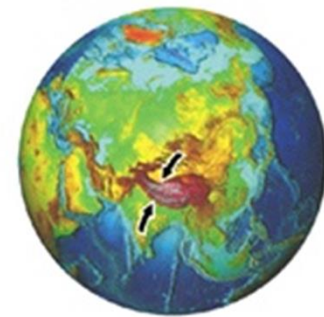
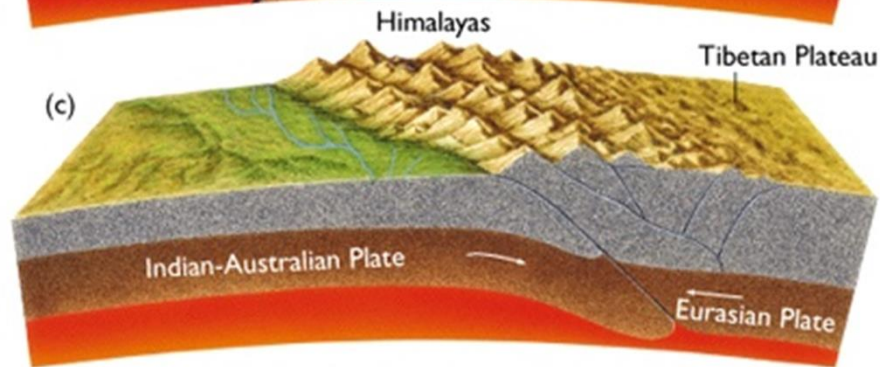
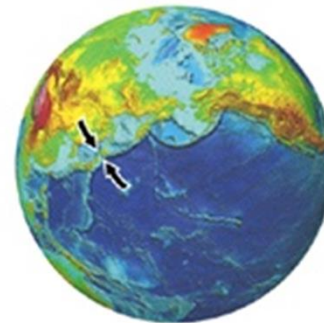
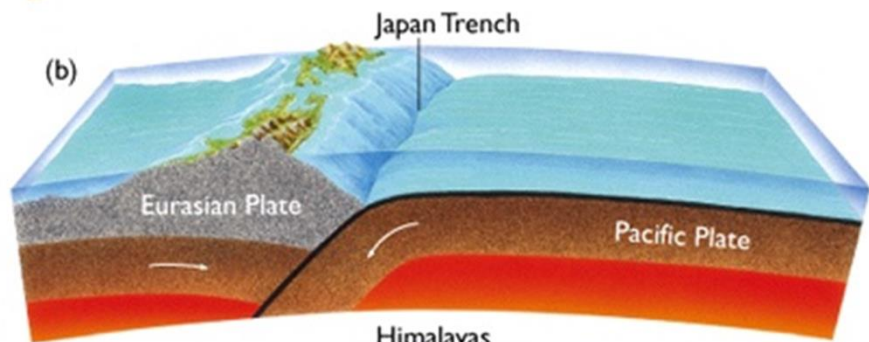
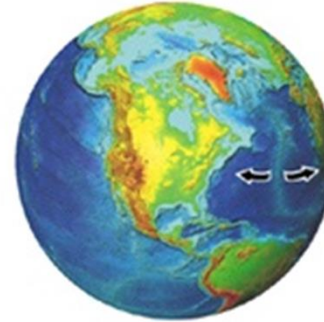
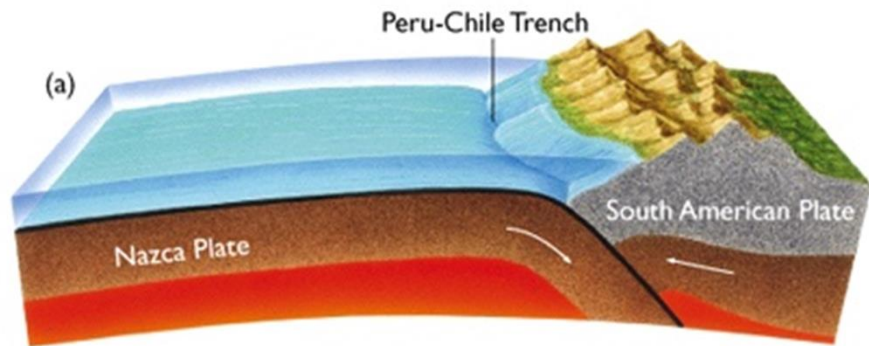
RIFTING

causes

SEAFLOOR SPREADING



مرز های همگرا Convergent Boundaries



There are 3 types of Convergent Boundaries...

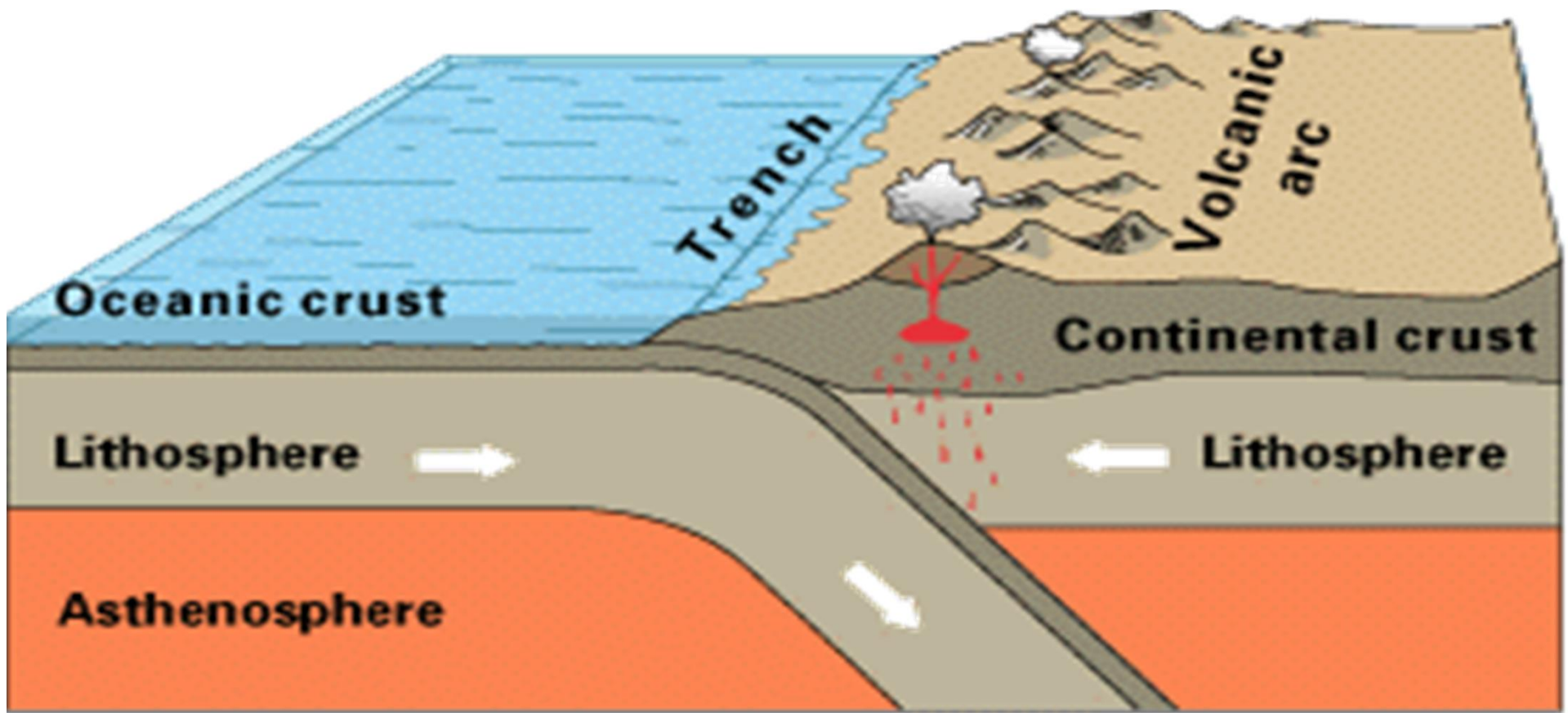
Type 1

Ocean plate colliding with a less dense **continental plate**

Subduction Zone: The process by which oceanic crust sinks beneath a deep-ocean trench and back into the mantle at a convergent plate boundary.

There are 3 types of Convergent Boundaries...

Type 1



Oceanic-continental convergence

Type 2

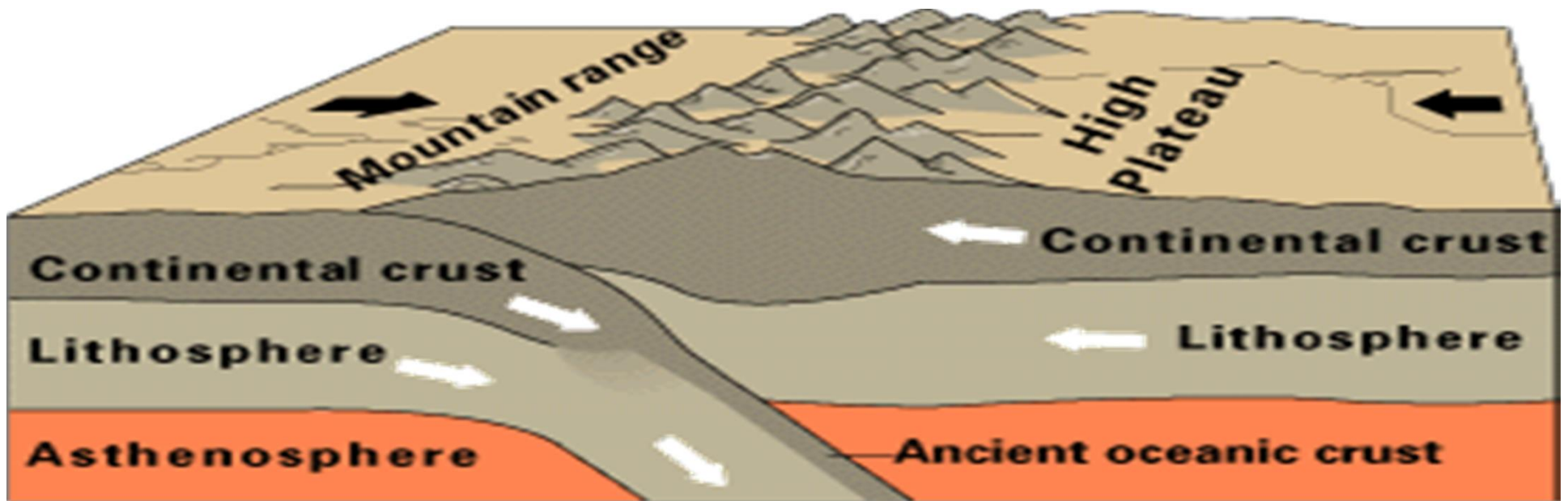
- **Ocean plate** colliding with another **ocean plate**
- The less dense plate slides under the more dense plate creating a **subduction zone** called a **TRENCH**



Oceanic-oceanic convergence

Type 3

- A **continental plate** colliding with another **continental plate**
- Have **Collision Zones**:
 - A place where **folded** and **thrust faulted mountains** form.

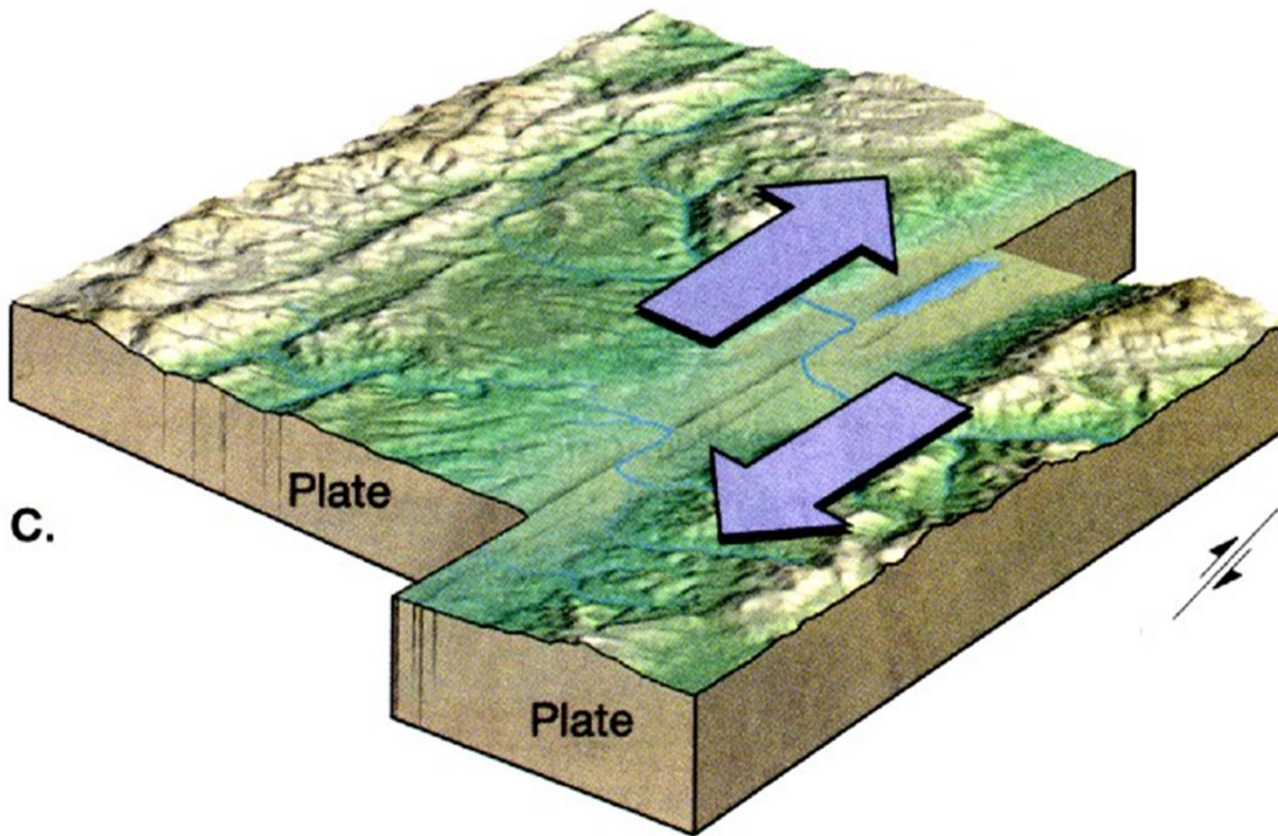


Continental-continental convergence

Transform Boundaries

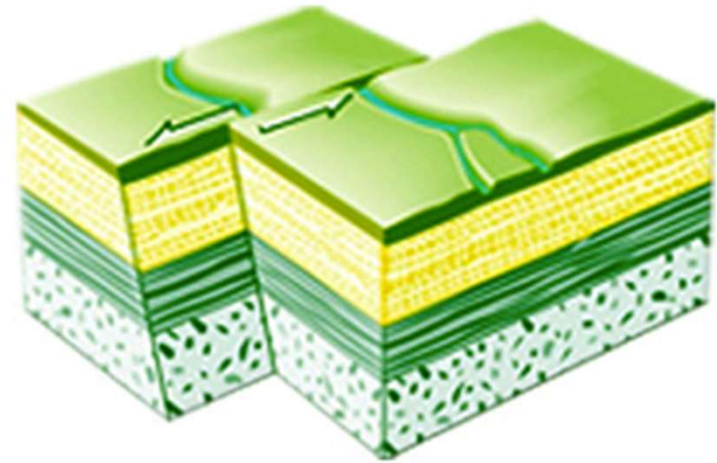
مرزهای گسلی ترانسفورم

A plate boundary where two plates move past each other in opposite direction.



How is the rock broken at Transform Boundaries?

- Rock is pushed in two opposite directions (or sideways, but no rock is lost)

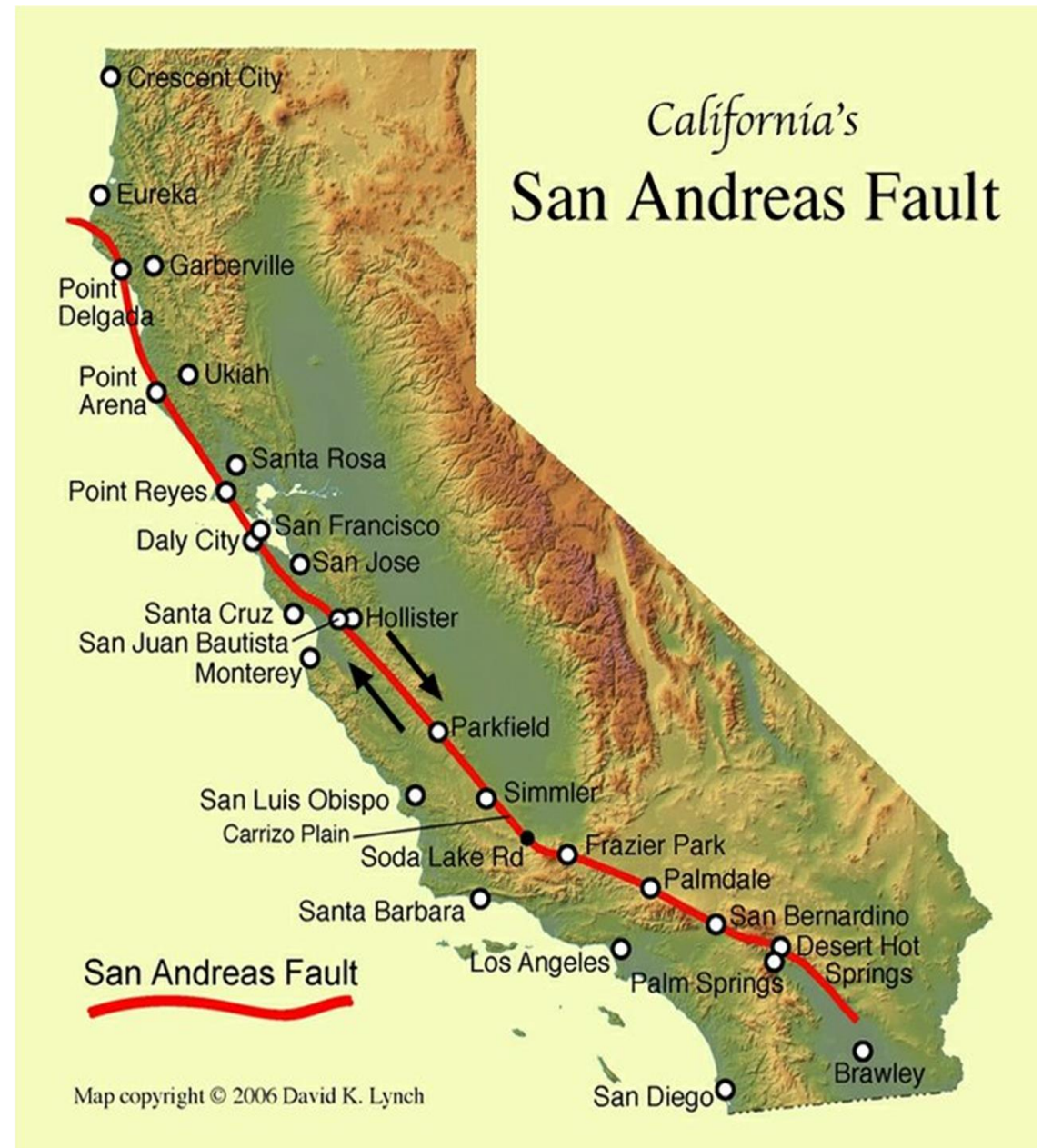


- This stress is called **SHEARING**

Transform Fault

What happens next at Transform Boundaries?

- May cause **Earthquakes** when the rock snaps from the pressure.
- A famous fault @ a Transform Boundary is the *San Andreas Fault in California.*



San Andreas Fault, CA



What happens when the rock is sheared (or “cut”) from the **Stress of Shearing**?

- A **STRIKE-SLIP FAULT**
- Rocks on each side of the fault slip past each other as they break.

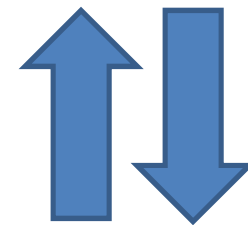
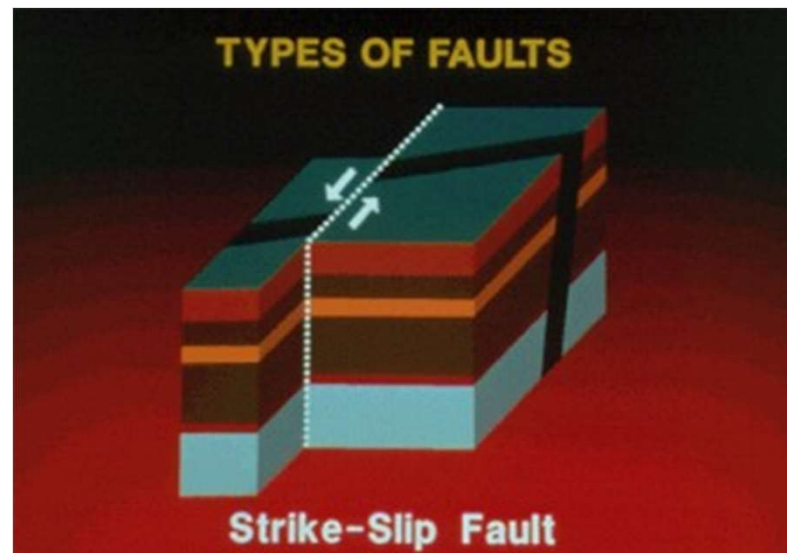
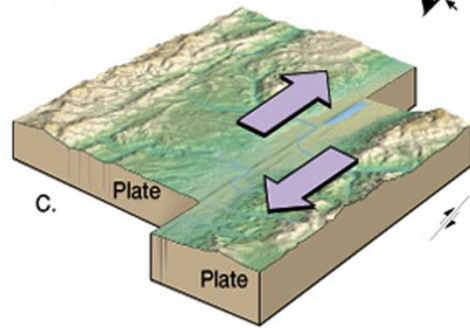
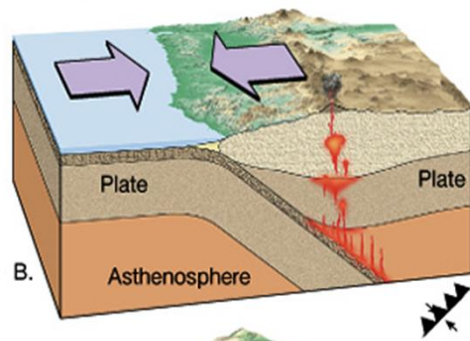
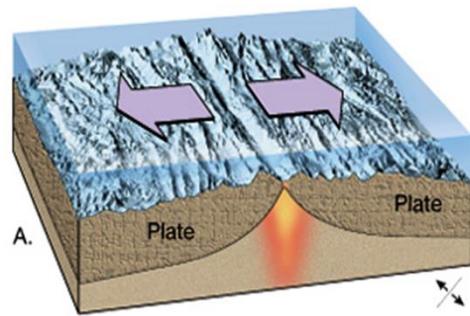


Plate Boundaries:



Can you match the boundary name correctly with its diagram?

A. _____

B. _____

C. _____

Plate Boundaries:

- Correct Answers:

A. Divergent

B. Convergent

C. Transform

