

1. Sea-floor Spreading
2. Plate Boundaries and Interactions

The story so far...

- Name the four layers of Earth, in order from the inside out.

- What important process occurs in the mantle? Draw a diagram to explain your answer.

- How does this contribute to plate movement?

Sea-floor Spreading

Mid-Atlantic Ridge

- In 1872, a British vessel HMS Challenger set out to map the ocean floor.
- The _____ discovered a long mountain range running north and south down the length of the _____ ocean.
- They called this the _____.



- Oceanographers found that the _____ rocks were found _____ to the ridge... Why?

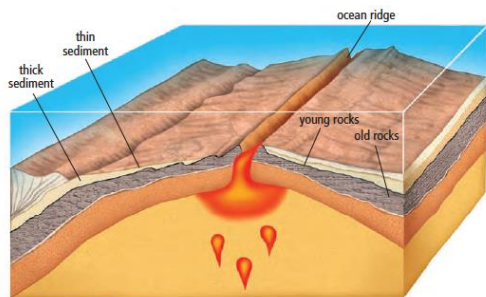


Figure 12.8 With increasing distance from the centre of a ridge, rocks on the sea floor are older and the ocean sediment is thicker.

- In 1960, Harry Hess proposed an explanation:

- _____ rises from _____ the Earth's surface
- When it breaks through the Earth's surface, it hardens and forms _____
- _____ forces apart the hardened material and continuously _____

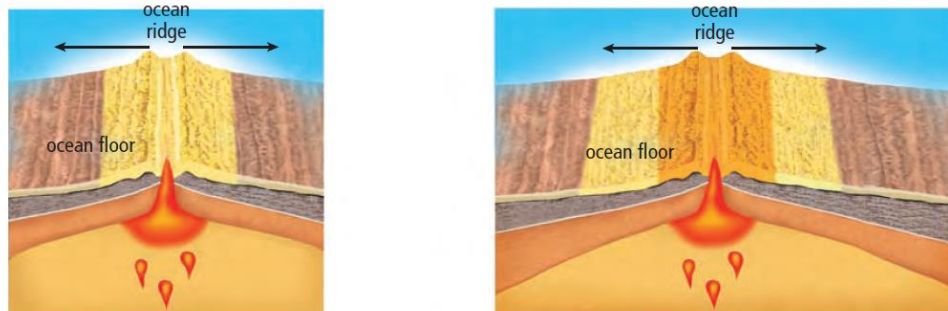
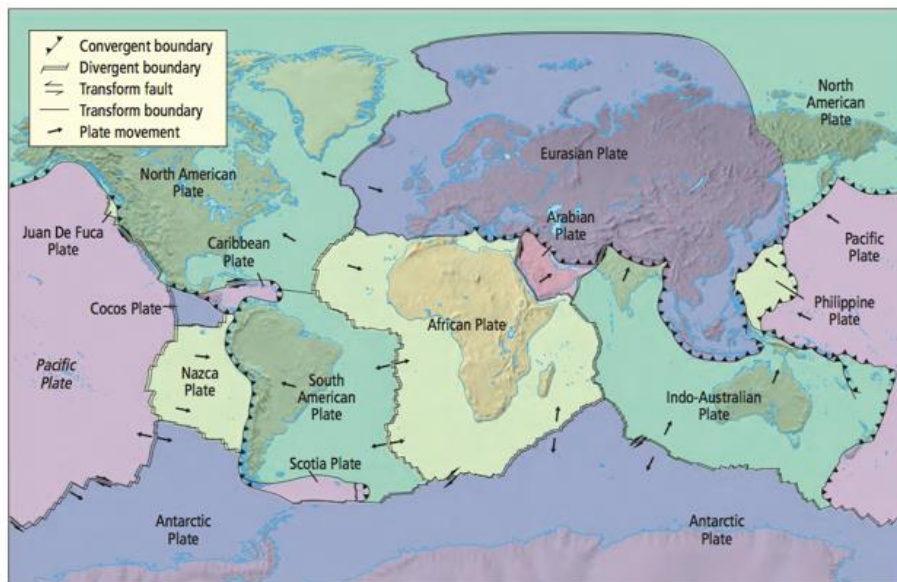


Figure 12.11 Convection currents under Earth's surface may cause magma to rise, which causes the sea floor to spread apart.

Plate Boundaries and Interactions

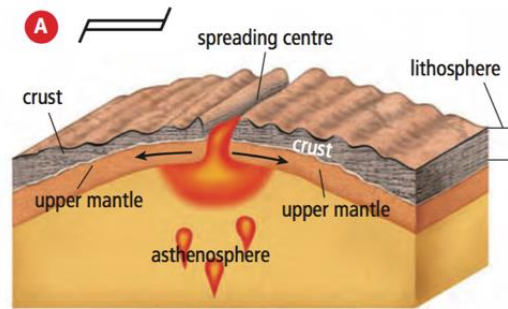
- A plate boundary is a region where _____ tectonic plates are _____



- The way in which tectonic plates interact depends on...
 - The _____ of the plate.
 - The _____ of plate movement.

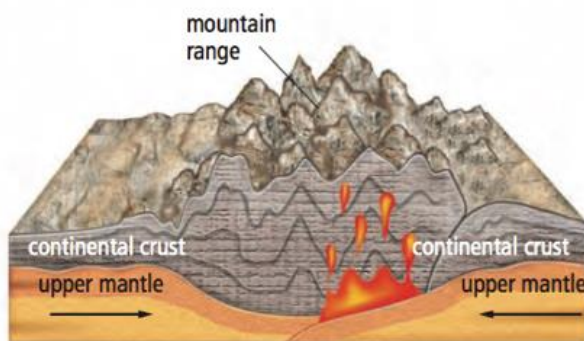
DIVERGENT

- Divergent plate boundaries mark the areas where _____ plates are _____ apart.
- In the ocean, sea floor spreading causes plates to _____.
- Ex.



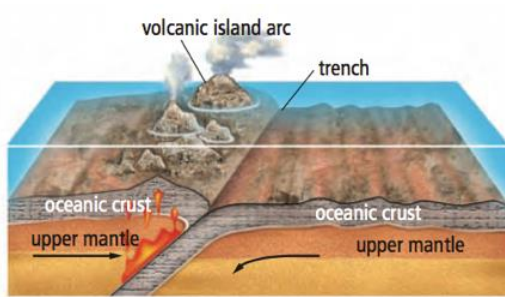
CONVERGENT

- Convergent plate boundaries occur where _____ plates _____.
- Depends on the _____ of the plates.
- Three types:
 1. **Continental plate + continental plate**
 - Plates have similar _____.
 - As the plates _____, their edges _____ and _____, forming great _____ ranges
 - Ex.



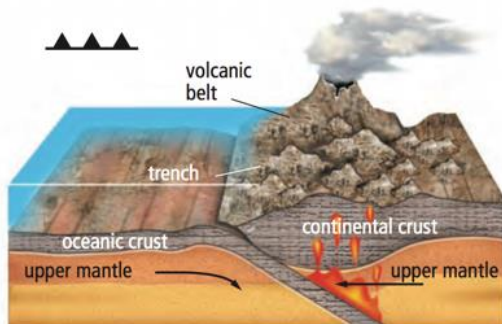
2. Oceanic plate + oceanic plate

- _____ occurs where the _____ dense (_____) plate will slide _____ the _____ dense (_____) plate and deep into the mantle.
- A deep underwater valley called a _____ is formed
- Can produce a _____
- Ex.



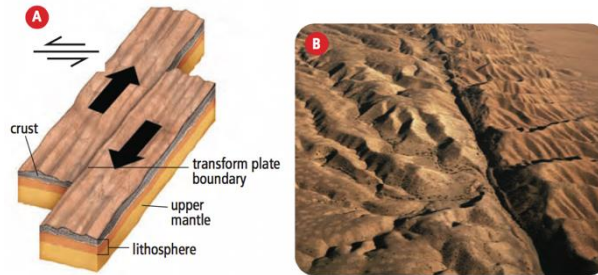
3. Oceanic plate + continental plate

- Ocean plate is _____ dense (_____) and is forced to slide _____ the continental plate.
- Also produces an _____
- Ex.



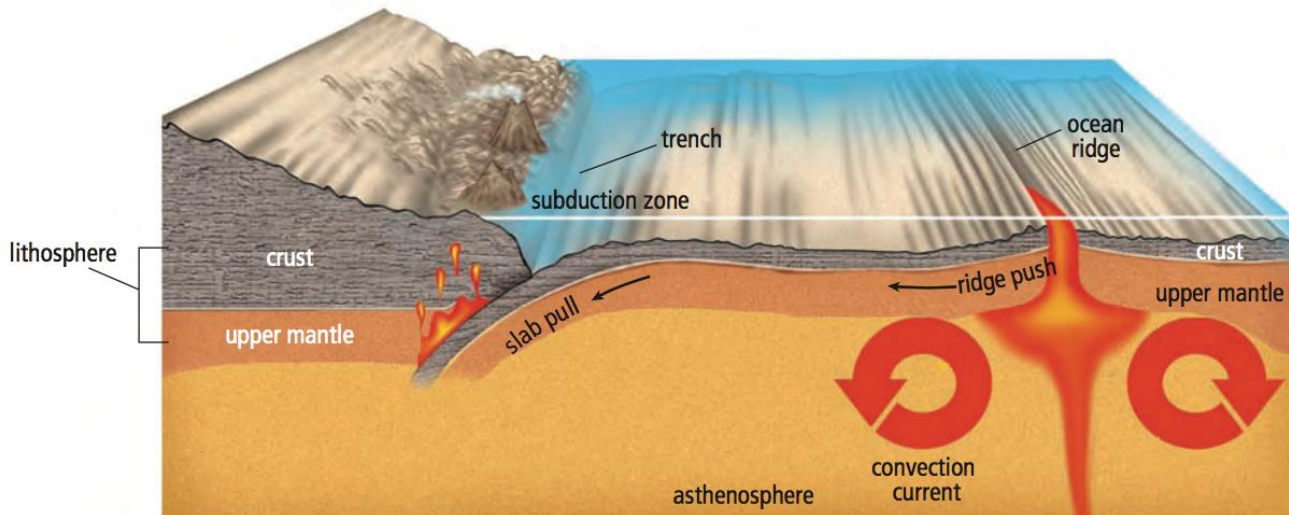
TRANSFORM

- Transform plate boundary occurs when _____ plates _____ past one another.



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- Ex.



Summary Questions

1. Match the term with the descriptor:

Term	Descriptor
1. ____ Continental drift theory	A. The region where magma breaks through Earth's surface, continually forcing apart old rock and forming sea floor
2. ____ Plate tectonic theory	B. The large slabs or rock that form Earth's surface and move over a layer of partly molten rock
3. ____ Spreading ridge	C. The original super continent
4. ____ Pangaea	D. The theory that the crust is broken up into large plates that move and then rejoin
5. ____ Magma	E. A process that provides an explanation for continental drift
6. ____ Mid-Atlantic Ridge	F. A long mountain range running north to south down the length of the Atlantic Ocean
7. ____ Sea floor spreading	G. The most inner layer of the Earth
8. ____ Convergent plate boundary	H. An area where tectonic plates are spreading apart
9. ____ Divergent plate boundary	I. The most outer layer of the Earth
10. ____ Transform plate boundary	J. An area where tectonic plates collide
11. ____ Crust	K. The second most inner layer of the Earth
12. ____ Mantle	L. Hot fluid below or within the Earth's crust
13. ____ Inner Core	M. The layer of the Earth where convection currents occur
14. ____ Outer Core	N. An area where tectonic plates slide past one another
15. ____ Tectonic plates	O. The theory that the continents have not always been in their present locations but have moved over millions of years.

2. What is a tectonic plate?

3. What is the Mid-Atlantic Ridge and how was it formed?

4. Identify the Mid-Atlantic Ridge on the map below.



5. Using your notes and/or the internet, describe the type of plate interactions that have occurred at the following geographic locations.

Geographic Location	Plate Interaction
1. East African Rift	
2. Juan de Fuca Plate & North American Plate	
3. Islands of Japan	
4. Himalayan mountains	
5. San Andreas Fault	

6. When continental plates collide, does subduction occur? Explain your answer.

7. What geological feature is formed at subduction zones?