Earth Science
**Earth's Interior**

- The three main layers of Earth are the crust, the mantle, and the core.

Layers of the Earth are similar to the layers in a hard-boiled egg!
Earth’s Crust

Typically, oceanic crust is composed of the more dense igneous rock, basalt. The continental crust is composed of the less dense granite. When they collide, the oceanic crust sinks below the continental crust.
Convection and the Mantle

- There are three types of heat transfer: radiation, conduction, and convection.
- Convection currents move because hotter material is less dense than cooler material and will rise/float. Cooler material is more dense & sinks.
Wegener's hypothesis was that all the continents were once joined together in a single landmass and have since drifted apart.

Alfred Wegener

Pangaea – the super continent
**Evidence of Continental Drift**

Alfred Wegener identified:

- 1. Continents fit together like the pieces to a **puzzle**
- 2. Fossil evidence of dinosaurs and prehistoric plants
- 3. Geologic rock and sediments

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Sea-Floor Spreading

- The longest chain of mountains in the world is the system of mid-ocean ridges.
- In sea-floor spreading, the sea floor spreads apart along both sides of a mid-ocean ridge as new crust is added. As a result, the ocean floors move like conveyor belts, carrying the continents along with them.
- Evidence supported the theory of sea-floor spreading: eruptions of molten material, magnetic stripes in the rock of the ocean floor, and the ages of the rocks themselves.
The Theory of Plate Tectonics

- The theory of plate tectonics explains the formation, movement, and subduction of Earth's plates.
Plate Tectonics

Major tectonic plates of the world.

Possible Causes of Tectonic Plate Motion

1. Ridge push: As the oceanic ridge, the oceanic lithosphere is hotter, moves away from the ridge, causing the crust moving over it to push towards the mid-ocean ridge.
2. Slab pull: Subduction occurs when oceanic plates sink into the mantle at subduction zones. The denser oceanic material sinks into the mantle as the plate goes down, pulling the rest of the oceanic plate with it.
3. Slab pull: As subduction occurs, the oceanic plate is forced deep into the mantle, creating a subduction zone. This causes the oceanic plate to be pulled down, adjusting the rest of the tectonic plate.
There are three kinds of plate boundaries:
- **Divergent**: spreading boundaries
- **Convergent**: colliding boundaries
- **Transform**: sliding boundaries.
Divergent Boundaries

- The place where two plates move apart
- **Sea Floor Spreading**: most spreading boundaries occur at the mid-ocean ridge.
- A deep valley called a **rift valley** forms along the spreading boundary

![Diagram of Divergent Boundaries](image)
Convergent Boundaries

- Continental – Continental
- Oceanic – Oceanic
- Continental - Oceanic
Transform Boundaries

- AKA Strike-Slip
No more !!