Ch 9.1 Notes

Objective: Be able to explain the theory of plate tectonics and be able to explain evidence that supports it.
Pangaea

- Alfred Wegener proposed that land on Earth formed a single, huge landmass.
  - It was called **Pangaea**, a Greek name that means “all lands.”
  - About 225 million years ago, the land on Earth was part of one supercontinent called Pangaea.
Evidence

• The pieces of Pangaea moved apart to form the seven continents.
  – This is called **continental drift**.

• Evidence:
  – Mountains from different continents matched up.
  – Same Fossils and plants found on different continents.
  – Glacier streak marks found on rocks in Africa, South America, and Australia.
  – Same rock types.
  – Continents fit like puzzle pieces.

• Wegener’s idea was not accepted by everyone because it did not explain what caused the continents to move.
Mid-Ocean Ridges

• In the middle of the Atlantic ocean there are mountain ranges called **mid-ocean ridges**.
  – The mountains are about 2.8 miles above the sea floor.
  – The ridges are spilt in the middle by either a valley or by a rise.
Ch 9.1 Notes

Objective: Be able to explain the theory of plate tectonics and be able to explain evidence that supports it.
Objective: Be able to identify 3 types of plate boundaries.
Tectonic Plates

- Earth’s crust is broken into many plates.
- How the continents moved is explained by a theory called **plate tectonics**.
  - Tectonics means construction or building.
  - The movement of the plates causes earthquakes and volcanoes.
  - North American plate is moving at a rate of 1 to 10 cm a year to the west.
Types of Plate Boundaries

- Divergent (← →) – plates are moving away from each other.
Divergent Boundary – *moving away* (2 oceanic plates)

- Mid-ocean ridge will form
  - Inside the ridge a valley forms called a **rift valley**
- Volcanoes & earthquakes both occur.
Divergent Boundary – moving away (2 continental plates)

- Earthquakes and volcanic activity occur here.
Types of Plate Boundaries

- Convergent (→ ←) – plates are moving towards each other.
Convergent Boundary — moving towards
(2 oceanic plates)

- Molten rock rises to the surface to form a chain of volcanic islands called an island arc
Convergent Boundary — moving towards (oceanic & continental plates)

- Where one plate moves under another plate is called the subduction zone.
- A deep ocean trench forms along the subduction zone.
- Earthquakes, volcanic activity, and mountains happen here.
Convergent Boundary – *moving towards*
(2 continental plates)
Types of Plate Boundaries

- Transform – plates are sliding past each other.
Transform Boundary — grind past each other

- Earthquakes only
San Andres Fault

- Earthquakes only
Ch 9.4 and 9.5 Notes

Be able to...

• What is seafloor spreading?
• How does paleomagnetism support the theory of plate tectonics.
• Identify what a hot spot is.
Seafloor Spreading

• Sea-floor spreading describes the sea floor on either side of a mid-ocean ridge as moving away from the ridge.
Seafloor Spreading & Ocean Drilling

- Seafloor spreading is a process that produces new oceanic crust.
- Youngest oceanic crust is at the ridge.
- Oldest oceanic crust is farthest away from the center, or closer to the continents.
Paleomagnetism

- As rocks cool the iron in them becomes magnetized in the direction of Earth’s magnetic field.
Paleomagnetism

• Rocks that show the same magnetism as present magnetic field are described as having normal polarity.

• Rocks that are opposite have reversed polarity.
Hot Spots

- A rising plume of mantle melting the crust creates a hot spot or volcanic area.