**Tectonics**

**What is plate tectonics?**

* The theory that the plates continuously move at a slow pace.
  + “Tectonic” – deformation of the crust by plate movement
  + Continental Drift: theory that the continents are slowly shifting.

**What are the plates?**

* Plates are made of rigid **lithosphere.**
  + The crust and upper mantle
* Plates are moved by the liquid **asthenosphere.**
  + Middle mantle
  + Has plastic qualities that allow plates to move

**How fast?**

* Plates move at 1-10 cm/year
  + The same rate as your fingernails grow!

**Pangea and Panthalassa**

* Pangea – the most recent super continent
  + Based of the Latin words *pan*- for “all” and *gaia* for “Earth.”
  + Separated to form today’s continents
  + Evidence of drift is found by:
    - Comparing fossils
    - Rock formations
    - Evolutionary similarities
* Panthalassa - the most recent super ocean
  + Based off the Latin words *pan-* for “all” and *Thalassa* for “Mediterranean” (a sea)
  + Took up the rest of the space that Pangea wasn’t in

**Plate Boundaries**

* Plates move in different ways at their boundaries
* 3 types of boundaries:
  + **Divergent – spreading apart**
    - Make: mid-ocean ridges 🡪 volcanoes
      * Ex: Mid-Atlantic Ridge
      * Iceland is being ripped in half by a violent divergent boundary
  + **Convergent – plates collide**
    - 3 types 🡪 make 3 different things
      * Land-Land 🡪 mountains
        + Ex: Himalayas
      * Land-Ocean 🡪 subduction zones
        + Heavy ocean plate sinks down
        + Melts rocks to fuel volcanoes
        + Ex: the Andes
      * Ocean-Ocean 🡪 trenches
        + Both plates are heavy and push down
        + Ex: Mariana Trench – 11km deep!
  + **Transform – plates slide past**
    - Least common boundary
    - Cause earthquakes
      * Ex: San Andreas Fault: most volatile fault on the planet!