Section 8.3: Plate tectonics

-The planet’s lithosphere is broken up into plates (diagram page 245)

-The ‘line’ where those plates meet up are called BOUNDARIES

-When the plates are moving away from each other, the boundary is called DIVERGENT

(DIVERGE = move apart)

-When the plates are pushing together at a boundary, it is called CONVERGENT

(CONVERGE = come together)

-When the plates are “sliding” past each other (parallel to the plate edges/boundary) the boundary is called a TRANSFORM BOUNDARY

the Theory of Plate Tectonics

-once, people thought the world had always been as it looked

-Scientists began to think that the continents were floating on the surface of the Earth because of how the different continents fitted together along their edges

-Scientists learned about the bottom of the oceans (including the continental shelves), and they studied volcanoes and earthquakes

-Scientists realized that it wasn’t just the continents that ‘floated’

-The entire crust moves, and the theory of PLATE TECTONICS was proposed to explain the development of ocean bottoms, mountain ranges, and volcanoes.

-The plates move as a result of the action of giant convection current sin the mantle.

Convergent Boundaries

-When two plates are pushing into each other

-One of the plates will slip under the other one (Oceanic under Continental)

-The Continental plate will be lifted up, forming mountains like the Western Cordillera (including the Rocky Mountains), The Andes (South America) and of course the Himalayas (including Mt. Everest)

-The other plate slides under, being slowly ‘re-absorbed’ into the mantle.

-The area, or ‘zone’ where the plate goes under is called a SUBDUCTION ZONE (page 246)

-The Subduction zone is an area subject to volcanoes and earthquakes due to the huge amount of friction and energy being bottled up where the two plates hit each other.

-The Ocean at a subduction zone may be very deep, forming a TRENCH. The Marianas Trench in the Pacific Ocean is the deepest water on the planet.

Divergent boundaries

-When two plates are moving apart.

-On a continent, a divergent boundary causes a RIFT VALLEY to form. Examples of rift valleys include the Great Rift Valley in Africa (see my photo shows) and even the Rocky Mountain Trench you enter as you drive to Cranbrook.

-when the divergent boundary is under an ocean, you get the formation of a MID-OCEAN RIDGE (page 247) as the plates move apart and fresh ocean floor is formed from the actions of magma. Iceland sits right on top of the Mid Atlantic Ridge!

Transform boundaries

-Two plates sliding past each other “in opposite directions”

-Usually jam up until the forces pushing the plates overcomes the friction, and then they move ‘suddenly. The San Andreas Fault in California is a good example of a transform boundary.

See page 249 to get a look at the complex plate boundaries off the coast of British Columbia.