7th Grade Unit 4: Restless Earth part 2

*Lesson 3: How do mountains (mt.s) form?*

*Vocab: deformation, folding, fault, shear stress, tension, compression*

Deformation- the process by which a rock changes shape when under stress

* Movement of tectonic plates causes stress (force on an area)
* Divergent boundary (pull apart) creates tension
* Convergent boundary (push together) creates compression
* Transform boundary (slide side-to side) creates shear stress
* Rock changes shape when put under stress at high temps.
* If applied fast it will break (fault) is more slowly it will bend (fold)

Fold- when rock layers bend under stress

* Folds form in synclines (youngest layers at the core) and anticlines (oldest layers at the core)

Fault- form when large blocks of rock break and move past each other

* 3 kinds of faults
	+ Strike-slip fault- blocks move past each other horizontally
		- Created by shear stress (stress that pushes rocks in a parallel but opposite direction)
		- Along transform boundaries
		- Cause earthquakes
		- Ex. San Andres fault in CA
	+ Normal fault- one block (hanging wall) moves down relative to the other (foot wall)
		- Created by tension (stress that stretches or pulls rock apart)
		- Along divergent boundaries
		- Creates rifts or a ridge
		- Ex. Great Rift Valley in Africa
	+ Reverse fault- one block (hanging wall) moves up relative to the other (foot wall)
		- Created by compression (stress that squeezes or pushes rock together)
		- Along convergent boundaries
		- Creates mt.s
		- Ex. Himalayan Mt.s Asia



3 types of Mts.

* Form from folding, faulting, or volcanism
	+ Uplift is the process that pushes land upward and can also help create a mt.
* Folded mt.
	+ From rock getting squeezed together and folding
	+ At convergent boundaries
	+ Ex. Appalachian Mts.
* Fault-block mts.
	+ From tension breaking rock into normal faults
	+ Ex. Grand Tetons and Sierra-Nevadas
* Volcanic mts.
* Many form at convergent boundaries
	+ On land or the ocean floor
	+ Most are located in the “Ring of Fire” around the Pacific ocean

*Lesson 4: How do volcanoes change Earth’s surface?*

*Vocab: volcano, magma, lava, vent, tectonic plate, hot spot*

Volcano- any place where gas, ash, or melted rock come out of the ground

Magma- melted rock under the surface

* Less dense than solid rock so it tries to move up to the surface
* When it reaches the surface it is called lava
* Lava and ash clouds erupt out of an opening in the volcano called a vent



Kinds of volcanoes

* Volcanic Mts.
	+ Viscosity is a liquid’s resistance to flow (glue is viscous)
	+ Low-viscosity lava erupts low sloped Mt. and no large explosions
	+ high-viscosity lava erupts into steep slopes and big explosions
	+ Shield volcano- broad base and covers a big area (Hawaii)
	+ Cinder cone-created with hardened pieces of lava and ash; sometime form at a secondary vent in a composite volcano
	+ Composite volcano-alternating layers of low and high viscosity lava; both explosive and mild eruptions create large steep sides
* Fissure and lava plateau
	+ Fissure is a crack in the Earth where lava flows from
	+ On land or ocean floor
	+ No crater or center opening lava flows from the whole thing
	+ When the lava cools it creates a big flat area called a lava plateau
* Craters and calderas
	+ Crater is an opening or depression caused by an eruption
	+ If the magma chamber empties out the ground can collapse in creating a caldera
	+ Ex. Yellowstone

Volcanos form

* Along the edges or in the middle of tectonic plates (giant sections of the lithosphere of Earth)
* At divergent boundaries
	+ Often fissure volcanoes
	+ Underwater volcanoes along the mid-atlantic ridge
	+ Cinder cones and shield volcanoes form along the boundary in Iceland
	+ Inside a continent it forms a rift valley
* Convergent boundaries
	+ Composite volcanoes form
	+ Calderas can also form
* At hot spots (a place where extremely hot mantle rises through the asthenosphere)
	+ Over a mantle plume
	+ Forms shield volcanoes
	+ As the plate moves over the hot spot it will make an archipelago
	+ Ex. Hawaii and Yellowstone