Topic: Geology

|  |  |
| --- | --- |
| Part of the Earth | Facts |
| Crust | * Thin, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_layer of Earth
* Oceanic crust is 7 km thick which is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_plates
 |
| Mantle | * 82% of the Earth’s volume
* Solid rock at the \_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at the bottom
 |
| Lithosphere | * The crust and uppermost mantle
* Cool, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_shell
* 100 km thick
 |
| Asthenosphere | * Soft, comparatively weak layer
* Below the lithosphere
* Rock \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ melting
 |
| Outer Core | * Liquid layer 2260 km thick
* Metallic iron generates Earth’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ field
 |
| Inner Core | * Solid layer having a radius of 1220 km
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ temperatures and \_\_\_\_\_\_\_\_\_\_\_\_ pressure
* Nickel mostly
 |

Rock: Any solid mass of mineral or mineral-like matter that occurs naturally as part of our planet
Three types: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**,**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| Vocabulary Word | Definition |
| Weathering |  |
| Compaction |  |
| Melting |  |
| Cementation |  |

Rock cycle:

* A continuous process
* Driven by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy


Igneous Rock -----------------------------> Sedimentary Rock

Sedimentary Rock ------------------------> Metamorphic Rock

Metamorphic Rock ------------------------> Igneous Rock

Metamorphic Rock -------------------------> Sedimentary Rock

Topic: Continental Drift Theory

**Explanation of the Theory**

* Proposed by Alfred Wegener
* Stated that the continents had once been joined to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ supercontinent
* Wegener’s Theory
	+ Pangaea broke apart 200 MY
	+ Continents “drifted”, Continents “broke” through the oceans

**Pangea**:

**Evidence of Continental Drift Theory**

1. Shorelines look like they \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Fossil organisms \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_landmasses
3. Mountain Ranges:
4. Glacier Evidence:

Mountain Ranges



**The Plate Tectonic Theory**:

Proposes that Earth’s outer shell consist of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_plates that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_in various ways and thereby produce earthquakes, volcanoes, mountains, and the crust itself


**Mantle Convection**

* Basic \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for plate movement
* The unequal distribution of heat within Earth causes thermal convection the drives plate motion

**Divergent Boundaries**

* Also called spreading centers
* When two plates move \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Creates new \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 (seafloor spreading)

* Causes ocean ridges and rift valleys


Convergent Boundaries

|  |  |  |  |
| --- | --- | --- | --- |
| Type of Convergent Boundary | Oceanic-Continental boundaries | Continental-Continental Boundaries | Oceanic-Oceanic boundaries |
| Landform Created | Causes subduction zones,\_\_\_\_\_\_\_\_\_\_\_, continental volcanic arcs | Two plates collide - Forms\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | One oceanic plate goes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_another oceanic plateCreates volcanic island arcs |





**Volcanoes**:

Definition: A mountain \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and/or pyroclastic material

Difference:

Magma – molten rock \_\_\_\_\_\_\_\_\_\_\_\_\_ Earth
Lava – molten rock \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Earth’s surface

Gases

* 70% water vapor
* 15% carbon dioxide
* 5% nitrogen
* 5% sulfur

Pyroclastic material

* Fragments\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ during eruptions
* Varies in size from very fine and volcanic ash to pieces that weigh several tons

**Hot Spots**:

Small volcanic region a few hundred kilometers across within a plate
Ex: Hawaiian Island

Transform Boundary

* Two plates grind \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ without production and destruction of lithosphere
* Ex: San Andreas Fault in California


**Faults**:

* Faults are formed by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in rocks
* Parts of a Fault
	+ Hanging wall: rock above the fault line
	+ Foot Wall: rock below the fault line

**Earthquake**:

* Vibration of Earth produced by a sudden release of energy
* Movements along the fault line

|  |  |
| --- | --- |
| Focus  | point within the Earth where the Earthquake starts |
| Epicenter  | location on the surface of Earth directly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Fault-  | associated with earthquake activity where \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

Waves:

1. Surface
	1. Seismic waves that travel along Earth’s outer layer
	2. Most \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ earthquake waves
	3. Last to arrive at the seismograph
2. P waves
	1. Can travel through solid, liquid, and gas
	2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ waves
3. S waves
	1. Can only travel through \_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. Slower than P waves but faster than surface waves
	

Intensity and Magnitude of Earthquakes

**Intensity** - A measure of the amount of earthquake \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at a given location

**Magnitude**
the amount of energy released \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an earthquake
Scale 0-10, 2.5 is the weakest damage

Tsumani

Seismic sea waves
Triggered by an earthquake occurring where a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is displaced vertically along a fault

