Name _____
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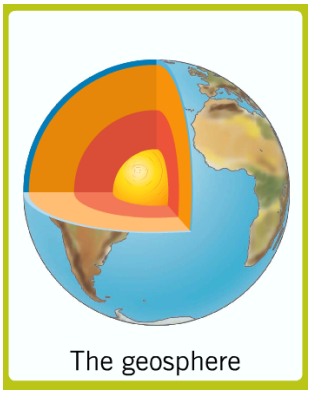
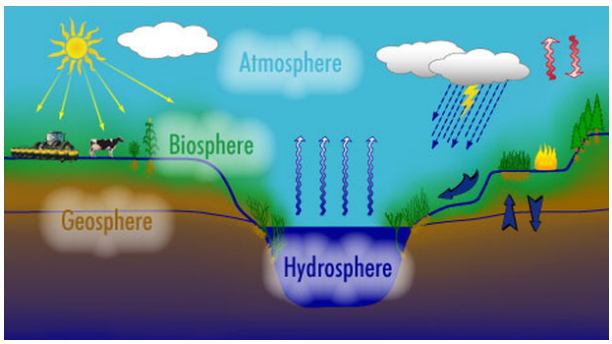

The geosphere

Chapter 3
The Dynamic Earth
Section 1, The Geosphere

The Earth as a System

- The Earth is an integrated system that consists of _____ _____ that all interact with each other.
- Scientists divided this system into four parts:
  - _____
  - _____
  - _____
  - _____



The Earth is an integrated system that consists of the geosphere, the atmosphere, the hydrosphere, and the biosphere

The Earth as a System

- The _____ is the mostly solid, _____ of the Earth that extends from the center of the core to the surface of the crust.
- The _____ is the mixture of gases that makes up the air we breathe.
- Nearly all of these gases are found in the first _____ above the Earth's surface.

The Earth as a System

- The **hydrosphere** makes up all of the _____ _____.
- Much of this water is in the _____, which cover nearly **three-quarters of the globe.**
- However, water is also found in the _____, on _____, and in the _____.

The Earth as a System

- The _____ is the part of the Earth where life exists.
- It is a thin layer at the Earth's surface that extends from about _____ above the Earth's surface down to the _____.
- The _____ is therefore made up of parts of the geosphere, the atmosphere, and the hydrosphere.

Discovering Earth's Interior

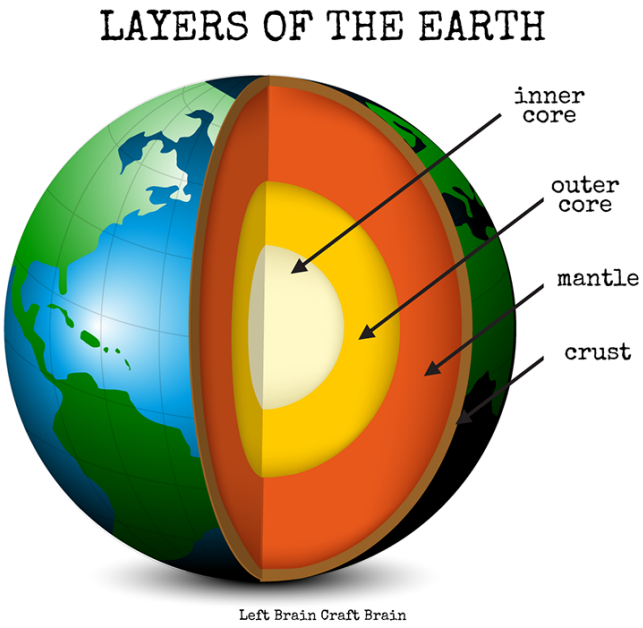
- Scientists use _____ to learn about Earth's interior.
- Seismic waves are the same waves that travel through Earth's interior during an _____.
- A similar process would be you tapping on a melon to see if it is ripe.

Discovering Earth's Interior

- A seismic wave is _____ through which it travels.
- Seismologists measure changes in the _____ of seismic waves that penetrate the interior of the planet.
- With this technique, seismologists have learned that the Earth is made up of _____ _____ and have inferred what substances make up each layer.

The Composition of the Earth

- Scientists divide the Earth into four layers:
  - _____
  - _____
  - _____
  - _____
- These layers are made up of progressively _____material toward the center of the Earth.



The Composition of the Earth

- The _____ is the _____ and _____outermost layer of the Earth above the mantle.
- It is the _____ layer, and makes up less than _____ of the planet's mass.
- It is _____ beneath the oceans and is _____ beneath the continents.

The Composition of the Earth

- The _____ is the layer of rock between the Earth's crust and core.
- The mantle is made of _____ of medium density, and makes up _____ percent of the mass of the Earth.
- The _____ is the central part of the Earth below the mantle, and is composed of the _____.

Earth's Layers based on **Composition** (Listed on Left & Described above)
& **Earth's Layers** based on **Structure**/Physical Properties (listed on Right& described Below)

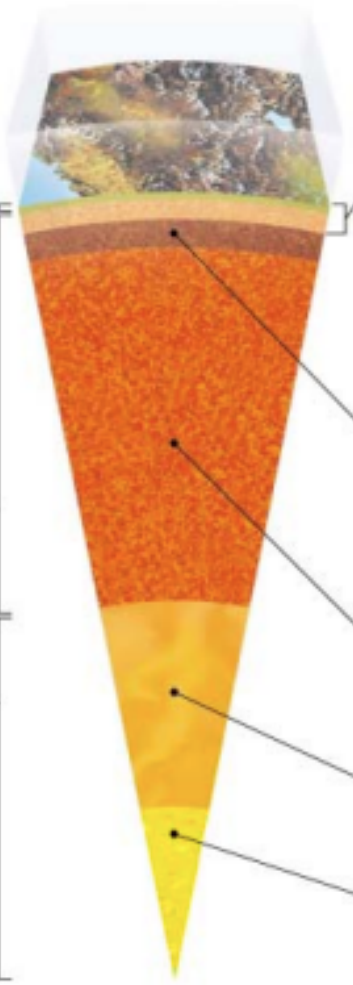


Figure 3 ▶ Earth's Layers
Scientists divide the Earth into different layers based on composition and physical properties.

Crust 5–70 km thick; the solid, brittle, outermost layer of the Earth; continental crust is thick and made of lightweight materials, whereas oceanic crust is thin and made of denser materials

Mantle 2,900 km thick; the layer of the Earth between the crust and the core; made of dense, iron-rich minerals

Core 3,428 km radius; a sphere of hot, dense nickel and iron at the center of the Earth

Lithosphere 15–300 km thick; the cool, rigid, outermost layer of the Earth; consists of the crust and the rigid, uppermost part of the mantle; divided into huge pieces called tectonic plates, which move around on top of the asthenosphere and can have both continental and oceanic crust

Asthenosphere 250 km thick; the solid, plastic layer of the mantle between the mesosphere and the lithosphere; made of mantle rock that flows very slowly, which allows tectonic plates to move on top of it

Mesosphere 2,550 km thick; the "middle sphere"; the lower layer of the mantle between the asthenosphere and the outer core

Outer Core 2,200 km thick; the outer shell of Earth's core; made of liquid nickel and iron

Inner Core 1,228 km radius; a sphere of solid nickel and iron at the center of the Earth

The Structure of the Earth

- The Earth can be divided into _____ layers based on the physical properties of each layer.
- The _____ is the _____ of the Earth that consists of the crust and the rigid upper part of the mantle.
- It is a cool, rigid layer that is 15 km to 300 km thick and is divided into huge pieces called _____.

The Structure of the Earth

- The _____ is the _____ of the mantle beneath the lithosphere.
- It is made of _____ that flows slowly, which allows _____ _____.
- Beneath the asthenosphere is the _____, the lower part of the mantle.

The Structure of the Earth

- The Earth's _____ is a _____ layer.

- At the center of the Earth is a _____, which is made up mostly of _____.
- Although the _____ is estimated to be between 4,000°C to 5,000°C, (_____)it is solid because it is _____.
- The inner and outer core make up about _____ of Earth's mass.

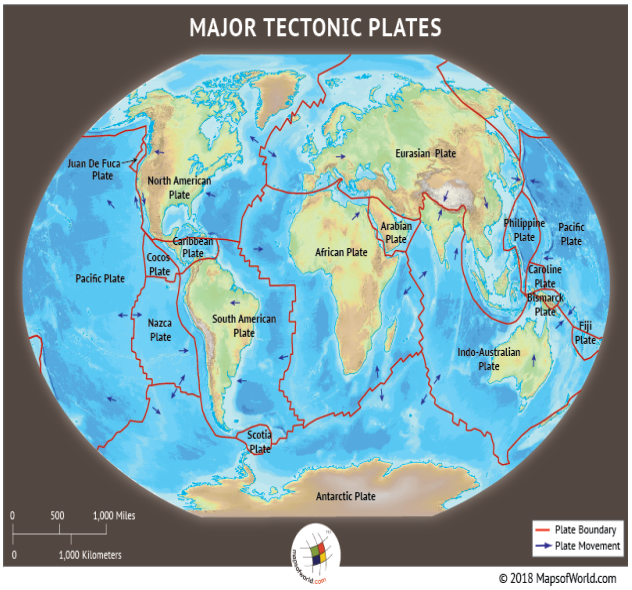


Plate Tectonics

- _____ _____ are blocks of _____ that consist of the crust and the rigid, outermost part of the mantle and glide across the underlying _____ _____.
- The _____ are located on tectonic plates and _____ _____ with them.
- The major tectonic plates include the _____, _____ _____, _____ _____, _____, _____, & _____ plates.

Plate Boundaries

- Much of the _____ at the surface of the Earth takes place at the _____ between tectonic plates.
- Tectonic plates may _____, _____ or _____ _____ one another.
- Enormous forces are generated with these actions causing _____ to form, _____ to shake the crust, and _____ to erupt along the plate boundaries.

Types of Plate Boundaries

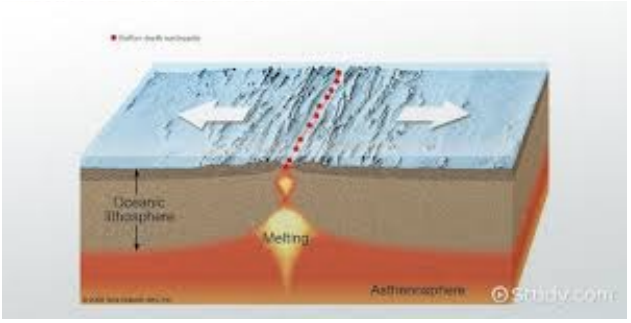
- _____ _____ are continually moving around the Earth's surface.
- When tectonic plates _____, _____ _____ one another, or _____ _____, enormous forces cause rock to _____ and _____.
- The three types of Plate Boundaries are called:
  - _____ (crashing together)
  - _____ (moving apart)
  - _____ (sliding past one another)

Divergent Boundaries:

- A _____ _____ occurs when two tectonic plates _____ _____ _____ each other.
- Along these boundaries, _____ and _____ are common.

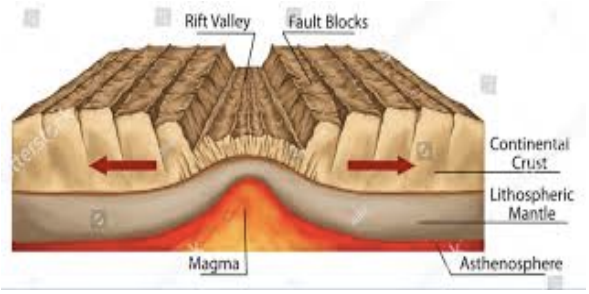
Mid-Ocean Ridges

- **Under the Ocean**- _____(_____ _____) _____ from the Earth's mantle to the surface, solidifying to create _____ _____ _____ at _____- _____ _____.



Rift Valleys

- **Within Continents** divergent boundaries initially produce rifts (like a _____ _____ or tear in the Earth), which eventually become _____ _____.
- An Example would be the _____ _____ _____ in Africa.

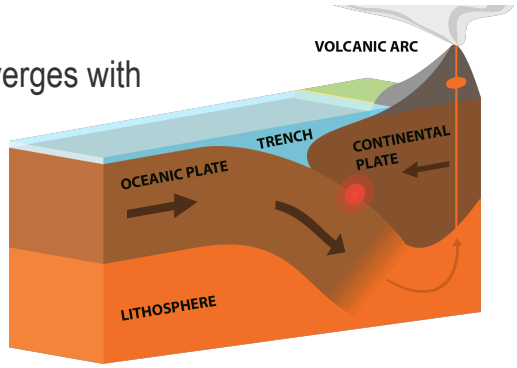


Convergent Boundaries:

- When two plates crash together, it is known as a convergent boundary.

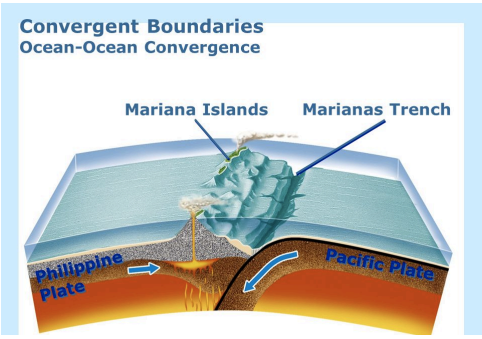
Ocean-Continent convergence (Subduction)

- When _____ _____ converges with _____ _____, the denser oceanic plate _____ _____ the continental plate and melts.
- This process, called _____, occurs at the _____ _____. The entire region is known as a subduction zone.
- _____ and _____ _____ form at subduction zones.
- An example of these is in the _____ _____ in South America



Ocean-Ocean convergence (Subduction)

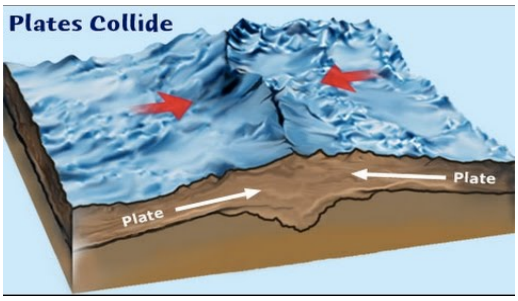
- When a convergent boundary occurs _____ _____ _____ _____, the older, more dense of those plates will _____ _____ the



other and _____ _____.

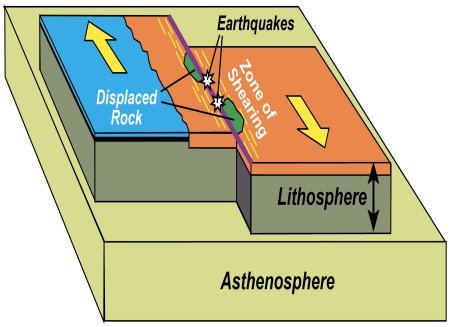
- This process forms the deepest of the _____ _____ _____ such as found at the _____ _____ in the South Pacific Ocean
- It will also form _____ _____.

Continent-Continent convergence



- Continental crust is _____ _____ (light) _____ _____.
- When two continental plates converge, they _____ _____ and _____ _____.
- The amazing _____ _____ are the result of this type of convergent plate boundary.
- The _____ _____ resulted from _____ convergence when _____ _____ _____.

Transform Boundaries-Slide past



- **Transform boundaries** are places where plates _____ _____ _____ _____
- At transform boundaries lithosphere is _____ _____ _____ _____.
- Many transform boundaries are found on the _____ _____, where they connect segments of diverging mid-ocean ridges.
- California's _____ _____ _____ is a transform boundary.
- _____ are very common here.

Earthquakes

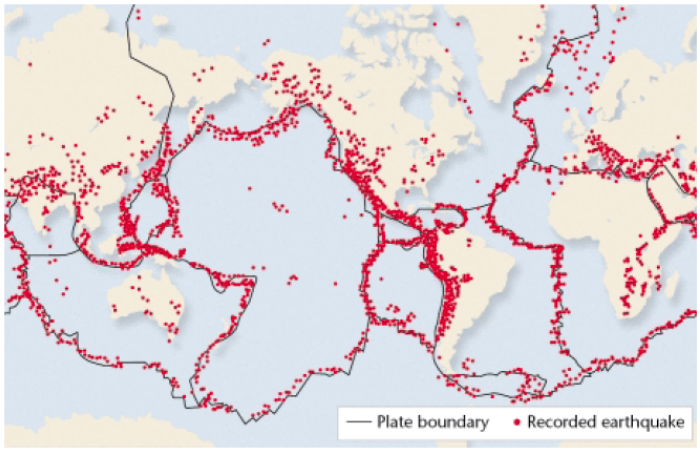
- A _____ is a break in the Earth's crust along which _____ of the _____ _____relative to one another.
- When _____ that are _____ _____ _____ _____ along a fault, a series of ground vibrations, known as _____, is set off.
- Earthquakes are occurring _____ _____ _____. Many are so _____ that we cannot feel them, but some are _____ movements of the Earth's crust that _____ _____ _____.

Earthquakes

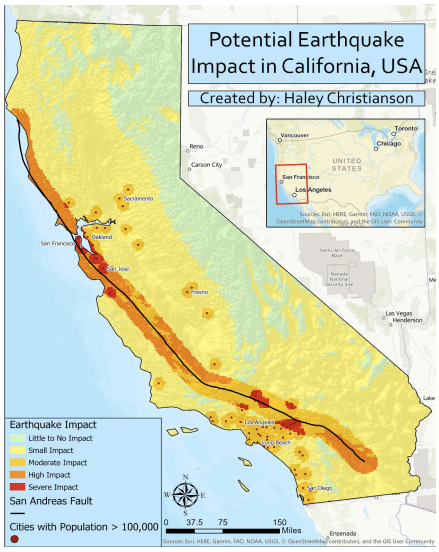
- The measure of the _____ _____ by an earthquake is called _____.
- The _____magnitude _____ _____ _____ _____, and the _____ magnitude _____ _____ _____ _____.
  Magnitudes greater than _____ _____ _____ _____ _____ _____.
- Each increase of magnitude by _____ _____ _____ indicates the release of _____ times more energy than the whole _____ _____ _____.

Where do Earthquakes Occur?

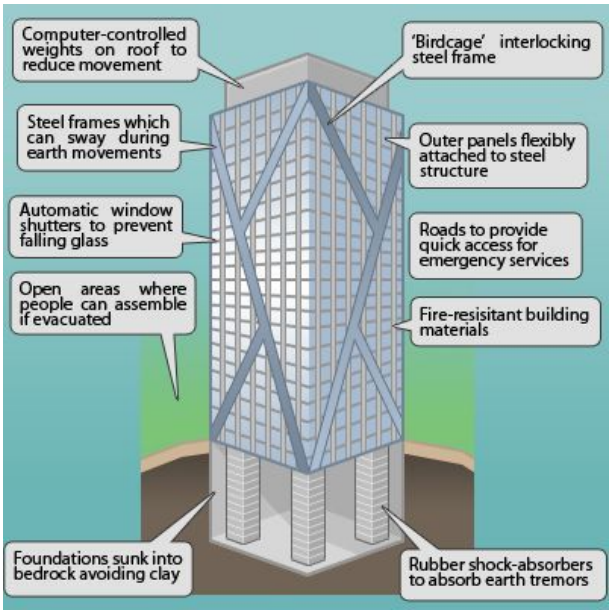
- The majority of earthquakes take place _____ _____ _____ _____ _____ _____ because of the enormous stresses that are generated _____ _____ _____ _____, _____, or _____ _____ each other.



- Over the past 15 million to 20 million years, large numbers of earthquakes have occurred along the _____ _____ _____ in _____, where parts of the _____ _____ plate and the _____ plate are slipping past one another.



Earthquake Hazard

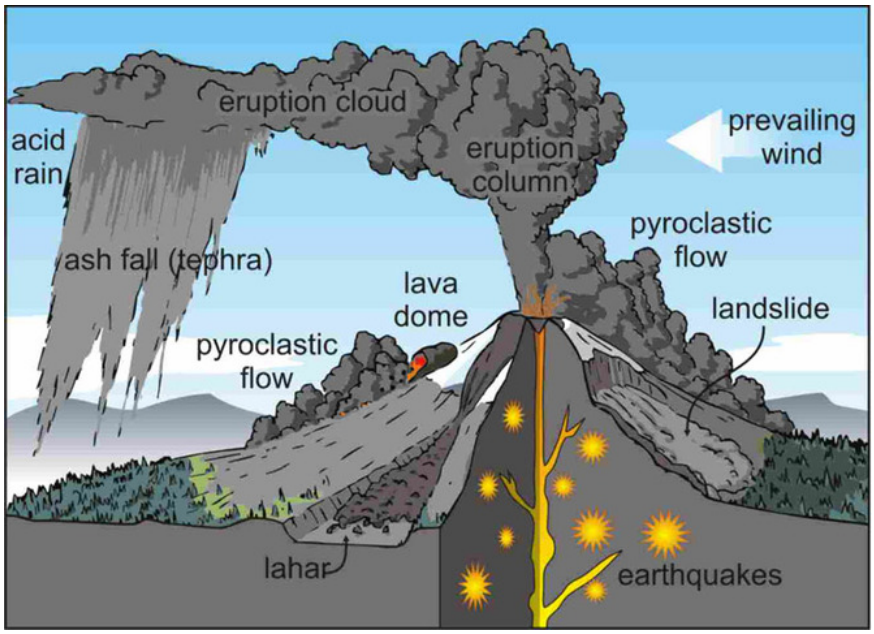


- Scientists _____ _____ when earthquakes will take place. However, they can help provide information about _____ _____ _____ _____ _____ _____ helping people prepare.
- An area's _____ _____ _____ is determined by _____ and _____ seismic activity.
- _____- _____ _____, built in high-risk areas, are slightly _____ so that they can sway with the ground motion preventing them from collapsing.

Volcanoes

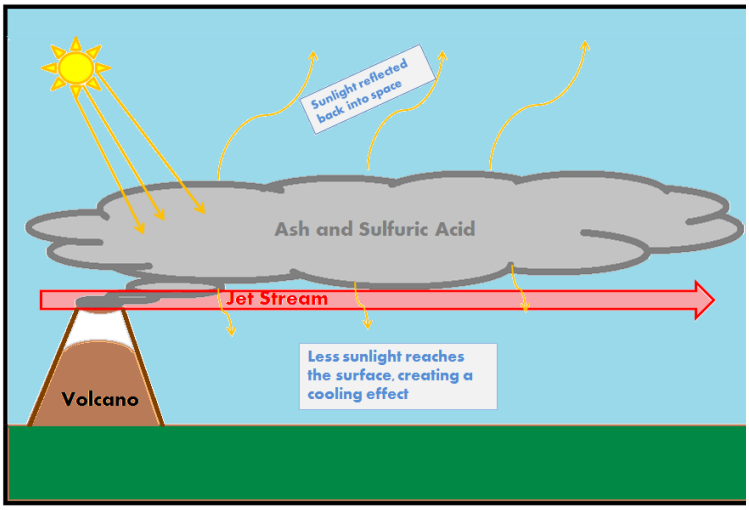
- A _____ is a mountain built from _____, or melted rock, which rises from the Earth's interior to the surface, and can occur _____ _____ or _____ _____ _____.
- Volcanoes are often _____ _____ _____ _____ _____ where plates are either colliding or separating from one another.
- The majority of the world's _____ _____ _____ _____ are located along tectonic plate boundaries that surround the _____ _____. Called the _____ _____ _____.

Local Effect of Volcanic Eruptions



- _____ _____: Clouds of _____ _____, _____, and _____ can flow down the slope of a volcano at speeds of up to _____ and _____ (burn) _____ _____ _____ _____.
- _____: During an eruption, _____ _____ can mix with _____ and produce _____ with the _____ of _____ that runs downhill and solidifies around anything trapped.
- _____: ash that falls to the ground can cause _____ to _____ under its weight, _____ _____, damage the _____ of vehicles, including _____ in flight, and cause _____ _____ and _____ _____ for _____ and _____.

Global Effects of Volcanic Eruptions



- Major volcanic eruptions can _____ _____ _____ for several years.
- In large eruptions, clouds of _____ _____ and sulfur rich gases may reach the _____ _____, and spread across the planet _____ _____ _____ _____ that reaches the Earth's surface.
- The reduction in sunlight can cause a _____ in the _____ _____ _____ _____.

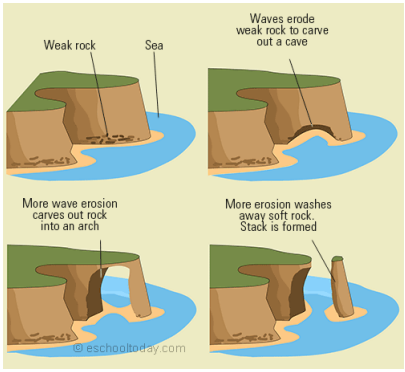
Erosion

- The Earth's surface is continually battered by _____ and scoured by _____ _____, which moves rocks around and _____ _____ _____.
- _____ is the process in which the materials of the Earth's surface are _____, _____, or _____ _____ and transported from one place to another by a natural agent, such as _____ _____ _____ or _____.
- Erosion _____ _____ _____ and makes them _____ as times passes. Older mountains are therefore smoother than younger ones.

EROSION TAKES A LOT OF TIME

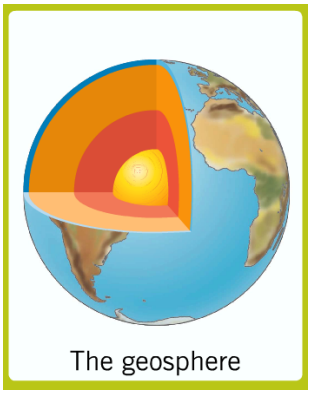
Water Erosion

- Erosion by both _____ and _____ can produce _____ _____ on _____ _____
- _____ from ocean storms can _____ _____ to give rise to a _____ of _____,
- Over time,_____ can carve _____ _____ into the _____.



Wind Erosion

- _____ also _____ the _____ of the planet.
- In places where few plants grow, such as _____ and _____, wind can _____ _____ _____ very quickly.
- _____ _____, such as sandstone, erode _____ _____ than hard rocks, such as granite do.


The geosphere

Chapter 3
The Dynamic Earth
Section 1 The Geosphere

Notes Verification Page

A ClassWork Grade 35% of Average
…BOTH sets of signatures are required

1. Sign with Mouse, 2. Print or 3. re-copy this FULL PAGE onto notebook paper. Then take a pic of the page with actual HANDWRITTEN signatures. Upload to Schoology classroom for your grade.

1. I have fully completed my notes.
2. I have viewed the videos requested and added in any of the essential facts.
3. Then I re-read through the ENTIRE document to increase my understanding

_____
(Student Name Printed)

_____
(Student Signature)

1. I have verified that ALL blanks are filled in
2. I ensured my student has re-read the document & watched the teaching video.
3. I then discussed the lesson with my student if necessary to help clarify any difficult points.

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(Parent Name Printed)

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