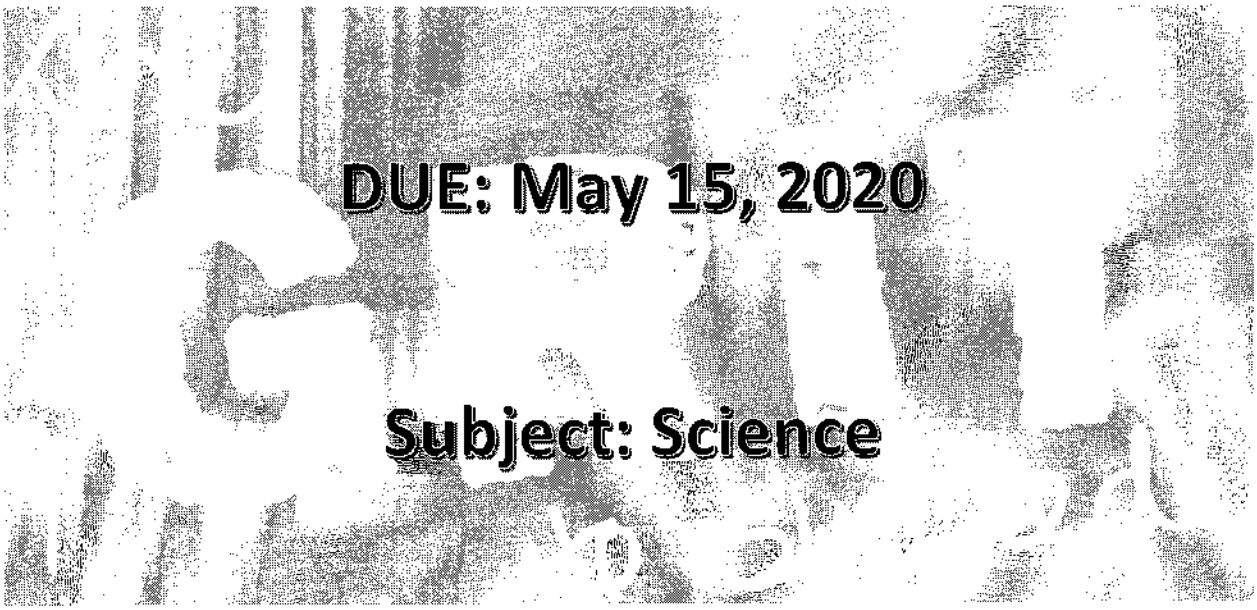
WEEK 3



Teacher: Ruiz

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INSTRUCTIONS FOR WEEK 3-PACKET SCIENCE

Earth Layers and Plate Tectonics

PART 1

- Read the lyrics more than just one time
- If possible, read the lyrics to a family member

PART 2

- Fill in the blanks with the correct word
- Next, using the words from the blanks (correct words) write a short summary that describes the theme or meaning of the song.

PART 3

- Read the word and definition
- Follow the direction to complete this section...we have done this before.
- If possible, create your own images
- Next, create a vocabulary chart...it can be a T-Chart...word then the definition.

PART 4

- READ/RESPONSE
- Only underline or highlight 5-7 words...ONLY WORDS...NO PHRASES...NO SENTENCES
- Usually proper nouns or the name of something are the best
- Answer the question
- Then and only then, write two summary sentences using at least 3-5 key words you underlined or highlighted.

PART 5

- With all your newly acquired knowledge and using the template provided, supply the following:
- Pick three facts or historical events
- Use the template provided
- Write a response that displays you proficiency concerning this topic
-

Name _____ Date _____ Flocabulary

Earth Layers & Plate Tectonics

"Hotter Than the Earth's Core"

INTRO

Hey yo, you ever thought about what's beneath the Earth's surface? Wouldn't it be crazy if we could dig a hole straight through? Well I hate to break it to you, but you can't. In reality, even the deepest holes we dig are just barely scratching the surface of the Earth. But what we can do is study the layers of the Earth and talk about plate tectonics. You with me?

The Earth is made of rock, but it's not that simple,
There's four layers to it, the inner core's in the middle.
It's made mostly of iron, you gotta love it,
Very hot, yet solid due to the layers above it.
They cause pressure, keep it real solid,
Next up, the outer core's what I call it.
Less pressure, but real hot, so it's liquid,
Free flowing metal, is this picture vivid?
There's currents in the molten rock,
After the core's the mantle, it don't stop.
It's mostly solid with two parts, listen here,
The asthenosphere and the mesosphere.
The asthenosphere's a very thin layer, can you dig it? Nope!
Very hot and nearly, but not quite, a liquid.
That's a key fact, let me tell you why homie,
It lets the Earth's top layers move above slowly.
See the crust is the very top layer,
It's part of the lithosphere, better care 'cause,
It's broken into huge rocks called tectonic plates,
They can shift and affect the Earth in big ways.

Follow me, you're about to learn about the Earth more,
From the only rapper hotter than the Earth's core.
Inner core, outer core, mantle and the crust,
With their tectonic plates, everybody listen up. (x2)

Now that you understand the basics, let's face it,
And talk about what happens when the plates shift.
See beginning around 1600,
Geographers noticed something crazy and wondered—
Did continents from all sides of the planet
Used to fit all together like a puzzle?

Understand it was a theory, so they studied their rocks and their fossils,
And said there was a supercontinent that was colossal.
Called Pangaea, one big land mass,
Where the continents were grouped all together in the past
Then tectonic plates caused continental drift,
It means the continents moved when the Earth's crust shifted.
See these plate movements cause land formations,
And ocean floor features on Earth, it's amazing.
Today they still move, pushing up against each other,
Like a kid and big brother in the car on vacation.
The borders between plates are known as faults,
Where earthquake cause shakes, and I don't mean malts.
Scientists use a seismograph to record the magnitude,
It means size but I call it earthquake attitude.
Movement at the fault? I should say so,
Also causes deep trenches and volcanoes.
Come to LA, I got a place you can stay,
Just don't let the earthquakes scare you away.

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Name _____ Date _____ Flocabulary

Earth Layers & Plate Tectonics

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Name _____ Date _____

Flocabulary

Earth Layers & Plate Tectonics - Vocab Cards

asthenosphere noun

A thin layer of Earth, about 150 miles thick, at the border between the mantle and the crust. It is very hot and nearly a liquid.

It's weird that below the surface we're standing on there are so many layers, like the thin layer of the mantle called the *asthenosphere*.

Use this word in a sentence or give an example to show you understand its meaning:	Draw this vocab word or an example of it:

continental drift noun

the gradual movement of the continents across the Earth over time.

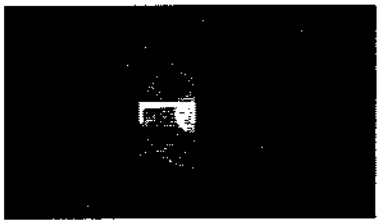
According to the theory of *continental drift*, the continents didn't always look like they do now.

Use this word in a sentence or give an example to show you understand its meaning:	Draw this vocab word or an example of it:

core noun

the central part of a planet, especially the inner part of the Earth. It usually has different physical properties from the surrounding layers.

The *core* of the Earth is made of nickel and iron.

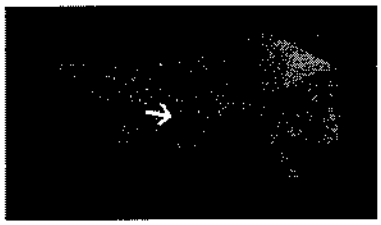


Use this word in a sentence or give an example to show you understand its meaning:	Draw this vocab word or an example of it:

crust noun

the rocky outer layer of a planet or moon; the layer of the Earth above the mantle.

Earth has many layers. The *crust* is the topmost one.



Use this word in a sentence or give an example to show you understand its meaning:	Draw this vocab word or an example of it:

fault noun

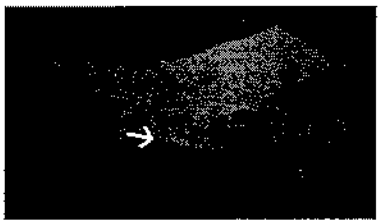
a long break in a body of rock or the crust of the earth. Usually the layers of rock are displaced on either side of the break.

The Earth's surface is broken into pieces like the shell of a hardboiled egg. Each crack is called a *fault.*

Use this word in a sentence or give an example to show you understand its meaning:	Draw this vocab word or an example of it:

lithosphere noun

the layer of rock that makes up the outer part of the Earth, including the crust and upper mantle.

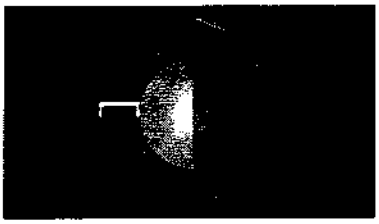


Earth's *lithosphere* includes interesting landforms, like mountains and volcanoes.

Use this word in a sentence or give an example to show you understand its meaning:	Draw this vocab word or an example of it:

mantle noun

the layer of the Earth between the crust and the core.



Earth's *mantle*, a thicker layer just under the thin surface, is made up of rocks, minerals and elements.

Use this word in a sentence or give an example to show you understand its meaning:	Draw this vocab word or an example of it:

mesosphere noun

A layer of Earth's mantle that is mostly solid and extends outward 1,500 miles.

The *mesosphere* is the lowest part of Earth's mantle.

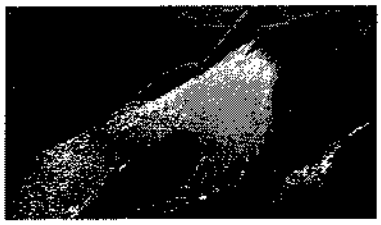
Use this word in a sentence or give an example to show you understand its meaning:	Draw this vocab word or an example of it:

molten adjective

liquefied by heat, especially metal or glass.

This *molten* lava came from a volcano!

Synonyms: liquefied, melted

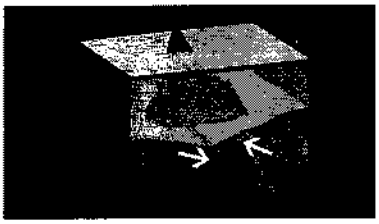


Use this word in a sentence or give an example to show you understand its meaning:	Draw this vocab word or an example of it:

tectonic plate noun

any one of the several large, separately moving sections of the Earth's surface that glide over the mantle. When they collide they cause such things like earthquakes and volcanic eruptions.

The movement of a *tectonic plate* can cause an earthquake.



Use this word in a sentence or give an example to show you understand its meaning:	Draw this vocab word or an example of it:

Name _____ Date _____

Earth Layers & Plate Tectonics

Use the text to answer each question below.

1. Deep in the Earth's crust, almost a mile beneath the ocean floor, a pool of superheated magma pushes against the surface layer of rock. At several thousand degrees Fahrenheit, the heat and pressure are awesome. The rock layer buckles, and a ridge on the ocean floor rises several meters before slamming downward and outward. The molten rock and superheated steam explode, and two huge rock plates, each thousands of miles wide, are pushed a few centimeters apart.

   A few centimeters doesn't sound like much, but an entire continent has suddenly moved. The resulting earthquake sends an undersea shock wave across the ocean. Minutes later, thousands of miles away, that shock wave, called a tsunami, crashes into shore.

   The explanation for the forces that unleash killer tsunamis, massive earthquakes, and exploding volcanoes, lies in tectonic plates. These are the huge rock plates underneath the continents.

   What can happen when tectonic plates move a few centimeters?

   A. The atmosphere can become cooler.
   B. Whole continents can move.
   C. The ozone layer can thicken.
   D. The moon can move closer to Earth.

2. Picture the Earth like a giant peach floating in space. On its surface is a thin skin called the crust. Instead of fleshy fruit, just below that is the rocky mantle. Deep in the center, like the peach's pit, sits the Earth's core.

   The inner core is solid, extremely hot and under immense pressure from all the rock above it. The outer core is molten, so it's liquid, and also very hot. This core extends 1,800 miles around from the center of the Earth.

   The layer after the core is the mesosphere. This layer is mostly solid and extends outward another 1,500 miles. The asthenosphere is a thin layer, about 150 miles thick, at the border between the mantle and the crust. It is still very hot, and nearly (but not quite) a liquid. Because of this, pieces of the Earth's crust can move very slowly above it.

   Which of the following is true about the Earth's layers?

   A. The asthenosphere is the thickest of Earth's layers.
   B. All of the layers are liquid and extremely hot.
   C. There is little to no pressure on the solid core.
   D. The Earth's core has two different parts.

3. Tectonic plates move because of the flow of heat inside the Earth. Deep in the asthenosphere, there is a convection current—that's when heated things rise and cooled things fall. Since the asthenosphere is not quite liquid rock, convection currents move rock very slowly. Where the crust is thin, the heated rock may rise. This usually happens in the middle of an ocean, creating an ocean basin. Where the crust is thick, like under a continent, rock sinks deeper into the mantle.

When tectonic plates move, they rub against each other, causing great stress on the rock. When rock is pushed together, the pressure is called compression. When rock is stretched apart, it's called tension. At points of tension, like under the ocean, magma may come to the surface. At points of compression, layers of rock may bend upward, downward or break entirely.

How does convection cause tectonic plates to move?

A. Convection keeps the plates thin enough to move.

B. Convection makes the plates solid enough to move.

C. The rising heat of convection currents moves the almost-liquid rocks.

D. The pressure of convection bends rocks until they break completely.

4. The Earth's crust is made of rock, which is composed of minerals. Minerals are solid, naturally occurring non-living materials that have a structure of crystals. There are hundreds of different kinds of minerals, but about 90% of the ones on Earth are silicates. Silicate minerals include oxygen and silicon along with some other combination of elements like iron, aluminum or potassium. Since each mineral is made of different elements, each has a unique set of properties. For example, diamonds are very hard, iron is strong and halite (salt) tastes good on food.

Which of the following is not true about minerals?

A. They always include oxygen and silicon.

B. They are naturally occurring materials.

C. They each have unique properties.

D. They have a crystalline structure.

5. The outer layer of the crust, the lithosphere, is broken into tectonic plates. The borders between these plates are called faults. When molten rock or magma squeezes to the surface at a fault, it releases pressure, exploding to the surface as a volcano.

Most of the lithosphere is covered by ocean. This water and the atmosphere around it help shape the Earth's crust. Volcanoes bursting from inside the crust can also change the atmosphere and oceans by shooting hot gases or ash into the air, or by boiling water that has seeped down into the crust. When a tectonic plate moves, the Earth shakes, creating an earthquake. If it shakes underwater, the movement can cause tsunamis, which wash away soil, sand, rocks and buildings, effectively changing the shape of the land.

Which of the following best describes the relationship between earthquakes and tsunamis?

A. An underwater earthquake can cause a tsunami.

B. Both are the result of big volcanic explosions.

C. Tsunami waves are the main cause of earthquakes.

D. Earthquakes prevent tsunamis from occurring.

6. According to the theory of continental drift, Earth's continents are a puzzle and millions of years ago they fit together as shown here. The theory states that 250 million years ago, most of today's land areas were connected as one supercontinent that we call Pangaea. Gradually, different tectonic plates pulled Pangaea apart—as some sections of these giant plates rose, others fell back into the Earth's crust or were pushed apart. Similar fossil remains and rock layers on each of the continents support the theory, showing where the continental plates used to be connected.

Which of the following best supports the theory of continental drift?

A. South America and Africa have completely different rock layers.

B. A hurricane hits the Gulf of Mexico at the beginning of June.

C. Similar fossils are found on the coasts of South America and Africa.

D. North America and South America are connected by land.

7. A bending layer of rock is called a fold. Upward folds, or anticlines, can form mountains, while downward folds, or synclines, can create valleys. An entirely broken rock plate forms a fault. A fault block, or huge cracked block of rock, can be pushed upward, also creating a mountain. Many landscapes of our country, like the Appalachian mountains, were formed this way.

Most volcanoes and earthquakes occur along the boundaries of tectonic plates. For example, there is a ring of mountains, faults and volcanoes on the edge of the Pacific Ocean nicknamed the "Ring of Fire." The area includes California, Alaska and Washington, which have all experienced large earthquakes over the years.

We can study the inside of the Earth by using vibrations called seismic waves measured on a machine called a seismograph. We know that the Earth has five layers because seismic waves behave differently in different materials.

Which of the following is true about folds?

A. They do not create mountains.

B. They are entirely broken rock plates.

C. They occur only in the inner core.

D. They can create deep valleys.

Name: _____ Date: _____ Flocabulary

EARTH'S LAYERS

Label each of the layers of the Earth. Then answer the questions that follow.

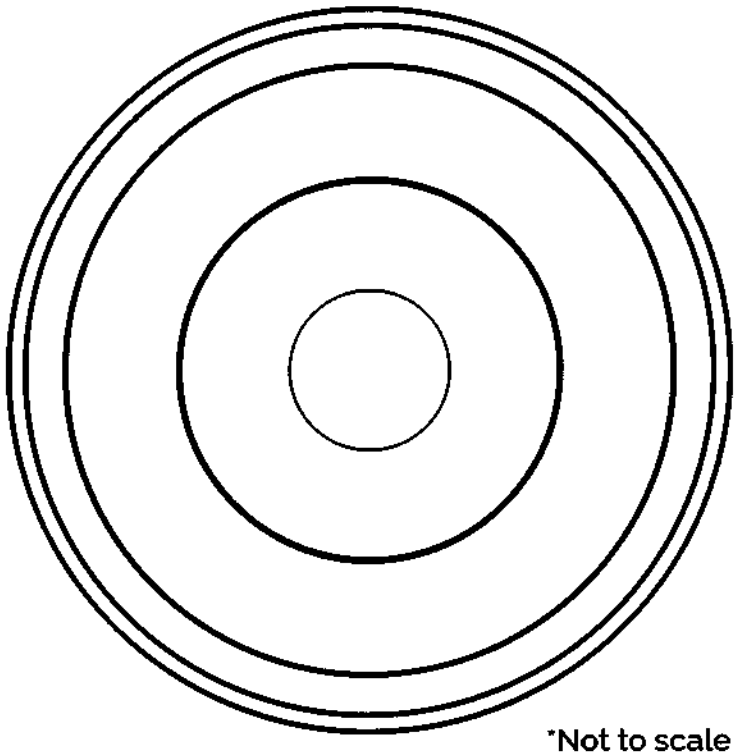
Asthenosphere

Mesosphere

Inner Core

Lithosphere

Outer Core



*Not to scale

1. Which layer is broken up into tectonic plates?

_____

2. What is another name for the lithosphere?

_____

3. Which two layers make up the mantle?

_____

4. Is the inner core a solid or a liquid?

_____

5. Where are there currents in the molten rock?

_____

Part 6

30

After analyzing the text _____, I (believe, feel, from my perspective) the main idea (focus) of this section is _____. This section _____ (stressed, emphasizes, points out, focuses on) ideas about _____. There were three main (ideas, achievements, historical information) which included _____, _____, and _____.

The first (idea, achievement, historical information) was _____. This was (important or significate) because_____. For example, _____ (evidence)

The second (idea, achievement, and historical information) was _____. This was (important or significate) because_____. For example, _____ (evidence)

The third (idea, achievement, historical information) was _____. This was (important or significate) because_____. For example, _____ (evidence)

Words to use for information: Next, after that, another, in the first place, Then, In addition