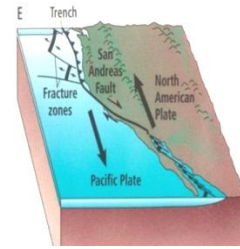
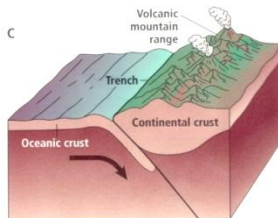
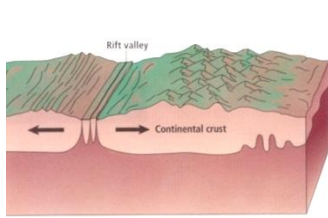


**Lithosphere #1 Unit Test Review**

**Name:** \_\_\_\_\_

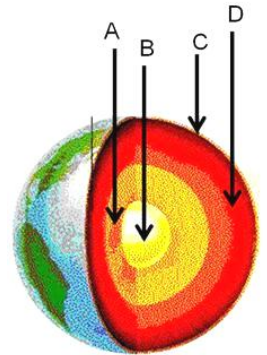
1. Label each of the following plate boundaries, describe what is happening to the plates at each one, and tell me which type of fault corresponds with each type of plate boundary.



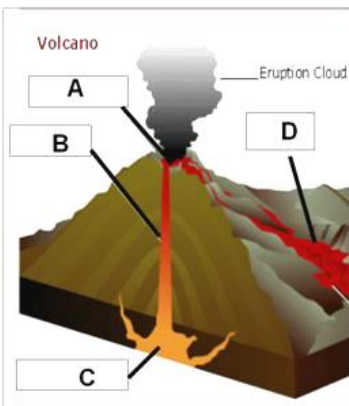
Boundary Type:	Divergent	Convergent	Transform
Description:	Plates move apart	Plates move together	Plates move past each other
Associated Fault Type:	Normal	Reverse	Strike-slip

2. Label each of the layers of the Earth, describe its composition, and list its state of matter (solid, liquid, gas).

	A	B	C	D
Layer:	Outer core	Inner core	Crust	Mantle
Composition:	Iron/Nickel	Iron/Nickel	Silicon/Oxygen	Rock mixture
State of Matter (solid, liquid, gas)	Liquid	Solid	Solid	Semi-solid



3. Label each of the parts of the volcano and describe it.



	A	B	C
Part:	Crater	Vent	Magma Chamber
Description:	Opening where lava/gas is released	Connection between the surface and the magma chamber	Storage of magma underground

4. What are oceanic plates made of? Heavy, dense basaltic rock.

What are continental plates made of? Lighter, less dense granite rock.

Which one is more dense? Oceanic

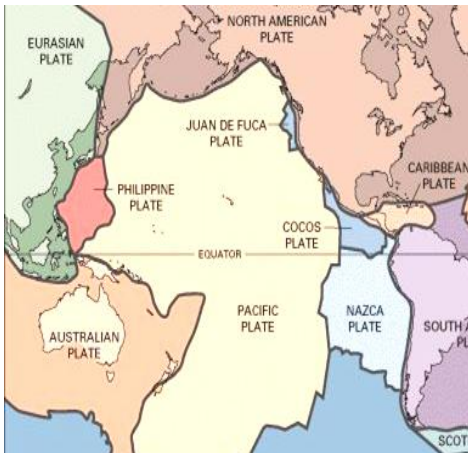
5. Fill in the following table about tectonic plate boundaries:

Boundary Type	Plates Involved	What forms?
Convergent	Oceanic + Oceanic	Subduction zone, deep ocean trench, volcanic arc
Convergent	Oceanic + Continental	Subduction zone, trench, volcanic/mountainous coast
Convergent	Continental + Continental	Mountains
Divergent	Oceanic - Oceanic	Mid-ocean ridge, seafloor spreading
Divergent	Continental – Continental	Rift valley
Transform	Any	Earthquake activity

6. What happens to tectonic plates when they are **subducted**? Dense plates are pulled under lighter plates.

What role does subduction play in the rock cycle? Subduction melts rock creating the material to form igneous rocks.

7. Tell me what each of these two pictures are showing. How do they relate to each other?



The first picture shows the current tectonic plates. The second picture shows volcanic activity. The volcanic activity lines up with the tectonic boundary surrounding the Pacific plate.

8. What are the four main pieces of evidence that support the theory of continental drift?

- Coastlines of continents appear to fit together.
- Similar fossils are found on separate continents.
- Mountain ranges match up on separate continents.
- Glacial evidence is found on all continents.

\*\*\*What is a 5<sup>th</sup>? Hint: think about magnets..... Polarity of rocks around seafloor spreading.

9. What does the theory of continental drift say? Who came up with it?

It says the continents have not always been in the same place. Alfred Wegener.

10. What is sea-floor spreading? Draw a picture.

The creation of new seafloor along a divergent boundary.

11. What invention helped support the theory of Continental Drift? What did it discover?

SONAR and GPS. SONAR shows the landforms along tectonic boundaries under the ocean that align with current plate locations. GPS can track locations on landmasses and show relative movement.

12. What is the name of the most recent super continent that all of today's continents were once a part of?

Pangea

When did it start to break apart?

175 million years ago

13. What does the theory of plate tectonics state?

The plates are moving in relation to one another.

14. What is thought to be the driving mechanism of plate movement?

Convection currents

15. When warm magma rises and cooler magma sinks inside of the mantle, what is this called? Draw it!!!

Convection.

16. When cold magma sinks, the plates pull downward. This type of movement is called slab pull, and it is responsible for ~90 - 95% of plate movement.

17. When hot magma rises, the plates Push upwards. This type of movement is called ridge push, and it is responsible for ~ 5 - 10% of plate movement.

18. Why is it necessary to have BOTH ridge push and slab pull going on at the same time? Hint: What would happen to Earth if the plates moved apart, but never subducted?

These two processes balance each other so the amount of crust on the surface remains relatively the same.

19. Fill in the table below with information about the 3 types of seismic waves.

	Primary waves	Secondary waves	Surface Waves
When do they come off a seismograph?	1st	2nd	3rd
What material can they travel through?	All materials	Only solids	Only the crust

20. How can geologists tell that the outer core of the Earth is a liquid, not a solid?

The disappearance of S waves that are absorbed by the outer core and cannot pass through.

21. What is a **fault**?

Point at which rocks break.

22. Name and draw a picture to demonstrate the 3 types of faults.

Normal	Reverse	Strike-slip
Hanging wall moves down in relation to the foot wall.	Hanging wall moves up in relation to the foot wall	Horizontal motion at the surface shows plates moving in opposite directions

23. What is the difference between a **focus** and an **epicenter**?

Focus is the point underground where rocks break. The epicenter is the point on the surface directly above the focus.

23. Which is more dangerous, an earthquake with a shallow focus, or one with a deep focus?

Shallow. There is less rock before reaching the surface for earthquake waves to dissipate in.

24. In order to determine the epicenter of an earthquake, data from how many **seismometers** are needed?

3

25. What is a rating from the **Richter scale** based on?

Magnitude of energy released in an earthquake.

26. How much stronger is a 9 on the Richter scale than a 6?

32,000 times stronger

27. What is viscosity?

Thickness of a fluid

28. What are the 3 types of magma?

basaltic, andesitic, rhyolitic

29. Which type of magma has the highest viscosity? Why?

Rhyolitic (or felsic) because of the mineral content.

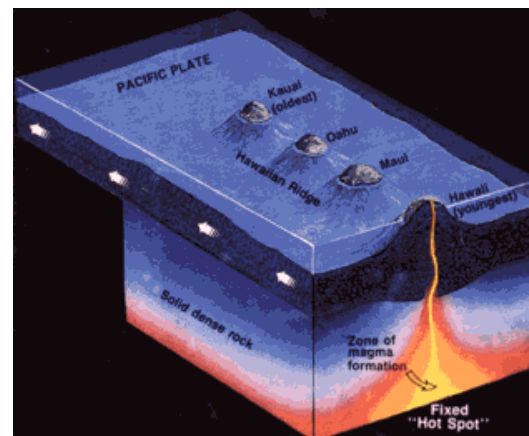
30. The higher the viscosity, the stickier (runnier/stickier) the magma, the more explosive

(more explosive/less explosive) the volcanic eruption.

31. 80% of volcanoes form at convergent plate boundaries, 15% for at divergent plate boundaries, and only 5% form at transform fault.

32. Geologists can tell 2 things about the Pacific Plate from looking at the Hawaiian Islands. What are they?

Direction and speed of movement



33. Fill in the table below with information about the 3 types of volcanoes.

	Shield Volcano	Composite (Strato)Volcano	Cinder-Cone Volcano
Slope of sides?			
Type of lava?			
Type of eruption?			
Shape? (Draw a picture)			

34. Volcano terminology matching:

- |                  |
|------------------|
| tephra           |
| lava             |
| gases            |
| ash              |
| bombs            |
| pyroclastic flow |
| lahar            |

- \_\_\_\_\_ : The term used for magma once it has erupted.
- \_\_\_\_\_ : Tiny fragments less than 2 mm
- \_\_\_\_\_ : Big fragments of fluid or partially fluid lava or rock
- \_\_\_\_\_ : Solid material of all sizes explosively ejected from a volcano into the atmosphere.
- \_\_\_\_\_ : Clouds of ash, gases, and tephra that move down a slope at 160 mph! Very deadly!
- \_\_\_\_\_ : Carbon dioxide, steam, and sulfur dioxide, The gas carries dust so it looks like dark smoke. They can be deadly!
- \_\_\_\_\_ : a type of mudflow composed of a slurry of pyroclastic material, rocky debris, and water.

35. What Period and Epoch of Geologic Time are we currently in?

36. How old do scientists think the Earth is?

37. Describe conditions during the Hadean Era.

38. How did Earth get a moon?

39. Which era do scientists think life began evolving during (cyanobacteria or blue green algae)?

40. What happened during the Carboniferous Period?

What happened at the end of the Carboniferous Period?

Why is that really important to us today?

41. Which mountains are older, the Appalachians or the Rockies? How can you tell?

42. How did the Outer Banks form, and when?

43. List the 9 types of geohazards associated with the lithosphere.

a.

b.

c.

d.

e.

f.

g.

h.

i.

44. If there was another earthquake at Eastern, how would you stay safe?