Unit II
Physical Geography:
Volcanoes and Earthquakes

Name: _____

What is a Volcano?

Volcano: _____

_____

What's that Red Molten Rock called?

It depends on the _____.

If it's located inside the earth's crust it's called _____.

If it's located outside the earth's crust, on the surface, it is called

_____.

Quick Sketch: Draw a diagram illustrating the difference between Magma and Lava

Where do Volcanoes occur?

Most form along plate _____ ....

1. in _____ zones (one plate sinks under another)
2. over hot _____.
3. where _____ are _____ _____.

How do they form

- _____ Plates
    - As the plates split apart, magma from the asthenosphere comes up into the lithosphere.

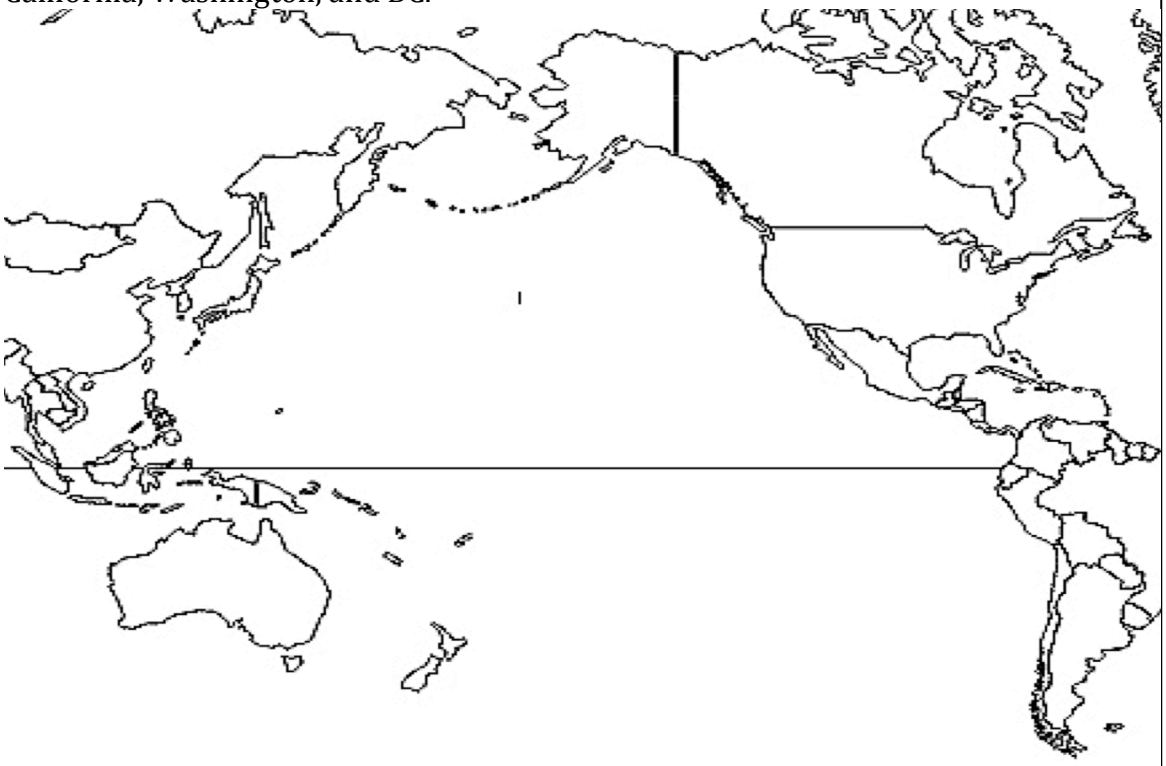
- _____ Plates
    - As the plates collide together, one is heavier than the other and is pushed underneath.
    - This forms large cracks in the earth's surface which allow for magma to flow into.
    - Overtime magma will push up through these cracks and form a volcano.
- _____
    - Occur at random hot spots on the earth's surface.

Quick Sketch: Draw an image that illustrates all three (divergent, convergent and hot spot) ways in which a volcano can form.

The Ring of Fire

- The majority of _____ are located along the _____.
- Here the _____ with the _____ in the _____, and the _____ in the West.

Quick Sketch: Label the following places: Alaska, Japan, Philippines, Hawaii, Chile, California, Washington, and BC.



Pacific Ring of Fire

_____ is mostly _____ at plate _____.

Volcanoes are Formed by:

1) _____

2) _____

3) _____

Subduction Zone

A _____ Zone forms when one plate is lighter than the other and goes underneath the _____ plate.

What are Hot Spot Volcanoes?

Hot _____ plumes _____ the _____ in the _____ of a _____ plate.

Example: _____.

Rift volcanoes

_____form when _____ rises into the _____ between _____ plates. They thus occur at or near actual plate boundaries.

What determines how explosive an eruption is?

1. **_____ Vapor: more _____ = _____ explosion**
2. **_____ gases (water and CO_2):**
    - **Easy _____ (low pressure)=quiet _____**
    - **Difficult to _____(high pressure)=explosive/violent eruption**
3. **Magma Type:**
    - **_____ (thin) =quiet _____**
    - **_____/_____ (thick)=_____ eruption**

Magma Composition

Basaltic

Volcanoes with _____ lava produce:

Underwater _____/lava formations, rock structures shaped like _____, _____ or _____.

As pahoehoe (pa-hoy-hay) lava cools, it forms a _____ structure.

If the same lava flows at a lower temperature, a stiff, slowly moving *aa* (AH-ah) lava forms.

Magma Composition Cont'd

2._____ Lava.

- **Also known as _____ Lava.**
- **_____ moving.**
- **Usually form a _____ cone volcano.**
- **_____ eruptions including _____.**

3._____ Lava

_____ moving lava.

Forms _____ columns/_____.

3 Basic Volcano Shapes

The shape and size are determined by the type of magma feeding it.

1. **_____ Volcano**
   - **Formed by _____ eruptions**
   - **_____-moving lava flows**
   - **_____ lava builds up in flat layers**
   - **Largest with gently sloping sides**
   - **Ex: Mauna Kea-Hawaiian Islands**

Quick Sketch: Draw a picture of a Shield Volcano.

2. _____ Volcano

- **Caused by _____ eruptions.**
- **_____ lava thrown _____ into the air.**
- **_____ cools into different size of volcanic material called _____.**
- **Steep-sided, loose _____.**

Quick Sketch: Draw a picture of a Cinder-Cone Volcano.

3. A _____ of the other _____ types

- **_____ or _____**
- **_____ or _____**
- **_____ or _____**
- **_____ of _____**

Quick Sketch: Draw a picture of a Composite Volcano.

Scientists monitor volcanoes.

- _____ monitor _____ to look for _____ signs that an _____ may be coming. Warning signs include:
  - _____
  - Changes in the _____ of the ground
  - Rising _____ of openings
  - Changes in _____ gases being tested.

Materials from Volcanic Eruptions Affect Earth

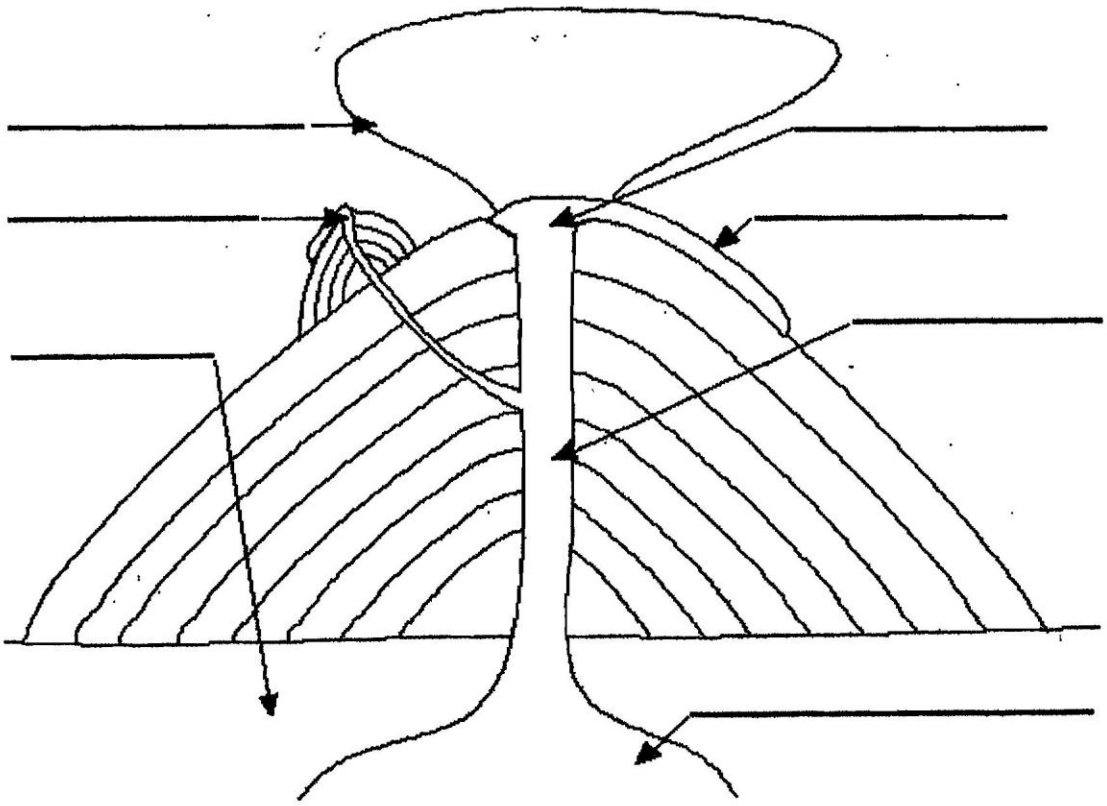
Land	Air	Water

Life Cycle of a Volcano

1. _____ - one that is erupting or has shown signs that it may erupt in the near future

2. _____- volcano to awaken in the future and become active

3. _____ - dead volcano; not likely to erupt again



Label the Volcano Diagram

More on Volcanos

Read the definitions, then label the diagram below.

Definitions

ash cloud - an ash cloud is the cloud of ash that forms in the air after some volcanic eruptions.

conduit - a conduit is a passage through which magma (molten rock) flows in a volcano.

crust - the crust is Earth's outermost, rocky layer.

lava - lava is molten rock; it usually comes out of erupting volcanoes.

magma chamber - a magma chamber contains magma (molten rock) deep within the Earth's crust.

side vent - a side vent is a vent in the side of a volcano.

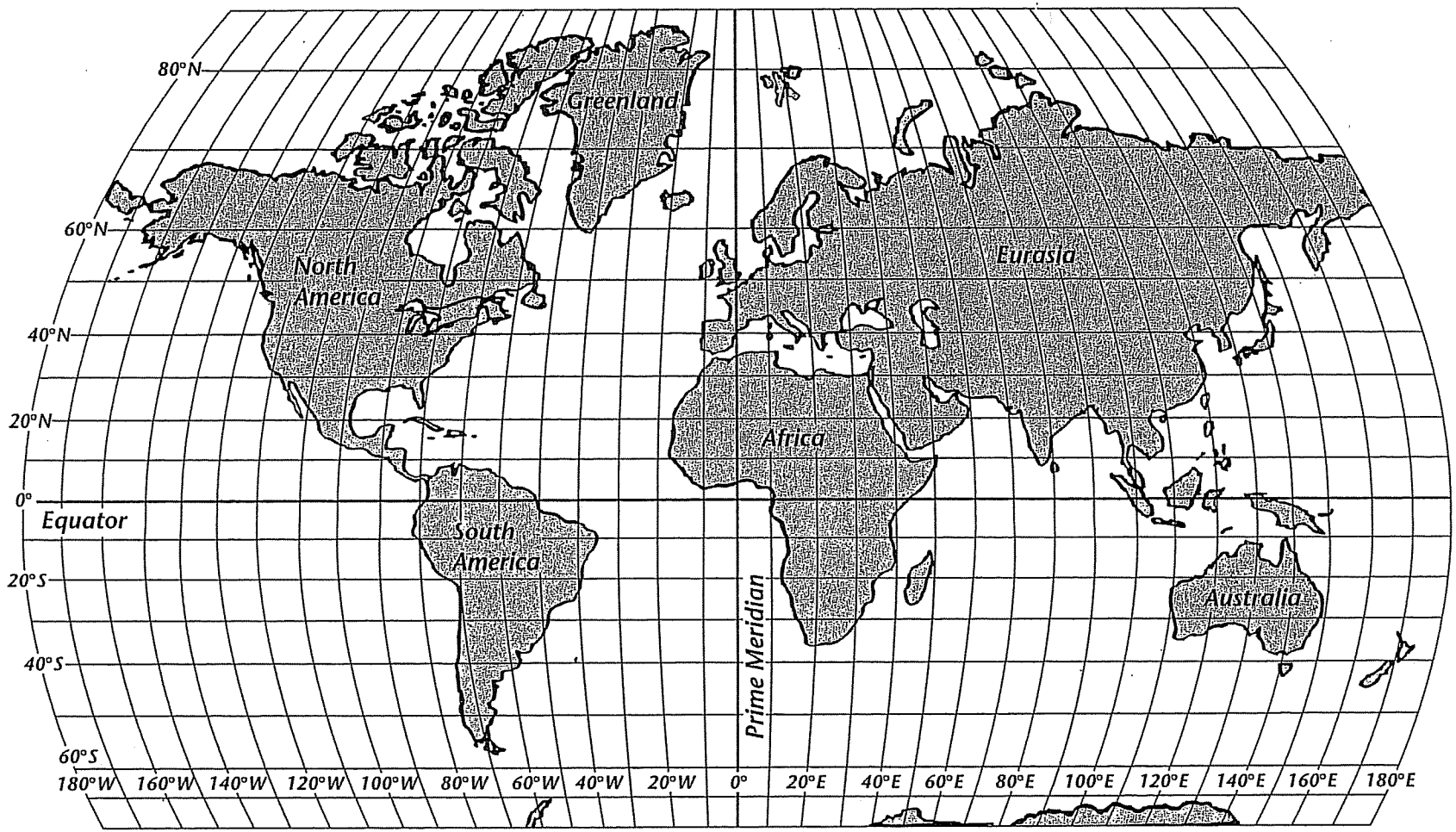
vent - a vent is an opening in the Earth's surface through which

Earthquakes		Volcanoes	
Longitude	**Latitude**	**Longitude**	**Latitude**
120° W	40° N	150° W	60° N
110° E	5° S	70° W	35° S
77° W	4° S	120° W	45° N
88° E	23° N	61° W	15° N
121° E	14° S	105° W	20° N
34° E	7° N	75° W	0°
74° W	44° N	122° W	40° N
70° W	30° S	30° E	40° N
10° E	45° N	60° E	30° N
85° W	13° N	160° E	55° N
125° E	23° N	37° E	3° S
30° E	35° N	145° E	40° N
130° E	35° N	120° E	10° S
12° E	46° N	14° E	41° N
75° E	28° N	105° E	5° S
150° W	61° N	35° E	15° N
68° W	47° S	70° W	30° S
175° E	41° S	175° E	39° S
121° E	17° N	123° E	138° N

1) Use the information in the table to fill in the world map.

2) For Earthquakes – Draw a circle and put the letter E at each location.

3) For Volcanoes – Draw a circle and put the letter V at each location.


80°N
60°N
40°N
20°N
0°
Equator
20°S
40°S
60°S
Greenland
North America
Eurasia
Africa
South America
Australia
Prime Meridian
180°W
160°W
140°W
120°W
100°W
80°W
60°W
40°W
20°W
0°
20°E
40°E
60°E
80°E
100°E
120°E
140°E
160°E
180°E

Volcanism Worksheet

Most times when we hear about Volcanoes we hear about their destructive power, how they have had to evacuate communities or how poisonous gases are emanating from within the volcano into the air. But volcanoes can also be beneficial to communities.

First, I would like you to use your cellphones, or a computer and go online and research the two following questions:

1) What are the hazards associated with a Volcano?
2) What are the benefits associated with a Volcano?

Second, I would like you to fill in the chart below discussing the hazards and benefits of Volcanoes based on your research.

Hazards	Benefits

VOLCANO WEBQUEST

1. Explore—Choose one site to take a virtual tour of a volcano.

a. Mt. St. Helens—take a 360 degree helicopter flight
http://www.fullscreen360.com/st-helens

b. Sunset Crater—loop tour
http://geomaps.wr.usgs.gov/parks/sunset/sunsetft.html

c. Nyiragongo—take a 360 degree rim tour
http://www.swisseduc.ch/stromboli/perm/nyiragongo/qtvrpanos-en.html

d.Hawaiian Volcanoes—Look at lava flows and lava tubes videos
http://www.nps.gov/havo/photosmultimedia/multimedia.htm

What site did you visit? What did you see?

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2. List the types of volcanoes and give examples of each type of volcanoes
http://pubs.usgs.gov/gip/volc/types.html

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3. How many active volcanoes are there?
https://www.usgs.gov/faqs/how-many-active-volcanoes-are-there-earth?qt-news_science_products=0#qt-news_science_products
http://pubs.usgs.gov/gip/monitor/intro.html

4. What did ancient people think was the cause of volcanoes?
http://www.crystalinks.com/volcanomyth
http://pubs.usgs.gov/gip/monitor/intro.html

5. How many lives have been lost to volcanoes in the last 500 years?
http://pubs.usgs.gov/gip/monitor/intro.html

6. Choose one volcano and write a descriptive paragraph of why it is so "deadly".
Deadly Volcanoes
http://www.pbs.org/wgbh/nova/volcanocity/deadly.html

7. List two instruments used for prediction and tell how they work.
http://library.thinkquest.org/17457/english.html

8. List 3 volcanic features and describe how they form.
Volcano Prediction & Volcano Features—use for Questions 7 & 8
http://library.thinkquest.org/17457/english.html

9. List three hazards with three facts each ex. formation, damage caused, etc.
Volcano Hazards
http://hvo.wr.usgs.gov/hazards/

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10. - Would you want to be a volcanologist? Give three reasons why or why not. http://volcano.oregonstate.edu/oldroot/volcanologist/index.html

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11,- Take the online quiz to see how much you know about volcanoes?
https://www.dkfindout.com/us/quiz/earth/take-volcanoes-quiz/
Score: _____