



Name: \_\_\_\_\_ ODD Period: \_\_\_\_\_

Week: 10–11

Dates: 10/19–10/30

Unit: Volcanos

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
19 E	20 O *VOCABULARY *FRAYER VOCAB *VOLCANO NOTES *BILL NYE NOTES	21 E	22 O *PLATE TECTONICS AND IGNEOUS ACTIVITY NOTES	23 E
26 O *FLEX DAY *CURRENT VOLCANIC ACTIVITY LAB	27 E	28 O *MELTING TEMPERATURE OF ROCKS LAB *MATCHING VOCABULARY *STUDY GUIDE	29 E	30 O *UNIT QUIZ *PACKET DUE

ASSIGNMENT	YOUR SCORE	TOTAL POINTS POSSIBLE
GOOD TO KNOW VOCABULARY WORDS AND FRAYER VOCAB		40
VOLCANO NOTES		40
VOLCANO ACTIVITY ONLINE LAB		20
PLATE TECTONICS AND IGNEOUS ACTIVITY NOTES		40
BILL NYE NOTES		20
MELTING TEMPERATURE OF ROCKS LAB		20
MATCHING VOCABULARY WORKSHEET		10
VOLCANO MOVIE NOTES		20
STUDY GUIDE		40
<b>TOTAL</b>		<b>250</b>

**GOAL FOR THIS UNIT**

Write a SPECIFIC goal for your academic performance on this unit (test score, packet score, study habits etc)

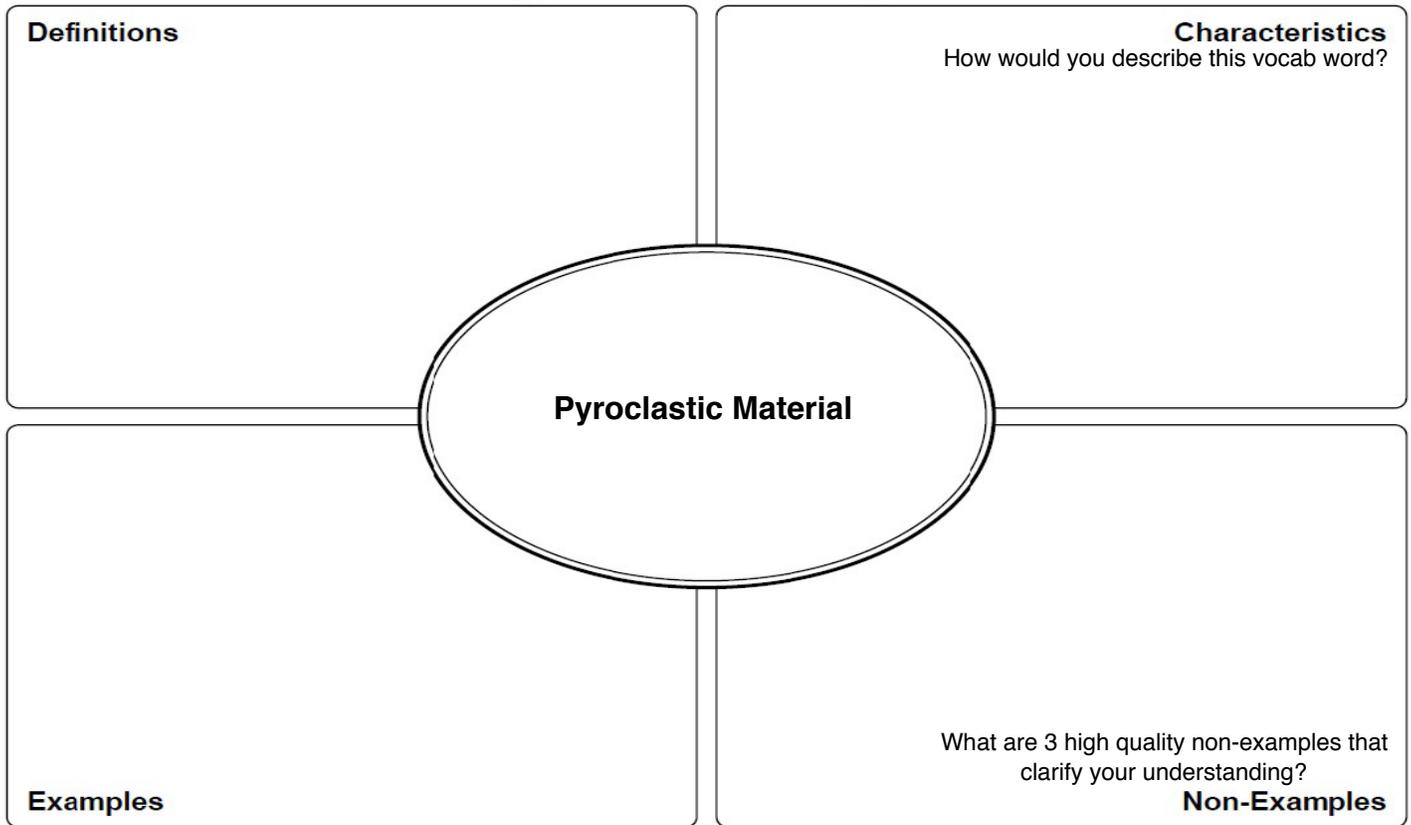
**AG EARTH SCIENCE FACT OF THE WEEK**

**THERE ARE MORE THAN 500 ACTIVE VOLCANOES IN THE WORLD. MORE THAN HALF OF THESE VOLCANOES ARE PART OF THE "RING OF FIRE," A REGION THAT ENCIRCLES THE PACIFIC OCEAN.**

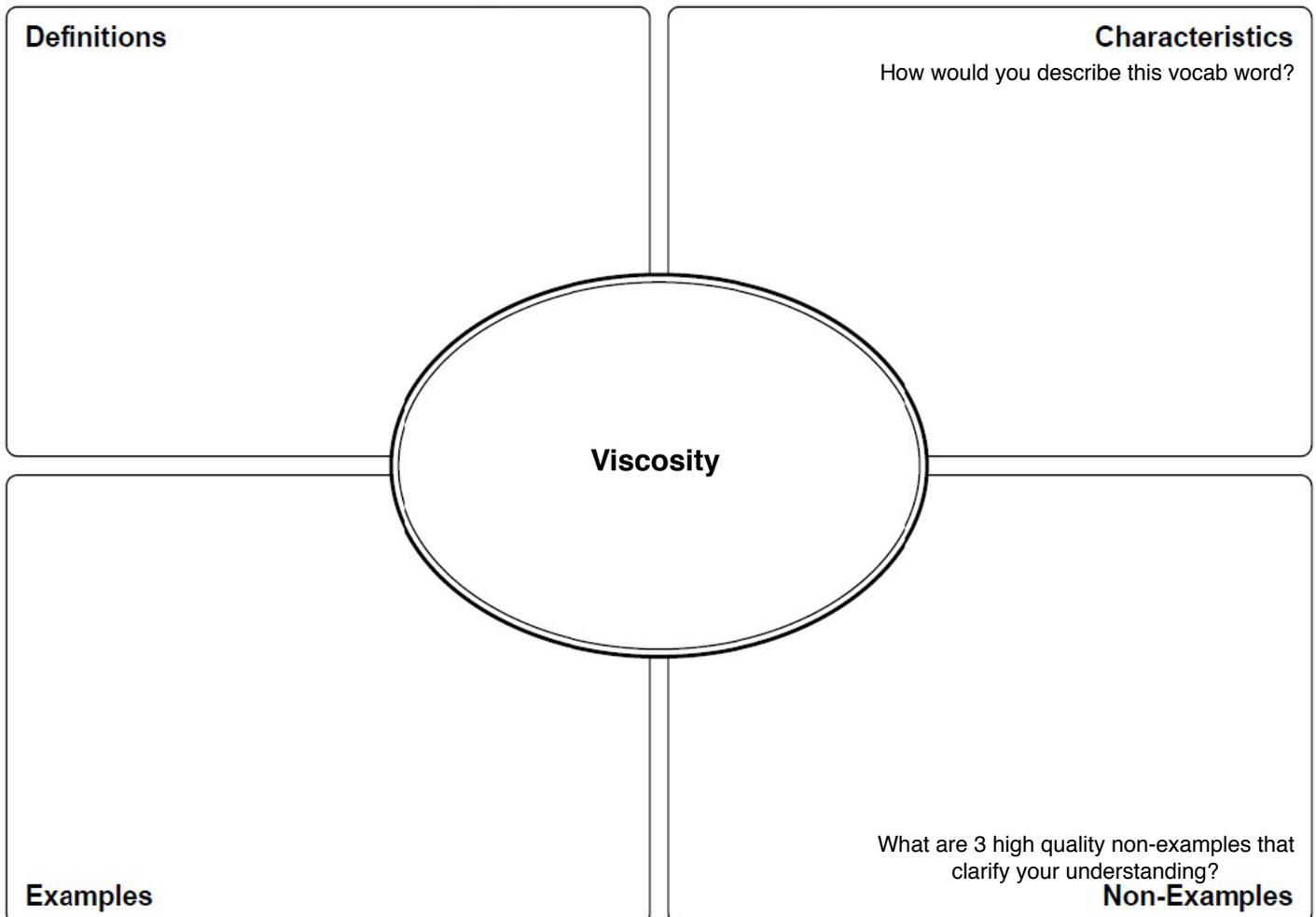
# GOOD TO KNOW VOCABULARY WORDS

Word	Definition
Vent	
Volcano	
Crater	
Shield Volcano	
Cinder Cone	
Composite Cone	
Caldera	
Intraplate Volcanism	
Batholith	
Geothermal Gradient	

## Frayer Model Diagram



## Frayer Model Diagram

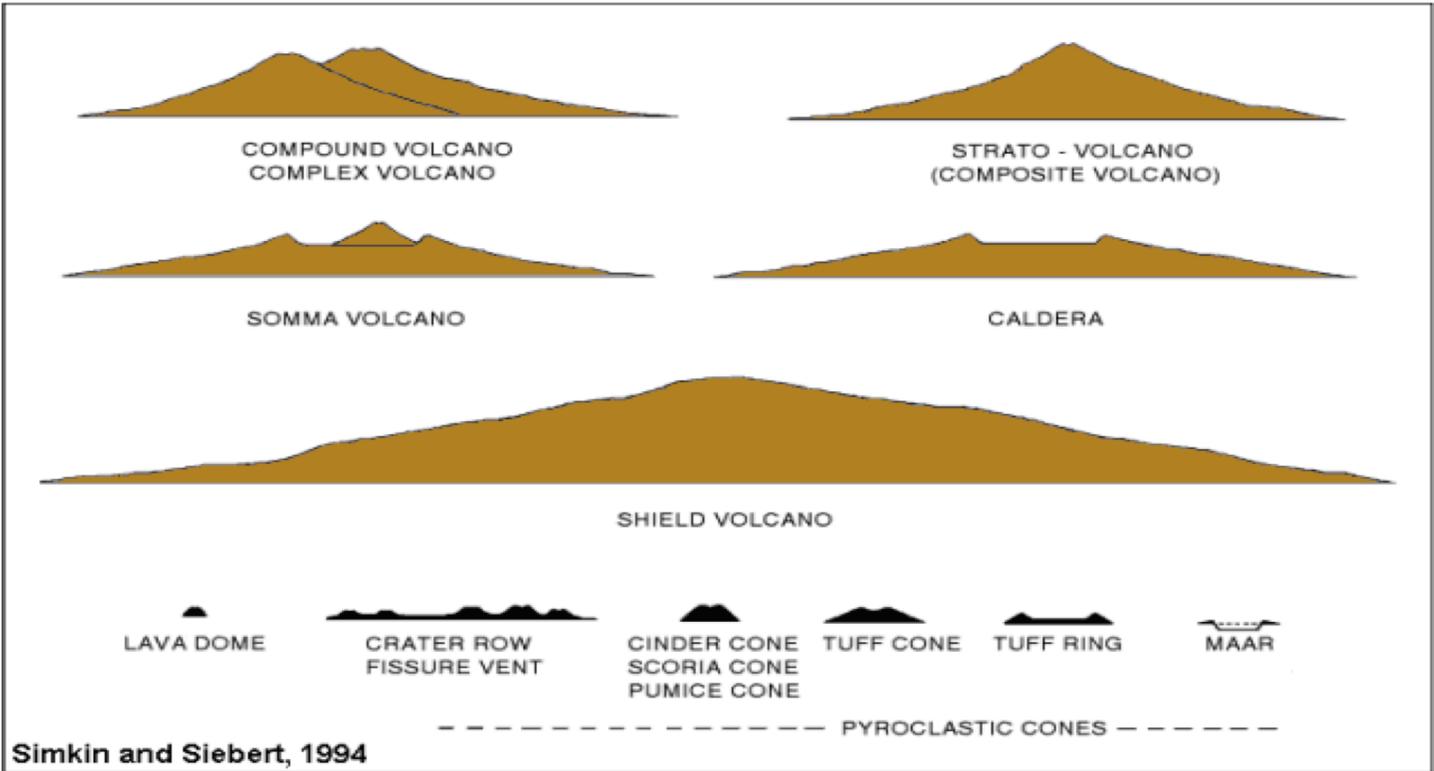






**Summary**

(briefly describe the main concepts, major points)



Simkin and Siebert, 1994

# CURRENT VOLCANIC ACTIVITY ONLINE LAB

When and where on the planet have volcanoes erupted recently? Which of the planet's tectonic plates were involved?

## DIRECTIONS:

1. Check out the Weekly Volcanic Activity report at:  
[http://volcano.si.edu/weekly\\_report.cfm](http://volcano.si.edu/weekly_report.cfm)
2. Choose any seven current eruptions to complete the columns of the table below.
3. To complete the "Tectonic Plate" column, refer to this USGS map of tectonic plates:  
[http://earthquake.usgs.gov/learn/topics/plate\\_tectonics/plates.php](http://earthquake.usgs.gov/learn/topics/plate_tectonics/plates.php)
4. This world map will help match latitude/longitude of the volcanoes to their plates:  
<http://southport.jpl.nasa.gov/imagemaps/>

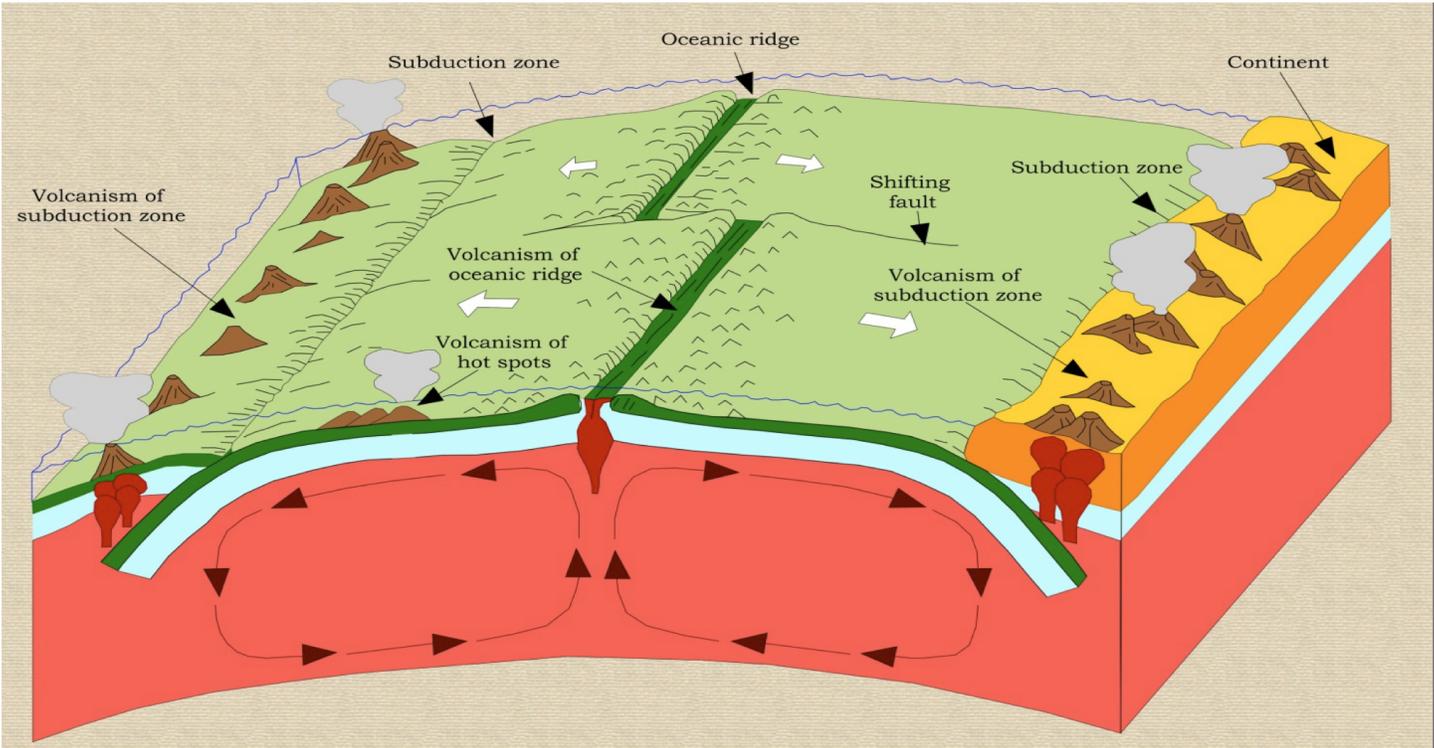
Volcano	Country	Latitude/ Longitude	Tectonic Plates	Special Notes





**Summary**

(briefly describe the main concepts, major points)



## Melting Temperatures of Rocks

Measurements of temperatures in wells and mines have shown that Earth's internal temperatures increase with depth. Recall that this rate of temperature increase is called the geothermal gradient. Although the geothermal gradient varies from place to place, it is possible to calculate an average. In this lab, you will investigate Earth's internal temperatures and the temperatures at which rocks melt. You will also investigate the effect of water on the melting temperatures of rock.

**Problem** How can rocks melt to form magma in the crust and uppermost mantle?

### Materials

- colored pencils (three different colors)
- ruler

**Skills** Analyzing Data, Graphing, Calculating

### Procedure

1. Use the Temperature Curves graph on the next page to plot the average temperature gradient for Earth's interior.
2. Plot the temperature values from Data Table 1 on the graph. Then draw a single best-fit line through the points with a colored pencil. Extend your line from the surface to 200 kilometers. Label the line "Temperature Gradient."
3. The melting temperature of a rock changes as pressure increases deeper within Earth. The approximate melting points of the igneous rocks granite and basalt under various pressures (depths) have been determined in the laboratory and are shown in Data Table 2. Granite and basalt were used because they are common materials in the upper layer of Earth. Plot the melting temperatures from Data Table 2 on the same graph. Use a different colored pencil to plot each set of points and draw the best-fit lines.

Depth (kilometers)	Temperature (°C)
0	20
25	600
50	1000
75	1250
100	1400
150	1700
200	1800

Granite (with water)		Basalt	
Depth (km)	Melting Temperature (°C)	Depth (km)	Melting Temperature (°C)
0	950	0	1100
5	700	25	1160
10	660	50	1250
20	625	100	1400
40	600	150	1600

4. Label the two lines “Melting Curve for Wet Granite” and “Melting Curve for Basalt.”

### Analyze and Conclude

1. **Using Graphs** Does the rate of increase of Earth’s internal temperature stay the same or change with increasing depth?
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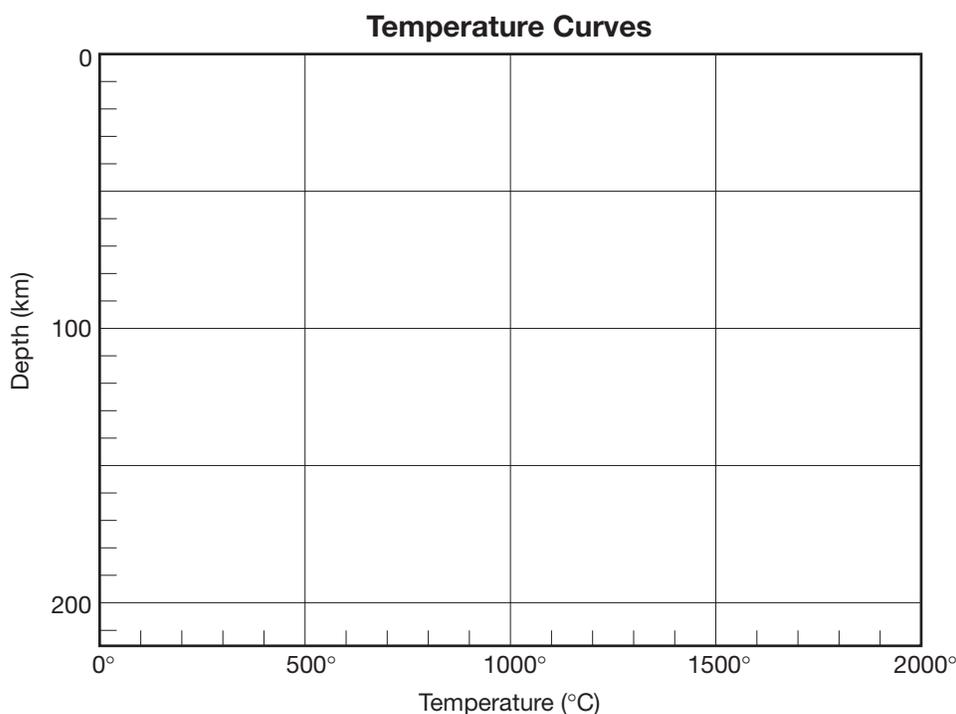
2. **Using Graphs** Is the rate of temperature increase greater from the surface to 100 km or below 100 km?
- 

3. **Interpreting Data** What is the temperature at 100 km below the surface?
- 

4. **Calculating** Use the data and graph to calculate the average temperature gradient for the upper 100 km of Earth in °C/100 km and in °C/km.
- 

5. **Drawing Conclusions** Based on your data, at approximately what depth within Earth would wet granite reach its melting temperature and begin to form magma? Explain.
- 

6. **Drawing Conclusions** Based on your data, at what depth will basalt have reached its melting temperature and begin to form magma?
- 



# BILL NYE: VOLCANOES

**Directions:** Bill Nye's "Name of Video" will be shown today in class today. Write 10 **COMPLETE** sentence facts pertaining to video that captured your interest. This is due at the end of the period. Be thorough with your answers.

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

# VOLCANO MOVIE NOTES

Raging Planet "Volcanoes" will be shown in class today. Write 10 COMPLETE sentence facts pertaining to video that captured your interest. This is due at the end of the period. Be thorough with your answers.

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.



Name \_\_\_\_\_

Date \_\_\_\_\_

## Vocabulary - Chapter 10 - Earth Science

caldera volcano pyroclastic material composite cone	cinder cone crater vent	shield volcano viscosity intraplate volcanism
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### Matching

Match each definition with a word.

- \_\_\_\_\_ The opening in a volcano that allows gasses and lava to escape from inside the earth.
- \_\_\_\_\_ A large crater caused by the violent explosion of a volcano that collapses into a depression.
- \_\_\_\_\_ a volcano composed of both lava and pyroclastic material
- \_\_\_\_\_ measure of a liquid's resistance to flow
- \_\_\_\_\_ these volcanoes are dome-shaped, low, wide, with gently sloping sides that make them have a flat appearance. (Many vents that can erupt with magma at the same time.) Fast moving lava flows continuously over long periods of time.
- \_\_\_\_\_ magma and fragments of rock that are ejected into the atmosphere during a violent volcanic eruption
- \_\_\_\_\_ A large, bowl-shaped formation that occurs when the top of a volcano falls into the magma chamber.
- \_\_\_\_\_ mountain that develops where magma erupts onto the earth's surface
- \_\_\_\_\_ a steep sided volcano formed by the explosive eruption of cinders that form around a vent. Cinders are lava fragments about 1 centimeter (about 1/2 inch) in diameter.
- \_\_\_\_\_ igneous activity that occurs within a tectonic plate away from plate boundaries

# VOLCANOS STUDY GUIDE

Directions: **Answer the questions in complete sentences or phrases** on a separate sheet of paper. Attach pages to packet when done.

1. In our melting temperatures of rocks lab, where was the rate of increase of Earth's internal temperature the greatest?
2. In our melting temperatures of rocks lab, at what temperature did the idealized internal temperature of earth reach 1,400 degrees celsius?
3. Where does most volcanic activity occur in the world?
4. Why is the asthenosphere rocks mostly molten?
5. An opening in the earth's service through which molten rock flows is called a ....?
6. A magma's viscosity is directly related to its \_\_\_\_\_?
7. What factors determine whether a volcanic eruption will be violent or relatively quiet?
8. What happened when oceanic crust meets continental crust?
9. Define:  
volcano  
hotspot  
"aa" –  
"pohoehoe" –  
pyroclastic material –  
caldera –  
intraplate volcanism -
10. What does the VISCOCITY of lava do when the temperature decreases? When the temperature increases?
11. What type of volcano is built almost entirely from ejected lava fragments?
12. What type of volcanoes are in Hawaii? (composite, shield, cinder cone, or pyroclastic?)
13. What type of land form develops when an oceanic plate descends beneath another oceanic plate?
14. What are the characteristics of the following:  
Composite (or Strato)volcano  
Shield volcano  
Cinder cone volcano
15. Explain the difference between lava and magma.