

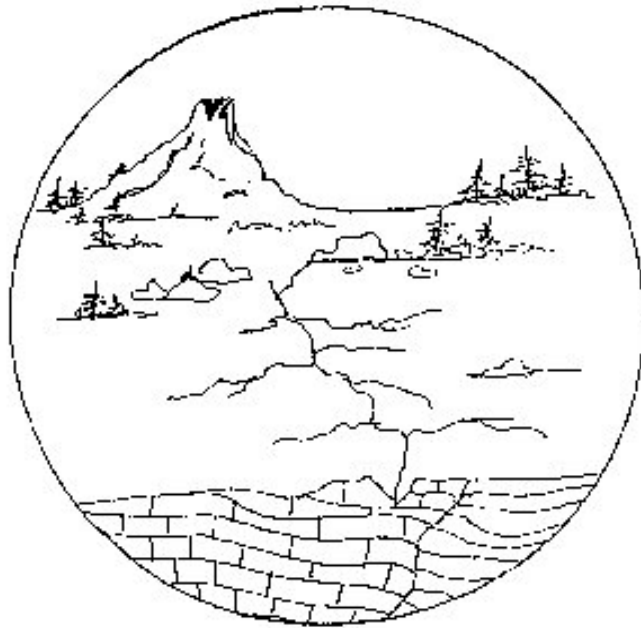


Plate Tectonic Cycle

Earth's Moving Force



THIRD GRADE WORKBOOK



student _____

PLATE TECTONIC CYCLE - VOLCANOES (3) LAB

PROBLEM: Are all volcanic rocks the same?

PREDICTION: _____

PROCEDURE: Look at the rock from Mt. Lassen in California. Describe it using some of the following words: **black, gray, light, heavy, has visible minerals, glassy, holey, shiny.** You may use your own words. After you look at Mt. Lassen, look at the other 3 rocks and describe the rocks. Use some of the same words as above.

DESCRIPTION

Mt. Lassen, CA

Mt. Shasta, CA

Clearlake, CA

Mono Craters, CA

Mt. Lassen is a composite volcano. It is made of lava and ash. Mt. Lassen erupted in the 1915 but it is now sleeping (dormant). Using clay, make a model of Mt. Lassen. Save the model, it will be used in a later lab.



CONCLUSION: How are volcanic rocks different?

PLATE TECTONIC CYCLE - VOLCANOES (3)

POST LAB

WRITE IN THE CORRECT ANSWERS FROM THE FOLLOWING WORDS:

volcano
magma
lava
pumice
granite

obsidian
ash
Hawaii
basalt
Mt. St. Helens

1. _____ is hot, molten, or melted rock which reaches the surface of the Earth.
2. Lava that is still deep inside the earth is called _____.
3. Lava erupts from a _____.
4. _____ is a natural volcanic glass.
5. _____ is a volcanic rock that is very light because it has so many little holes ("preserved" gas bubbles) in it.
6. The state of _____ is a chain of volcanic islands in the Pacific Ocean.
7. _____ is an active volcano in Washington that erupted explosively on May 18, 1980.
8. _____ is an igneous rock that cooled slowly below the earth's surface. It is not produced by a volcano.
9. Most of Hawaii is made of _____ a fine-grained black rock.
10. When Mt. St. Helens erupted, it shot tons of powdery _____ into the atmosphere.

PLATE TECTONIC CYCLE - EARTHQUAKES (3)

PRE LAB

An earthquake occurred 6 kilometers below the surface of the earth, just south of the San Francisco Bay, as shown in Figure 1.

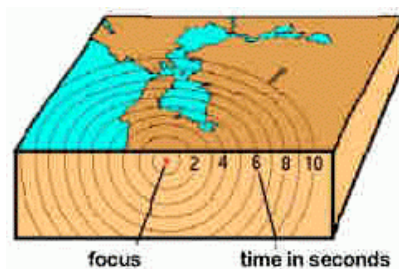


Figure 1

The energy released radiates outwards from the focus.

Seismograms record how the energy affects different areas. Figure 2 shows seismograms from different locations around the Bay area that recorded the earthquake. Look at the information from the seismograms locations in figure 2 and answer the questions below.

- How many seismograph locations are shown? _____
- Why are they spread out and not all in the same place? _____
- Which location felt the earthquake first? _____ Which location felt the earthquake last? _____
- Which area had more energy recorded? _____ Which location had the least _____
- When did the first wave hit each of the areas (seconds after the earthquake).
 A _____, B _____, C _____, D _____,
 E _____, F _____

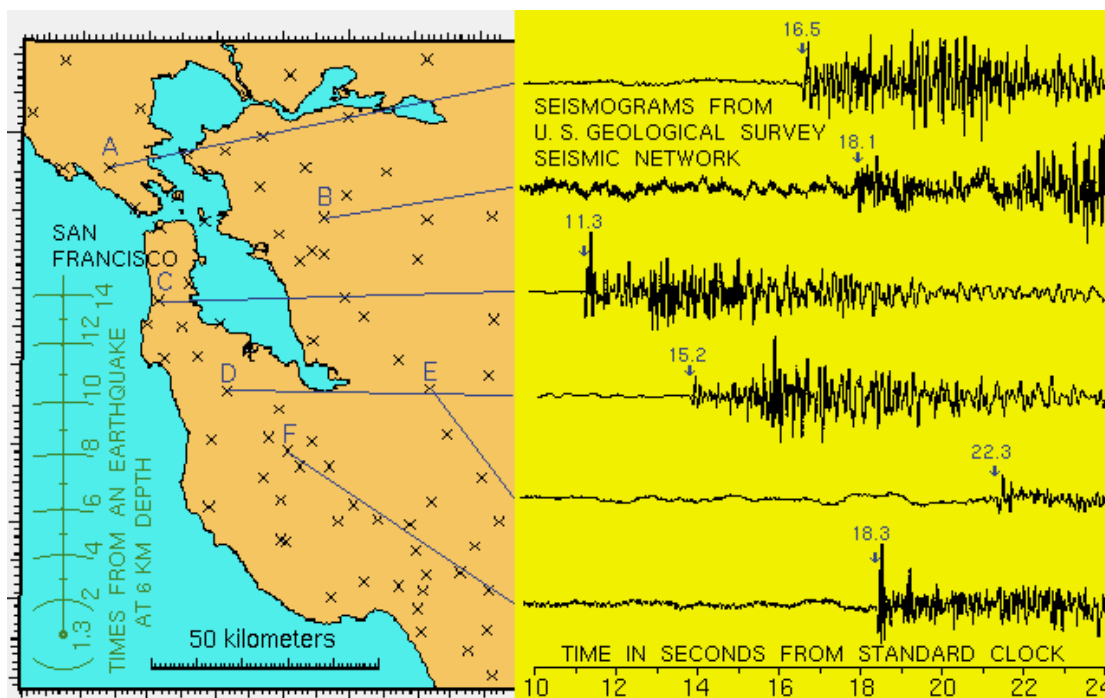


Figure 2.

PLATE TECTONIC CYCLE - EARTHQUAKES (3)

LAB

PROBLEM: Why do earthquakes cause damage?

PREDICTION: _____

MATERIALS: margarine tubs, teaspoons, oil, water, aluminum foil

PROCEDURE: Fill the margarine tubs 1/2 full of water

1. Gently tap the sides of the tub. What are you creating in the tub?

2. Tap the sides a little harder. Does the pattern change? How?

3. Float a flattened piece of foil in the tub. Tap gently. What happens?

4. Tap a little harder on the outside. Does it still float?

5. With the teaspoon, tap the water directly. Can you cause the foil to sink without touching the foil and without spilling any water? _____

6. Take the foil out. Put 1 teaspoon of oil on the water. Tap the sides gently. What happens? _____

7. Tap the sides a little harder. What happens?

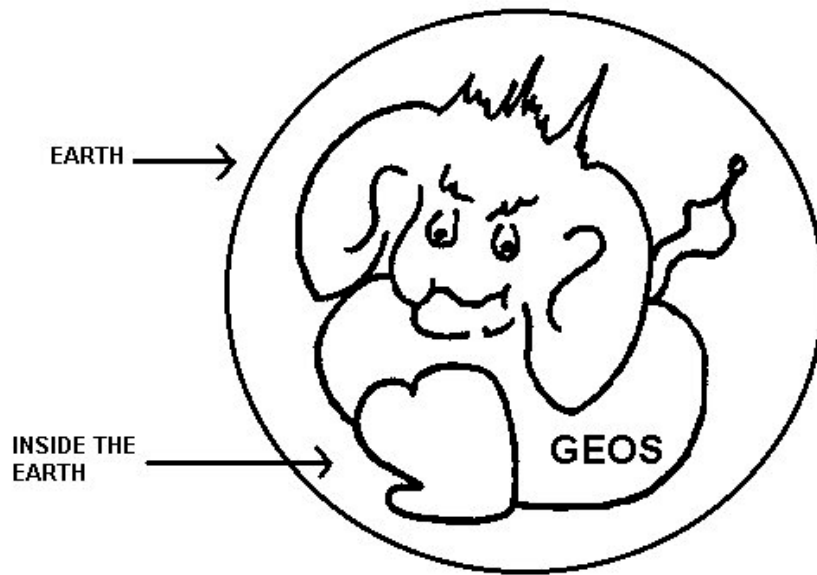
8. Fill in the blank letter in the sentence below.

*WHEN THE STRESSES IN THE EARTH BREAK THE CRUST THEY SEND OUT
W _ _ _ _.*

CONCLUSION:

What causes some of the damage during an earthquake?

PLATE TECTONIC CYCLE - EARTHQUAKES (3)
POST LAB



There is a friendly monster inside the Earth. Geos wants to get out, but he does not want to hurt any living creature on Earth. How can he get out without hurting anyone? Geos can change to any shape that he wants. He can become liquid or change into energy.

PLATE TECTONIC CYCLE - PLATE TECTONICS (3) LAB

PROBLEM: How does the earth "relieve" itself of stress?

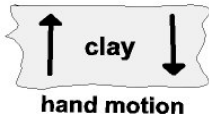

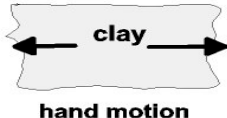
PREDICTION: _____

EXERCISE I. Glue Ball. (1) Each Glue Ball represents a portion of the Earth. (2) Stick Glue Balls together and mix well. (3) Predict what will happen if the "Glue Ball Earth" is "stressed." _____

EXERCISE II. Find out how much stress the following items can withstand. Put each one between the palms of your hands. See if you can create enough pressure to break them!

	DO YOU THINK YOU CAN BREAK IT?	WHAT HAPPENS
1. Peanut		
2. Clay		
3. Marbles		
4. Styrofoam		

EXERCISE III. You have a slab of clay. "Stress" your clay in the following ways.

DRAW CLAY AFTER EARTHQUAKE	
<p>A.</p> 	
<p>B.</p> 	
<p>C.</p> 	

CONCLUSION: What happens when the Earth is under stress? _____

PLATE TECTONIC CYCLE - PLATE TECTONICS (3)
POST LAB

DRAW PRESSURETRON AND CONSUMATRON. SHOW HOW THEY CAUSE
MOVEMENT IN THE EARTH'S CRUST

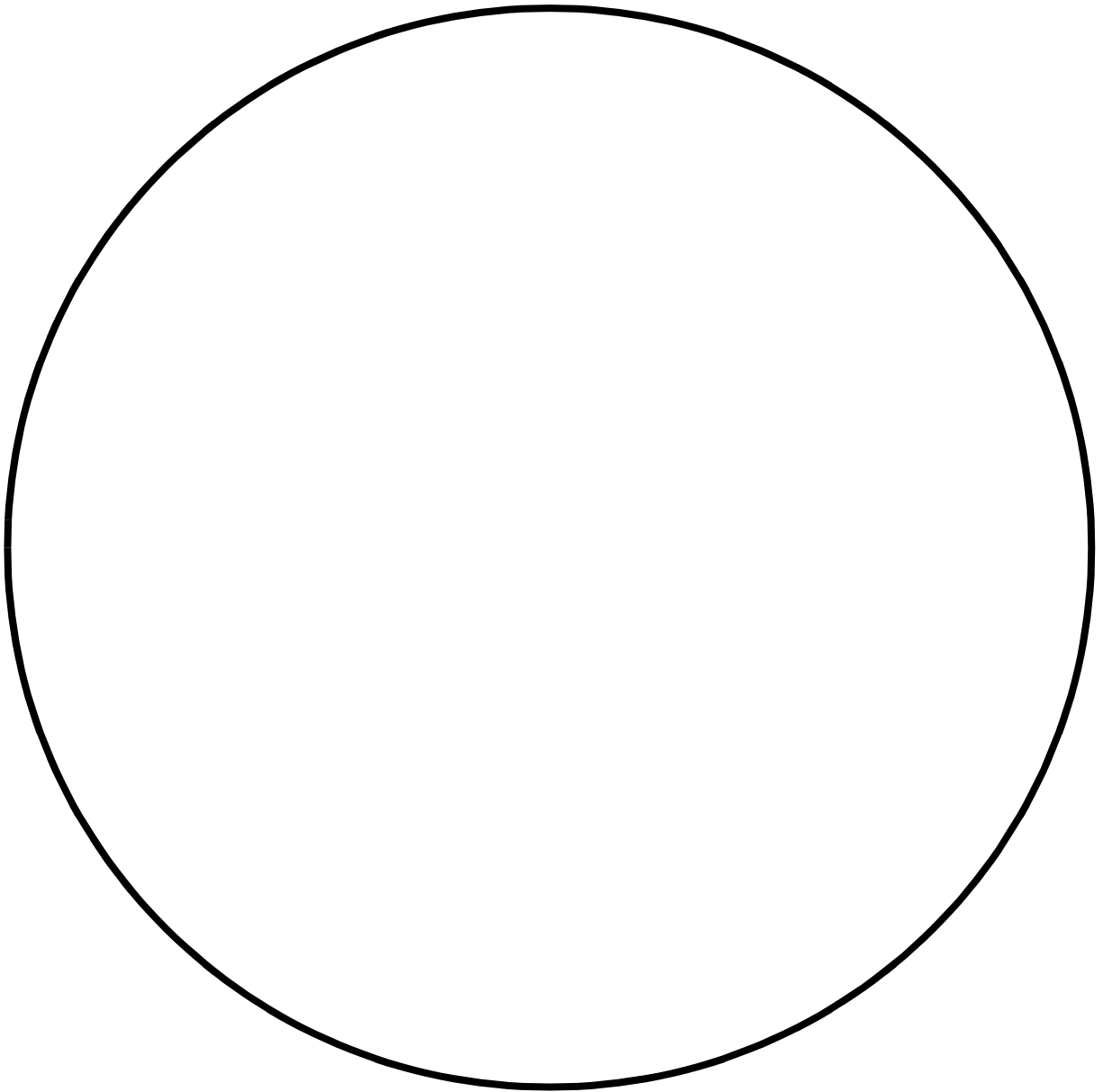


PLATE TECTONIC CYCLE - HAZARDS (3) LAB

PROBLEM: When is a volcano dangerous?

PREDICTION: _____

EXERCISE I. Look at the following slides and record the dangers that are present.

1. Mt. St. Helens, Washington	
2. Mt. Vesuvius, Italy	
3. Mt. Etna, Italy	
4. Mt. Lassen, California	
5. Kilauea, Hawaii	

EXERCISE II.

Using the model of Mt. Lassen, picture what will happen if it erupts. Draw a picture of what you think the volcano will look like before and after it erupts.

BEFORE	AFTER

CONCLUSIONS: What are the major types of volcanic disasters?

