

# THE ROCK CYCLE

Name \_\_\_\_\_  
Date \_\_\_\_\_  
Per \_\_\_\_\_ page \_\_\_\_\_

Objective: \_\_\_\_\_  
\_\_\_\_\_

## PART 1: WEATHERING

### Research:

Weathering: \_\_\_\_\_

Two types:

Physical: \_\_\_\_\_  
\_\_\_\_\_

Chemical: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Activity:

1. Using the pencil sharpener, shave the crayons your teacher has left for your group (4-6 crayons) into shavings. Put the fragments by color into separate piles on wax paper. You are "weathering" rock material.
2. Save for part 2 and answer discussion questions.

### Discussion Questions (answer in complete sentences):

1. Are all weathered rock fragments in your pile the same size? \_\_\_\_\_ Why or why not? \_\_\_\_\_  
\_\_\_\_\_
2. What have you observed about rock fragments in nature? \_\_\_\_\_  
\_\_\_\_\_
3. Where do rock fragments tend to collect? \_\_\_\_\_  
\_\_\_\_\_
4. How do rocks get smaller in size? \_\_\_\_\_  
\_\_\_\_\_
5. How might ice be an agent of weathering? \_\_\_\_\_  
\_\_\_\_\_
- How about a tree root? \_\_\_\_\_  
\_\_\_\_\_
6. Does mechanical weathering differ from chemical weathering? \_\_\_\_\_
7. Which type of process does this activity represent? \_\_\_\_\_

## **PART 2: EROSION AND DEPOSITION**

### **Research:**

Erosion: \_\_\_\_\_

Material is transported by \_\_\_\_\_, \_\_\_\_\_ or \_\_\_\_\_

Sediment: \_\_\_\_\_

Deposition: \_\_\_\_\_

Stratification: \_\_\_\_\_

### **Activity:**

1. Put a sheet of aluminum foil (approx. 10 x 18) on your work area.
2. In the center of the foil each student in your group should drop his or her "rock fragments", one at a time, piling them on top of each other. When each person has "deposited" his/her fragments, examine the pile carefully.
3. Carefully fold the foil over the fragments and save for Part 3.

### **Discussion Questions (answer in complete sentences):**

1. Explain the process of erosion: \_\_\_\_\_

2. Explain how the action you just completed in this activity is like erosion: \_\_\_\_\_

3. What are deposition and stratification? \_\_\_\_\_

What are some conditions that might control deposition? \_\_\_\_\_

4. Why are similar-sized rock fragments often found together? \_\_\_\_\_

5. Where could you find rock debris fragments in loose layers? \_\_\_\_\_

**PART 3: LITHIFICATION AND SEDIMENTARY ROCKS****Research:**

Lithification: Two parts:

Compaction: \_\_\_\_\_

cementation: \_\_\_\_\_

sedimentary rocks: \_\_\_\_\_

**Activity:**

1. Put the foil package between two pieces of plywood.
2. Have the lightest student briefly step onto the board.
3. After removing the package from between the boards, carefully open the foil and examine the "sedimentary rock."
4. Remove a small piece from the sedimentary rock. Put the small piece in a baggie. The remainder should be left in the foil package and saved for Part 4.

**Discussion Questions (answer in complete sentences):**

1. Describe the thickness now compared to when it was initially deposited on the foil: \_\_\_\_\_
2. What happened to the spaces between the rock fragments? \_\_\_\_\_
3. Explain the difference between compaction and cementation: \_\_\_\_\_
4. Which does the activity done here represent, compaction or cementation? \_\_\_\_\_

## **PART 4: METAMORPHISM AND METAMORPHIC ROCKS**

### **Research:**

Metamorphic rocks: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### **Activity:**

1. Place the foil package between two pieces of plywood
2. Have the tallest person stand atop the board, over the foil.
3. Briefly place the foil package on a hot plate at a low temperature (your teacher will monitor this step) Bring the tongs with you to the hot plate to take the foil off when it's heated.
4. Repeat steps 1-3 for an additional two times.
5. Place the foil package on your work station and allow it to cool.
6. While the package is cooling, work on the discussion questions.
7. Once the package is cool enough to handle, open and examine the newly formed "metamorphic rock". Take a small piece of it and place with your previously saved "sedimentary rock" in the baggie.
8. Save the metamorphic rock in the foil for Part 5.

### **Discussion Questions (answer in complete sentences):**

1. Describe the color-layer thickness, comparing the metamorphic rock with the sedimentary rock: \_\_\_\_\_  
\_\_\_\_\_
2. Describe the change in fragment shape: \_\_\_\_\_  
\_\_\_\_\_
3. Why did this change happen? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## **PART 5: IGNEOUS ROCKS**

### **Research:**

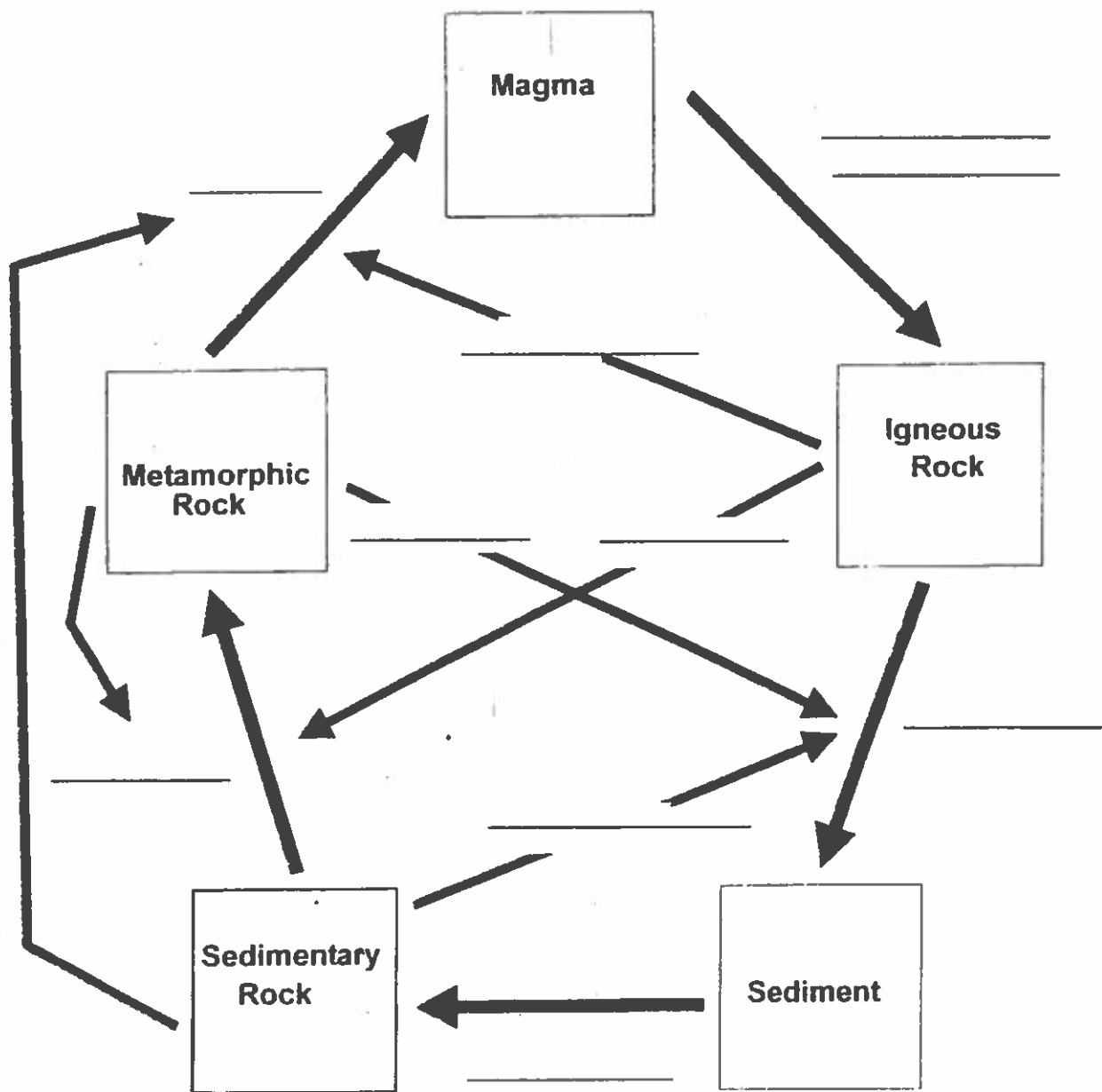
Igneous rocks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

### **Activity:**

1. Bring your foil packet saved from part 4 to the aluminum tray on the hot plate.
2. When your teacher returns your foil package, to back to your work station and let it cool.
3. Work on your discussion questions while the packet is cooling.

### **Discussion Questions (answer in complete sentences):**

1. What happened to the "rock" fragments when they were heated on the hot plate? \_\_\_\_\_  
 \_\_\_\_\_
2. How does the igneous rock differ from the previously saved sedimentary and metamorphic rocks? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
3. Which type of "rock" is easiest to break apart? \_\_\_\_\_
4. Which type of "rock" is the most difficult to break apart? \_\_\_\_\_



**The Rock Cycle**

## LAYERS OF THE EARTH

**OBJECTIVE:** \_\_\_\_\_

**RESEARCH:**

layers of the earth:

crust: \_\_\_\_\_

continents: \_\_\_\_\_

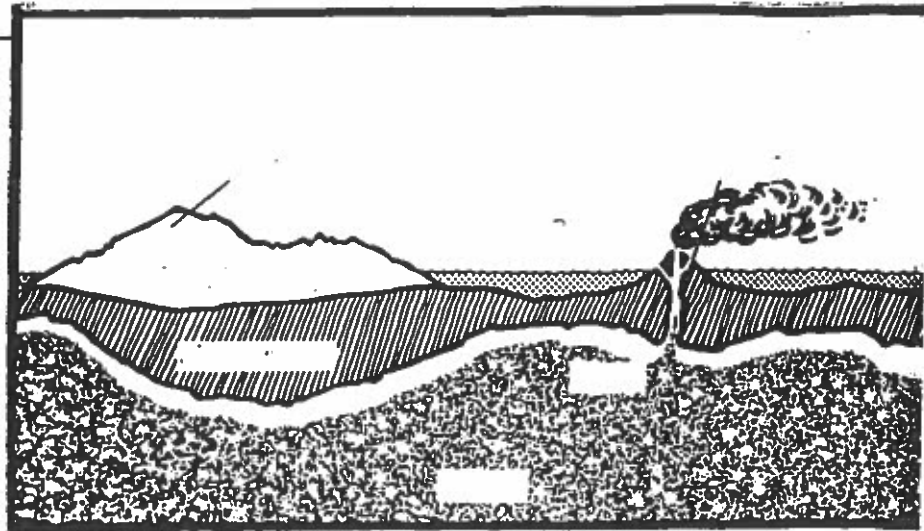
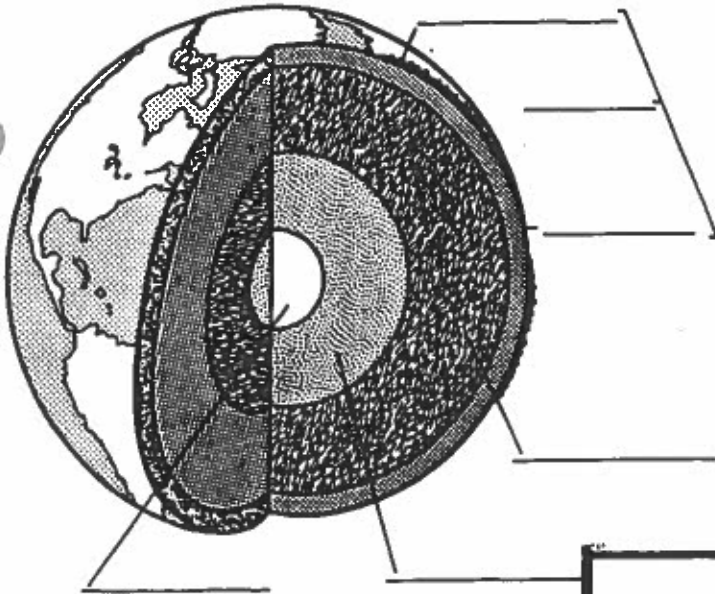
under oceans: \_\_\_\_\_

mantle: \_\_\_\_\_

Moho: \_\_\_\_\_

outer core: \_\_\_\_\_

inner core: \_\_\_\_\_



**ACTIVITY:** Earth is made of solids, liquids, and gases. Write the following words in the correct spaces below: tree, rock, soil, air, water, ocean, mountain.

Solid	Liquid	Gas

### FOLLOW-UP QUESTIONS:

- Why would a person be unable to dig a tunnel all the way through the middle of Earth?  
\_\_\_\_\_
- How much hotter is the center of the Earth than your oven at home? \_\_\_\_\_
- Using an apple as a model of Earth, what would the skin be called? \_\_\_\_\_  
What would the center be called? \_\_\_\_\_ What would the fruit be called? \_\_\_\_\_
- It is 2800 miles (4505 km) across the United States. Which is farther the distance from the surface to the center of the earth or the distance across the United States? \_\_\_\_\_  
By how much? \_\_\_\_\_
- Large areas of land that rise above the oceans are called: \_\_\_\_\_ and they are mostly made of \_\_\_\_\_.
- The rock beneath the oceans is **thicker/thinner** (circle one) than the rock under the continents and is made of \_\_\_\_\_.
- Both granite and basalt are igneous rocks. Granite has large crystals and basalt has very small crystals. Explain where these two different rocks were formed and a possible reason they ended up where they did in our world. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_