

Rock Cycle WebQuest

<http://www.learner.org/interactives/rockcycle/>

1. Go to the **Introduction** at the top of the page and read the information.
2. Scroll down and click on **Begin with Types of Rocks**.
3. You should now be on the **Types of Rocks** page. Read the section and answer these questions.
 - a. What are the 3 main types of rocks?
 - i. Igneous:
 - ii. Sedimentary:
 - iii. Metamorphic:
 - b. What are sedimentary rocks made of?
 - c. Give 1 interesting fact about each type of rock.
 - i. Igneous:
 - ii. Sedimentary:
 - iii. Metamorphic:
 - d. Give 1 example of each type of rock.
 - i. Igneous:
 - ii. Sedimentary:
 - iii. Metamorphic:
 - e. What are the key characteristics used to identify rocks? (Scroll down to the **What to Look For** section)
4. Click on **Start Rock Collection** and begin. Touch each rock and read the information about it.
5. Click on **Identify Rock Types**. Take the quiz and record your score here. _____
6. You should now be on the **How Rocks Change** page. Read the different sections and answer the following questions.

Heating & Pressure

- a. What are the first 2 forces that cause rocks to change?
- b. True or False: The rock cycle is a slow process.

*Click on the **Start** button. Read the section.

- c. What is metamorphism?

* Watch the animation!

*Click on the **Next** button.

Melting

- a. At what temperature does rock melt?

Cooling

- a. What happens when liquid magma is cooled?
- b. What is intrusive igneous rock?
- c. What is extrusive igneous rock?

**Watch the animations!*

Weathering & Erosion

- a. What forces/elements are involved in weathering and erosion?
- b. What is the result of weathering and erosion?

Compacting & Cementing

- a. What happens to sediment over time?

**Watch the animations!*

Click on **Transform the Rock. Take the quiz and record your score. _____*

7. You should now be on the **Rock Cycle Diagram** page. Read the information and answer the following questions.

- a. Who is the rock cycle attributed to?
- b. What is the main idea of the rock cycle?
- c. True or False: Rocks are not created nor destroyed, but they are recycled.

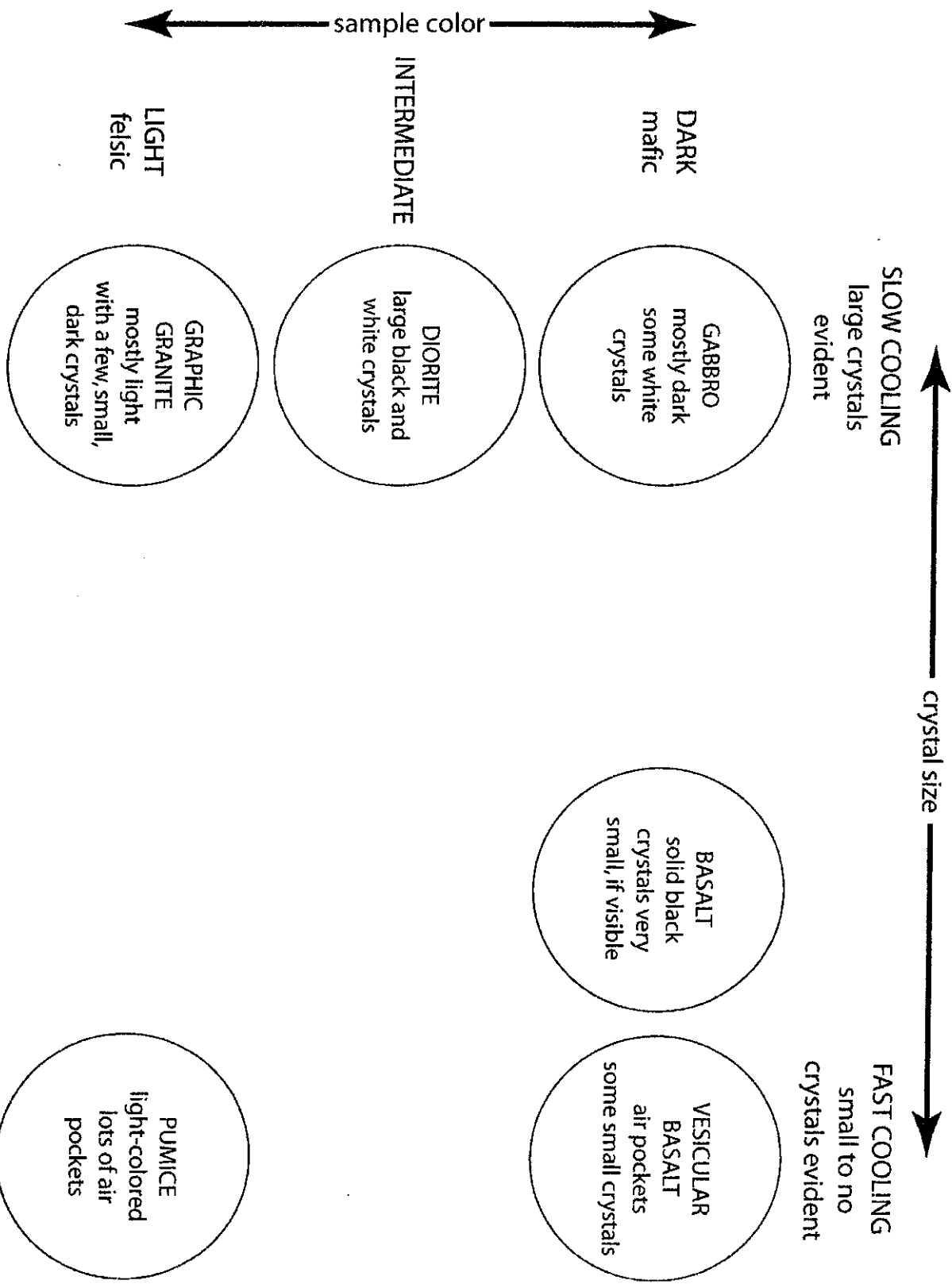
**Explore the rock cycle diagram!*

Go to **Complete the Cycle. Take the quiz and write your score here. _____*

8. You should now be on the **Test Your Skills** page. Enter your first name and the initial for your last name (both partners). Now, take the final quiz! **I MUST SEE AND RECORD THIS SCORE, IN ORDER FOR YOU TO RECEIVE CREDIT!!!**

Your WebQuest is now over...

IGNEOUS ROCKS CHART



SD 1 - Igneous Rocks Chart

SD 2 – Igneous Rock Identification Sheet

<p>Gabbro</p>	<p>Diorite</p>
<p>Graphic Granite</p>	<p>Basalt</p>
<p>Vesicular Basalt</p>	<p>Pumice</p>

SD 3 – Igneous Rock Stories

Story 1

This rock is formed from volcanoes near or under the sea. When lava leaves a volcano, the pressure release can make it foam like carbonated soda, creating bubbles. When this super-heated lava contacts water, it cools into a solid almost instantly. As it quickly solidifies, it traps bubbles inside thin glassy walls.

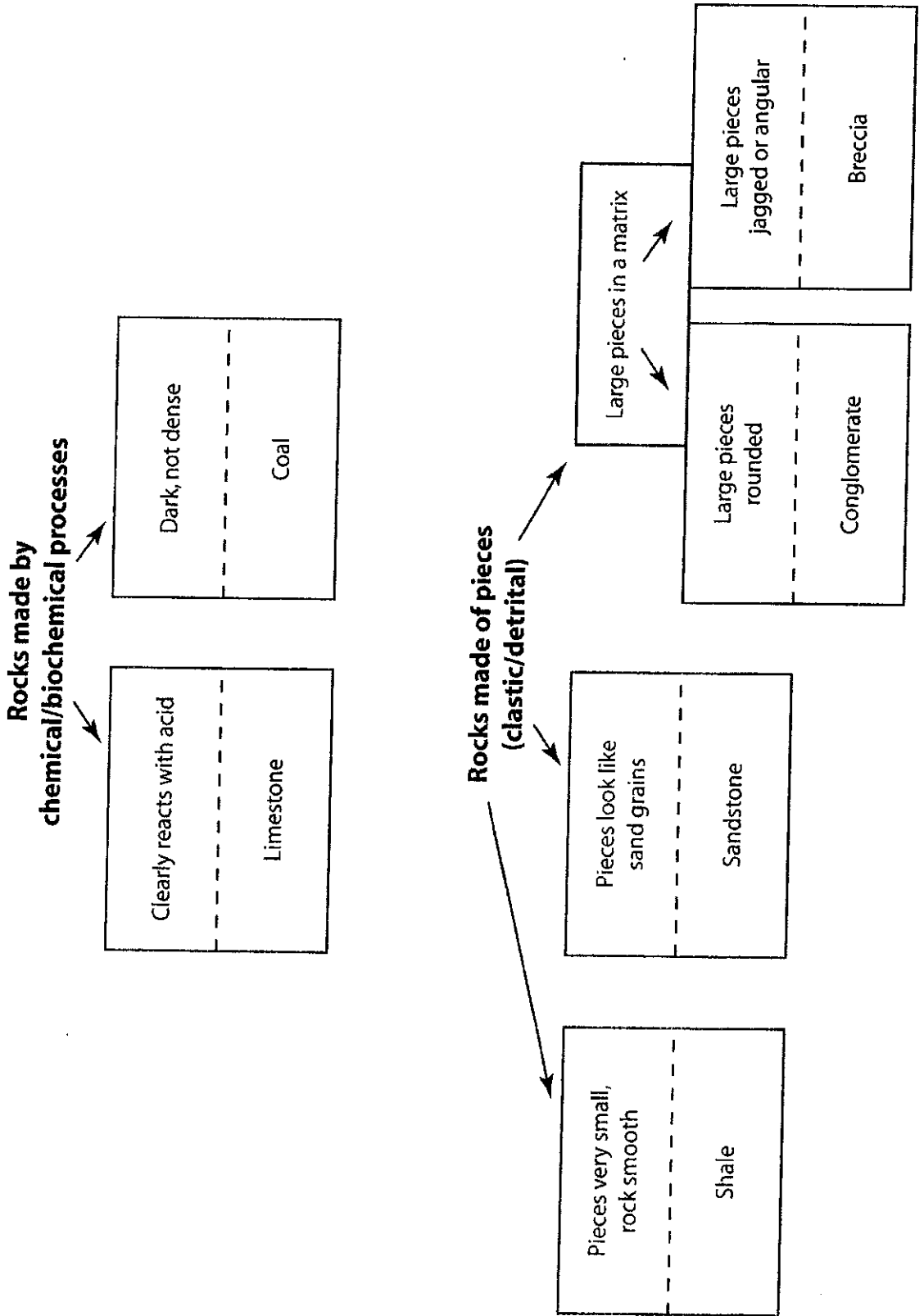
Story 2

This rock is formed when molten magma slowly cools deep in the Earth, often below the sea. This magma pushes up and cools very slowly, over millions of years. Because it cools so slowly, it forms large crystals. The lava that creates this rock contains little silica and no quartz, very different from granite. Large deposits of it are in the crust under the oceans and also on the moon. It is sometimes used for kitchen countertops where it is incorrectly called “black granite.”

Story 3

This rock is formed when a large body of magma with high water content slowly finishes cooling. The dark quartz and light-colored feldspar in the magma cool together and slowly separate from each other. The quartz crystallizes along the edges of the feldspar crystals. Following the feldspar boundaries, the quartz forms dark shapes that look like writing.

SEDIMENTARY ROCKS CHART



SD 2 – Sedimentary Rock Identification Sheet

<p>Limestone</p>	<p>Coal</p>
<p>Shale</p>	<p>Sandstone</p>
<p>Conglomerate</p>	<p>Breccia</p>

SD 3 – Sedimentary Rock Stories

Story 1

This rock forms in shallow ocean water, where pieces of shell, coral, fragments of skeletons and algae accumulate. When animals that use calcium carbonate in their shells and skeletons die, they settle on the ocean bottom and collect. Because of this, some of these rocks are filled with fossils.

Story 2

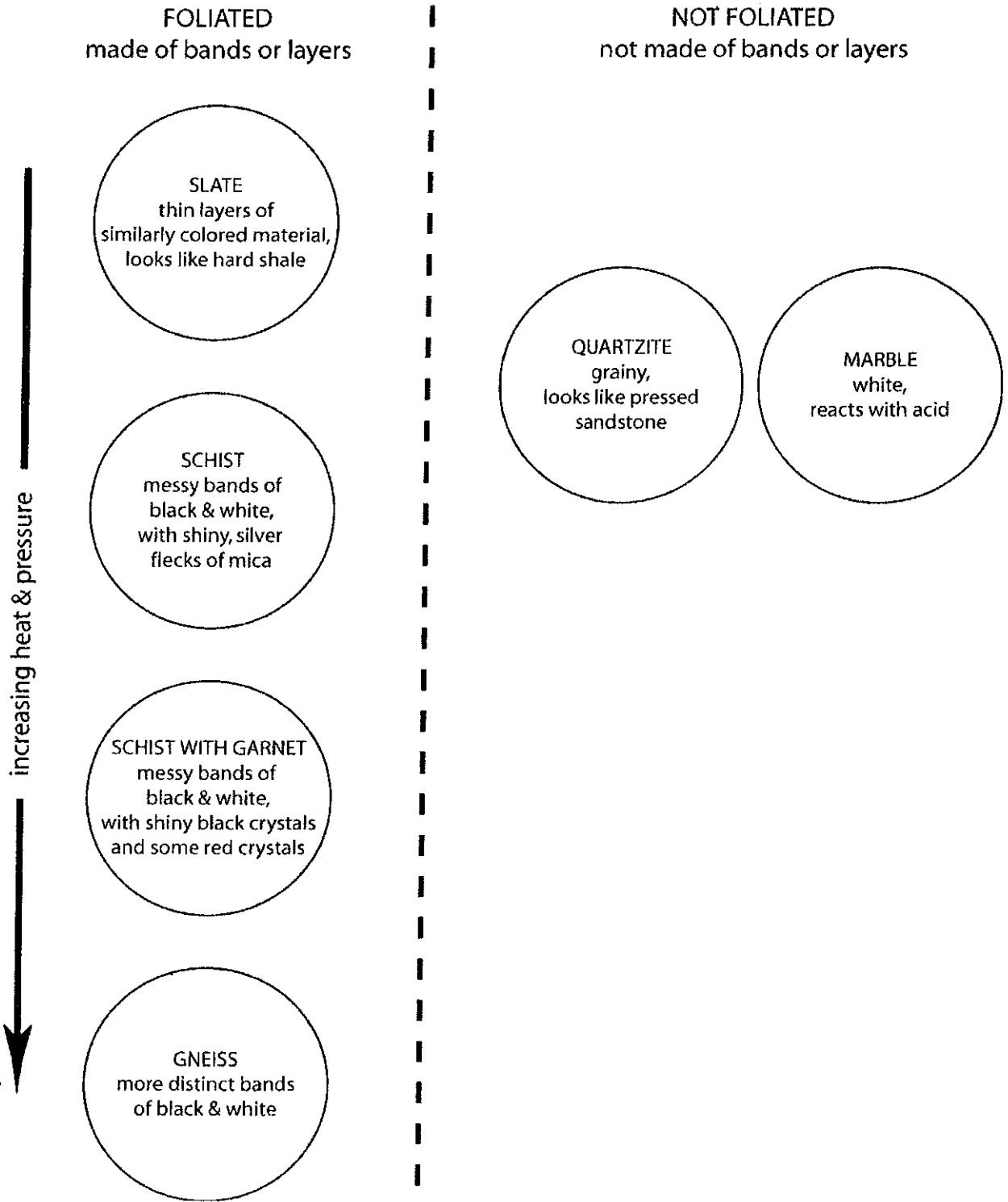
This rock forms where small rounded rocks or pebbles accumulate in sediments. Powerful currents in water are necessary to move and round the pebbles that make up this type of rock. As a result, it usually occurs where there is or has been a fast stream or a beach with strong waves. The pebbles in this rock are usually cemented together by silica, calcite or iron oxide.

Story 3

This rock forms where jagged fragments of rock or mineral debris accumulate. This can happen at the base of an outcrop where weathered debris accumulates or in streams near an outcrop of rock. It can also be formed when tectonic forces break brittle rock in a fault zone. It is almost always made of angular pieces surrounded by a fine-grained matrix.

SD1 – Metamorphic Rocks Chart

METAMORPHIC ROCKS CHART



SD 2 – Metamorphic Rock Identification Sheet

<p>Slate</p>	<p>Schist</p>
<p>Schist With Garnet</p>	<p>Gneiss</p>
<p>Quartzite</p>	<p>Marble</p>

SD 3 – Metamorphic Rock Stories

Story 1

This rock often forms in basins between convergent plate boundaries where a shale-type sedimentary rock made of clay or volcanic ash is subjected to heat and pressure. Compared with other metamorphic rocks, relatively little heat and pressure are needed to make it. It is extremely fine-grained, with many thin layers. Its color is largely determined by the amount of iron it contains, but it is normally a shade of gray.

Story 2

This rock forms when intense heat and pressure partially melt and compress granite or sedimentary rocks. These high temperatures and pressures occur as tectonic processes such as continental collisions or subduction push rock deep in the Earth. With this rock, the materials it is composed of (minerals) stay more or less the same. However, their structure changes to become much more layered, producing clear alternating layers.

Story 3

This rock forms when limestone is compressed at high temperature when limestone is pushed deep into the earth by tectonic forces. The heat and pressure cause the calcite that makes up limestone to re-crystallize into a denser rock. The denser rock is made up of calcite crystals that are all about the same size, and more compact. The stripes and swirls of colored versions of this rock are impurities such as clay, silt, sand, or iron oxides that were in the original limestone.

Name(s):

Core:

Date:

Crayon Rock Cycle

Directions: You will be working by yourself today. Please follow the Scientific Method procedures we learned to work through today's lab.

1. Question: How does the rock cycle work?
2. Hypothesis: (Describe the rock cycle and how it works... Please use the back of this paper to answer.)

Student 1: →→→ (Use the Back) →→→

3. Procedure:
(Day 1) Un-wrap 2 different colored crayons. With a plastic knife make shavings of both crayons into a plastic bag. (Until crayons are fully shaved down)
(Day 2) With the shavings inside the closed bag smash the pieces together (Compaction). Carefully taking the given piece of aluminum foil create a "boat" for your shavings to go into. With a Styrofoam cup of hot water carefully place your "boat" in the cup but above the water. (Making sure your boat never touches the water). Remove the boat when all of the wax inside has melted together (Cementation). Place the boat on top of your table to let cool.
4. Results: What type of rock would the crayon represent now and why?
5. Analysis: Do your answers make sense? Yes or No, and why?
6. Conclusion: In your own words summarize this lab in 3 or more sentences. (What you didn't know before this lab, that now you do...?)
7. Further Questions: Explain to me how this lab deals with information we have been learning about, and why?

Name(s):

Core:

Date:

Cookie Mining...

Directions: You will be working with your neighbor today. That is a group of at most 2 people. Please follow the Scientific Method procedures we learned to work through today's lab.

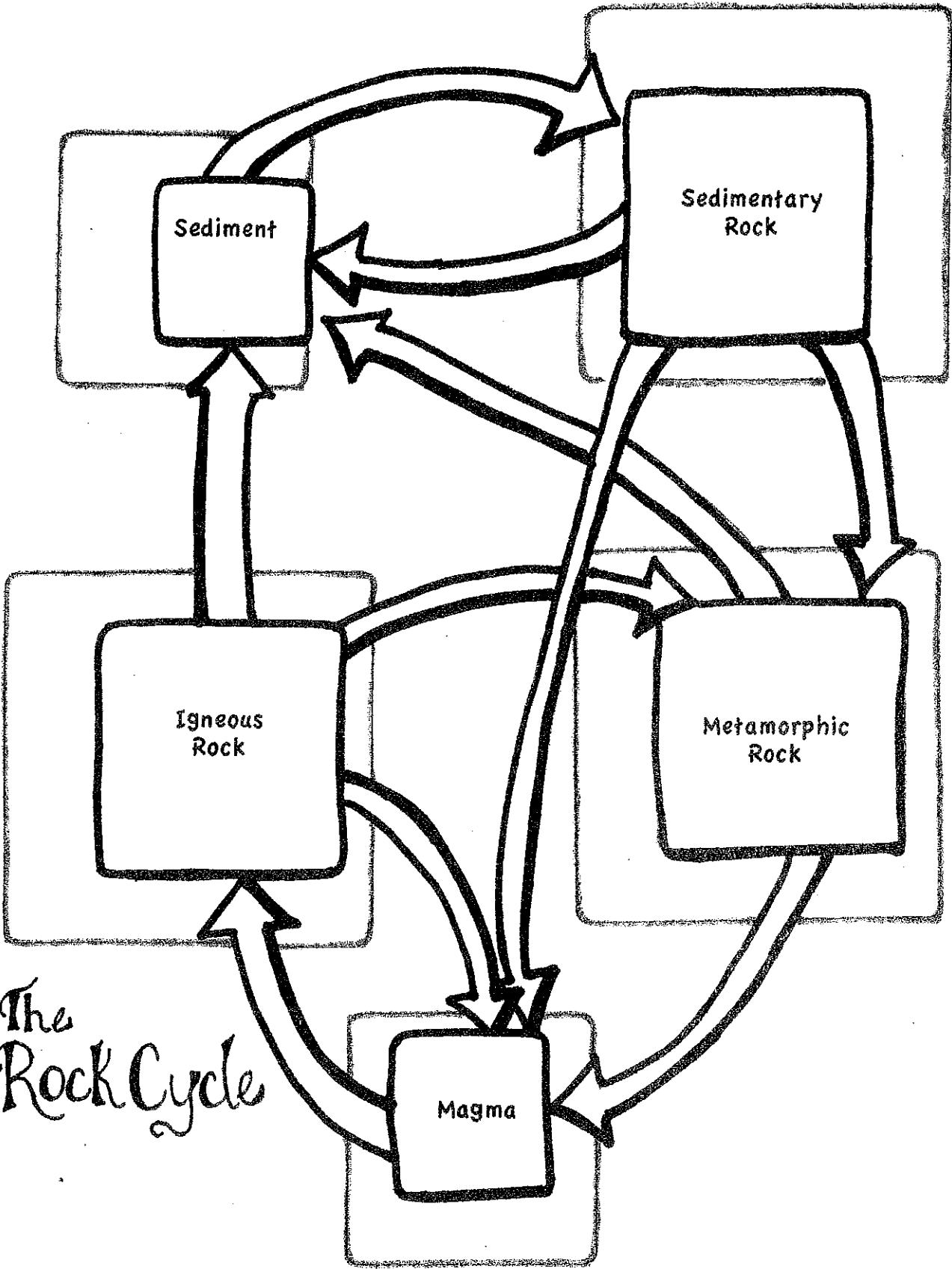
1. Question: What happens to a mining town over time?
2. Hypothesis:
3. Procedure: Draw any habitat on the inside of a paper plate, leaving a circular space in the center for a cookie to rest in. Place a cookie in the center of a paper plate. Using only your mining tools, (tooth picks, etc) mine out the valuable chocolate chips (ore). After placing the cookie on the plate, your hands and fingers can NOT touch it any longer. Your job is to mine out all the chocolate chips without destroying the surrounding habitat. Crumbs outside of the circular center are counted against you, but complete chocolate chips will be considered a valuable resource.
4. Results: Please graph your results in the correct spaces below.

How much time did take to mine the entire cookie?	
How many Chocolate Chips do you have?	
How many crumbs are on the outside of the plate or outside of the plate?	

5. Analysis: Do your answers make sense? Yes or No, and explain why?

6. Conclusion: In your own words summarize this lab in 3 or more sentences.

7. Further Questions: Explain the dangers of mining and how this impacts animals and habitats.



*The
Rock Cycle*

Name: _____ Date: _____ Period: _____

Rock Cycle Questions

Level 3

1. What is the **first** rock type that can form? How do you know?

2. Which rock type comes directly from magma?

3. What must happen **first** in order for sedimentary rocks to form?

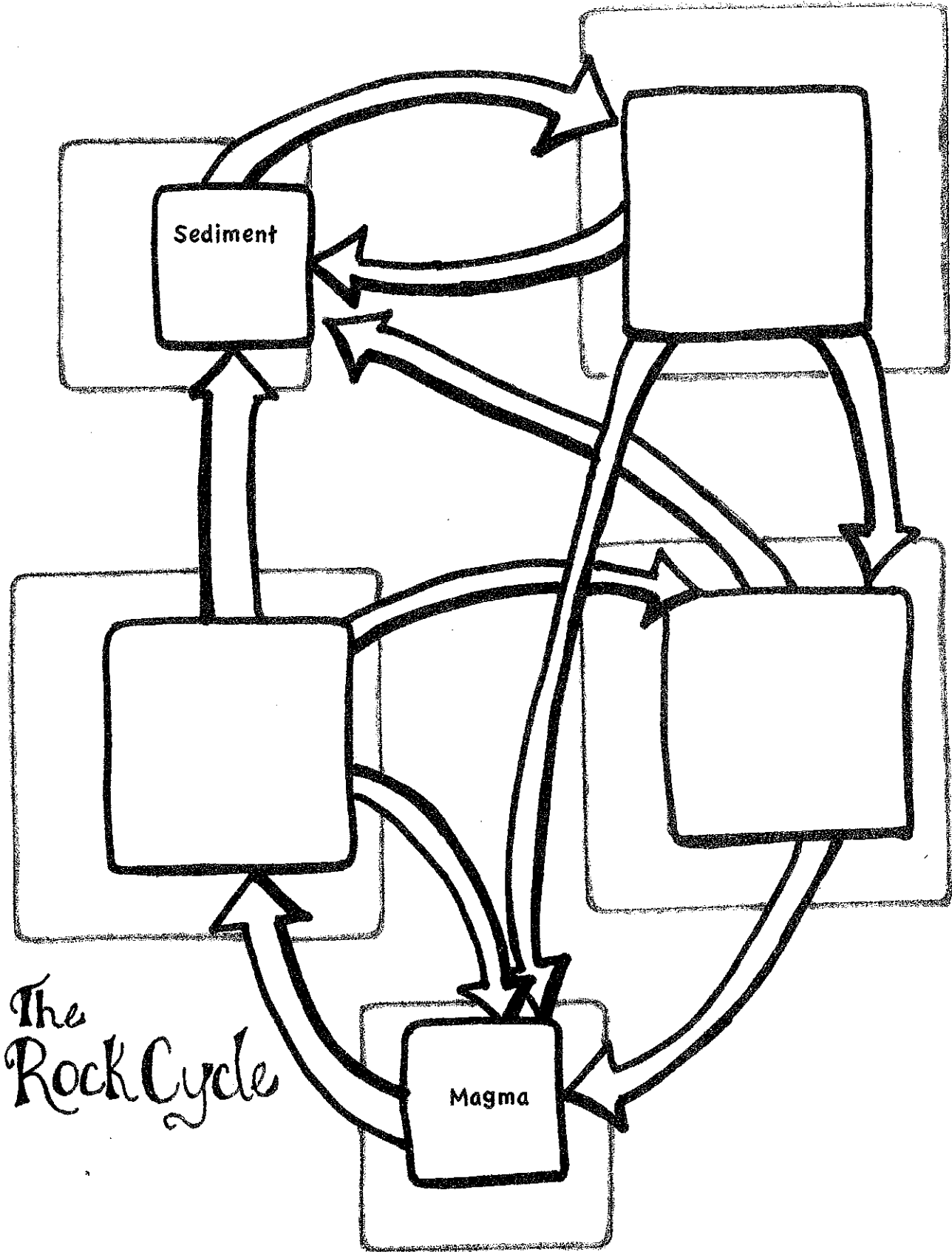
4. What has to happen **first** for other rocks to become igneous rocks?

5. How do rocks change into metamorphic rocks?

6. Which rock types can be made into sediment?

8. What is the "Law of Conservation of Matter"?

9. How does the rock cycle show that rocks are not created nor destroyed as they change?



*The
Rock Cycle*

Name: _____ Date: _____ Period: _____

Rock Cycle Questions

Level 4 and up

1. What is the original rock type? How do you know?

2. Can any rock come directly from magma? Explain.

3. What must happen first in order for sedimentary rocks to form?

4. What has to happen first for other rocks to become igneous rocks?

5. How do rocks change into metamorphic rocks?

6. Which rocks can be made into sediment?

7. Describe how the rock cycle works.

8. What is the "Law of Conservation of Matter"?

9. Explain how the rock cycle can illustrate the Law of Conservation of Matter.
