

## MONDAY MORNING SCIENCE BLAST

### Rock Cycle - Earth Science - Minerals and Rocks

What does a rock want to be when it grows up? That's easy: a rock star. What is a rock's favorite transportation? Yup, a rocket! And what do you call a truant rock? A skipping stone, of course! There are some misconceptions about rocks, one of which is that rocks are hard. Not necessarily! You can actually scratch some common rocks with your fingernail; these include shale, soapstone and gypsum rock. Other rocks may be soft while in the ground but harden once they are exposed to the air (and vice versa). Some rocks, like geodes, are often hollow inside or may actually hold water inside them, much like coconuts. And lava threads and the fine open meshwork of exploded lava (known as reticulate) seem awfully fragile to be called rocks.

Most rocks are made of minerals, which are defined as inorganic compounds with names, like quartz, calcite, or pyrite. However, coal, considered a rock, is composed of organic material, not minerals. Then there's coquina, a rock made entirely of seashells; shells are made of mineral matter but aren't minerals any more than teeth are. These types of rocks are in their own category, called biogenic rocks. Interestingly, concrete can also be considered a biogenic rock.

Even though most rocks are considered to be inorganic, they do go through a cycle, which might in some ways be compared to the life cycle of living creatures. However, unlike the life cycle of living things, rocks don't die in the end, they just change to another type of rock. In this lab, your students will be learning how the rock cycle works.

To begin, instruct your students to roll a die and find the number they have rolled on the chart provided; this will determine what type of rock each student will begin the cycle as. Have your students record their starting rock type in the Data Table, then use a colored pencil to circle this type of rock on their Rock Cycle Diagrams. Once the starting rock type has been determined, students are to roll the die again to discover what type of rock they become next (Roll #1). They are to again use the Rock Cycle Table to determine the type of rock they become by matching the number on the die with the number on the chart and reading the description of the rock cycle process involved. After recording that rock type, your students are to draw a line to that next type of rock and circle it. (If they stay as the same rock, have them draw another circle around the rock.)

Rolling the die again will determine what type of rock your students will change to next (Roll #2). Instruct your students to use the Rock Cycle Table to help determine the type of rock they become, matching the number on the die with the number on the chart, then record this rock type in the Data Table. Using the same colored pencil they started with, your students are to draw a line to the new type of rock they have become and circle it (again drawing another circle around the rock if they stay as the same rock). Instruct your students to repeat Step 3 eight (8) more times. Once they have completed Roll #10 for one rock, they are to repeat Steps 1-4 for at least two more rocks, using a different colored pencil for each beginning rock.

# Rock Cycle

**QUESTION:** How does the rock cycle work?

**MATERIALS:**

colored pencils  
dice

rock cycle diagram  
rock cycle table

**PROCEDURE:**

1. In this activity you will be showing the complexity of the rock cycle. First roll the die and find the number on this chart, which will determine what type of rock you will begin the cycle as.  
**A roll of a 1 or 2 = igneous**  
**A roll of a 3 or 4 = sedimentary**  
**A roll of a 5 or 6 = metamorphic**  
Record your starting rock type in the Data Table. Use a colored pencil to circle this type of rock on your Rock Cycle Diagram.
2. Once you have determined what rock you're starting as, roll the die to discover what type of rock you become next (this is Roll #1). Use the Rock Cycle Table to help determine the type of rock you become by matching the number on the die with the number on the chart and reading the description of the rock cycle process involved. Record the type of rock you become in the Data Table. Use the same colored pencil you started with to draw a line to the next type of rock you become and circle it (if you stay as the same rock, draw another circle around the rock).
3. Roll the die again to decide what type of rock you will change to next (this is Roll #2). Again, use the Rock Cycle Table to help determine the type of rock you become by matching the number on the die with the number on the chart. Record this rock type in the Data Table. Using the same colored pencil you started with, draw a line to the new type of rock you become and circle it (if you stay as the same rock, draw another circle around the rock).
4. Repeat Step 3 eight (8) more times.
5. Once you have completed Roll #10 for one rock, repeat Steps 1-4 for at least two more rocks. Use a different colored pencil for each beginning rock.

**DATA:** See next page

**QUESTIONS:**

1. What processes are involved in forming rock?
2. Which rock-forming process is most active on surface rocks?
3. What type of rock is usually formed by heat and pressure? Which type of rock would you expect to be formed by a volcano? Which type of rock would you expect to be formed at the junction of colliding boundaries?

**DATA TABLE:**

///////////////// ////	ROCK 1	ROCK 2	ROCK 3
<b>Starting Rock</b>			
<b>Roll #1</b>			
<b>Roll #2</b>			
<b>Roll #3</b>			
<b>Roll #4</b>			
<b>Roll #5</b>			
<b>Roll #6</b>			
<b>Roll #7</b>			
<b>Roll #8</b>			
<b>Roll #9</b>			
<b>Roll #10</b>			

**ROCK CYCLE TABLE**

ROCK TYPE	DIE #	ROCK CYCLE PROCESS
IGNEOUS	1 or 2	rock weathers and erodes into sediments; sediments are carried to the ocean bottom; pressure forms <b>SEDIMENTARY ROCK</b>
	3 or 4	rock is changed by heat and pressure to form <b>METAMORPHIC ROCK</b>
	5 or 6	heat and pressure causes rock to melt into mantle; it later cools to form new <b>IGNEOUS ROCK</b>
SEDIMENTARY	1 or 2	rock weathers and erodes into sediments; sediments are carried to the ocean bottom; pressure forms new <b>SEDIMENTARY ROCK</b>
	3 or 4	rock is changed by heat and pressure to form <b>METAMORPHIC ROCK</b>
	5 or 6	heat and pressure causes rock to melt into mantle; it later cools to form <b>IGNEOUS ROCK</b>
METAMORPHIC	1 or 2	rock weathers and erodes into sediment; sediments are carried to the ocean bottom; pressure forms <b>SEDIMENTARY ROCK</b>
	3 or 4	rock is changed by heat and pressure to form <b>METAMORPHIC ROCK</b>
	5 or 6	heat and pressure causes rock to melt into mantle; it later cools to form new <b>IGNEOUS ROCK</b>

# **Rock Cycle Diagram**

**IGNEOUS ROCK**

**SEDIMENTARY ROCK**

**METAMORPHIC ROCK**