

Rock Cycle Dice Game

North Carolina Geological Survey www.deq.nc.gov/geoscience-education



Overview

The rock cycle is a continuous Earth process, with no beginning and no end. Rocks are constantly undergoing transformations to new rocks and rock types which changes Earth's landscapes, landforms, and the resources that are available to us.

Targeted Grade Level(s)

4th grade – 6th grade

2023 Science Standard(s)

ESS.4.4.2: Carry out investigations to classify rocks as metamorphic, sedimentary, or igneous based on their composition, how they are formed, and the processes that create them.

Objectives

This hands-on activity is meant to reinforce the concepts of rock formation, rock types, and the rock cycle. Students will gain an understanding of how a rock can move through different stages of the rock cycle. Students should also understand that a rock does not always go through all the steps in this process.

Estimated Time

30 minutes

Teacher Prep & Background

- 1. Teachers should print out the templates for the dice (included on pages 3-7 of this packet). Assemble the dice by folding along the lines and taping the edges together to make five, 6-sided dice. As indicated on those sheets, there is one dice per Station.
- 2. Teachers should print out the five Station signs (included on pages 8-12 of this packet) and place one at each of five locations around the classroom. Place the appropriate dice at each Station.
- 3. Teachers should print out the "Ride the Rock Cycle" sheets (included on page 2 of this packet), one for each student. If you wish to pair students into groups, print one for each group.

How it Works

- 1. Divide the students evenly into five groups. Assign each group one of the five Stations to start the game. Be sure they mark their starting Station on the "Ride the Rock Cycle" sheet.
- 2. Each student in the group should roll the dice at their Station to see what path they take. Students should log the "Ride the Rock Cycle" sheet with their path after each roll of the dice.
- 3. Since it is possible to get stuck at one Station for a while, students should only stay at one Station for 3 dice rolls. Then they must move to a new Station.
- 4. Students should remember to log each dice roll on the "Ride the Rock Cycle" sheet so they have a record of their journey.
- 5. The game is over when students have logged 10 stops on their rock cycle journey.

Ride the Rock Cycle!

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1. I began my adventure at the	Station.
2. I rolled the dice and it told me to	
3. I rolled the dice and it told me to	
4. I rolled the dice and it told me to	
5. I rolled the dice and it told me to	
6. I rolled the dice and it told me to	
7. I rolled the dice and it told me to	
8. I rolled the dice and it told me to	
9. I rolled the dice and it told me to	
10. I rolled the dice and it told me to)
I ended my rock cycle journey as	

Melt into MAGMA



Igneous Station





Weather into SEDIMENT



Remain as IGNEOUS rock



Change into METAMORPHIC rock



Remain as IGNEOUS rock



Remain as MAGMA



MAGMA Station

Remain as MAGMA



Remain as MAGMA



Remain as MAGMA



Cool into IGNEOUS rock



Cool into IGNEOUS rock



METAMORPHIC ROCK Station

Melt into MAGMA



Remain as METAMORPHIC rock



Weather into SEDIMENT



Remain as METAMORPHIC rock



Weather into SEDIMENT



Melt into MAGMA



Lithify into SEDIMENTARY rock



SEDIMENT Station

Remain as **SEDIMENT**



Remain as SEDIMENT



Remain as **SEDIMENT**



Lithify into SEDIMENTARY rock



Remain as **SEDIMENT**



SEDIMENTARY ROCK Station

Melt into MAGMA



Change into METAMORPHIC rock



Weather into SEDIMENT



Remain as SEDIMENTARY rock



Remain as SEDIMENTARY rock



Weather into SEDIMENT



IGNEOUS STATION



- If your dice says "IGNEOUS" stay at this station
- If your dice says "MAGMA" move to the MAGMA station
- If your dice says "METAMORPHIC" go to the METAMORPHIC rock station
- If your dice says "SEDIMENT" go to the SEDIMENT station

MAGMA STATION



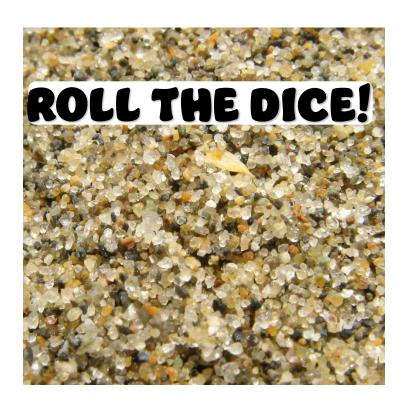
- If your dice says "MAGMA" stay at this station
- If your dice says "IGNEOUS" move to the IGNEOUS station

METAMORPHIC ROCK STATION



- If your dice says "METAMORPHIC" stay at this station
- If your dice says "SEDIMENT" move to the SEDIMENT station
- If your dice says "MAGMA" move to the MAGMA station

SEDIMENT STATION



- If your dice says "SEDIMENT" stay at this station
- If your dice says "SEDIMENTARY"
 move to the SEDIMENTARY rock
 station

SEDIMENTARY ROCK STATION



- If your dice says "SEDIMENTARY"
 stay at this station
- If your dice says "MAGMA" move to the MAGMA station
- If your dice says "SEDIMENT" move to the SEDIMENT station
- If your dice says "METAMORPHIC" move to the METAMORPHIC rock station

Ride the Rock Cycle! Discussion Questions



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- Review your rock cycle journey. Did you make it to all the Stations?
 Did you spend three dice rolls at one Station? At which Station did you get stuck?
 Is there anyone who got stuck at the Sediment Station? Do you know why this might be? Did you look at the dice at the Sediment Station? If you did, how many sides of that dice were marked "Stay as Sediment"? Why do you think this is?
 Not all rocks go through all the steps of the 'rock cycle'. For instance, how might sediments go right back to being sedimentary rocks (by what processes)?
- 5. You moved through this rock cycle pretty quickly. Take a guess or do research to find out how long it takes a rock to move through the rock cycle.