



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)	4 th grade – 6 th 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!

North Carolina Geological Survey



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

**Remain as
IGNEOUS rock**



**Weather into
SEDIMENT**



**Remain as
IGNEOUS rock**



**Change into
METAMORPHIC
rock**



**Remain as
IGNEOUS rock**



MAGMA Station

**Remain as
MAGMA**



**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**



SEDIMENT Station

**Lithify into
SEDIMENTARY
rock**



**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

North Carolina Geological Survey



1. Review your rock cycle journey. Did you make it to all the Stations?
2. Did you spend three dice rolls at one Station? At which Station did you get stuck?
3. 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?
4. 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.