

RIDE THE ROCK CYCLE

Grade 3 (may be adapted for grades 4-5)

Modified by ADMMR from Illinois State Museum Geology Online: <http://geologyonline.museum.state.il.us>

Stage 1 – Desired Results

Goals

Present the rock cycle to students using a simulation activity and rock/mineral specimens.

Note: This activity uses the six rock specimens provided to teachers attending the 2009 NSTA Regional Conference in Phoenix. Teachers who do not have access to these should plan to obtain six specimens that represent igneous, sedimentary and metamorphic rocks (ideally two of each).

Understandings

Students will understand that:

- Everything on earth (i.e. plants, animals, rocks) is continually changing.
- Classification is based on how the rocks are formed: igneous (fire), sedimentary (water and wind), metamorphic (heat and pressure).
- The rock cycle helps to explain how and where rocks change from one type to another.
- Movement through the rock cycle is not usually linear.

Essential Questions

Students will consider such questions as:

- Do rocks/minerals ever change?
- Where do rocks/minerals come from?
- How are rocks/minerals formed?

Knowledge

Students will know:

- There are three major types of rocks: igneous, sedimentary and metamorphic.
- Rocks and minerals are shaped by Earth's process and are constantly cycling through a process known as the rock cycle.
- Rocks and minerals have characteristics that indicate what part of the rock cycle they have been through.

Skills

Students will be able to:

- Identify where rocks and minerals come from.
- Compare different properties of rocks and minerals.
- Record data accurately.
- Analyze and share data.
- Hypothesize where rocks and minerals come from.

Stage 2 – Assessment Evidence

Performance Tasks

Students will:

- Complete the "Roll and Rock Journey" worksheet.
- Describe the rock cycle in verbal and written communications.
- Be able to correlate rock samples to the process that shaped them.

Other Evidence

Students will:

- Ask questions that are on-task.
- Fully engage in rock cycle activities.
- Work independently as well as within the larger class group.

Stage 3 – Action Plan

Materials Preparation

- Create the dice for each station of the rock cycle game. (See attached patterns.) Print the dice patterns on card stock to make them sturdier and use a different color for each die.
- Print one “Rock Cycle” poster for each station of the rock cycle game.
- Print one copy of the “Roll and Rock Journey” worksheet for each student. (See attached.)
- Loose sand, gravel or soil. (Optional but recommended.)

Learning Activities

Part 1: Play the game. Set the classroom with seven stations that represent the following places where events take place in the rock cycle. Place the correct die at each station.

- Ocean
- Lake
- River
- Volcano
- Earth’s Interior
- Soil
- Mountain

Divide the class into seven groups, as equal in number as possible. Each group forms a line at one station. Each student, in turn, rolls the die, records the event and follows the directions. (It is possible to stay at one station for more than one roll of the die. However, to make the game more interesting, we suggest that the student stay at one location no more than three turns.) Make sure the students are recording the events after each roll.

Part 2: Use the rock samples to illustrate the journey. Have the students examine the rock specimens and indicate which kind of rock they were at each location on their journey. You may want to supplement the rocks in the kit with some loose sand and gravel and some soil so they can relate to what they already know.

Part 3: Elaborate on the experience. Students write about their experience along the rock cycle journey. Select from one of the following variations: newspaper article, personal letter to a friend or family member in another state, student blog for a website or entries for a diary.

Arizona Academic Standards Addressed

Science

Strand 1: Inquiry Process

- Concept 1: Observations, Questions, and Hypotheses
- Concept 2: Scientific Testing (Investigating and Modeling)
- Concept 3: Analysis and Conclusions
- Concept 4: Communication

Strand 2: History and Nature of Science

- Concept 2: Nature of Scientific Knowledge

Strand 6: Earth and Space Science

Concept 1: Properties of Earth Materials/Structure of the Earth

Concept 2: Earth's Processes and Systems

Writing

Strand 1: Writing Process

Concept 1: Prewriting

Strand 2: Writing Elements

Concept 4: Word Choice

Concept 5: Sentence Fluency.

Concept 6: Conventions

Strand 3: Writing Applications

Concept 2: Expository

Concept 6: Research

National Science Education Standards Addressed

Unifying Concepts and Processes

Systems, order, and organization

Change, constancy, and measurement

Form and function

Science as Inquiry

Abilities necessary to do scientific inquiry

Understandings about scientific inquiry

Earth and Space Science

Properties of earth materials

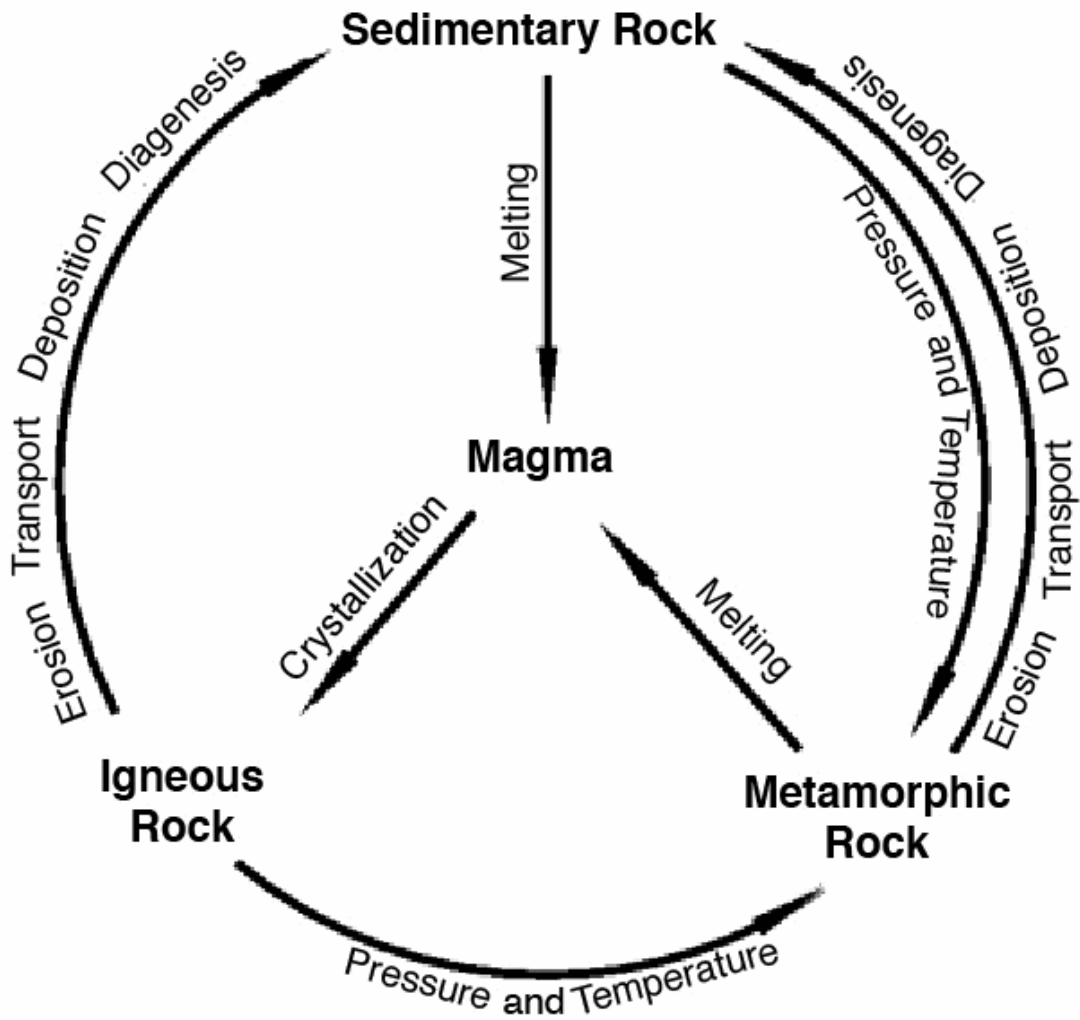
Science and Technology

Abilities to distinguish between natural objects and objects made by humans

History and Nature of Science

Nature of science

Rock Cycle



Source=[*File:Kreislauf der gesteine.png](#) |Date=2009-04-05 09:11 (UTC) |Author=[*File:Kreislauf der gesteine.png](#)
http://en.wikipedia.org/wiki/File:Rock_cycle.gif#filehistory

Roll and Rock Journey

My Name _____

Use this sheet to record your travels along the rock cycle. At each stop, you will write down **where on earth** you were (for example, ocean) and the **rock type** you became at that station. Be sure to fill in each step as you do it - don't wait until the end!

1. I began my adventure at _____.
Rock type: _____
2. The first thing that happened was _____.
Then I went to _____.
Rock type: _____
3. The next thing that happened was _____.
Then I went to _____.
Rock type: _____
4. The next thing that happened was _____.
Then I went to _____.
Rock type: _____
5. The next thing that happened was _____.
Then I went to _____.
Rock type: _____
6. The next thing that happened was _____.
Then I went to _____.
Rock type: _____
7. The next thing that happened was _____.
Then I went to _____.
Rock type: _____
8. The next thing that happened was _____.
Then I went to _____.
Rock type: _____
9. The next thing that happened was _____.
Then I went to _____.
Rock type: _____
10. The next thing that happened was _____.
Then I went to _____.
Rock type: _____

11. The next thing that happened was _____.

Then I went to _____.

Rock type: _____

12. The next thing that happened was _____.

Then I went to _____.

Rock type: _____

13. The next thing that happened was _____.

Then I went to _____.

Rock type: _____

14. The next thing that happened was _____.

Then I went to _____.

Rock type: _____

15. The next thing that happened was _____.

Then I went to _____.

Rock type: _____

16. The next thing that happened was _____.

Then I went to _____.

Rock type: _____

My favorite type of rock is _____.

I like it because _____.