

NHMU: Rock Cycle

Summary

Through playing the Rock Cycle Game students will gain an understanding of the cycles that form metamorphic, sedimentary and igneous rocks.

Main Core Tie

Science - 4th Grade

[Standard 3 Objective 1](#)

Additional Core Ties

Science - 3rd Grade

[Standard 5 Objective 3](#)

Science - 4th Grade

[Standard 3 Objective 2](#)

Science - 5th Grade

[Standard 2 Objective 1](#)

Group Size

Small Groups

Materials

- One igneous, metamorphic, and sedimentary rock for each player
- [Rock Cycle Game Board](#) (pdf)
- One number cube per game (die)
- Small pebbles (or other game markers)

Background for Teachers

Rocks are categorized into three groups according to how they form. Igneous rocks are formed when magma cools. The rate that the magma cools determines what type of igneous rock is formed. Metamorphic rocks are formed when rocks are exposed to heat and pressure. When the Earth's plates collide and rub against each other, the pressure creates heat and the rocks can change. Rocks are also exposed to extreme heat when they are subducted deep in the Earth or when they come in contact with hot molten material. The box below shows how a few metamorphic rocks form.

Original Rock under heat and Pressure becomes Metamorphic rock

Limestone = Marble

Sandstone = Quartzite

Granite = Gneiss

Sedimentary rocks are formed when sediments are deposited and squeezed together. Weathering from wind, ice, water, plants, and even pollution will break up rocks into small pieces called sediment. This sediment is then eroded, transported, and deposited into layers that are cemented together to form sedimentary rocks.

The processes that create the three different types of rocks make up what is called the rock cycle. Although it takes an extremely long period of time, all rocks can change into different types of rocks through this cycle.

Process = Rock Formed

Heat and pressure = Metamorphic rocks

Weathering, erosion, deposition and cementation = Sedimentary rocks
Cooling of magma = Igneous rocks

Instructional Procedures

Game is for 1 to 3 players

Place all the rocks on the table. Group the rocks into 3 categories: Igneous, Metamorphic, and Sedimentary. Keep them in these groups.

Begin the game by placing the pebble markers on either one of the starred squares.

Roll to see who goes first (highest roll goes first).

To move on the rock cycle game board:

The number rolled on the number cube is the number of spaces you can move.

Follow the arrows.

If you land on square with words on it, follow the directions.

When you land on EXACTLY on the squares labeled "igneous, metamorphic, or sedimentary" rock, pick up the appropriate rock from the piles you first created (you only pick up ONE of each).

The first player to pick up all three types of rocks wins the rock cycle game.

*If only one player is playing, he or she will simply see how fast they can get through the entire rock cycle.

Bibliography

This lesson plan was developed by the [Utah Museum of Natural History](#).

Authors

[Utah LessonPlans](#)