

## Activity 2: Rock cycle journey

### Background:

The rock cycle is a dynamic process that drives the formation and destruction of mountains and affects entire continents, global weather and ultimately all life on Earth. In this game you will model what can happen to a bit of rock or sediment as it moves through the rock cycle.

### Directions:

In this game, rock cycle stages and types of rocks, such as *melting*, *cooling* or *metamorphic*, are located at 11 different stations. Each station has a "die" - a box that is labeled on each of its six sides. The sides of the dice are marked to reflect the relative likelihood of materials actually moving through the stages. For example, rock material may remain in a molten state inside the earth for long periods of time. To show this, the die at station # 10, "Magma," has four sides that say "magma (stay as you are)" and only two sides that say "cooling and hardening." If you roll the "magma (stay as you are)" side of the die, you will stay at station #10 and roll again when it is your turn. If you roll one of the sides that say "cooling and hardening" you would move to station #9, the "Cooling and Hardening (crystallization)" station.

1. Begin by choosing one station to start at. There are 11 stations so there should be two or three students at each station at the beginning of the game. It does not matter where you start; you probably will have a chance to visit most of the other stations during the game.
2. Use your data table to record the # of the station you begin at in the column marked "station #." Record the name of your station in the column marked "station name."
3. Now you get to roll the die. Since this is your first roll, put a 1 in the data column box for "roll #." After rolling the die, record what the die instructed you to do in the "what happened" column of the data table.
4. In reality there is no set formula for how long rocky material spends at each stage of the rock cycle. It may speed through in just 200,000 years or so, or it may stay at the same point in the cycle for millions of years. For the purposes of this game, count each roll of the die as 200,000 years. Even if you end up staying at the same place for multiple turns, every time you roll the die you add another 200,000 years to the age of your rock.
5. Record each of these pieces of information in your data table each time you have a turn. It is important to keep careful records, as you will need the information to complete a "data summary" and answer some questions at the end of the game.

