

The Rock Cycle Activity

Scientists estimate that the Earth is 4.6 billion years old. You are going to roll the dice **23 times** so that each roll represents 200 million years. The Earth began as molten magma material, so you are all going to start the rock cycle as magma which is Station 10.

Just follow the instructions under each station. On the Rock Cycle Stations sheet draw and number the lines as you move throughout the stations. For example, if your first roll is a 1 or 2 you will draw a line to Station 9 and number that line "1". If you roll a 3, 4, 5, or 6 you stay where you are and number Station 10 with the number "1". Every time you roll you will add a number either on the line of or on the station at which you are staying.

By the time you are finished each group should have a different version of the rock cycle.

Station 1: Compaction and Cementation

- If you roll a 1, 2, or 3 draw a line to Station 7: Sedimentary Rock.
- If you roll a 4, 5, or 6 stay here and roll again.

Station 2: High Temperature and Pressure

- If you roll a 1, 2, or 3 draw a line to station 6: Metamorphic Rock.
- If you roll a 4, 5, or 6 stay here and roll again.

Station 3: Sediments

- If you roll a 1 or 2, draw a line to Station 1: Compaction and Cementation
- If you roll a 3, 4, 5, or 6 stay here and roll again.

Station 4: Igneous Rock

- If you roll a 1 or 2 draw a line to Station 11: Weathering and Erosion.
- If you roll a 3 or 4 draw a line to Station 2: High Temperature and Pressure.
- If you roll a 5 or 6 draw a line to Station 8: Melting

Station 5: Uplift to the Surface

- If you roll a 1, 2, 3, or 4 draw a line to Station 11: Weathering and Erosion
- If you roll a 5 or 6, stay here and roll again.

Station 6: Metamorphic Rock

- If you roll a 1 or 2, draw a line to Station 8: Melting.
- If you roll a 3 or 4, draw a line to Station 5: To the Surface
- If you roll a 5 or 6 go to Station 2: High Temperature and Pressure

Station 7: Sedimentary Rock

- If you roll a 1 or 2 go to Station 2: High Temperature and Pressure
- If you roll a 3 or 4 go to Station 8: Melting
- If you roll a 5 or 6 go to Station 11: Weathering and Erosion

Station 8: Melting

- If you roll a 1, 2, or 3 draw a line to Station 10: Magma
- If you roll a 4, 5, or 6 stay here and roll again.

Station 9: Cooling and hardening (Crystallization)

- If you roll a 1, 2, or 3 draw a line to Station 4: Igneous Rock
- If you roll a 4, 5, or 6 stay here and roll again

Station 10: Magma

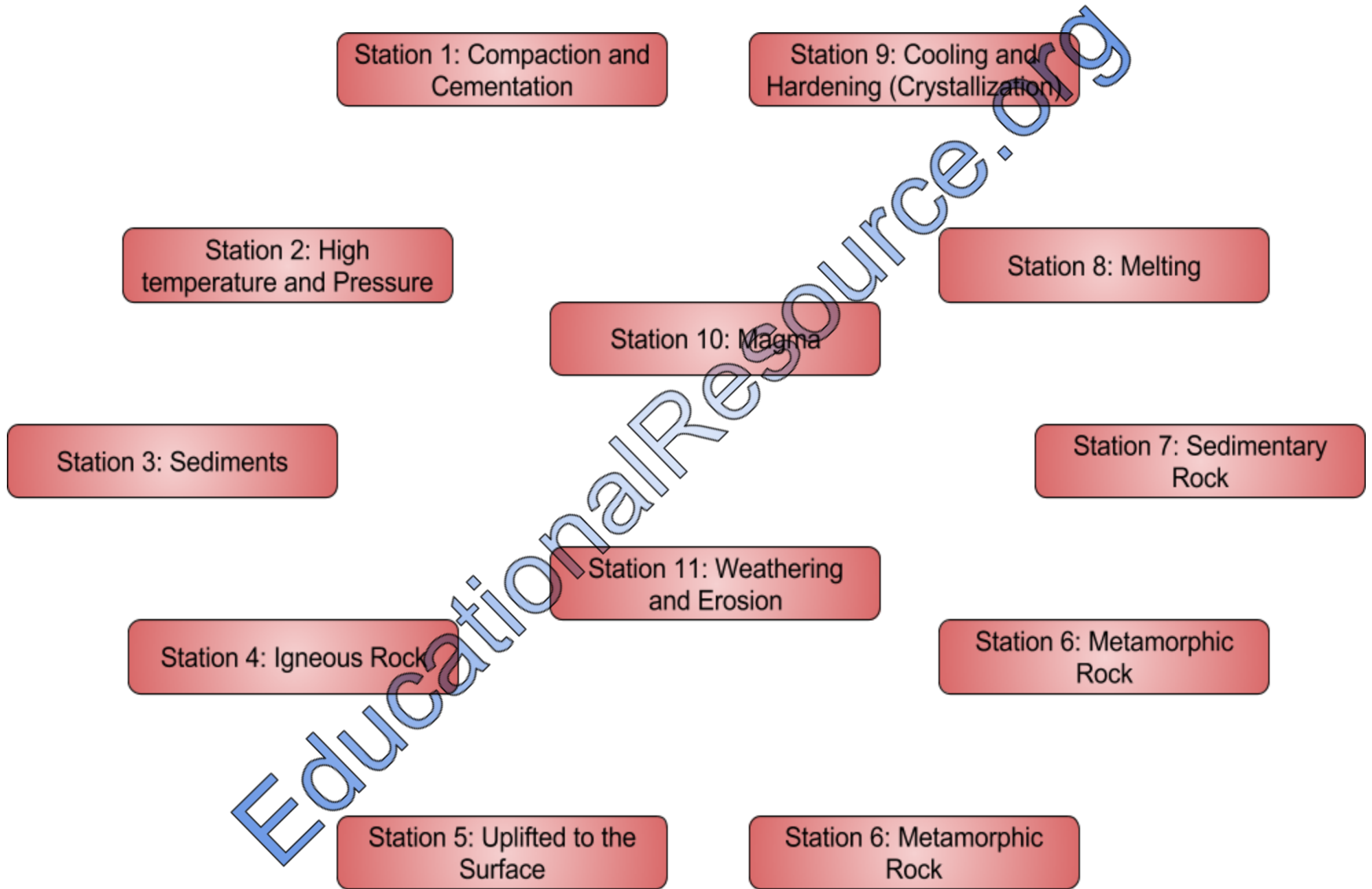
- If you roll a 1 or 2 go to Station 9: Cooling and Hardening
- If you roll a 3, 4, 5, or 6 stay here and roll again

Station 11: Weathering and Erosion

- If you roll a 1, 2, or 3 go to Station 3: Sediments
- If you roll a 4, 5, or 6, roll again

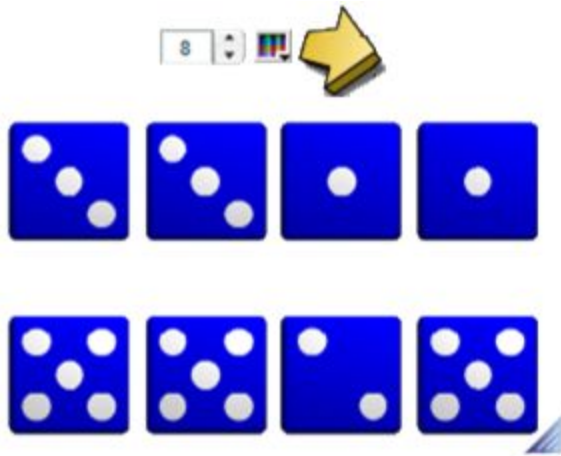
When you are finished, look at your rock cycle and be prepared to tell the class the geologic story that your rock went through.

The Rock Cycle Stations



Teacher Reflection and Instructions

- This activity takes about 20-30 minutes to complete; 50 minutes if you have the students create a share a story about how their rock cycle was.
- This is a modified version of an activity that I learned of many years ago in college.
- There are three ways I have completed this activity.
 - The first way is the original that I learned in college. You can create an actual station for each area and have the students actually move to each station as they roll the dice. I didn't like this one teaching 7th grade or at the high school. It became a goof off lesson, but I can see the value of a movement activity like this if you are teaching younger grades and need to get some wiggles out.
 - The second method is using the multiple dice found on the Smart Notebook Software. I would create 8 dice and then assign each group of 4 students to a particular die. As I would roll all 8 at once they would move according to which die they were assigned to look at. The advantage of this is that they pace is the same for all students who will start and end at the exact same time. It isn't as interactive as rolling your own die though.



- The third method which works just as well as method two is to give each person, partnership or group of students (depending on how many dice you have) a die. The disadvantage of this method is the pacing and the fact that some students can't quite figure out how to roll dice without them falling on the floor and going all over the place. The teacher will also lose a few this way and there is the cost of buying the dice.
- I try to save paper by printing off the instruction sheet as a classroom size set so that each class will use the same paper, and then print off the Station sheet either in the amount of how many students total I have or how many groups.
- I have found that partners works the best and not in bigger groups.
- When students are finished I have them compile some of the details and describe their rock cycle to the class.