

**REGENTS EARTH SCIENCE**  
Rock Cycle Activity

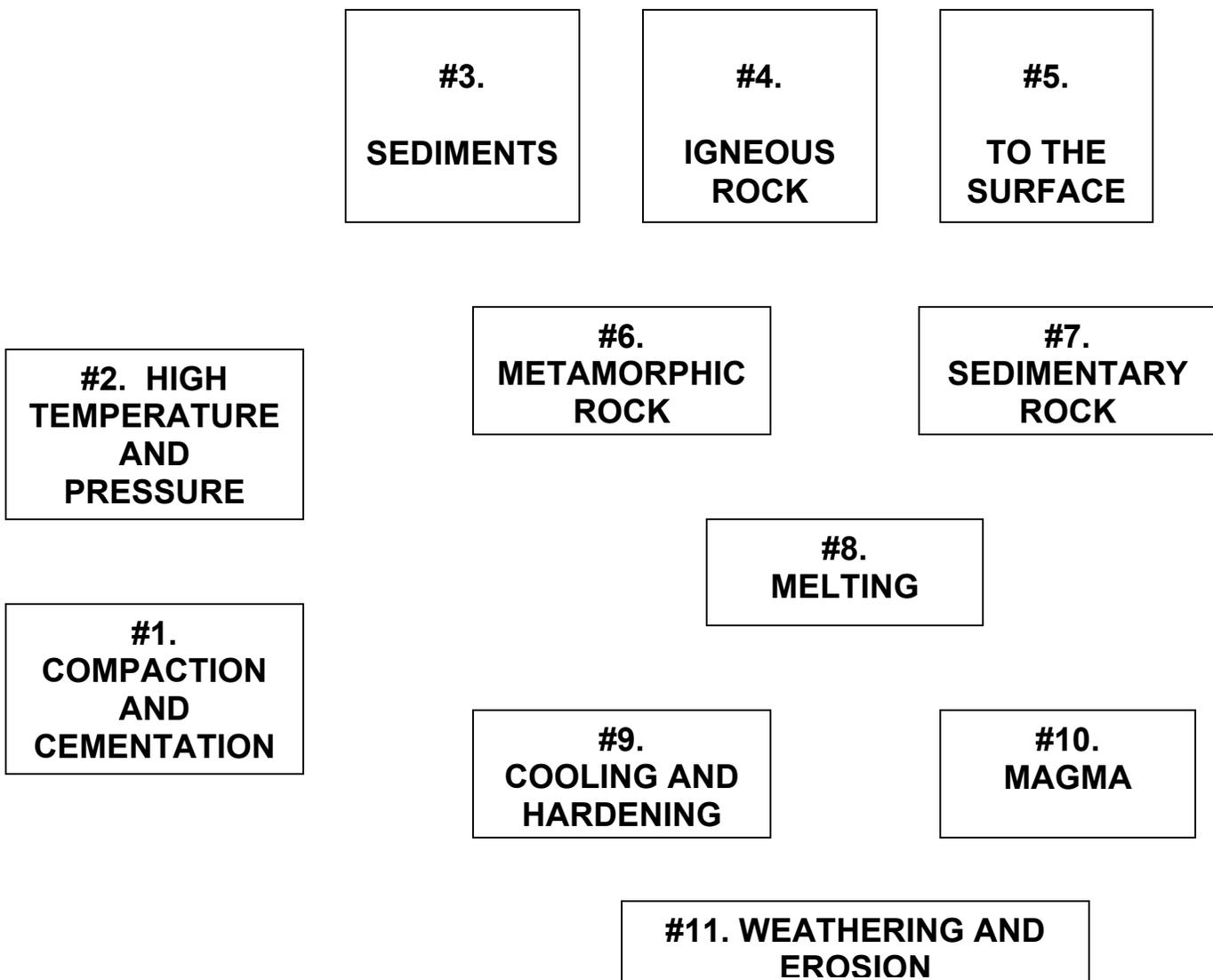
Name: \_\_\_\_\_

As you have no doubt figured out by now, the processes involved in rock formation are cyclical- that is, any one atom may be involved in every single stage of the rock-forming process. On average, the transition from one part of the cycle to another can take anywhere from 200,000 years to many millions of years. In this activity, you will “experience” the rock cycle, and develop estimates of the time required to advance from one stage to the next.

**PROCEDURE**

First, take some time to familiarize yourself with the map of the classroom below. Working with a partner, you will trace your route from one station to the next by doing the following:

1. Write the word “**START**” in the box representing the station at which you are beginning.
2. Roll the die at your table, and draw an arrow from your station to the station appearing face up on your die, and label the arrow with the number “1”.
3. Repeat this process until you have rolled at least 20 times, and labeled the arrows accordingly.



## INTERPRETATION

1. Where did you spend the most time? \_\_\_\_\_  
\_\_\_\_\_
2. Why is the rock cycle called a cycle? \_\_\_\_\_  
\_\_\_\_\_
3. What are the possible directions that SEDIMENTARY ROCK can take in this cycle? \_\_\_\_\_  
\_\_\_\_\_
4. What steps can happen after materials are brought TO THE SURFACE (Station 5)? \_\_\_\_\_  
\_\_\_\_\_
5. Why didn't everyone follow the same path? \_\_\_\_\_  
\_\_\_\_\_
6. How much of the rock cycle can be observed, and how much is inferred (list specific steps in your answer)?  
\_\_\_\_\_  
\_\_\_\_\_
7. How might people be affected (in both the short and long term) by the movement of earth material through the rock cycle?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
8. Assuming that each "roll" requires 200,000 years, determine the average time it takes for each of the following steps to occur:  
**COOLING AND HARDENING to SEDIMENTS =** \_\_\_\_\_  
**HIGH TEMP. AND PRESSURE to THE SURFACE =** \_\_\_\_\_  
**WEATHERING AND EROSION to IGNEOUS ROCK =** \_\_\_\_\_

**FIGURE 1.**

A list of stations and how each station's die should be labeled.

| Name of station                                       | # of die sides marked with given "Go to" option | Go to:   |
|---|---|--|
| Station 1.<br>Compaction and cementation              | 3   | Sedimentary rock                                   |
|   | 3   | Compaction and cementation (stay where you are)    |
| Station 2.<br>High temperature and pressure           | 3   | Metamorphic rock                                   |
|   | 3   | High temperature and pressure (stay where you are) |
| Station 3.<br>Sediments                               | 2   | Compaction and cementation                         |
|   | 4   | Sediments (stay where you are)                     |
| Station 4.<br>Igneous rock                            | 2   | Weathering and erosion                             |
|   | 2   | High temperature and pressure                      |
|   | 2   | Melting  |
| Station 5.<br>To the surface                          | 4   | Weathering and erosion                             |
|   | 2   | To the surface (stay where you are)                |
| Station 6.<br>Metamorphic rock                        | 2   | Melting  |
|   | 2   | To the surface                                     |
|   | 2   | High temperature and pressure                      |
| Station 7.<br>Sedimentary rock                        | 2   | High temperature and pressure                      |
|   | 2   | Melting  |
|   | 2   | Weathering and erosion                             |
| Station 8.<br>Melting                                 | 3   | Magma  |
|   | 3   | Melting (stay where you are)                       |
| Station 9.<br>Cooling and hardening (crystallization) | 3   | Igneous rock                                       |
|   | 3   | Cooling and hardening (stay where you are)         |
| Station 10.<br>Magma                                  | 2   | Cooling and hardening                              |
|   | 4   | Magma (stay where you are)                         |
| Station 11.<br>Weathering and erosion                 | 3   | Sediments  |
|   | 3   | Weathering and erosion (stay where you are)        |