

Name: _____

Abrasion Lab

Directions: In groups of 2, 3, or 4, (one person in group needs to have a camera phone), go outside and find a rock. The rock should not be larger than one inch in diameter. Answer questions 1, 2, and 3, and then place the rock into the tumbler. We are going to add some silicon carbide powder which is a very hard elemental compound and rates about a 9 on the Moh's Scale of Mineral Hardness. We are going to let the tumbler run for about a week and then take another look at your rock.

1. What type of rock did you find? (Igneous, metamorphic, sedimentary)
2. Take a picture of the rock and try to find some identifying marks that will help you identify it later. List some of the identifying marks on your rock.
3. What is the initial weight? (in milligrams)
4. What is the weight after a week? (in milligrams)
5. What is the weight after week 2? (in milligrams)
6. Write a statement of conclusion.
7. Assuming your rock will maintain a constant rate of weathering, about how many days would it take to be completely weathered down to sand? (Show your work.)

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Teacher Insights, Reflection, and Procedures

- Before I do this lab, I have them read and then we discuss Section 2 at the following address.
<http://earthscience.xyz/Weathering>
- You will need to make sure you have a tumbler and some silicon carbide powder. It is good to have an extra belt in case yours breaks. That has happened to me once. Had to cut the lab short because of it.
- You will need scales that can measure in milligrams, so that students with the hardest rocks can see some change. I have not had a rock that has not dropped some weight in two weeks. There are some rocks that don't drop a lot though.
- I use the coarse grit for this lab.
- Of course the fun part is when a student goes back and can't find his rock at all because it is gone due to how soft it is.
- I let the get into groups of 2, 3, or 4. If you have a whole bunch of classes it might be better to have larger groups so that you have enough room in your tumbler for all the rocks.
- Number 8 can be a challenge to many students in finding the rate, but I let them discuss it with their groups and then they have to present their solutions to the class. This is a good way to incorporate math into the lesson.
- I discuss as a whole group, each group's rock, finding out how much mass it lost, and discussing why some rocks lost more mass than other. This will reinforce their understanding of differential weathering, which is a section that is taught while their rocks are tumbling.
- Remember to NOT dump your rock "juice" slurry down the drain when you are finished.
- When this lab is done, I add some polish and try to polish the student rocks and let them take it home if they want to. I let the tumbler go for one week with the polish.