

Name: _____

Date: _____

Class: _____



Dear Scientist,

The Catastrophe Construction Company based in Long Island, New York would like to design a brand new, state-of-the-art home that is completely “weather-proof.” The company would like the new house to be built out of a material that will survive the strongest storms in New York. Since you have been studying weathering in your class, the company has asked you to decide which of the five rock samples they have sent you will make the best material to use to build their new “weather-proof” design. Thanks for your help!

Materials

- five different rock samples, each approximately 7.5 cm in diameter by 2.5 cm in width
- rock tumbler
- sand
- water
- balance

Procedure: Before the experiment

Describe and identify the rock samples. (Make sure each box includes the name of the sample, a detailed drawings and any labels that help to identify or explain how it appears.)

Five empty rounded rectangular boxes with dashed purple borders, arranged in two rows (three in the top row and two in the bottom row), intended for drawing and labeling rock samples.

With your lab group, create an experiment, using a rock tumbler, to quantify (evaluate with numbers) the rate at which different rocks weather and erode.

Hypothesis

Predict which rock will be most resistant. Least resistant? Justify your predictions based on what you know about each rock.

Think carefully: Place all five rocks in order from most resistant to least resistant.

6. Determine the mass of each rock sample and record the data in the table below.

Mass (g) loss of rock samples over time:

	Gabbro	Slate	Granite	Limestone	Sandstone
Original mass					
Day 1					
Day 2					
Day 3					
Day 4					
Day 5					
Day 6					
Day 7					
Day 8					
Day 9					
Day 10					

During the experiment

7. After the first 24 hours of tumbling, decide if the rocks are weathering and eroding in the order you predicted. If you wish, based on the new data, modify your predictions below.

8. Place the samples back in the tumbler. Run the tumbler for 24 hours. Rinse the mud from the rocks. Determine the mass of the samples again. Repeat for several 24-hour periods until clear patterns emerge or specimens are abraded to mud.

After the experiment

9. Once you have completed all rounds of tumbling, graph your mass results (using graph paper or Microsoft Excel). Place all five rocks in order from most resistant to least resistant. Does the order match your original prediction? Why or why not?

10. After discussing the results of the experiment as a class, estimate how far the rocks travel in one day. Show your work.

11. How far would the rocks travel in 10 days? Compare this distance to the length of some well-known rivers in the United States.

12. Do you think the water in most rivers travels at a high enough speed to move rocks of the initial weight? Explain your answer.

13. Finally, explain in a paragraph which rock sample you believe Catastrophic Construction Company should use to build their new “weather-proof” homes. Please give at least two reasons to support your claim.