



ACTIVITY 1.3

Modeling the Weathering Process

Introduction

In this activity, you will design an experiment that models the weathering process.

Observation

People, including scientists, have observed that rocks seem to weather (or break down) faster in some climates than in others. You will use methods from both Activity 1.2 and the text to answer this question:

The question. What is the effect of temperature on the process of chemical weathering?

Background

Sometimes, natural events and processes are too large, too small, too fast, or too slow to study directly. So scientists develop models of these events. In this experiment, you will model the process by which rocks are broken down in nature. The natural process of breaking down rocks into smaller pieces is called **weathering**.

Wind, flowing water, moving ice, and the pull of gravity all result in the slow breakdown of rock. Also, naturally occurring chemicals in water often react with soil and rock, slowly breaking them apart. This process is called *chemical weathering*. We will use antacid tablets to represent (model) limestone rocks, and water to model the action of natural water.

Helpful Hint!

A model is something that imitates the behavior of something else.

Materials (per lab group)

- stopwatch or wall clock
- room-temperature water
- 3 beakers (250 mL)
- Celsius thermometer (°C)
- cold water
- waste container

- hot water (45°C–50°C)
- 4 antacid tablets (limestone rocks)
- safety goggles
- graph paper

Procedure

1. Review the observation, the question, and the list of materials.
2. Think of a way you might answer the question based on the background information, what you know about the methods of science, and the materials available. This is your testable hypothesis.
3. Write your proposed experimental design in your science notebook. Include safety procedures and your hypothesis.
4. Have your teacher review and approve your design.
5. Gather your materials and conduct your experiment.
6. Record your data and observations in a table in your science notebook.
7. Clean up your lab station.



WARNING

Use care when handling hot water.

QUESTIONS & TASKS

1. Graph your data. It is up to you to decide how to do the graph.
2. What does your graph show? Was your hypothesis correct?
3. What explanation about weathering can you give based on your data?
4. What information would strengthen your explanation?

[Adapted from an activity developed by the Graduate School of Education at the University at Buffalo (SUNY).]