

Student Experiment Activity Sheet

Mineral Crystallization

(1) Hypothesis:

Explain how you can change the experiment to make the crystals grow larger or smaller. For example, if we put jars on the window ledge, will the crystals grow larger or smaller than crystals in a jar in the closet? Are there other changes in the experiment that we could test?

(2) Experiment:

Brainstorm with the teacher and your classmates about the process of crystal formation. Ask the teacher to help you modify the basic experiment to either make the crystals grow larger or smaller. Get a mixture of water and dissolved salts from your teacher and put the jar where it cannot be disturbed. Leave the jar until the water has evaporated, then shake the crystals out onto a paper towel. Record below any changes that you are going to test with your jar of solution.

(3) Data Table:

Measure the lengths of all of the crystals that formed in your jar. At the bottom, calculate the average size of the crystals. (To find an average, add the lengths of all of your crystals, then divide by the number of crystals that you measured.) Put a star beside the largest crystal that grew in your jar. You do not need to use all of the spaces if you have fewer than 10 crystals. If you have more than 10 crystals, use the space to the right of the table.

Crystal #	Size of Crystal in millimeters (mm)
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
Average	

(4) Results:

What was the largest crystal that grew in your jar? Compare the lengths of your crystals with those of your classmates. Was your largest crystal larger or smaller than the rest of the class? Was your average crystal size larger or smaller? How was your experiment different from the rest of the class? What does this tell you about how crystals grow?

Rubric for the Crystal Growth Experiment

This lesson was designed to help the students begin to understand the concepts of scientific inquiry, especially hypothesis building and scientific method. The lesson should be judged primarily on how well the students did in the hypothesis and results areas of the worksheet.

(1) Hypothesis (50%)

- 5 – Formulated a hypothesis in the first part of the worksheet and tested it during experimentation part of the exercise.
- 4 – Formulated a hypothesis but did not test it.
- 3 – Formulated an experiment but did not make the connection between the idea of hypothesis and testing.
- 2 – Did not formulate a hypothesis or an experiment.
- 1 – Did nothing.

(2) Experiment (25%)

- 5 – Creative use the materials to test crystal growth.
- 4 – Does the experiment, but does not offer variations.
- 1 – Does nothing.

(3) Results (25%)

- 5 – In the write up of the results, makes a clear connection between the way in which the experiment was conducted and the outcomes. Clearly identifies the largest crystals and calculates the average. Makes comparisons with results from other students.
- 4 – Analyzes the results of the experiment but does not make a connection between experiment and outcomes.
- 3 – Analyzes the results, but does not calculate an average.
- 2 – Analyzes the results, but does not make comparisons with other students.
- 1 – Does nothing.