Crystal Clear Observations

You may think of crystals as pretty rocks used in jewelry or found among other rocks on an outdoor exploration, but crystals are around us all the time and in lots of things we use—and even eat—everyday! Explore some common, everyday crystals and find out the characteristics that make these structures special.

OBJECTIVES

In this activity, you will

- Make observations about crystals.
- Determine the characteristics of crystals.
- Use geometry terms to describe crystals.

MATERIALS

Computer with ProScope software installed
ProScope
Hand lens
A baggy of crystals, labeled with a letter
Goggles
Black paper or cloth
Lab sheet

PROCEDURE

1. Make sure the ProScope is connected to the computer.

2. Pick up your group's baggy of crystals.

3. Write the letter printed on your baggy on your lab sheet.

4. Look carefully at the crystals in your baggy. Make a drawing of your crystals and write a few words to describe them on your lab sheet next to the picture of the eye.

5. Pour a small amount of your crystal substance onto the black paper. Use a hand lens to observe it again. What can you see about the crystals that you couldn't see before? Make your drawing and describe the crystals next to the picture of the hand lens.

6. Now use the ProScope to observe your crystals. Make your drawing and write a new description on the part of the lab sheet that shows the ProScope. What can you see with the ProScope that you couldn't see with the hand lens or with your naked eye?

7. What do you think your substance might be? Record your idea on your lab sheet.

8. Now return your baggy to the class table and discuss your findings with the class. Make notes from your discussion on the following table.

Discussion Sheet
Write notes about your class discussion. What do you think are the characteristics of crystals?

ANALYZE YOUR DATA

Use your observations and the group discussion notes to answer the following questions.

1. How were all of the crystal substances similar?

2. How were they different?

3. What do you think makes a substance a crystal? Write your ideas from your observations and class discussion.

Good job!!

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TEACHER NOTES

Crystals are substances that are rigidly shaped based on the characteristics of the atoms or molecules that form them. They will keep that shape regardless of how large or small the pieces of the substance are—if you crush any of these crystals, they will retain the same shape. This makes crystals a particularly interesting topic for students to explore because they are able to see the structure of how atoms or molecules connect to each other. Salt, sugar, alum, and Epsom salts are examples of household crystals that allow exploration of this topic. In this activity, each group students will closely observe one kind of salt or granulated sugar in order to determine the characteristic structures that make crystals.

OBJECTIVES

- Make observations about crystals.
- Determine the characteristics of crystals.
- Use geometry terms to describe crystals.

MATERIALS

Computer with ProScope software installed
ProScope
Hand lens
Baggies of common household crystals, labeled by letter to distinguish the different kinds. (different kinds of salt and granulated sugar)
Goggles
Black paper or cloth
Lab sheet

Possible Answers ANALYZE YOUR DATA

1. How were all of the crystal substances similar? They were both whitish. They all had straight sides (faces or planes). Each crystal substance kept the same shapes with faces regardless of the size of the crystal.

2. How were they different? One of them was made of little cubes, the other was made of rectangular prisms.

3. What do you think makes a substance a crystal? Write your ideas from your observations and class discussion. A crystal is a substance has a shape with that is made up of faces (planes) which keeps the same shape no matter how big or small the pieces are.

Crystal Clear Observations Lab Sheet

Name _____ Baggy letter _____

My Drawings

ProScope

My Descriptions

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I think my crystal might be _____

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