

CURIOSITY AT HOME

GROW YOUR OWN CRYSTALS



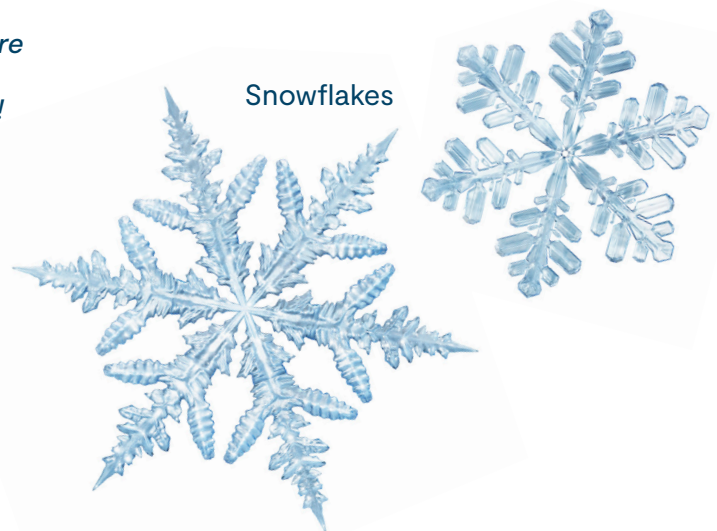
Crystals are seen in many places in nature. Not only are they found in some kinds of rocks, but they also make up snowflakes and even living creatures such as coral! With this activity, you can grow and observe your own crystals with just a few materials.

MATERIALS

- Piece of black construction paper
- Sugar, table salt, or Epsom salt
- Hot plate or stove
- Stirrer (spoon or butter knife will do)
- Tablespoon
- Metal or glass pie pan or other flat dish with an edge
- Recommended: Magnifying glass or phone with a magnifying glass setting or app.
- Science notebook or paper
- Something to write with

PROCEDURE

- Place a small amount of sugar, salt or Epsom salt on the dark paper.
- Examine all the samples with a magnifying glass, or zoom in to get a closer look with a phone camera or magnifier. Look at the shape of each individual grain, what do you notice that is similar and different between the grains of each substance? Draw a sketch of what you see in your science notebook.



Amethyst



Coral



Experiment continued on next page...



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- Create a supersaturated solution: This could take up to 30 minutes, so be patient!
 - ◇ Get an adult to help with this part of the activity.
 - ◇ Bring 1 cup of water to a boil.
 - ◇ While stirring rapidly with the stirrer, start adding the sugar (or salt) one tablespoon at a time. Continue adding until you notice that the added sugar won't dissolve any more. This should be about 2 cups of sugar. Water should remain boiling during this step.
 - ◇ You've now made a supersaturated solution- a solution that contains more than the maximum amount of solid that is capable of being dissolved at a given temperature.
- Create experimental setup:
 - ◇ Cut the construction paper so it fits snugly into the base of the pie pan.
 - ◇ Pour the supersaturated solution into the pie pan until it is just covering the construction paper.
- Place setup near a window, in the sunshine if possible.
- As the solution evaporates, crystals should form on the construction paper.
- Depending on how warm it is, this process can take 10 to 60 min.
- Depending on your supersaturated solution, the crystals might not be very big. Try gently feeling the crystals with your finger. What do you notice?
- Use the magnifying glass to examine the crystals close up once the solution has been evaporated and your paper is dry. What do you notice about the crystals? Do they look more similar or different compared to the crystal grains you observed earlier? Try to sketch the crystals in your science notebook.

EXPLORE MORE

Try this experiment with a different supersaturated solution (using sugar, salt or Epsom salt). Do the crystals look different? Does one solution create bigger crystals?

DID YOU KNOW?

Crystals are solid structures that form when tiny particles connect in a repeating pattern. One way that crystals can form is when water evaporates and leaves those particles behind. Sometimes only one crystal forms, and sometimes a large network of crystals can form. A crystal's "habit" is its visible external shape. The habit of a crystal is determined by the crystal structure, chemical bonds, and the conditions under which the crystal formed.

What are the habits of the crystals you observed?



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K-2 GRADE EXPLORATION

- Go outside with an adult and observe or collect 5-10 different looking rocks. Make observations about the rocks. What did you notice? Make a few sketches in your notebook. Do you see any patterns?
- Look closely, how many are all the same mineral type (based on the color, shape, and other observations) and how many have more than one type of mineral?
- Crystals are just one type of pattern that forms in nature. Draw a picture in your science notebook of a pattern you can find in nature.



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3–5 GRADE EXPLORATION

- Salt is a mineral, a chemical compound that naturally forms in a crystal shape. Much of the Earth's surface is made of rocks and minerals. Imagine a river that flows over rocks and minerals. What do you expect to happen over time?
- If a rock contains a mineral that humans use (such as copper), how easy would it be to extract? You can set up your own mining experiment by trying to extract all the chocolate chips out of a chocolate chip cookie. What happened to the rest of the cookie as you mined out the chips?



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6–8 GRADE EXPLORATION

- How many minerals do we use every day? Look around the place you live to see how many household items might be made of minerals.
- Consider a cell phone. What materials are used to make it? How many of those materials come from a mineral? Learn more about the minerals used to make cell phones at this US Geological Survey website: <https://pubs.usgs.gov/gip/0167/gip167.pdf>
- According to the United States Geological Survey, over half the components of a cell phone come from minerals. Make a list in your science notebook of other items you can find that might be made of minerals.



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