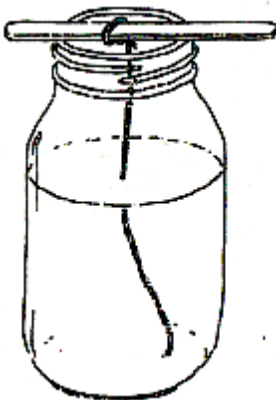


Making a Crystalline Solid

You MUST have parental supervision for this activity!



Materials:

- 1 Glass jar or drinking glass
- Food coloring (optional)
- 1 Piece of cotton string
 - 1 cups Water
 - 1 Pencil or stick
 - 2 to 3 cups Sugar
 - 1 Paper clip



Directions:

1. Heat the water in the saucepan over medium-high heat until it comes to a boil.
2. Completely dissolve the sugar in the boiling water, stirring continuously with the wooden spoon until the solution grows clear and it reaches a rolling boil.
3. Remove the solution from the heat, and then carefully pour it into the jar. Cover the jar with a small piece of waxed paper.
4. Tie the weight to one end of the string, and then tie the other end to the middle of the pencil. The string should be about two-thirds as long as the jar is deep. Dip the string into the sugar solution, remove it, lay it on a piece of waxed paper, straighten it out, and let it dry for a few hours.
5. Gently suspend the prepared string in the solution and let sit at room temperature, undisturbed, for several days. You can check each day to see how much your crystals have grown. It's tempting, but don't touch the jar until the experiment is finished—it usually takes about seven days.
6. At the end of the week, the crystals on your string should be clearly defined, with sharp right angles and smooth faces of various sizes. In the field of crystallography, these are called *monoclinic* crystals.

Questions:

1. What determines the shape of the crystals?
2. What are some of the physical properties of sugar?
3. Why is it important to let the sugar cool slowly instead of putting it in the freezer?
4. Take out the string and look at the crystals, use a magnifying glass if you need to. Draw several of them to show the angles. Which of the pictures at the right most look like the crystals of sugar?
5. Pour a few pieces of table salt (not sea salt) onto the table. Look at these under a magnifying glass. Draw several of them to show their angles. Which of the shapes shown most look like the salt crystals?

