

# 3<sup>rd</sup> Grade Science Experiment: What Factors Affect the Growth of Crystals?

We are learning how to conduct a scientific investigation into the growth of crystals. All three classes have conducted and assessed the first stage of the investigation. Some classes have also conducted a second test. Here is some information in case you would like to conduct a similar test at home. ***Make sure you use a plastic plate.*** Salt water is very corrosive and will leach through a paper plate and create a terrible mess. The same goes for an aluminum pie tin. (I learned about both the hard way.)

## **Initial test:**

We dissolved 2 Tbsp of table salt into 6 oz. of room-temperature tap water, poured the solution into two 3 oz. plastic cups set on a plastic plate with 30 cm of wet, ¼” cotton clothesline connecting the two cups, and then let the experiment sit undisturbed for one week. Here is a photo of how we set things up, taken after one week:



Notice the shape of the clothesline—the ends of the clothesline touch the bottoms of the cups; the curve in the middle does not touch the plate.

After one week, students should look at the crystals that formed and record their observations. They should sketch and/or describe crystal shape, size, color, location (where they formed) and relative abundance. They should also notice any differences between crystals formed on the wick and those formed on the plate or in the cups.

## **Follow up:**

Next, students were required to set up a second experiment, changing one element of their initial test, and then observe any differences in the crystals that form. Below are the initial test conditions and some suggestions for possible changes.

Initial Test	Possible changes
Solute (what gets dissolved): 2 Tbsp table salt	Amount of salt, different solute, such as sugar, Epsom salt, baking soda or washing soda

Solvent: 6 oz. room-temperature tap water	Hot water, ice water, more or less water, different solvent, such as hydrogen peroxide (consumer grade, i.e. 3%).
Wick: 30 cm 1/4" cotton clothesline, wet, shaped like an "M"	Different length and/or thickness, different material, such as yarn, wire or string, different shape, such as no "M" or touching the plate.

This above list is not exhaustive. Other changes are possible, but it is important that only one element of the initial test conditions is changed at a time. Otherwise, it will not be possible to determine the precise reason for any changes that you notice in the crystals that form.

If you conduct an experiment at home, send me a photo of your results and I will share it with the other 3<sup>rd</sup> graders.