

Teachers, please copy both sides of this page for your students to take home.

Rock and Roll!!!

Volcanoes, earthquakes and more!

Dear Students and Parents,

We hope you enjoyed your recent day of science exploration and investigation with Pacific Science Center's *Rock and Roll* van. The Science On Wheels program, which began operating in 1974, is an interactive outreach program that travels to schools across the state of Washington.

The *Rock and Roll* van provides students with hands-on science experiences. Students participate in a lively assembly, explore an interactive exhibit area and receive a 45-minute hands-on lesson. Our goal is to foster an interest in science, technology and mathematics.

We encourage you to talk about our visit and investigate the activities below. The activities on this page are designed for you to do with your family and friends. They require few materials and are easy to do.

We hope you enjoy these activities, Thank you for having us visit!

~Science On Wheels Teachers

Materials

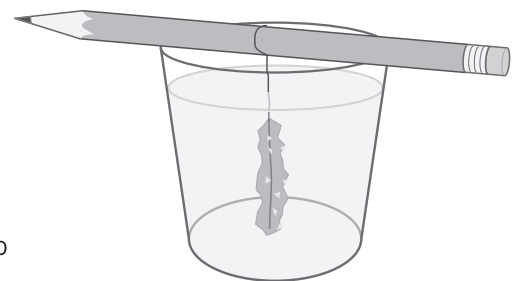
- 1 large cooking pot
- 1 cup of water
- 1 1/2 cups granulated sugar
- drinking glass or jar
- pencil
- piece of cotton string
- spoon

Rock Candy

Crystals are formed in rocks when liquid minerals cool and harden. If the liquid mineral cools quickly, small crystals are formed. If the liquid mineral cools slowly, larger crystals can form. Become a crystallographer, someone who studies crystals and how they form, by observing how sugar crystals take shape. Note: Sugar is an organic compound made from a plant. Minerals are inorganic or non-living compounds found in nature.

Procedure (with adult help)

- Boil the water on the stove. Turn off the heat and add the sugar while stirring. If all of the sugar dissolves, add a little more and keep stirring until no more sugar will dissolve.
- When the solution reaches a safe handling temperature, pour it into a clear drinking glass or jar.
- Tie one end of the string around the pencil.
- Rub sugar onto the cotton string so that some sugar sticks to it. This makes a seed crystal.
- Drop the cotton string into the solution so it dangles near the bottom. Rest the pencil on the rim of the glass.
- Put the glass in a place where it will stay cool and undisturbed. Do not touch the string or lift it up!
- Leave it for a few days and observe what happens. When the water starts to evaporate, crystals will begin to form on the string.



Try doing this experiment twice, placing one in a cool spot and the other in a warm area to see if temperature has an effect on crystal formation. Eat the results!

Magic Shell Volcano

Materials

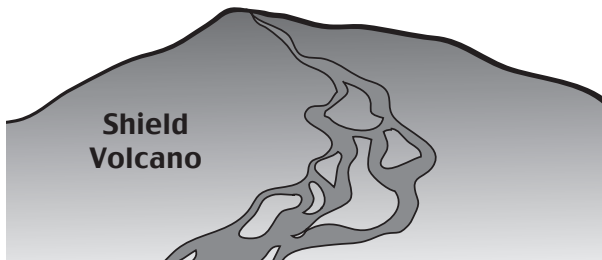
- Magic Shell syrup
- 2 plates
- freezer
- glass
- measuring spoon
- water

Not every volcano erupts the same type of lava, and as a result they have different shapes and sizes. Volcanoes that erupt fluid-like basalt lava are called shield volcanoes because their broad and gentle slopes resemble the shape of a warrior's shield. Hawaiian volcanoes are shield volcanoes. On the other hand, volcanoes that erupt viscous (thick and sticky) lava are referred to as stratovolcanoes. They tend to build up, layer upon layer, with each eruption. Mount St. Helens is a great example of a stratovolcano!

Procedure

- Place both plates in the freezer for about 10 minutes.
- Shake up the bottle of Magic Shell. Pour 1/2 cup into the glass, add 1/2 cup water, and mix thoroughly. The "lava" in the Magic Shell bottle is more viscous (sticky) than the lava in the glass.
- On one plate pour about two tablespoons of the viscous lava (Magic Shell only), and on the other plate pour two tablespoons of the less viscous lava (water and Magic Shell mixture). Wait about 20 seconds.
- Repeat this step 10 more times. (You may have to put the plates back into the freezer in between steps.)

You have just created a shield volcano and a stratovolcano. What differences do you notice between the two plates? Find pictures of different types of volcanoes online or in books.



Candy Caves

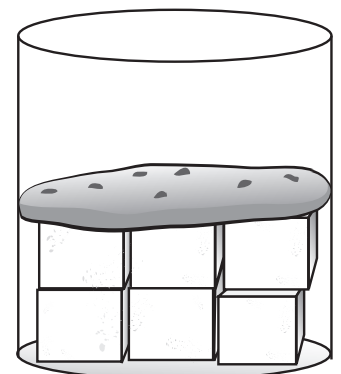
Caves and karsts are areas where there are hollow spaces underground. When water seeps underneath the top layer of soil, sometimes there are minerals below that easily dissolve in the water. Different things happen depending on how hard the top layer of soil and rock is. If the top layer is really hard, caves can form. If it is softer earth, sinkholes and sinking streams can occur!

Procedure

- Stack two levels of sugar cubes inside the container.
- Place the clay on top, stretching it all the way to the edges of the glass. Using the pencil, poke about six holes in the clay.
- Put a few drops of food coloring into the glass of water. Pour water over the clay, one spoonful at a time. Where does the water flow? Add a little more at a time and watch what happens.

Materials

- 10 sugar cubes
- small clear container
- pencil
- clay
- small glass of water
- food coloring (optional)
- spoon



Resources:

National Park Service U.S. Department of the Interior Geologic Resources Division:
Cave and Karst Program