



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 doing these activities together!

~Science On Wheels Teachers

Materials

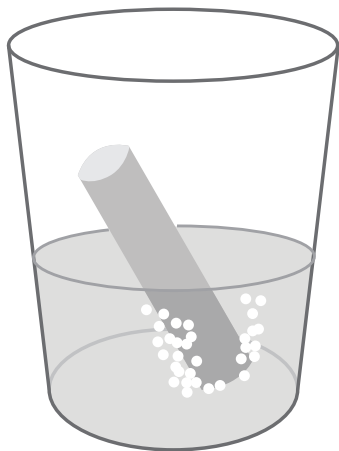
- chalk
- vinegar
- a jar or glass

Dissolve A Rock

Rocks are solid mixtures of one or more minerals. Some minerals can be changed by exposing them to different substances. Many minerals will change when you expose them to acids, such as vinegar. One rock that changes quickly when exposed to acid is chalk, which is a type of limestone. Try the following experiment to see a rock dissolve away in vinegar.

Procedure

- Fill the jar or glass about 1/4 full with vinegar and then put the piece of chalk in the vinegar. What do you notice happening? Look for bubbles coming off of the chalk. These are bubbles of carbon dioxide gas caused by the chemical reaction between the chalk and the vinegar.
- Let your chalk sit in the vinegar for two or three days. Check the glass each day and observe what is happening to the chalk. Make some predictions. Do you think the chalk will totally dissolve? How many days do you think it will take to dissolve? Write your predictions down and see if your guesses were correct.
- Look for statues or buildings that seem to be wearing away. Weak acid rain falling on these structures will cause the stone they are made of to deteriorate, or wear away, over time. If statues or buildings are made of limestone or other stone that has limestone in it, they will deteriorate even more quickly.
- Try this experiment again using different brands of chalk sticks. Do some brands dissolve more quickly? Why do you think this happens?



Cast From The past

Materials

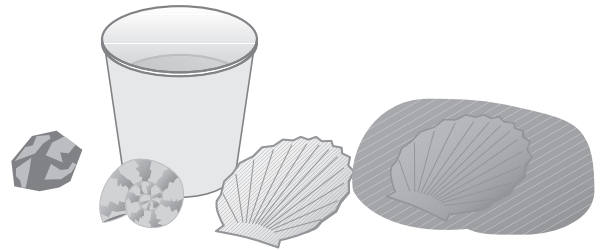
- 1 small plate
- paper cup
- modeling clay
- various disposable objects (seashells, rocks, small toys, etc.)
- petroleum jelly
- plaster of paris
- plastic spoon
- water

Fossils are evidence of plants and animals that lived long ago. Paleontologists are scientists who examine fossils to learn about the organisms that left them behind and the conditions in which they lived. Fossils can tell us about the Earth's climate, the water's salinity (how much salt is in the water) and the sediments present at the time the organism died. Fossils can be formed in many different ways. If an organism is buried quickly by mud or sand, its remains will be preserved and over time turned to rock. This is called a body fossil. Sometimes the only thing that remains is an imprint of an organism. This is called a mold. If that mold is filled in by more sand and mud that also hardens, a cast is made. In this activity, make a mold and cast that is similar to a fossil!

Procedure

- Place a piece of clay, about the size of a walnut, on the plate.
- Rub the outside of the object with the petroleum jelly.
- Press the object into the clay.
- Carefully remove the object so that a clear imprint of it remains in the clay.
- Mix four spoonfuls of plaster of Paris with two spoonfuls of water in the paper cup.
- Pour the plaster mixture into the imprint in the clay and allow the plaster to harden about 10-20 minutes.
- Separate the clay from the plaster mold.

Challenge a friend or someone you live with to guess what object you used to make the fossil!



Rock Candy

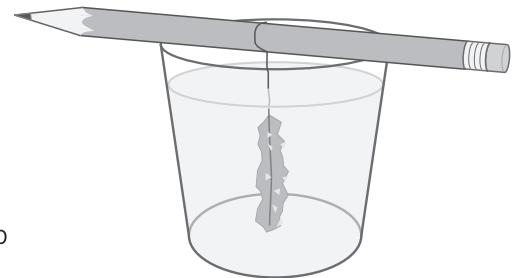
Crystals are formed in rocks when liquid minerals cool and harden. If the liquid mineral cools quickly, small crystals are formed. If the liquid mineral cools slowly, larger crystals can form. Become a crystallographer, someone who studies crystals and how they form, by observing how sugar crystals take 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.

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



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!