

# Caves – The Hole Story!

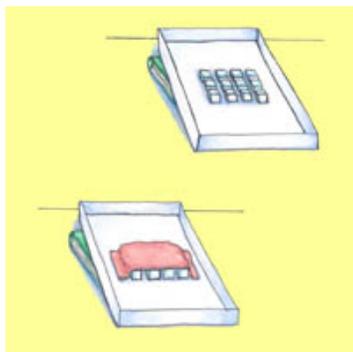
Caves can be formed over thousands of years by water eroding limestone rock. You can make a model of a cave being formed that takes a lot less time.

## Materials:

12 sugar cubes  
Tray  
Modeling clay  
Book (2-3 cm thick)  
Water  
Cup  
Flashlight

## Procedures:

1. Place 12 sugar cubes close together to form a rectangle in the tray as shown.
2. Form a piece of clay into a pancake that is larger than the sugar cube rectangle. Place the clay over the cubes and press the outer edge down so that it attaches to the tray. Leave openings in the front and back as shown.



The sugar cubes represent rock that can be easily eroded by water. The clay represents rock that is harder for water to erode.

3. Place a book under one end of the tray so that it is tilted. Slowly pour about  $\frac{1}{2}$  cup of water in a stream that runs into the sugar cube “rock”. After a few minutes, check to see if any of the rock has eroded and if a cave is being formed. Use a flashlight to explore inside.
4. If all the rock has dissolved, try it again with a little less water. If very little rock has dissolved, try it again with a little more water.



## Think about this ...

What might happen if there was rock that was very hard to erode mixed in with rock that was easier to erode? You could make a model of this by forming pieces of clay into little cubes the same size as the sugar cubes and mixing them among the sugar cubes. When you let the water contact the cubes this time, what do you think will happen? Try it and find out!

## Where's the Chemistry?

Many caves are formed when water erodes limestone rock. It usually takes many thousands of years. Many of the features of caves, including the overall direction of the paths inside and many of the features like the size and shape of the chambers are determined by the presence of rock that erodes easily and rock that is more difficult to erode.



The American Chemical Society develops materials for elementary school age children to spark their interest in science and teach developmentally appropriate chemistry concepts. The *Activities for Children* collection includes hands-on activities, articles, puzzles, and games on topics related to children's everyday experiences.

The collection can be used to supplement the science curriculum, celebrate National Chemistry Week, develop Chemists Celebrate Earth Day events, invite children to give science a try at a large event, or to explore just for fun at home.

Find more activities, articles, puzzles and games at [www.acs.org/kids](http://www.acs.org/kids).

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## Safety Tips

This activity is intended for elementary school children under the direct supervision of an adult. The American Chemical Society cannot be responsible for any accidents or injuries that may result from conducting the activities without proper supervision, from not specifically following directions, or from ignoring the cautions contained in the text.

### Always:

- Work with an adult.
- Read and follow all directions for the activity.
- Read all warning labels on all materials being used.
- Wear eye protection.
- Follow safety warnings or precautions, such as wearing gloves or tying back long hair.
- Use all materials carefully, following the directions given.
- Be sure to clean up and dispose of materials properly when you are finished with an activity.
- Wash your hands well after every activity.

**Never** eat or drink while conducting an experiment, and be careful to keep all of the materials used away from your mouth, nose, and eyes!

**Never** experiment on your own!

**For more detailed information on safety go to [www.acs.org/education](http://www.acs.org/education) and click on "Safety Guidelines".**

