

# GEOLOGY SHAKES

## EARTH SCIENCE

### Materials

- sensory table, or long plastic storage box
- board, about 6 inches wide and slightly longer than the sensory table or storage box
- containers of pebbles, sand, and water
- clear plastic containers, preferably with lids

### Activity Description

For this activity, a board is placed across the top of the water table, and containers of pebbles, sand, and water are set inside the table. Children create concoctions by mixing scoopfuls of the pebbles,

sand, and water in clear plastic containers. If lids are available, children can shake up their geology shakes before setting them on the board; otherwise, they can stir the mixtures. As children spend time filling additional containers, changes begin to occur in the mixtures setting on the board. The once dark brown water quickly begins to lighten in color.

Young children love mixing things, so it is good to have plenty of replacement materials on hand. Save some of the mixtures for at least a week. Children will notice that overnight the water becomes increasingly clear, and this process continues for several days. They may also observe a rim of sand between the sand and pebble mixture at the bottom of the jar and the water at the top.



During this activity, the contents of used containers can be dumped into the body of the water table, and the containers can be rinsed at the sink to be ready for the next group of experimenters. On the following day, children can use colanders to sift the pebbles from the sand, a filtering process that is also an excellent science activity.

### **Science Content**

The purpose of this activity is for children to explore the process of **sedimentation**, which is the tendency for particles to settle out of the fluid in which they are suspended. In geology, sedimentation results in the formation of **sedimentary rocks**. Moving water picks up sediment and deposits it when it reaches some kind of barrier, such as the curve in a creek or river, or a tree that has fallen across the water.

In this activity, three materials are sorted through the **forces** of nature. Gravity causes the heavier pebbles to sink to the bottom of the container, which displaces the water and some of the sand. Because the sand is heavier than the water, it forms a layer on top of the pebbles and fills in the gaps between rocks, leaving the gradually clearing water on the top.

### **Mathematics Content**

Children may want to create recipes for their geology shakes, such as two scoops of pebbles, one scoop of sand, and three scoops of water. These recipes can be written on note cards and attached to the contain-

ers for later comparison. This variation in the activity introduces the mathematical concepts of quantification and measuring, while also increasing the scientific potential.

### **Connections to Engineering**

Understanding the process of sedimentation and the properties of various materials is important in civil and construction engineering. Building a road or a house on a base that could easily be eroded by water could lead to serious problems.

### **Comments and Questions to Support Inquiry**

- This geology shake is completely brown. I'm going to set this sand timer on the board next to the container. When the sand runs out, let me know. That will be in five minutes, and I want to see how this geology shake looks then.
- I thought you put the water in first. How did the water get up to the top?
- If we put a lot of pebbles in this container, do you think the water will still end up at the top?
- If you want to shake the container again, that's all right. We'll see if the same thing happens again, and the pebbles go to the bottom.
- I see a line forming in between the bottom layer and the water. What do you think is causing that line?