Get the Dirt on Soil

Soil is mostly ground up rock, plant, and animal material of different sizes. Soils act differently depending on how much of each different type of material they contain. Try the next activity and you'll be convinced that soil is royal!

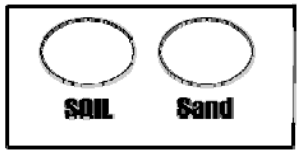
Materials:

1/4 cup potting soil
1/4 cup course sand
Tablespoon
Popsicle stick
Magnifying glass
Paper and pencil
Water in a plastic cup

NOTE: Children should wash hands thoroughly after handling soil.

Procedures:

1. Draw 2 large circles on your paper. Label one soil and the other sand. Place a tablespoon of soil in its circle and a tablespoon of sand its circle. Use a whole piece of paper to draw a chart like the one shown.



Observation for:	**Soil**	**Sand**
Step 2		
Step 3		
Step 4		
Step 5		
Step 6		
Step 7		

2. Spread each sample around with a Popsicle stick. What colors are the particles? Is there anything you recognize as a piece of plant or insect? Is there anything shiny? Describe what you see in the samples in as much detail as you can.
3. Use a magnifying glass to take an even closer look. Use your Popsicle stick to move the samples around and to scrape and smash some pieces if you can. Describe what you see that's different from what you saw before.
4. Look at the size of the particles. Are they different sizes, or are most particles about the same size. Are the particles clumped together, or are they mostly separate from each other?
5. Pick up some of the sample, and gently move it around between your thumb and index finger. Does it crumble or smear? Does the way the samples feel between your fingers tell you anything about the size of the particles?
6. While observing closely with the magnifying glass, place a few drops of water on the sample. What do you notice? Does the water seem to be absorbed into the sample or not? Does the water seem to break any of the sample apart?

7. Now that the samples are a bit wet, use your index finger to smear a little of the sample on the paper. Does it make a mark? Why do you think one smears more than the other?
8. Look at the recorded observations in your chart. Were potting soil and sand mostly the same or mostly different? What were the major similarities and differences?

Think about this ...

When you put water on the sand and soil samples, you probably noticed that the soil absorbed more water than the sand did. What do you think would happen if you compared course sand to fine sand to see how much water each one absorbed? Try it and see!

Where's the Chemistry?

In this activity, you looked at two extremes of soil: pure sand (not a very good soil) and potting soil (a pretty good soil). Potting soil usually has some sand, decomposed plant material, and a mineral that holds water very well, called perlite. The plant material and the perlite absorb and hold water much better than sand making the potting soil easier to mold and to smear.

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.

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 and click on "Safety Guidelines".