

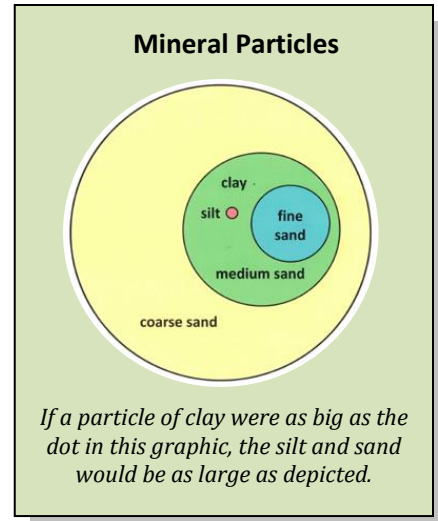
Background

Soil is more complex than most people realize. Healthy soil consists of the following elements:

- Mineral particles — sand, silt, or clay
- Organic matter — decomposing plants, animal matter and droppings
- Small organisms — worms and insects and microorganisms, such as bacteria and fungi
- The space between mineral particles (pore space).

This investigation explores the *three types of mineral particles in soils: sand, silt, and clay*. These minerals differ in size and composition. Sand has the largest particles; silt has much smaller ones; clay particles are so small they must be seen with a powerful electron microscope.

Soils have different *textures* according to the proportions of sand, silt, or clay particles in the soil. In the following activity, you will determine the textural characteristics of sand, clay, silt. From the information you gather, you will estimate the mineral composition of a soil sample from your school grounds.



Soil Texture Investigation

Materials

- Samples of sand, clay, silt, and school soil
- Spray bottle of water or dropper
- 3 spoons

Procedure

Each person in your team can do each of the following steps. One person should record the answers.

1. Put 3 teaspoons of your first soil sample, sand, into your palm.
2. Moisten the soil sample with the spray bottle or dropper. Your sample should be moist, not wet. Knead it to break up lumps. It is the proper consistency when it is moldable, like moist putty. If it is too wet, add more sand. If it is too dry, add more water.
3. Use this sample to answer the questions in **Texture Test Chart**. Write your answers in the appropriate column.
4. Put 3 teaspoons of clay in your palm. Follow steps 2-3 with the clay sample.
5. Repeat the procedure with 3 teaspoons of silt and then with your school soil sample.
6. After all the samples have been tested, answer the **Discussion Questions**.

Texture Test Chart

Using your soil sample, answer the following questions. Answer yes or no in the column for your sample.	Sand	Clay	Silt	School Soil
a. Can you form a ball?				
b. Does it stay a ball when squeezed?				
c. Can you form a ball and then roll the ball into a snake?				
d. Can you form a ring with the snake shape?				
e. Does your sample feel gritty?				
f. Does your sample feel like flour or powder?				
g. Does your sample feel sticky?				
h. What color is the sample?				

Discussion Questions

1. From the Background paragraph and your Texture Test results, describe two characteristics of sand.
2. From the Background paragraph and your Texture Test results, describe two characteristics of moist clay.
3. How was the school soil sample similar or different than the sand and silt characteristics?
4. Using the information you gathered, how would you classify the school soil—as sand, silt, clay, silty clay, sandy clay, or loam? (*Loam* is about equal portions of sand and silt with a little bit of clay.)