

Sec: _____ Name: _____

Experiment: Soil Transport & Soil Types
(E. Science 9-7-2d)

Purpose: To learn a technique involved in soil type identification. And to observe which of the soil components goes into solution, and to determine which surface materials are carried a long distance and which ones are deposited nearby.

Materials: **Part A:** 60 mL clay or mud 60 mL gravel
5 plastic glasses (clear) 60 mL salt 60 mL sand
spoon water 100 mL graduated cylinder
Part B: two types of soils

Methods:

Part A: Transporting Soil Materials

1. Put 30 mL of clay into one glass, 30 mL of gravel into a glass, 30 mL of salt into a glass, and 30 mL of sand into a glass.
2. Take the leftover 30 mL of each material and put it into the fifth glass.
3. Add 50 mL of water to each glass and stir well. Record your observation in results table.
4. Observe the glasses 10, then 20 then 30 minutes later. Record your observations. In results, diagram the layers in the glass containing the mixture after the 30 minutes.

Part B: Soil Texture Classification By Making A Ribbon

1. Take some soil (of sample A) and make it into a ball. Work the soil with your fingers. Slowly add water to the soil until it is moist.
2. After the ball of soil is moist, try to form a long, thin ribbon of soil. Use the following descriptions to categorize your soil. (Record one fo the following three terms in results beside sample A)
 - a. If you can form a long, thin ribbon, you have a **clay** soil.
 - b. If you formed a long ribbon but it breaks easily, you have a **clay loam** soil.
 - c. If you had difficulty forming a long ribbon, you have a **loam** soil.
3. Now make your soil classification more detailed by selecting one of these descriptions.
 - a. If the soil feels smooth, add the word **silty** to your soil name.
 - b. If the soil feels slightly gritty, **don't add any word** to your soil name.
 - c. If the soil feels very gritty, add the word **sandy** before your soil name.
4. Repeat steps 1 - 3 but use soil sample B this time.

Results: **Part A: Transporting Soil Materials**

	beginning	10 min.	20 min.	30 min.
clay				
sand				
salt				
gravel				
mixture				

sketch:

Part B: Soil Texture

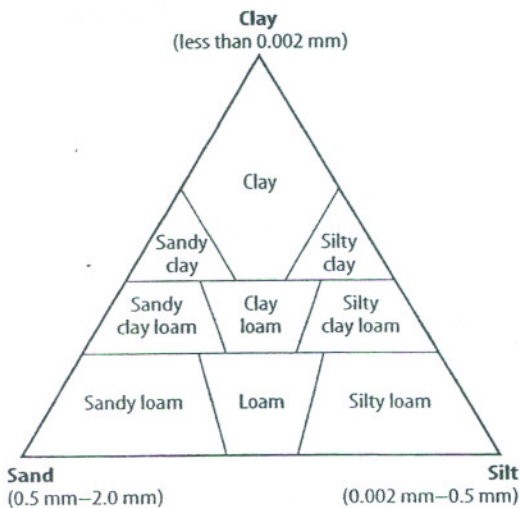
2. Sample A: _____ Sample B: _____
3. Sample A: _____ Sample B: _____

Conclusions:

1. What happens in each container (Part A)?
2. How are sandy materials and clay distributed in the glass with the mixture (Part A)?
3. Why are sediments sorted by size in soil (Part A)?
4. What happens to the sand, salt, clay, and gravel carried by streams (Part A)?
5. Which texture class name did you assign to your two soil samples?
 Sample A: _____ Sample B: _____

Discussion:

1. In an arid climate where water is not penetrating the soil but is moving up the surfaces of the soil from underground, where would you expect to find the soluble material?



2. Find your soil texture class name on the triangle to the side. Notice the corners of the triangle are labeled sand, silt, and clay.

2a. Check to see if your soil texture class is close to one of the three corners, if so record which one. If your soil texture class is in the middle record "middle".

Sample A: _____ Sample B: _____

2b. Does your soil contain mostly sand, silt, or clay, or does it have nearly equal amounts of each? Hint: If your soil name is close to a corner, it has mostly that size of sediment. If your soil name is in the middle of the triangle, it has nearly equal amounts of each sediment size.

Sample A: _____ Sample B: _____

3a. Read Matthew 7: 24 - 29. Comment on what will happen to the house on...
 rock
 sand

3b. What scientific principle was Jesus referring to?

3c. What lesson is to be learned from this parable in reference to the house on...
 rock
 sand

4. Why is it important that soil evolution continue?

5. Why do people need soil?

6. The following is a review of soil components. Fill in the following blanks.

- a. Clay, silt, and sand are small particles of _____
- b. Decaying, dark - colored plant and animal material is called _____.
- c. Small spaces between soil particles may be filled with _____ or _____.