SCHOOLYARD GARDENS

LAYERS OF SOIL

PLAN AHEAD:

This activity requires waiting overnight, so plan two days for completion

PURPOSE:

Determining the amount of sand, silt, and clay particles in a given soil sample helps you understand what type of soil you have in your garden.

MATERIALS:

- A sample of soil that likely contains sand, silt and clay (from schoolyard garden or yard)
- Clear jars with lids
- Water
- Felt tip marker
- Ruler
- Layers of Soil worksheet

PROCEDURE:

1. Fill a jar half full with soil. You can use soil from your garden or just from the ground. For an interesting comparison, take a sample from both places.
2. Add water to the jar until it is full.
3. Tightly close the jar with the lid.
4. Shake the jar until the soil and water are mixed well.
5. Allow the jar to sit undisturbed for 24 hours.
6. After the 24 hours have passed, you should see layers forming in the jar. Use a felt-tipped marker to mark the layers on the jar.
7. Identify each layer as sand, silt, or clay and write it in the chart.
8. Using a ruler, take measurements to determine the composition of the soil in percent and record it on the worksheet.
9. Complete the data and questions sections of the soil worksheet to complete this experiment and find out what kind of soil your schoolyard garden has

Layers of Soil Worksheet

Introduction:

In science, matter is referred to as either organic or inorganic. Organic matter is of plant or animal origin. Examples of organic matter would be compost, leaves and wood chips. Inorganic matter is of mineral origin. Iron, salts, and sand are examples of inorganic matter. Soil is composed mostly of inorganic matter. This inorganic matter is classified by particle size, as can be seen in the chart below:

Particle Size (mm)	Less than 0.002	0.002 to 0.06	0.06 to 2.0
Particle Name	Clay	Silt	Sand

When suspended in water, the particles will settle according to their size. The larger particles will settle first, and the smallest particles will settle last. In this way, the different soil components of a given sample can be separated out and measured.

Soil Data:

Layer	Particle Type	Height of Layer	Total Height	Height of Layer ÷ Total Height x 100 = %
High				
Mid				
Low				

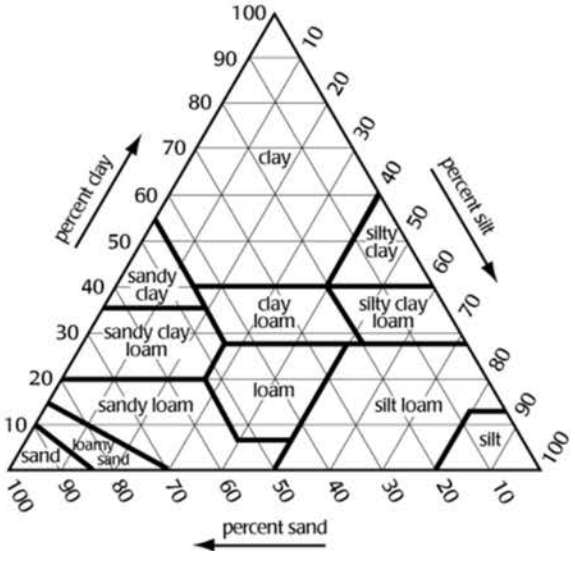
To figure percentage of particle layer height use this example:

- The height of the lowest layer is 7 inches
- The height of the entire soil sample is 10 inches
- 7 inches of 10 total inches are composed of the lowest layer
- 7/10 = .7 and .7 X 100% = 70% of soil compose by the lowest layer

Questions:

1. Which particle type made up the highest percentage of your soil sample? _____
2. What type of soil is in your jar? _____

Using the percentages you found and the **soil triangle** to the left, you can determine what kind of soil you have. Just find the spot in the triangle where two of your percentages line up.



For example, if you found that the soil contained 40% sand, 40% silt, and 20% clay:

1. Start along the bottom of the triangle and find the line marked "40."
2. Follow that line up and to the left until it crosses the horizontal line marked "20."
3. Read the name of the soil type. In this case, the soil is "loam."

The point at which the line for 40% sand and 20% clay cross is also the point where the line for 40% silt crosses. (That line goes up and to the right.) You can find your soil type by looking at just two of your percentages. The third one will line up with the other two every time.