



Investigate the Components of Soil

The scientific method is a systematic way to find answers to questions that interest you. One of the key elements in the scientific method is the hypothesis. The hypothesis is your predication, or best guess, at the answer to the question. You state your hypothesis before you conduct the experiment, based on what you think you will observe. The hypothesis should also include an explanation of why you think you will get the predicted result. During the experiment, your hypothesis will be "put to the test". The results may support the hypothesis, but this isn't always the case.

In this activity you are challenged to answer the question "**Is a soil sample a mixture of more than one component?**" As a group, decide your hypothesis, read the list of materials needed and review the method required to put your hypothesis to the test. Pages 2 and 3 of the worksheets provide the materials list, the description of the method and a table to record your results. When you have completed your investigation of soil, write a scientific report to describe the scientific question, hypothesis, method and materials, results, and conclusion.

The Scientific Method and Report Writing

- Question** · Write the question you are investigating.
- Hypothesis** · State your hypothesis.
- Method** · Write the process or steps of your experiment and the materials used.
- Results** · Describe the facts or data that you collected.
- Conclusion** · Explain why you think the experiment happened the way it did and include whether the results supported your hypothesis or not.



The Components of Soil - Materials, Method and Results

Materials

- 250 mL of potting soil
- 500 mL water
- 30 cm length of tube (for siphoning)
- 5 cm x 5 cm square piece of nylon
- magnifying glass
- large clear plastic or glass jar with a lid
- ruler
- large syringe (for siphoning)
- masking tape
- measuring cup

Method and Results Table

	Descriptions and Observations	
	Dry Soil Sample	Wet Soil Sample
Examine the dry soil sample under the magnifying glass. Describe its colour:		
Describe the different particles in the soil:		
Pick up some of the sample. Rub the sample between your fingers and feel its texture. Record your observations:		

The Components of Soil - Materials, Method and Results

(continued)

	Descriptions and Observations	
	Dry Soil Sample	Wet Soil Sample
<p>Put 3/4 of the soil into the glass jar and slowly add enough water to cover the sample. Keep the rest of the sample dry for later comparison.</p> <p>Watch for bubbles to rise from the soil. Record your observations:</p>		
<p>Now, fill the jar so that there is a 1/2 water and 1/2 soil mixture. Securely put the lid on the jar. Shake the jar thoroughly and set it aside to settle for at least 30 minutes.</p> <p>Observe the layers in the jar carefully noting where the small and large particles are.</p> <p>Sketch and label a diagram of the jar and its contents:</p>		
<p>Siphon out all of the water being careful not to disturb the soil using the tube with nylon cover and the large syringe.</p> <p>Carefully remove the top layer. Examine a sample of the top layer under the magnifying glass.</p> <p>Take a sample of the top layer and rub it between your fingers.</p> <p>Repeat this procedure for each layer and record your observations:</p>		