

Investigating soils

Settlement test

Humus and rock particles mix together in different proportions to produce different types of soil. There are three basic types of rock particles; from the largest to the smallest they are sand, silt and clay. The settlement test is used to separate these constituent materials in a soil sample. A quantity of soil is placed in a transparent jar with some water, shaken vigorously and allowed to settle on a flat surface. Children observe the settlement over a period of a few days. Sand, silt, clay and organic matter will separate in different layers and at different speeds with the heaviest particles settling first. Children predict which materials will settle first. Sand sized particles will settle almost immediately and form the bottom layer. Silt particles will settle next. Clay may take over a day to settle on top of the silt. Humus may act as silt or clay, or it may be partly decomposed material that floats. Different soils will have layers of different depth. This test is used to name the soil as the dominant type of particle determines the soil name. Children measure the depth of each layer and name the soil based on the particles present in greatest amount (e.g. 80% clay, is a clay or clay-based soil).

- Distribute soil samples with transparent screw-top jars
- Discuss the importance of carrying out a fair test (amount of water and soil, time allowed for shaking and settlement)
- Children predict what they think may happen
- Teacher models the settlement test
- Children carry out the test, observe and record findings after one hour, after one day
- They measure and record the height of each layer, note colours and draw the layers on the task card



Settlement test

- Fill a jar $\frac{3}{4}$ full of water.
- Add enough soil to almost fill it.
- Secure the lid and shake for 10 seconds.
- Place the jar on a level surface.
- Discuss with your group what you think will happen to the soil and water.
Record your prediction.

Prediction

- Observe the jar in one hour. Discuss, draw and record what you see.
- Observe the jar the next day. Discuss, draw and record what you see.

One hour	Next Day

Conclusions

The thickest layer is



The thinnest layer is

We think our soil is _____ because
