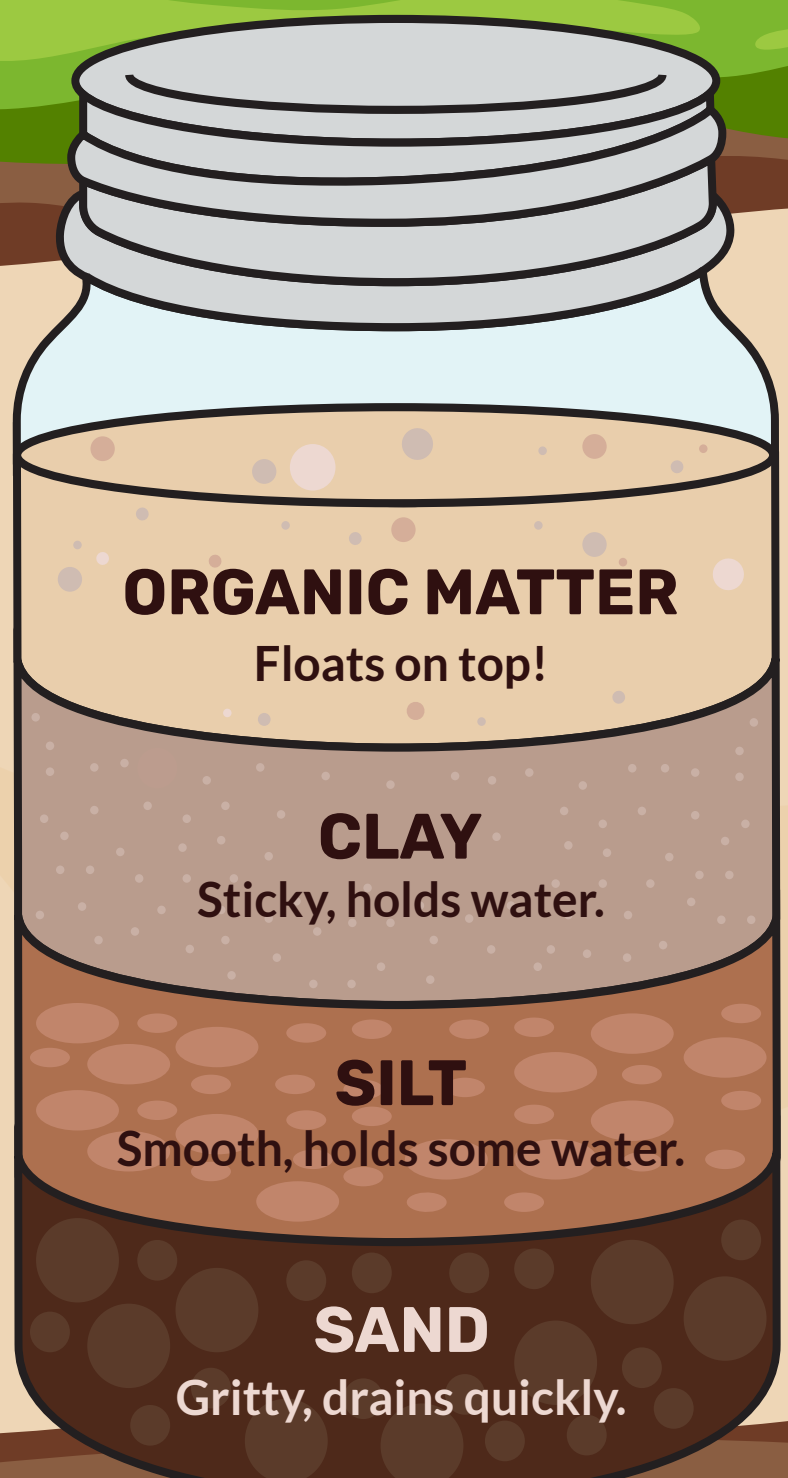
Grades 3–5

What's the Dirt on Soil?

What's in My Soil?

Look closely at your jar after a few hours!



Make a Soil Jar!

Materials

1. A clear jar with a lid
2. Soil from outside*
3. Water

Optional: 1 spoon of alum (potassium aluminum sulfate) or dish soap

**scoop it from 2-3 inches below the surface and make sure there are no rocks or big roots!*

Activity

1. Put a few inches of soil in the jar.
2. Fill the rest of the jar with water.
3. Add a drop of dish soap or alum (optional).
4. Shake the jar for 1–2 minutes.
5. Let your jar sit for a few hours or overnight so the layers can settle. Watch as the layers settle over time!

Discussion Topics

Compare your jar to the "good soil" jar provided by California Farmland Trust.

What's the same?

What's different?

Would your soil sample be good for growing plants? Why or why not?

Vocabulary

Sand: Gritty and drains fast

Silt: Smooth like baby powder; holds water better than sand but can get sticky

Clay: Sticky, hard to break, and holds water tightly

Loam: A balanced mix of sand, silt, and clay. Holds water well but drains easily. Great for growing!

For more information visit the California Farmland Trust website:

CaFarmTrust.org/Dirt

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What's the Dirt on Soil?

Educator Guide

Objective

Students will observe soil composition through a jar test and understand that different soils have different textures.

Lesson Overview

This activity helps students explore what soil is made of. Using a simple jar test, students will collect soil, shake it with water, and observe how it settles into layers of sand, silt, clay, and organic matter. The full lesson takes about 45–60 minutes over two class sessions.

To support learning, California Farmland Trust will provide a jar of "good" soil for students to compare their own samples with—making this activity easy to do in any setting, including urban environments.

Activity

- Ask each student to bring soil from home or collect soil at school.
- Have students follow the jar test steps listed on the front of the poster. After shaking, let the jars sit for at least 4–8 hours, or overnight if possible, to allow the layers to settle fully. Sand settles quickly and clay may take up to a day to settle.
- After layers settle, guide them in identifying each layer: sand, silt, clay, and organic matter. Use a ruler to measure the height of each soil layer in your jar. Record the measurement in inches.
- Provide the California Farmland Trust's "good soil" jar for comparison.
- Use the discussion topics (listed on the front) to promote discussion.

Extension Ideas

- Research ways to improve soil textures, and try it out in your garden, yard, or school campus.
- Use touch tests: Sand feels like salt, silt feels like flour, clay feels like flour and water mixed.
- Discuss where food comes from and why soil matters.
- Try growing a seed in the soil they collected.

California Standards

Grade 3
NGSS: 3-PS2-1, Math CC, 3.MD.B.4

Grade 4
Math CC, 4.MD.A.1

Grade 5
NGSS, 5-PS1-3 and 5-ESS2-1

Additional Discussion Topics

Compare your jar to the "good soil" jar provided by California Farmland Trust.

What's the same?
Sample answer: Both jars have visible layers of sand, silt, and clay. They also have floating organic matter on top.

What's different?
Sample answer: My sample has more floating material and less clay than the "good soil" jar. The layers are not as clearly separated.

Would your soil sample be good for growing plants? Why or why not?
Sample answer: It might not be ideal because it has a lot of sand, which drains too quickly and might not hold nutrients well.

What kind of plants might grow well in your soil?
Sample answer: Plants that like well-drained soil, like lavender or rosemary, may do well in my sandy soil.

Does your soil hold water, or dry out fast?
Sample answer: My soil dries out quickly, so I think it would need organic matter added to help retain moisture.

Why is healthy soil important?
Sample answer: Healthy soil gives plants the nutrients and structure they need to grow. It also helps prevent erosion and stores water.

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