

Soil Test Detectives

Use observations and fair tests to compare soils.

S3E1.b "Plan and carry out investigations to describe properties (color, texture, capacity to retain water, and ability to support growth of plants) of soils and soil types (sand, clay, loam)."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline the sentences that tell what a soil was like or what happened in a test. Circle words that show how the class made a fair comparison.

Three Soils, One Test

- ① Ms. Lee's class planned a soil investigation. They placed the same amount of sand, clay, and loam into three cups with holes. Before adding water, students described each soil. Sand was light tan and felt gritty. Clay was reddish brown and felt smooth but sticky when damp. Loam was dark brown and felt crumbly, with tiny bits of plant matter.
- ② To test water retention, the class set each cup in a tray. They poured half a cup of water into every cup and waited ten minutes. The sand cup left the most water in its tray, so sand held the least water. The clay cup left the least water in its tray, so clay held the most. Loam held some water but also drained some.
- ③ For a growth test, students planted three bean seeds in each cup. They kept the cups in the same sunny place and gave each cup the same amount of water. After fourteen days, most seeds had sprouted in loam, and the loam plants were tallest. The class concluded that loam supported growth best in this test. They knew different plants or conditions could give different results.

2 ANSWER WITH EVIDENCE Use the passage

- 1 Name two things the class kept the same during the growth test. Why was keeping them the same important?

- 2 What did the water left in the trays show about sand and clay?

- 3 Which soil was reddish brown? How did it feel when damp?

- 4 What evidence showed that loam supported plant growth best in this test?

3 YOUR TURN Your own words

Plan a fair investigation that compares sand, clay, and loam. In the table, tell what you will observe, what you will keep the same, and how you will record each result.

SOIL TYPE	WHAT I WILL OBSERVE	WHAT I WILL KEEP THE SAME	HOW I WILL RECORD RESULTS

PART 1 • READ AND MARK

Underline the sentences that tell what a soil was like or what happened in a test. Circle words that show how the class made a fair comparison. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	Name two things the class kept the same during the growth test. Why was keeping them the same important?	They kept the cups in the same sunny place and gave each cup the same amount of water. This made the comparison fair.
2	What did the water left in the trays show about sand and clay?	Sand held the least water because the most water drained into its tray. Clay held the most water because the least water drained into its tray.
3	Which soil was reddish brown? How did it feel when damp?	Clay was reddish brown. It felt smooth but sticky when damp.
4	What evidence showed that loam supported plant growth best in this test?	Most seeds sprouted in loam, and the loam plants were tallest after fourteen days.

PART 3 • YOUR TURN (SAMPLE ANSWER)

SOIL TYPE	WHAT I WILL OBSERVE	WHAT I WILL KEEP THE SAME	HOW I WILL RECORD RESULTS
Sand	color, texture, water that drains, and plant sprouts	amount of soil, number of seeds, water, light, and time	notes, amount of drained water, sprout number, and plant height
Clay	color, texture, water that drains, and plant sprouts	amount of soil, number of seeds, water, light, and time	notes, amount of drained water, sprout number, and plant height
Loam	color, texture, water that drains, and plant sprouts	amount of soil, number of seeds, water, light, and time	notes, amount of drained water, sprout number, and plant height

Accept equivalent descriptions of the passage results and any two correct controlled conditions. For the investigation plan, accept reasonable observations and measurements if the student keeps important conditions the same across all three soils.