

LESSON 4 / FAMILY GUIDE

Slow the Storm

Where will the rain go?

ENGINEERING CHALLENGE: Design a small landscape that manages heavy rain and helps protect buildings or other places from flooding.

At a Glance

Age	6-10 years
Estimated time	45-60 minutes
Engineering field	Water Resources & Environmental Engineering
Engineering practices	Observe, Create, Test, Improve
Big ideas	Runoff, absorption, stormwater, and flooding

Materials

Gather these first

A shallow tray or baking sheet; small blocks, cups, or boxes for buildings; foil, cardboard, or plastic for hard surfaces; sponges, cloth, or soil for absorbent surfaces; water; and a cup or spray bottle for pretend rain.

- Optional: toy trees or plants, pebbles, small runoff-collection containers, markers, paper, and a measuring cup.
- Keep the landscape simple. One building, one road, and two different surfaces are enough for a meaningful first test.

Caregiver Notes

Your role

The goal is not to stop every puddle: real landscapes get wet! Ask where water goes, why it goes there, and whether a different route might be more helpful.

Let your child observe before changing the landscape. Use approximately the same rain amount between tests. Consider whether soaked absorbent materials affect later results.

Start the Conversation

Why water engineers study this

When rain falls on rooftops, sidewalks, roads, gardens, and lawns, some water soaks in, some runs across surfaces, and some pools in low places.

Engineers design landscapes, drains, and green infrastructure to slow, absorb, redirect, or collect stormwater.

Choose a Starting Point

Story connection

One neighborhood house floods during heavy rain. Water follows the street and pools near the house. What could change - the ground, a garden, a pathway, or something else?

Real-world connection

After a safe rainstorm, notice puddles, gutters, storm drains, grassy areas, sidewalks, and low ground. What changes between pavement and soil?

Ask Your Child

- Where do you think rain goes after reaching the ground?
- Why do some places have larger puddles?
- Which surfaces might absorb or redirect water?
- How could green spaces affect stormwater?

Meet Water Engineers

Sarah Traore - Civil Engineer & Water Researcher

Has worked on stormwater runoff, green infrastructure, hydrologic modeling, water quality, and climate adaptation. Ask: Can plants be part of an engineering solution?

Cadijah Walcott - Civil & Environmental Engineer

Has used hydrologic modeling to study flooding and later worked in coastal hazard mitigation. Ask: Why study floods that already happened?

LESSON 4 / FAMILY ENGINEERING ACTIVITY

Slow the Storm - Let's Engineer!

YOUR CHALLENGE: Design a small landscape that manages heavy rain and helps protect buildings or other places from flooding.

Open Challenge

Set up and explore

Build a miniature neighborhood with buildings, roads, and ground surfaces. Make it rain, observe what happens, and redesign one feature to change the path of water.

What to Do

- 1. Observe** Study the landscape. Which places might flood?
- 2. Create** Arrange small buildings, roads, soil, and greener or absorbent areas.
- 3. Predict** Where might rain flow and where might it pool?
- 4. Test** Use a small, measured amount of pretend rain. Notice where water flows, collects, and soaks in.
- 5. Improve** Change one landscape feature; use the same rain amount and compare the result.

Make It Your Own

Getting started

Use one building and one road; then try changing a surface or adding a sponge or cloth.

Ready for more?

- Add a park, garden, another building, or a low area.
- Compare foil, cardboard, soil, and sponge surfaces.
- Try to protect a building without flooding another.
- Test whether the redesigned landscape also works during heavier rain.

Talk About It

- Where did the water move fastest?
- What absorbed or redirected the rain?
- Did a change solve a problem or create one somewhere else?

- How might a garden or green space help?

Before You Finish

Did you stop the water - or give it a better place to go?

Invite your child to share discoveries through conversation, drawing, writing, photographs, pointing, or building. Record ideas in your Unit 2 Engineering Notebook if you wish.

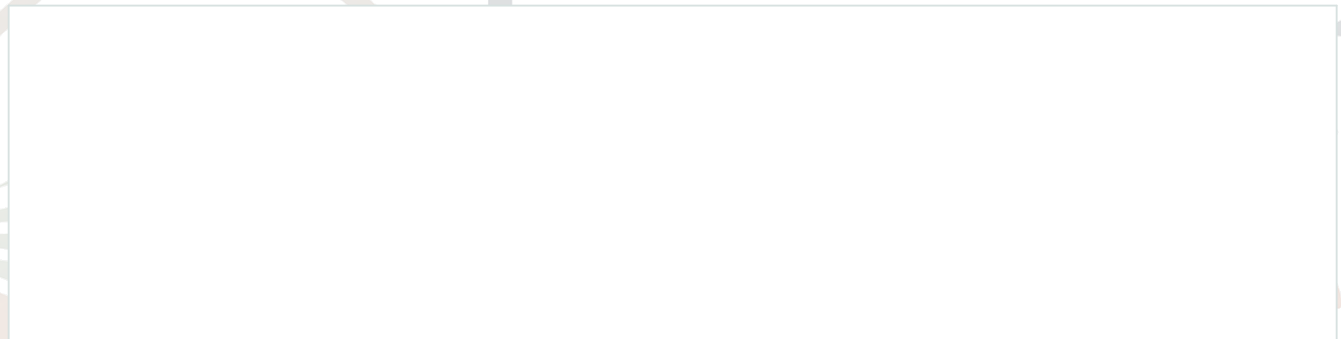
Safety Reminder

Use small amounts of water away from electricity. Observe real rain only from a safe place; never go outside to test during a thunderstorm.

ENGINEERING DESIGN PROCESS ASK > IMAGINE > CREATE > TEST > IMPROVE

Optional: Family Notes and Sketches

Use this space for a quick drawing, a question, or something you noticed while engineering together.



DESIGNED FOR FAMILIES