

LESSON 1 / FAMILY GUIDE

Follow the Water

Can you get water from here to there?

ENGINEERING CHALLENGE: Design a pathway that moves water from a starting container to a destination without carrying the water container.

At a Glance

Age	6-10 years
Estimated time	30-45 minutes
Engineering field	Water Resources & Civil Engineering
Engineering practices	Create, Test, Improve
Big ideas	Water flow, gravity, slope, and systems

Materials

Gather these first

Two containers; water; a towel or tray to catch spills; and two to four materials that might help create a pathway.

- Aluminum foil, straws, cups, cardboard, plastic bottles, paper tubes, spoons, funnels, or sponges.
- No straws? Try rolled paper. No funnel? Use the top of a clean plastic bottle with adult help. No tray? Work over a towel, in a sink or bathtub, or outdoors.

Caregiver Notes

Your role

Wonder alongside your child and allow them to decide what to build and change. You do not need to teach gravity or water pressure before starting.

Unexpected water movement is information, not failure. Invite your child to talk, point, sketch, or describe discoveries in their own way.

Start the Conversation

Why water engineers study this

Water moves through rivers, pipes, gutters, and other systems around us. Engineers design pathways that help guide it where it is needed.

Ask: Where have you seen water moving? What might happen if you change the angle of a water pathway?

Choose a Starting Point

Story connection

Imagine water is on one side of your kitchen table and a thirsty plant is on the other. You cannot carry the water container. How could you get the water to the plant?

Real-world connection

Look for a faucet, pipe, gutter, drain, hose, ditch, downspout, or watering can. What does its shape do to guide water?

Ask Your Child

- Where do you think the water will go?
- What could help guide the water?
- How could we change the water's direction?

Meet Water Engineers

Nathaniel Todea - Hydraulic Engineer

A Diné engineer whose work has involved watersheds, rivers and streams, fire hydrology, dams, and major water infrastructure. Ask: What should an engineer learn about a river before changing it?

Diana Piña Yitbarek - Water Engineer

Her work has included groundwater cleanup, water quality, and pollutant monitoring. Ask: What kinds of knowledge beyond math and science could help someone care for water?

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LESSON 1 / FAMILY ENGINEERING ACTIVITY

Follow the Water - Let's Engineer!

YOUR CHALLENGE: Design a pathway that moves water from a starting container to a destination without carrying the water container.

Open Challenge

Set up and explore

Place the water source above an empty destination container. Let your child select materials and decide how water might travel between them.

What to Do

1. Imagine Choose a starting point and destination. Talk about or sketch a route.

2. Create Build a pathway using materials your family has.

3. Predict Before adding water, explain or show where you think it will go.

4. Test Pour a little water through the path and watch carefully.

5. Improve Change one thing based on what you noticed, then test again.

Make It Your Own

Getting started

Begin with a short, simple pathway. Test one section, and then add or adjust another section.

Ready for more?

- Guide water around a corner.
- Make the pathway travel farther or cross a gap.
- Use only three materials.
- Redesign to spill less water.

Talk About It

- Where did the water go?
- What helped the water move, and what got in the way?
- What would you change before another test?

Before You Finish

What did the water teach you about your design?

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.

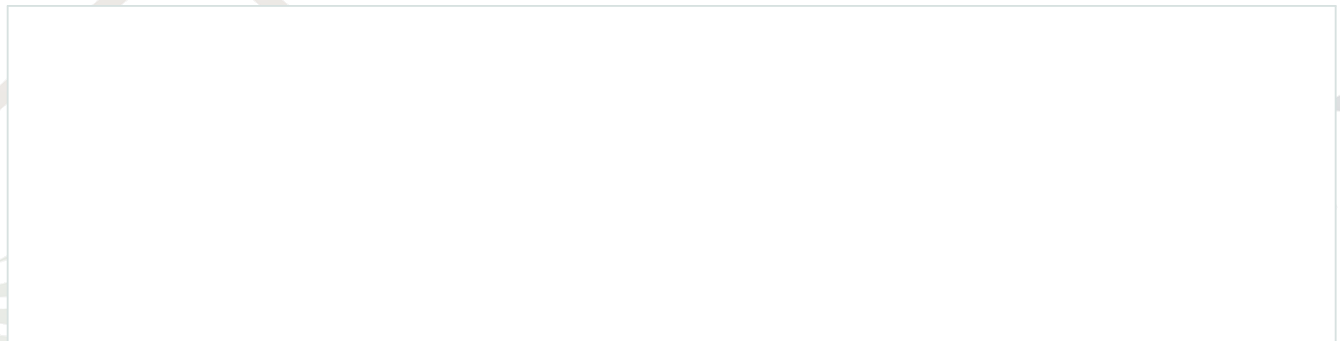
Safety Reminder

Work over a tray or towel, use only small amounts of water, keep water away from electrical items, and have an adult help with cutting.

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.



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