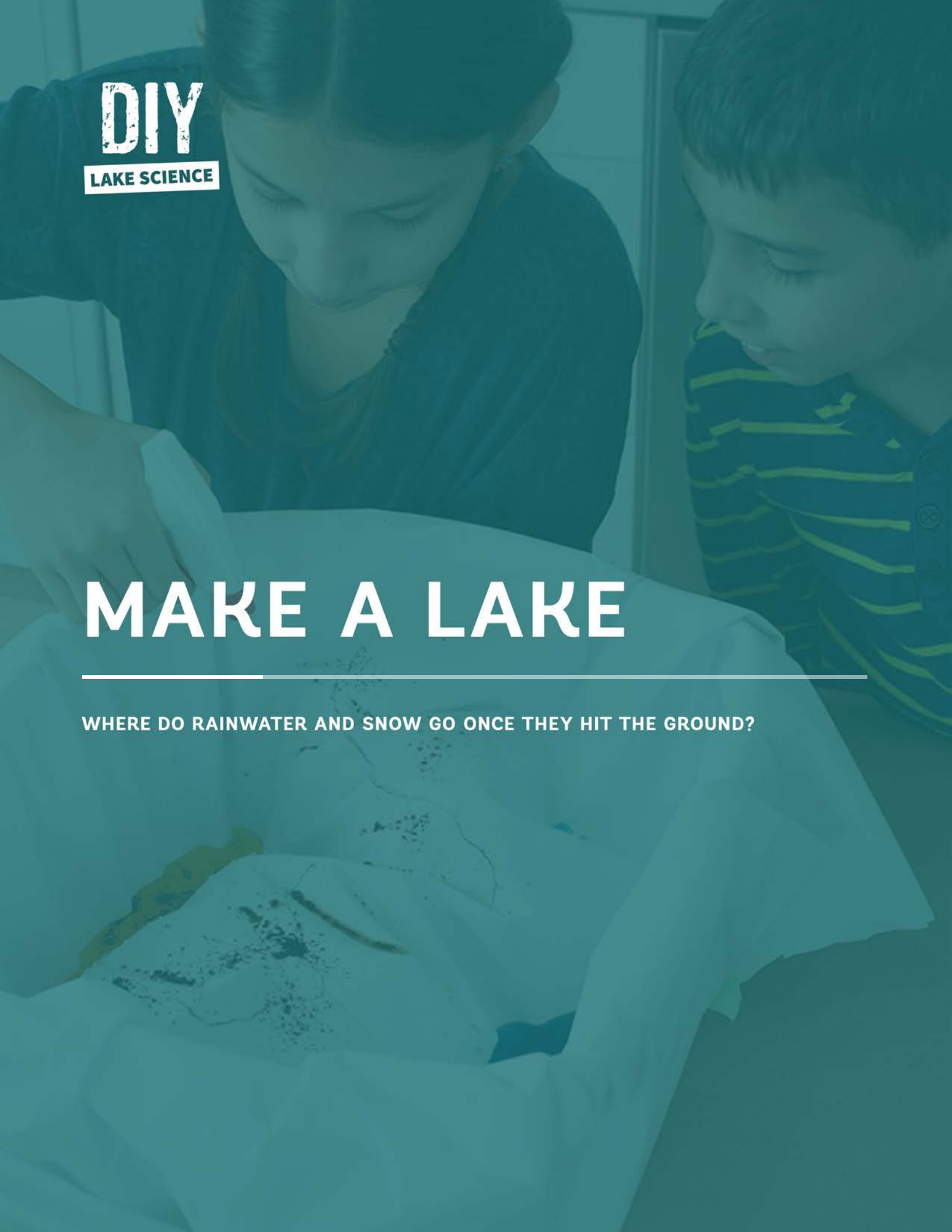


DIY

LAKE SCIENCE

MAKE A LAKE

WHERE DO RAINWATER AND SNOW GO ONCE THEY HIT THE GROUND?

ACTIVITY DESCRIPTION

Do you ever wonder where rainwater goes after the rain stops? And why there are rivers and lakes in some parts of the land but not in others? In this activity, you will make a model landscape to find out how watersheds are formed.

Age: 7 and up

Preparation: 5 minutes
Activity: 20 minutes
Cleanup: 10 minutes

ACTIVITY MATERIALS

- Plastic bin (at least 45 cm long × 30 cm wide × 10 cm deep)
- 10-15 pieces of newspaper or scratch paper
- Thin sheet of plastic, approximately 70 cm × 70 cm (tablecloth or shower curtain)
- Black, blue, and green permanent marker
- Tap water
- Spray bottle filled with water
- Two drinking cups (coffee mug or larger)
- Blue and yellow food coloring
- 30 mL (2 Tbsp) of coffee grounds
- Rags or paper towels for cleanup
- Scissors (optional)
- Liquid measuring cup (optional)

MATERIALS NOTE

For the thin sheet of plastic, white or light-colored material works best. An old plastic shower curtain or tablecloth works well. Aluminum foil can be used if plastic sheeting isn't available.

STEP 1

Crumple up enough pieces of newspaper to make a long row across the center of the plastic bin. This will represent one long ridge of hills in your landscape.

STEP 2

Cut a piece of plastic (or aluminum foil) so that the length and width are at least 10 cm longer than the length and width of the bin. Cover the long ridge you made with the plastic sheet. Beginning in the middle of the box, press the plastic into all the corners of your bin, working your way to the walls of the bin. Make sure the edges of the plastic fold over the edge of the bin.

Tip: If using foil, be sure to press it down gently to avoid tearing. Also, depending on the width of your box, you may need two pieces of foil to ensure that all the paper gets covered.

STEP 3

Using a black permanent marker, draw a line along the top of your ridge. This is the high point that separates the two valleys on either side.

Tip: Use light pressure when you draw on the ridge so you don't flatten the surface or move the paper underneath.

STEP 4

Add approximately 125 mL (4 oz) of water to each of the two cups. Add several drops of blue food coloring to one cup and mix, and add several drops of yellow food coloring to the other cup and mix. Each of these cups represents rainwater that will fall on the landscape you just made.

STEP 5

Slowly pour the yellow water on one side of your ridge in your bin. Pour the water so that it falls to one side of the black line you drew.

STEP 6

Next, slowly pour the blue water on the other side of your ridge (the black line). Where did blue and yellow water end up? Do you see any green water? If so, that means the two waters mixed.

Your bin represents two separate watersheds. Ridges are the boundaries of watersheds. All the water that flows down one side of the ridge (blue water) flows into one watershed. Water that flows down the other side of the ridge (yellow water) flows into a separate watershed.

STEP 7

Imagine someone spilled pollution in your landscape. Sprinkle coffee grounds on the ridge in your bin to represent pollution. This pollution could be from garden or farm fertilizers, or oil leaking from cars or trucks. Predict what would happen to the pollution if it were to rain in your landscape.

STEP 8

Now, make a rainstorm! Using the spray bottle, spray water all over your watershed. Spray at least 10 times. Pay close attention to what happens to the pollution after the storm. Did your prediction come true?

STEP 9

You will now make a new landscape. Dump the water from your bin into a sink, throw away the crumpled up papers, and rinse out the bin. You may need to use a new sheet of plastic to cover your new landscape. Crumple at least five new pieces of paper and place them in the plastic bin. Arrange them in a way that makes a landscape like the one shown here. Stack some of the pieces of paper high, to make hills and mountains. Leave some areas with little or no paper to make meadows and low areas. Lay the sheet of plastic over the new landscape, just like before.

STEP 10

Use a black marker to draw a line on the new ridges in your landscape. Depending on what your landscape looks like, there may be more than one ridge top. Next, using a blue marker, carefully draw rivers and lakes where you think they will occur in your watershed when it rains. This takes some imagination! Lakes often occur in low places in a watershed and rivers connect lakes to the ridgetops.

STEP 11

Using a green marker, draw where you would want to build a house and grow food. How close should a home be to a lake? How high up the mountain would you want a house to be?

STEP 12

Prepare one more cup each of blue and yellow water. Identify two separate watersheds in your landscape, using the ridge lines you drew and thinking about the first part of the activity where you learned how to identify watersheds. Test your watershed predictions by pouring blue water on the hill slopes of one watershed, and yellow water on the hill slopes of the other watershed. Do you see any green water, which means the water mixed together?

STEP 13

Spill some more pollution (coffee grounds) in one area of your landscape. Predict where the pollution will go after another rainstorm happens.

Test your prediction and make another storm by spraying water all over your landscape! Where did the coffee go? Was your prediction correct?

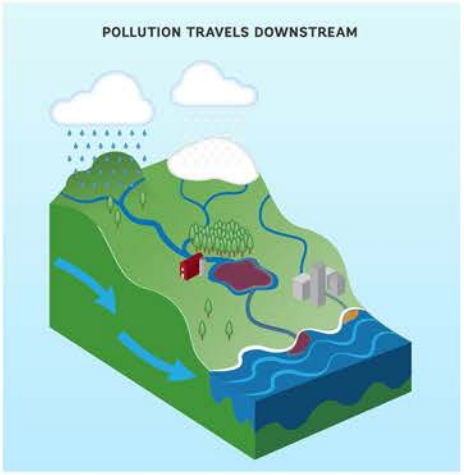
WHAT'S GOING ON?

The land around a body of water is called a watershed. It's the area that collects snow and rain that drains downhill to a river, lake, or ocean. We all live in a watershed! In watersheds, water travels from the high areas (like the ridges you colored black) downhill where it gathers to form rivers and streams, and continues down to the lowest areas like lakes, wetlands, and ocean where it can't go down any further. Watersheds are nature's boundaries. One watershed is separated from another by high areas like mountain ridges. Big watersheds are made up of smaller watersheds. Can you count how many watersheds are in the landscape you made?

A watershed is the area that collects snow & rain that drains downhill to a body of water.

HEALTHY WATERSHEDS

The water we drink, bathe with, and play in comes from watersheds. Plants and animals need healthy watersheds to survive too. When water flows across the land in a watershed, water can pick up soil or pollution (like the pollution you made in your watershed) and carry it to lakes and rivers. Pollution threatens the health of the watershed and all the creatures that depend on it—including us! What can we do to keep our watersheds healthy? Make sure trash and pollution end up in the right place. Plant and protect native plants. The roots of plants hold the soil in place, which slows the flow of water and soil. This prevents pollution from spreading across the watershed.



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For more info and other activities, visit:
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CREDITS

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This activity from the DIY Lake Science app allows families to investigate and learn about lakes and bodies of water at home or on the go! The app features twelve hands-on investigations, as well as videos and a lake simulation.

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