

# Topic: Waterways

## Go with the flow

[http://www.sciencebuddies.org/science-fair-projects/project\\_ideas/Geo\\_p045.shtml#procedure](http://www.sciencebuddies.org/science-fair-projects/project_ideas/Geo_p045.shtml#procedure)

## Materials and Equipment

- 4 empty water jugs or large plastic bottles
- A cutting knife
- Adult helper
- Area with small slope that is OK to get messy. Some examples are:  
Sloped area in a larger sandbox, suggested dimension 20 inches (50 cm) long, 16 inches (40 cm) wide, and a slope of about 4 inches (10 cm) high, or, a brick or big block under one side of a movable sandbox to obtain a slope.
- Plastic sheet or tarp (20 by 22 inches)
- Soil
- Permanent marker
- sticks
- Water from household or garden tap
- Notebook
- Pen or pencil

## Experimental Procedure:

### Prepare your jugs

1. Ask an adult to cut a small triangular hole near the bottom of the first jug. Then a medium triangular hole near the bottom of the second jug. Then a large triangular hole near the bottom of the third jug. The fourth jug will be used for filling the other jugs.
2. Using a permanent marker, draw a line where this jug is approximately  $\frac{3}{4}$  full.

### Prepare your work area.

1. Cover your work area with the big plastic sheet or tarp. This will make cleanup easy.
2. Flatten the plastic as much as possible.
3. Spread soil evenly over the plastic, covering an area about 16 inches (40 cm) by 20 inches (50 cm) with a layer of soil roughly 1 inch (2 cm) thick.
4. Spread and flatten the soil evenly
5. Use sticks to make three riverbeds in the soil. The three riverbeds should be parallel to each other, leaving about 4 inches (10 cm) of space between them. Start about 2 inches (5 cm) from the side of your workspace.

### Let the rivers run

You will pour an equal amount of water on each model riverbed, but the water will run at different speeds, depending on the size of the hole cut in the bottom of the jug. You will start with the slow-running river (the jug with the smallest hole) and move on to the medium- and fast-running rivers as you move from one riverbed model to the next.

- In your notebook, create a table for recording your observations.
- Fill the watering can up to the  $\frac{3}{4}$  line, using the fourth jug.
- Be sure to keep the jugs at the same height as you let the water run in the three different river models.
- Let a helper pour the water from the watering can in the jug with the small hole, being sure that the helper pours the water in without stopping.
- Note any observations about what happened while the river was flowing in your table. Here are some things to look for:
  - *Did you observe meandering, or flooding while the water flows?*
  - *Were islands created by the water in your river model? Did they stay the entire time, or get washed away?*
  - *Did the banks of your river hold firm or break down? If they broke down, did it happen gradually or suddenly?*
- Measure how wide the riverbeds are. Use your table to record your measurements.

	Riverbed 1	Riverbed 2	Riverbed 3
meandering			
flooding			
islands			
banks			
Width of river beds			