

# Make Your Own GLACIER

A glacier is a gargantuan mass of compacted snow and solid ice. Formed in the Arctic and Antarctic thousands of years ago, glaciers also develop outside these areas on mountain peaks and in valleys. As snow thaws and freezes again, glaciers thicken and continue to grow. Slowly but continuously, glaciers move. In fact, people have called glaciers "rivers of ice" since they constantly move like water. As glaciers advance, or increase in size and move forward, they haul boulders and push mounds of rock debris in front of them. As they retreat, or melt, glaciers deposit boulders in new places. They create lakes, carve craggy hills, and etch valleys into the landscape.

**1** With the scissors, carefully cut away one of the milk carton's side panels.

**2** Fill about one-third of the milk carton with gravel, rocks, and sand to form rock debris. Pour in enough water to cover the rock debris, and stir with the wooden spoon. Place the milk carton into a freezer and allow it to freeze solid.

**3** When the carton is completely frozen, remove it from the freezer. Fill another third of the carton with the same gravel, rocks, sand, and water mixture. Return the carton to the freezer, and allow it to freeze solid again. Your glacier will be growing larger and thicker.

## Supplies

scissors	•	wooden spoon
half-gallon milk carton	•	freezer
gravel	•	wooden board or panel
rocks	•	12 feet (3.5 meters)
sand	•	long by 1 foot (0.30
water	•	meter) wide

## Water Worlds

Kettle lakes, including those found in Alaska's Denali National Park and Preserve, are formed by glaciers. When glaciers retreat, mammoth chunks of ice stay behind, partially buried beneath sandy gravel. In time, the ice melts, and it leaves a large, bowl-shaped indentation in the sediment. Groundwater seeps into the hole and combines with precipitation to create a kettle lake.



**4** When the carton has thoroughly frozen again, remove it from the freezer. In the remaining one-third of the carton, add the same gravel, rocks, sand, and water mixture. Place the carton in the freezer again, and let your glacier bulk up even more.

**5** Select a day when the outside temperature is above 55 degrees Fahrenheit (13 degrees Celsius) and below 80 degrees Fahrenheit (27 degrees Celsius). Now, you're ready to take your glacier outside and observe its movement.

**6** Outdoors, position the wooden board or panel at a 20-degree angle. At the top of the board, spread a 1-inch layer of gravel.

**7** Peel and pull away the cardboard portions of the milk carton. Place your frozen glacier at the top of the board. Wait about an hour.

**8** Observe how the glacier has moved across the board. What happened to the gravel? How much ice has melted? Has any rock debris been left behind? What formations do you notice?

## DID YOU KNOW?

Lake gigantic water jugs, the glaciers and ice caps in Antarctica and Greenland hold about 69 percent of the planet's freshwater supply. But climate change is speeding up the melting process. If all the earth's glaciers and ice sheets completely melted, sea levels would rise about 200 feet (61 meters).