

## ACTIVITY

# MAKE YOUR OWN WATER PRESSURE EXPERIMENT

With this experiment, you will see how the pressure of water changes depending on how much water is on top of it. Why do the floors at the top of a 30-story skyscraper need different pumps than floors at the bottom? **Caution: This activity requires the use of a knife, so ask an adult to supervise.**

**1** Take the top off the empty jug and set it aside. Use the marker to make your jug into a skyscraper. You can draw windows and doors, and even draw the people inside.

**2** Have an adult help cut three holes, about as wide as a dime, into the jug. One hole should be close to the bottom of the jug. The next one should be in the middle, and the last one at the top.

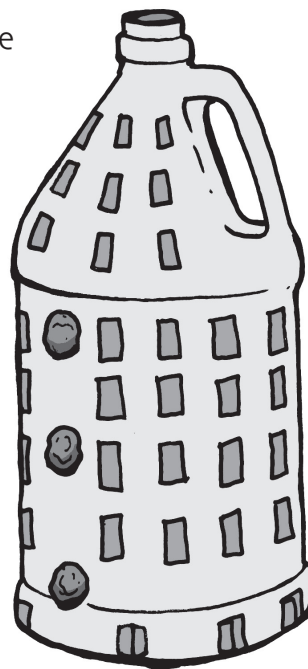
**3** After you've made the holes, use the modeling clay to make plugs to close them. Tie the string to the top of the jug. It should be long enough that you can hold the jug by the string so it doesn't touch the ground.

**4** Take your skyscraper jug and a pitcher of water outside. This will get a bit messy!

**5** Carefully fill the jug with water. Tie the jug to a tree branch or fence post.

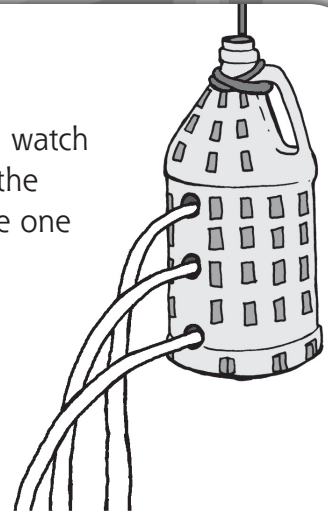
## SUPPLIES

- plastic gallon jug
- marker
- knife
- modeling clay
- string or rope
- water
- helpers



**6** Now quickly remove all the plugs at the same time and watch the water flow. How does the stream of water coming from the bottom hole look compared to the top hole? What about the one in the middle?

**What's Happening?** The difference in water pressure affects the way the water squirts out of the holes. The stronger the squirt, the more water pressure. You can see why people at the top of a skyscraper need pumps to get water and why people at the bottom don't.



**Try This!** What happens if you poke more holes in the jug? Does this increase the water pressure or decrease it? Experiment with a smaller jug. Does the water squirt out as far as it did from the big jug?

## HOW'S THE WATER UP THERE?

In the early 1900s, water was distributed in tall buildings by a tank on the roof—gravity delivered the water to the floors below. When the tank's water level dropped, a pump brought more water up. One problem with this was the tanks had to be heated in the winter to keep from freezing. And in the summer, the water would be hot from sitting in the sun.

In the 1950s, pressure tank systems powered by an air compressor replaced the roof tanks. This system was indoors and the compressor pumped water to each floor. But the systems used a lot of energy, took up a lot of space, and were expensive to install.

Today, most buildings use a series of pipes and tanks in the walls and basement. Pressure valves on different floors control the water flow, turning on when water is needed on any floor, and shutting off during periods of less use, such as during the night when everyone is sleeping.