

# EARTH SCIENCE SERIES

# CHANGING WATER DENSITY

Have you ever tested objects to see what will float and what will sink in water? Why do some objects sink immediately while some float on the surface? Part of the answer is density! We can experiment with how density changes whether something sinks or floats by adding kitchen powders to water.

## MATERIALS AND STEPS

- Four small cups
- A tablespoon
- Salt
- Sugar
- Baking soda
- A small object to test

Fill your cups at least  $\frac{3}{4}$  full with water. Leave the first cup as it is with just plain water. For the second cup, stir in at least 2 tablespoons of salt and keep stirring until the salt is fully dissolved. For the third cup, repeat using sugar. For the fourth cup, add the baking soda and stir, but stir again right before attempting your test. The baking soda will not dissolve in water the way salt and sugar do.

Start the density experiment by dropping your object (we used grapes, but you can try any object of a similar size and mass) into the plain cup of water. What happens? Does it sink or float? Does it fall through the water quickly or sink slowly to the bottom? Try again with the salt-water cup. If the grape doesn't float, try adding more salt and see what happens next. Repeat your experiment with the cups containing sugar and baking soda.

Were you surprised by the results? Adding powders to the water can change the water's density, but do you think there are any other ways to change the density of water? What if you used warm water or cold water instead of room temperature water? Do you think that would change the results?

## VOCABULARY

**Mass** is the amount of matter or substance that makes up an object.

**Density** is a word we use to describe how much space an object or substance takes up (its volume) in relation to the amount of matter in that object or substance (its mass).

**Volume** refers to the amount of space the object takes up.

## FUN FACT

The ocean is saltiest at the equator! At the North and South poles, glaciers that do not contain salt are melting and diluting the salt content of the surrounding water.



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