



## Activity: Sink and Float – Exploring Density

One way to explore relative density is by testing whether something sinks or floats in liquid or gas. For this experiment, we're going to see if objects are more dense or less dense than water by observing if they sink or float. Objects that sink are more dense than water. Objects that float are less dense.

### Materials

- ▶ Small objects around your house that can get wet
- ▶ Towel, to help with spills and to place wet items
- ▶ A tub of water

### Suggestions for Objects to Use

- ▶ Lego
- ▶ Plastic lid
- ▶ Ice cube
- ▶ Small balls (golf, wiffle, tennis)
- ▶ Crayon
- ▶ Rubber band
- ▶ Packing peanut
- ▶ Coin
- ▶ Cork
- ▶ Rock
- ▶ Grains of sand
- ▶ Piece of wood
- ▶ Small bottle
- ▶ Fruits and vegetables

### Instructions

- ▶ Once you have collected all your materials, begin sorting them into piles: those that you predict will float and those that you think will sink. If you are doing this experiment with someone else, you may also have a third pile for those items that you don't agree on.
- ▶ Once you have all your predictions, you should begin testing your objects one by one. Did it do what you predicted? Often, incorrect predictions are the most interesting ones!
- ▶ If an object floats, you should do an additional test of pushing it under the water to see if it floats back up. There are some items that we can make float because of the surface tension of water or air that is in the item. But when those items are pushed under water and do not float back to the surface, they are actually more dense than water.

### What's Going On?

- ▶ Density can be a confusing concept because we often think of it only in terms of weight – whether something is heavy or light. But density also has to do with volume, or how much space an object takes up.
- ▶ Density is the relationship between weight and volume and it's a property of matter. For example, a twig doesn't weigh very much and floats. But the whole tree, which is really heavy, will do the same thing. Because it is made of the same material as the twig, it has the same density and it will also float.
- ▶ Try a rock – does it sink or float? What if you try a grain of sand, which is basically a tiny rock that doesn't weigh very much? What do you think it will do? Try it and find out!

### Extension

- ▶ Find a small bottle with a lid. Test its density when it's filled with air. Then test its density when it's filled with water.
- ▶ Air is much less dense than water and is great at helping things float. Think about when you blow bubbles underwater; the bubbles go up!
- ▶ Try to find the right combination of water and air in the bottle that just makes it float or sink.