

Topic: Water

Surface tension: make a paper clip float

<http://www.sciencebob.com/experiments/paperclip.php>

What you will need

- clean dry paper clips
- tissue paper
- a bowl of water
- pencil with eraser

What to do

1. Fill the bowl with water
2. Try to make the paper clip float...Can it be done?
3. Tear a piece of tissue paper about half the size of a money note.
4. GENTLY drop the tissue flat onto the surface of the water.
5. GENTLY place a dry paper clip flat onto the tissue. (Try not to touch the water or the tissue)
6. Use the eraser end of the pencil to carefully poke the tissue (not the paper clip) until the tissue sinks. With some luck, the tissue will sink and leave the paper clip floating!

How does it work?

How is this possible?... With a something scientists call SURFACE TENSION.

Basically, it means that there is a sort of skin on the surface of water where the water molecules hold on tight together. If the conditions are right, they can hold tight enough to support your paper clip. The paperclip is not truly floating, it is being held up by the surface tension. Many insects, such as water striders, use this "skin" to walk across the surface of a stream.

Make it an experiment

The project above is a DEMONSTRATION. To make it a true experiment, you can try to answer these questions:

1. How many paperclips can the surface tension hold?
2. Does the shape of the paperclip affect its floating ability?
3. What liquids have the strongest surface tension?
4. Can the surface tension of water be made stronger? (try sprinkling baby powder on the surface)

Topic: Water

Make an Egg Float in Salt Water

<http://www.sciencekids.co.nz/experiments/floatingeggs.html>

An egg sinks to the bottom if you drop it into a glass of ordinary drinking water but what happens if you add salt? The results are very interesting and can teach you some fun facts about density.

What you'll need:

- One egg
- Water
- Salt
- A tall drinking glass

Instructions:

1. Pour water into the glass until it is about half full.
2. Stir in lots of salt (about 6 tablespoons).
3. Carefully pour in plain water until the glass is nearly full (be careful to not disturb or mix the salty water with the plain water).
4. Gently lower the egg into the water and watch what happens.

What's happening?

Salt water is denser than ordinary tap water, the denser the liquid the easier it is for an object to float in it. When you lower the egg into the liquid it drops through the normal tap water until it reaches the salty water, at this point the water is dense enough for the egg to float. If you were careful when you added the tap water to the salt water, they will not have mixed, enabling the egg to amazingly float in the middle of the glass.

Topic: Water

Sink or Float?

<http://www.hometrainingtools.com/a/sink-and-float-science-projects>

Gather up some objects from around your house to test their sinking or floating abilities. Make sure all of the items you pick can get wet!

What You Need:

- a large container of water (use a bucket, or fill up a sink)
- lots of small objects of different weights and materials (plastic, metal, wood, foil, Styrofoam)
- a few larger objects
- worksheet
- pen

What You Do:

- Look at the objects you collected. Draw a picture of each one in the boxes on the left side of the worksheet.
- Make a prediction about each object - do you think it will sink or float in the water? (To make a prediction means to say what you think will happen.) Mark your prediction on the worksheet for each item (circle float or sink).
- Drop the objects into the water one at a time. Watch what happens to each one. Did you predict correctly? Circle "float" or "sink" next to each object on the sheet to show the results of your experiment.

What Happened:

Even though some of your items seemed very light (things like a paperclip or a button), they still sank in the water. Some objects that might have seemed sort of heavy (like a wooden block) probably floated. That is because whether an object sinks or floats in water doesn't just depend on its weight or size. It also depends on its density. Density is a measure of how solid something is. All things are made up of tiny particles called molecules. If the molecules inside an object are very close together, the item is solid, or dense. If the molecules are farther away from each other, the object is less dense, or less solid. An example of a very dense item is a penny. A cork is less dense.

A coin, paperclip, or button sank because the materials they are made of (metal or plastic) had more density than water. (Their molecules are closer together than water molecules are.) A cork, piece of wood, or Styrofoam floated because those materials have less density than water. All the objects that were less dense than water floated in the water! Objects that had more density than the water sank.