



Curiosity Guide #206

Liquid Forces

Accompanies Curious Crew, Season 2, Episode 6 (#206)

Floating Metal

Investigation #4

Description

What metal objects can you get to float?

Materials

- Basin or bowl of water
- Cut metal window screen

Procedure

- 1) Fill a basin or bowl with water.
- 2) Gently place a piece of metal window screen on the surface of the water.
- 3) Can you make it float?
- 4) Try other things like a needle, paper clip, or a tin can lid. See if you can get them to float!

My Results

Explanation

Water droplets are attracted to each other, a force called **cohesion**. Droplets on the surface of the water in the basin are pulled down and to the sides, because there are no droplets above them. That attraction leaves a skin-like film on the surface. The film on the surface can withstand the pressure of lightweight objects like insects or toothpicks. We call that force **surface tension**. Even though the metal is heavier than the water, the surface tension can hold it up! As soon as the metal object breaks that surface tension, the object will sink. The object sinks because the rest of the cohesive force under the surface is the same, and gravity will pull the screen down.

Something to think about: Have you ever seen a small insect or spider walk on the water? It is surprising to think that the water droplets that spider is standing on are sticking together so tightly that the spider's weight doesn't break through. We call that skin-like layer from the water **surface tension**. That same tension is what holds a water droplet together in the shape of a little sphere. Wouldn't it be neat to be able to walk on water? Too bad that surface tension won't hold us up. Uh-oh!

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