

SCIENCE WORLD

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BACKGROUND SCIENCE:

The attraction of water molecules to each other (cohesion) can be weakened by the addition of soap/detergent. This attraction produces surface tension. The soap reduces the surface tension of the water around it. By placing soap in a small notch at the back of a boat reduces the surface tension of the water at the back of the boat. Because the surface tension is then greater at the front of the boat, the cohesion at the front of the boat will pull it forward. Once the soap has spread out across the surface of the water, the boat will stop moving forwards.

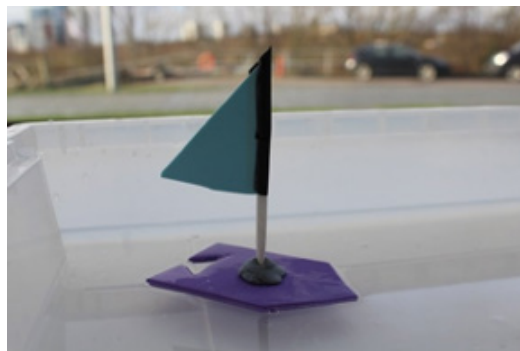
FUN FACT: Small aquatic creatures can use this surface tension to “walk” on water without falling in!

MATERIALS:

- Clean and soap-free container of water (or sink with a plug)
- Recycled cardboard or cardstock (milk carton, cereal box, etc)
- Scissors
- Dish soap
- Toothpicks
- OPTIONAL: Coloured paper, toothpick & clay/playdough for sail mount.

WHAT TO DO:

Cut out a boat from the recycled cardboard using the [template provided](#). Cut a small notch at the back of the boat in the middle of the rear edge. Create and mount a sail on the boat if you wish! Place the boat near the edge of the container or sink full of water. Use the toothpick to drop a small amount of dish soap in the notch at the back of the boat. The boat should move forward!



Video: <https://youtu.be/Tdr2n9sopkQ>

WONDERINGS:

- Does the boat still move forward in different liquids?
- Does the shape of the boat affect its ability to move?
- Does the size of the boat affect its ability to move?
- Is the boat being pulled forward or pushed forward? How?