

# Soap Powered Boat Challenge

## Surface Tension

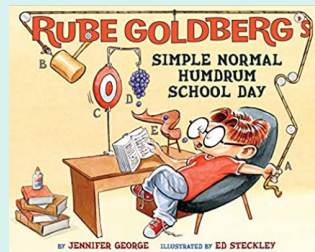
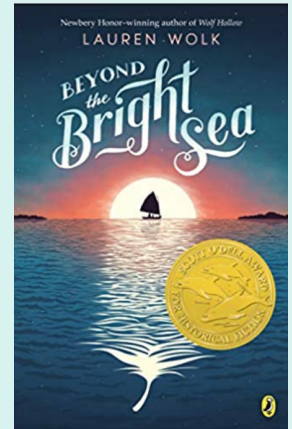
If your boat is lightweight (not too many decorations), it should float and move quickly when you drop the first soap into the notch. The boat moves because the soap alters the water's surface tension. You are learning about physics! Water molecules (the tiny pieces of water) tend to stick together (cohesion). On the surface of the water, water molecules are more attracted to other water molecules than to the air- which results in surface tension.

Water has high surface tension, which means the molecules are pulling each other on the surface very strongly. Soap is a surfactant that breaks down water's surface tension by giving water molecules something else to be attracted to (soap molecules).



When a drop of soap is placed in the notch of the boat, the surface tension of the water in that small area is reduced. The high surface tension in the rest of the surface of the water pulls the water away from the area with low surface tension dragging the boat with it. After repeating the experiment several times, the boat stops moving despite adding more soap. By then the surface tension in the entire pool of water has been broken.

Check out these other great literacy connections!



## Everyday Science: Cool Physics Facts!

Examples of Surface Tension:

- \*Some small insects, such as the water strider, can walk on water because their weight is not enough to break through the surface
- \*Common tent materials are somewhat rainproof- but if you touch the tent material you break the surface tension and the rain will drip through!
- \*Research more cool facts!