



Project Exploration creates transformative learning opportunities for youth underrepresented in the sciences –particularly students of color and girls – by equipping them with the skills, practices, and mindset needed for a lifelong pursuit of learning. STEM@Home makes activities around science, technology, engineering, and math accessible and fun to do at home. This STEMbook activity, resources, and more are available at [www.projectexploration.org/stemathome](http://www.projectexploration.org/stemathome).

## In this activity, you will:

engineer a balloon-powered sponge boat.



## Supplies Required:

- One thick sponge
- One balloon
- One piece of 2cm clear plastic tubing
- Craft knife
- Scissors

## Video

How to make a balloon-powered boat: <https://tinyurl.com/ydhkop4m>

## Overview

This is a fun balloon-powered activity and an experiment that tests the effect of force on an object. You may have seen those cool balloon powered cars around on videos, where a blown-up balloon attached to a car releases it's air, propelling the car forward. We've applied the exact same principal to a simple boat made from a sponge only the balloon's end is under the water and the boat is propelled forward. It's funny to see it in action!

Friction is the force that resists motion between two objects or surfaces. When you put your boat in the water, friction prevents it from moving very much. After blowing up the balloon, attaching it to the straw, and releasing it, the air in the balloon travels through the straw and out the open end. This pushes the boat forward, overcoming the friction of the water that is pushing back against it. The boat moves forward because the force of the released air pushing the boat is greater than the force of the friction that is resisting its movement.



## Instructions



1. Use the scissors to cut a pointed end to the sponge to make the bow of your boat.
2. Now in the stern of the boat, use the craft knife to make a small slit. Feed the plastic tubing through the slit so that it sits halfway.
3. Blow up your balloon and let the air out to make the balloon nice and stretchy.
4. Now slip the end of your balloon over the top of the plastic tubing - the bit sticking through to the top of the boat.
5. Fill up the bathtub and blow the balloon up by placing your mouth over the lower part of the plastic tube - the bit sticking below the boat's 'hull'. Place a finger over the end of the tube to stop the air coming out straight away.
6. Put your boat into the water and remove your finger, the rush of air from the deflating balloon should propel your boat across the bath.
7. You'll have to squeeze the water out of the sponge each time you launch your boat.

## Additional Resources

**Think About It!** What could you change to make the boat move faster or farther? What would happen if you tried two balloons, less weight, etc.? Make modifications and test to see if your new design goes faster or farther.

1. What is structural engineering? <https://tinyurl.com/y5un4rf9>
2. How do boats float? <https://tinyurl.com/jdyb362>
3. Learn more about buoyancy: <https://tinyurl.com/y77zjpls>

## Share It Out

**Share on social media:** Record a video or take a picture of your balloon boat and post the results online using the hashtags:

#BalloonBoatChallenge  
#ProjectExploration  
#StemAtHome

Tag a friend and challenge them to make their own balloon boat!

**Share via PE's website:** Students who complete STEM@home activities and share what they learned with the PE team via our website will earn points which can be traded in for cash prizes at the Explore Store. Your project number is 404. Learn more at [www.projectexploration.org/explore-store](http://www.projectexploration.org/explore-store)

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