

## SHIPS AHOY!

Duration: 30 minutes

Institution: Museum of Science Boston

Skill level/Age Level: 2<sup>nd</sup> Grade - Adult

Group size: 25-30

## INTRODUCTION

Using simple, colorful, and recycled materials, students design and build a model vessel to achieve the optimal use of wind power. Find a hull and sail configuration that moves across our water track in the fastest time, or carries the largest cargo of treasure. This is a fun, hands-on activity that reinforces the engineering design cycle. Students can apply their knowledge and understanding of wind power, buoyancy, displacement, friction, and lift to their sailboat design.

## KEY CONCEPTS AND/OR SUBJECT AREA

- Mechanical engineering
- Buoyancy
- Fluid dynamics

## MATERIALS AND TOOLS

*Essential Materials:*

- Boat hulls (soap dishes)
- Masts (K'NEX)
- Sails (Fun Foam shapes)
- Plastic clips
- Glass gems

## HOW TO OR STEP-BY-STEP

1. What makes a sailboat go? How are our sailboats powdered? How can you build your sailboat so that it stays afloat? Brainstorm different combinations of materials you could use to create your sailboat. Think of many different possible solutions and discuss them with your team. Think of what real sailboat look like and how they sail.
2. Choose a design idea that you would like to build and test.
3. Determine which materials you will use and how you will connect them together.
4. Determine which materials you will use. How many sails will your sailboat have? Will it carry any gems, and if so, where will they be placed? Construct your designs with the materials you have selected.
5. Ask facilitators to help you test your designs!

6. Be sure to test multiple designs and keep track of the results. Try changing just one thing on your design and testing again.
7. Which design worked best? What did you learn from your tests? How could you make an even better sailboat?
8. Plan your new design like before and then test it again. How did your new design work compared to the old?

**KEYWORDS**

- Water activity
- Boats
- Ships
- Buoyancy
- Design Challenge
- Vehicle