

BUOY, OH BUOYANCY

Put your engineer caps on and help us test different materials to design a boat that stays afloat.

Big Idea

Students will explore the concept of buoyancy. What floats and sinks?

Standards

<p>CCSS.MATH.CONTENT.K.MD.A.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.</p>	<p>Students will describe the attributes of the different materials such as heavy vs. light and long vs. short and if they float vs. sink in the water.</p>
<p>NGSS K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.</p>	<p>Students will develop a sketch and/or physical model to help keep the animals or rocks from getting wet.</p>
<p>IELDS 12.D.ECa Describe the effects of forces in nature.</p>	<p>Students will describe the effect of gravity on the boat materials by describing whether the boat floats or sinks and why.</p>

Materials

For Making Boats:

- Tin foil
- Paper cups
- Straws
- Popsicle sticks
- Tape
- Twisty ties
- Rubber bands
- Paper
- Crayons
- Markers
- Scissors

For Testing:

- Objects for testing boats such as rocks or plastic Animals
- Bins with water

Setup

Have a table for boat building and a station for boat testing with the bins of water and weighs (such as rocks or animals).

Directions

1. Encourage students to draw a boat design first. Display multiple images of boats, including labeled boat parts.

2. Introduce the building materials: tin foil, popsicle sticks, straws, twisty ties, tape, rubber bands. The crayons and markers are for decorating their boats.
3. Students can test out any materials at the water station before designing and building their boats.
4. Encourage students to design and test their boats multiple times even if it doesn't float the first time. When an object is placed in water there are two forces working upon it in opposite directions. Gravitational force pulls the object down while buoyant force pushes it upwards.

Investigation Questions: What materials float or sink? (A basketball filled with air will float because it is less dense & displaces more water. A small pebble sinks because it is denser and displaces less water.) Does your boat float or sink? What can you do differently or change in your boat? What is the same about the boats that float? What is the same about the boats that sink? How does size affect the boat? Have you been a boat before? What was it made out of?