



# Sink or Swim

THE BASICS	THE TOOLBOX	EDUCATION STANDARDS	Science as Inquiry Content Standard: Investigating the properties of common objects, and experimenting to answer questions and classify items.
 Grade Level: K-12   Estimated Time: 30 min.	<ul style="list-style-type: none"> <li>• A copy of page 87.</li> <li>• Tub, bucket or bowl, half full of water</li> <li>• Paper towels</li> <li>• At least 6 different objects to test. (See list below.)</li> </ul>	SAFETY CONCERNS	Be careful of water spills and slippery floors. Clean up spills as soon as they happen. Make sure younger students do not put objects into their mouths.
		FOR KIDS WITH DISABILITIES	Visually-impaired students can use their hands to feel whether the objects float or sink. Mobility-impaired students may work with larger objects.



### Educational Objective:

To encourage skills in sorting and classifying items according to common characteristics. To introduce the characteristics that determine whether an object will float or sink, and to begin to explore the concept of density.

### What to Do:

- Give each group a sink/swim card and their items to test.
- Have students make predictions about each of their items.
- Pass out the bowls of water and have students test their predictions.
- When making the sink/swim card, you may laminate the card or place it in a large Ziploc bag to help it withstand moisture.
- When gathering objects to test, include just about anything – objects made of a variety of different materials, such as wood, metal, plastic, or paper. Some ideas are nails, bolts, screws, sponges, toothpicks, marbles, wire, aluminum foil, plastic forks, rubber balls, paper clips, pencils, erasers, styrofoam, pennies, or soda bottle caps.
- You may want to package the objects into Ziploc bags for each team of participants, or you may also want to ask each student to bring in one object to test.

**Questions to Ask Students As They Do This Activity:**

- Will each object sink or swim (float)? What makes it sink or swim?
- Would a bigger object made of the same material do the same thing? Would a smaller object made of the same material do the same thing? Try it.
- Can you think of anything made of the same material that doesn't do the same thing?
- How can boats float when they are made of metal?
- How close were your guesses? Why did you guess the way you did? Was your guess based on previous experience?
- Do things sink just because they are heavy? What about an apple? A log?

**Why It Happens:**

Whether an object will float or sink in a fluid depends mainly on its density. Density describes how heavy something is compared to its size. A golf ball and a ping-pong ball are approximately the same size, but the golf ball is heavier than the ping-pong ball. Therefore the golf ball is said to be denser. Also, a bowling ball and a soccer ball can be about the same size, but a bowling ball has a higher density, which makes it heavier than the soccer ball. Liquids also have densities. If you have two measuring cups full of different liquids, the denser liquid will be heavier. In general, an object will float in a liquid if the object is less dense than the liquid, and the object will sink if it is denser than the liquid.

**WEB SITES**

- **Sink or Float?**  
<http://www.sciencenetlinks.com/lessons.cfm?DocID=164> (Grades K-2)
- **Physical Properties of Water & Ice**  
[http://cwis.nyu.edu/pages/mathmol/modules/water/info\\_water.html](http://cwis.nyu.edu/pages/mathmol/modules/water/info_water.html) (Grades 4-12)

**SOFTWARE**

- **Bumptz Science Carnival**  
Theatrix/Sanctuary Woods, 1995.  
(Grades 1-5)
- **Sammy's Science House**  
Edmark Corporation, 1993  
(Grades PreK-2)

**READING ROOM**

- Challoner, Jack. **Floating and Sinking**. Raintree Steck-Vaughn, 1996. (Grades 1-4)
- Davies, Kay and Wendy Oldfield. **Floating and Sinking**. Steck-Vaughn, 1992. (Grades K-2)
- Trumbauer, Lisa. **Sink or Float?** Newbridge, 1997. (Grades K-4)

**Career Connections**

A process engineer must understand the various properties of objects in order to control the variables for developing new materials and alloys.

**SINK**

**SWIM**

# SINK OR SWIM ACTIVITY SHEET

## **Make Predictions:**

1. In front of you is a collection of objects. Pick up each object and look at it closely. Note similar and different characteristics.
2. Guess whether each item will sink or float in water and place each object next to the corresponding label, then write your predictions on the chart.
3. Why do you think each item will sink or float? Is it like other things that you know will sink or float?
4. Continue for each item until you have placed all the objects into one of the two groups.

## **Test your Predictions:**

5. Fill a bucket or other container half full with water.
6. One by one, test each of the objects in the water to see if it will sink or float. As you test the items, make two new piles of items based on whether they actually sink or float.
7. How many of your predictions were correct? Look at the objects that did sink. Can you find characteristics that they have in common?
8. Now look at the items that did not sink. Do they have anything in common?
9. Does it matter how you place the objects in the water? In other words, will some objects sink when you put them in one way, but float when you put them in another way?

## **Other Things to Try:**

- Does the amount of water in your container make a difference? Try using a very shallow amount of water in the bucket, or very deep water in the bucket.
- Does it make a difference if your water is soapy?
- Does it make a difference if you use other liquids like carbonated beverages or oil? If something floats in water, will it also float in cola or oil?

