

## The Sink That Boat! Experiment

### What you need:

- Aluminum foil sheets, about 18" x 18"
- Tub of water or a sink filled with water
- Pennies (or small rocks, or Lego minifig, or grapes, or pony beads ... whatever!)



### What to do:

1. Make a boat with your foil. Crimp and squeeze and roll the foil in whatever way you think would make a good boat.
2. Make a 2nd boat with foil. Think of a different design. If your first was flat and wide, try one that's small and round. The foil is very easy to mold!
3. Make a 3rd boat with foil. Again, try to come up with a design that is different than the first two.
4. Put your boat in the water. If it floats, you are ready for the next step. If it doesn't, tweak your design until it floats.
5. Once all your boats are seaworthy, make a hypothesis. Take a guess which boat can take the most weight, and come up with a reason why.
6. Now, test your hypothesis! Put your pennies (or whatever) on one of your boats, one at a time. Once the boat starts to sink, remember the number of pennies it could hold.
7. Now try your second boat. Which one won?
8. Now try your third boat. Did your hypothesis test out?

### What's happening?

When an object is placed into water, it pushes some of the water aside. This is called displacement. The amount of water that is displaced equals the weight of the object. There are two forces at work here: gravity and buoyancy. Gravity is the force pulling the object down, while buoyancy is the force trying to keep it on top of the water. The amount of buoyancy is equal to the amount of water that is displaced. The object sinks if the buoyancy is less than the force of gravity, while the object floats if the buoyancy is greater than the force of gravity.