

# SCIENCE DISSECTED

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## “Flinking” - An Inquiry Approach to Density

It's Not Floating, It's Not Sinking. . . It's Flinking

Flinking is an incredibly fun way to introduce the idea of density. The students are given the challenge of “flinking” an object. They must get an object to “flink” in the middle of a graduated cylinder using the following materials: tap water, salt, a graduated cylinder, a stirring rod, a beaker, an electronic balance, and a piece of gum. Working in groups of two, students develop their conceptual understanding of density by calculating the density of the gum and saltwater, and by manipulating the saltwater's density as they strive for “flinkage”. The only information with which they are provided prior to starting the activity is:

- the density of water is equal to  $1 \text{ g/cm}^3$
- an object with a density greater than  $1 \text{ g/cm}^3$  will sink
- an object with a density less than  $1 \text{ g/cm}^3$  will float
- the equation for calculating density

They are required to create a data table, calculate the density of the saltwater and gum, describe how they got their gum to flink, and define flink in terms of density. This is a novel activity for teaching density and serves as a wonderful segue into the concepts of salinity, density currents, and haloclines in Marine Science.

The inquiry lab allowed students to employ an amazing variety of approaches to solve a problem. Some students calculated the density of their gum then methodically massed the salt to make their saltwater solution. They determined the density for each trial with the intent of reaching equal density for the gum and the saltwater. Other students poured massive amounts of salt into their water, dropped the gum in, then added salt or water to adjust the density. Both techniques were correct, as long as they could determine the density of the saltwater and the gum at “flinkage”.

Of the many successes in this activity, my favorite was listening to the students discussion of density. They were relating mass to volume and the need to increase or decrease one or the other to reach “flinkage”. Throughout the day I heard students yell, “Mrs. Kern! We are FLINKING!” As with any inquiry activity, it is important to allow the student time to fail and/or succeed. The skilled teacher uses student setbacks to guide their next actions, without giving them answers. Finally, communicating the findings to the class and providing closure is critical to student success with the concept. (written by Cindy Kern)

### Related Link - Math and Science Activity Center:

[http://www.nyu.edu/pages/mathmol/modules/water/density\\_intro.html](http://www.nyu.edu/pages/mathmol/modules/water/density_intro.html)

### “FLINKING” OUTCOMES

- Engage in Inquiry as a process and a skill
- Determine the density of two substances
- Using density, identify the relationship between the two substances.
- Analyze the affect on density through manipulation of mass and volume.

### Lab Safety Tip:

#### Eliminate Mystery Substances at Their Source!

Become a label fanatic!  
Eliminate future unknown substance by labeling all chemical solutions and preparations when they are made.  
(Flinn Scientific)