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**Mission:** Raven Hill provides a place that enhances hands-on and lifelong learning for all ages by connecting science, history & the arts.

## Density

When you go swimming and float in the water, you are buoyant. Buoyancy is an upward force on an object in a fluid, such as water. In terms of density, Archimedes' principle says that an object will float in a liquid, if the density of that object is less than the density of the fluid itself. You float, because you are less dense than the water you are in. You float easier or higher in salt water, because salt water is even more dense than fresh water. Scientists use density to compare objects and they compare everything to the density of water, which they gave a density of one. That means anything that has a density of greater than one is heavier than water and will sink. Likewise, everything that has a density of less than one is lighter than water and will float in water. You will need an egg—raw or hard-boiled (mine is raw & old, so it has extra air pocket in), a clear glass, another smaller glass, food coloring, table salt, a spoon and water. Fill the glass about 1/3 full of water. Add a drop of food coloring and stir it in. Add a couple tablespoons of salt and stir it into the water. Lower egg into salt water. If the egg sinks to the bottom, add more salt and stir carefully until the egg floats or is less dense than the salt water. Fill the smaller glass half full of water and stir in a drop of food coloring—use a different color from before. Very carefully, use the spoon to add the colored fresh water to the large glass with the salt water & egg. The fresh water is less dense and will float on top of the salt water, forming two colored layers with the egg “floating” at the interface between the salt & fresh water. DO NOT STIR AFTER ADDING THE TOP LAYER OF FRESH WATER. If you want, set the glass aside and observe for a while. As the salt and fresh water diffuse or move to form a homogeneous (all the same) solution, the egg will sink (greater density) and the water will become a single color (single density). Enjoy and remember, always clean up, after you are done experimenting.



1 Density supplies



2 Make salt water & float egg



3 Carefully spoon fresh water on top