



## Two Candles

### RECAST ACTIVITY

*(Note: Do this activity as a demonstration but do NOT foreshadow what will happen.)*

Explain that you have two beakers filled with liquid, and two pieces of candle - one large and one small (the pieces are from the same candle).

Drop the smaller candle in Beaker A [*it floats*] and the larger candle in Beaker B [*it sinks*]. Ask the students to write down their ideas about what happened and why.

Then remove the candles from the beakers and switch the candles. Drop the smaller candle in Beaker B [*it sinks*] and the larger candle in Beaker A [*it floats*]. Ask the students to notice what happened and explain why.

Have the students share their reactions. Were they surprised about what happened? How did the demonstration change what they were paying attention to? [*The activity forces their attention to the liquid, which beforehand had been non-obvious to them. One of the liquids is water and the other is Isopropyl Alcohol.*] Whether an object sinks or floats in a certain liquid depends upon the density of the object and the density of the liquid. If the density of the object is greater than the density of the liquid, the object will sink. If the density of the liquid is greater than the density of the object, the object will float. Ask students what they think will happen if the density of the object and the density of the liquid are the same? [*The object will suspend.*] Gather their ideas



### PREPARATION

#### Materials

- Two 600 ml beakers marked A and B
- Equal amount of water (A) and rubbing alcohol (B), approx. 16 fluid oz of each
- 2 pieces of candle wax from the same candle, same color and circumference, 1 one-inch long piece, 1 two-inch long piece
- Paper towel

#### Prep Steps

1. Gather materials and test the candle and alcohol experiment ahead of time. It works with most candles (but not all candles are the same density.)
2. Before class, fill Beaker A with about 500 ml of water, and Beaker B with about 500 ml of alcohol.

## RECAST ACTIVITY ANALYSIS

### What makes this work as a RECAST activity?

Students typically give simple linear explanations for why things sink or float. They focus on the more obvious variable—the object and reason about features that they can perceive—it’s size or weight. This is exacerbated by school curriculum that labels objects “sinkers” or “floaters.” This activity pushes students’ attention to the variable that they take for granted, the liquid, and forces them to see it as a part of the causal equation. They come to see sinking and floating as dependent upon the relationship between the object and the liquid (or in some cases, two liquids), and begin to develop a sense of relational density—a critical understanding for many other understandings, from layers in the atmosphere to weather systems.