Astrophysics & Space Science Theory Group
Early Universe Cosmology & Superstrings Group
Gravity, Cosmology & Astroparticle Physics Group
Hypervelocity Impacts & Dusty Plasmas Lab
Space Science Lab
Meyer Observatory

Diving Raisins

This activity can be used to introduce density.

Texas Essential Knowledge and Skills:

5th Grade: The student is expected to classify matter based on physical properties, including mass, physical state (solid, liquid, and gas), relative density (sinking and floating), and solubility in water.

6th Grade: The student is expected to calculate density to identify an unknown substance.

Materials:

- Clear carbonated drink such as Sprite or 7-Up
- Raisins

Procedure:

1. Hypothesize what will happen if raisins are added to the carbonated liquid.
2. Add raisins.
3. Observe what happens.
4. Discuss why this occurs.

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5. Discuss the following questions:

    a. What would happen if the liquid is heated?
    b. What other objects would dive?
    c. Would the raisins behave differently in a diet soda?

Background Information:

The formula for density is $d = \frac{m}{v}$

d = density
m = mass
v = volume

In this mini-experiment the raisins sunk to the bottom of the container and bubbles formed on the outside of the raisins. The raisins rose upward through the liquid. When they reached the surface, the bubbles popped and the raisins spun over and sunk to the bottom of the container again. Then more bubbles clung to the sides and the raisins repeated their ascent. The raisins sunk because their density is greater than the density of the liquid. The gas bubbles in the liquid act like tiny balloons clinging to the sides of the raisins. The gas bubbles plus the raisins are less dense than the liquid, so the raisins rose to the top of the glass. When the raisins lost the bubbles at the surface, their density became greater than the density of the liquid and once again and they fell.