Density Makes Drawings Come to Life

Objective: Students will be able to explain how the density of an object impacts whether it will sink or float in a given liquid. If the liquid is more dense than the object, the object will float, and if the liquid is less dense than the object, the object will sink.

Standards: 5-PS1-3; MS-PS1-1

Materials:

- Expo Marker
- Glass
- Oil (any cheap cooking oil such as canola or vegetable)
- Water
- Tray or dish with sides (like a casserole dish)
- Aluminum foil

Procedure

1. Show students a glass half filled with water, and ask them to predict what will happen, and why, if you pour oil into the glass. Share.
2. Ask a student volunteer to pour the oil into the glass. Ask student and/or the class why the oil sits on top of the water.
3. Explain density and give examples. Have students record notes.

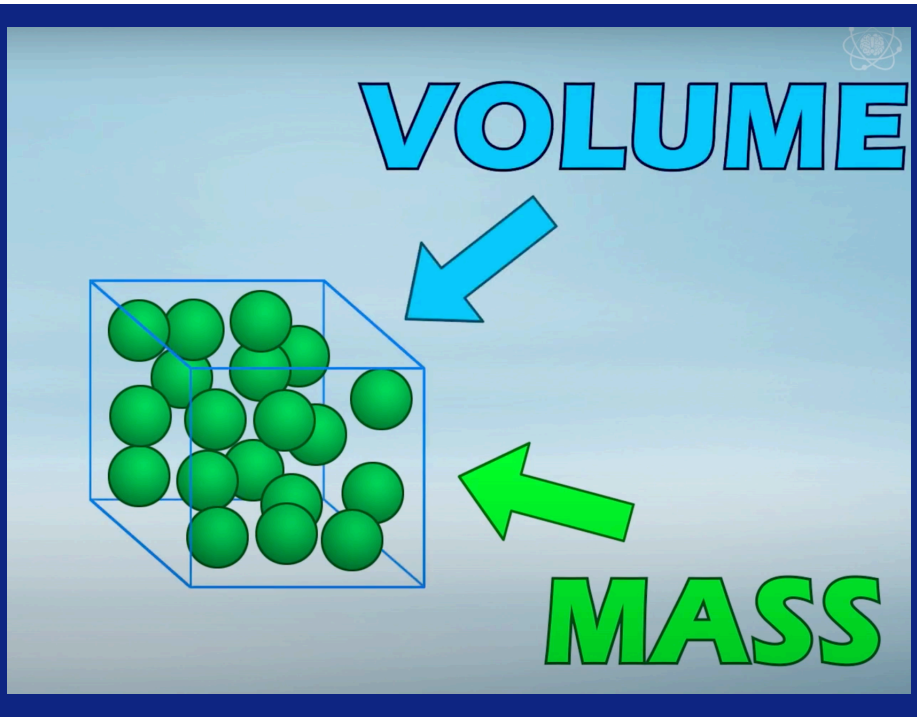
4. Show students video to 2:46 then pause.
5. Demonstrate live if possible, and ask students to predict what will happen

Vocabulary

Density: the relationship between an object's volume and its mass. In other words, it's how heavy something is given its size.

Mass: the amount of matter, or substance (stuff), that makes up an object.

Volume: refers to the amount of space an object takes up.



when you add water to the dish with the dried drawing.

6. Play video/add water.
7. Invite students to create their own drawings. Challenge option to create a story and transfer it from the water to another surface.

Assessment:

Students should write an explanation of how density relates to the experiment, and how density affects whether something will float or sink. Students can optionally take the experiment a step further and create another demonstration of moving art using another oil based substance or object.

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Extension:

1. Have students fill a cup/container with water.
2. Give students three small pieces of aluminum foil.
3. Tell students to crumple one piece into a ball.
4. Ask students to predict whether foil or water is denser, and whether the foil will float or sink. Ask them if both the ball and the flat square will float or sink, or just one, and have them explain their hypothesis in writing.
5. Tell students to test both foils and record their observations.
6. Ask: Why did the flat piece sink? Why did the ball float?
7. Have students try reaching into the water to crumple the flat piece and observe what happens.
8. Have students record their observations and results.
9. Explain/have a student explain that foil is denser than water, and the ball formed outside the water had air trapped in it, making it more buoyant.

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