

## HUGK12 Activity

Title: *Magic? Not!*

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DCPS Standards:

8.4.2., 8.4.4.

Investigate density and buoyancy through lab activity

Goals:

1. Define Density.
2. Define buoyancy.
3. Explain the characteristics of the liquid used in the experiment as it relates to density and buoyancy.

Objectives:

1. The students should practice lab safety rules when setting up the equipment and handling the liquids. In addition, the students will be able to make scientifically sounds observations using appropriate vocabulary. The students will also be able to infer deeper concepts from the observations and from teacher prompting

Prerequisite Knowledge

Background: Density is mass per unit volume ( $\text{kg/m}^3$ ). In other words it is the ration of the matter in an object compared to the objects volume.

The concept of density was thought to have been discovered by Archimedes after the King was thought to have received a fake gold crown. Archimedes noticed that the density of an object could be observed by the displacement of the water.

Buoyancy is the upward force on an object produced by the surrounding fluid in which it is fully immersed or partially immersed. The pressure difference between the top and the bottom of the object can cause a net upward force. The upward force is equal to the magnitude of the weight of the fluid displaced by the body. This force enables the object to float and seem lighter than it really is. Buoyancy acts against gravity.

Essential Questions:

1. What are the units of density?

2. In what step are we observing buoyancy?

Laboratory Materials:

- Alcohol
- Water
- Food coloring
- Plastic wrap
- Ice cubes
- Beaker
- Salt
- vinegar

Differentiating Instruction:

English Language Limited (ESL) students should have no problems with this activity.

Rationale:

This activity is designed to have students become familiar with experiment setup, density and buoyancy.

Research Activity:

- Students will be asked to first watch a set up demonstration. The teacher will then allow the students to work in groups and follow the instructions of the lab. The teachers will then give direction while providing support to students.

EVALUATION AND ASSESMENT:

Scholars will be asked to answer questions through out the lab and at the end there will a question to gauge their total understanding.