

Subject: Science

Grade: Kindergarten

Standard: #3 The Physical Setting

Key Concept: Objects can be described in terms of their physical properties.

Generalization: Whether an object sinks or floats in a substance is a property of that object.

Background:

Mr. Archimedes' Bath, ISBN 0-207-17285-4: This book is needed for the assessment portion. While it is not absolutely necessary, do try to find it and use it.

The teacher should pre-test in some way to determine whether or not the student has a clear understanding of “sinking” and “floating” and can identify items that would most likely sink and float in water.

Students who still need help with the concept of sinking and floating should be placed in Tier I. Students who show understanding of this concept should complete the activity in Tier II.

This lesson is tiered in *content* according to *readiness*

Tier I:

A variety of common objects (bottle cap, cork, paper, foil, toothpick, marble, leaf, sponge, rubber band, rock, etc.) are needed. Some should sink and some should float in water. Each group needs a clear plastic shoebox, cup, or other clear container in which to put the water to test each object. You should make a data sheet for each group. For this age group, posterboard-size works well. List pictures of the objects down the sides and have four columns across. Two of the columns are grouped as “Predicted,” under which you have written Yes and No (or smiley face/frowny face for non-readers), and two are grouped as “Actual.” Below is a sample. Students would make a check or place a sticker in the correct space.

| | Predicted | Answer | Actual | Answer |
|-----------|------------------|---------------|---------------|---------------|
| | Yes | No | Yes | No |
| Toothpick | | | | |
| Cork | | | | |
| Marble | | | | |

Fill, or have students fill, their container about 2/3 full of water. Give students the pre-made grid and explain to them how to conduct the experiment. You may need to do an example for them first. Have students complete the experiment. You may wish to have them share their results with other groups of the same tier.

Tier II:

These students will be doing a similar investigation, but will use two different liquids. One should be water; the other may be heavily salted water or rubbing alcohol. Caution students NOT to taste either liquid. You do not want them to know you have two different liquids at this point. If necessary, pre-make the grid. You will need two, this time; one for Liquid 1 and the other for Liquid 2. It would be best to have two identical sets of objects since some will not dry out by the time you need to put them in the second liquid. Have students use the same procedure as Tier I, completing all testing with the first liquid. Then give them the second liquid and ask them to repeat the procedure. If the results differ, ask them to give some ideas about what might cause the difference. Have them share results with other groups working at Tier II.

Assessment:

The teacher should assess through observation while rotating among the groups. Accurately completed grids may also be assessed.

The teacher should lead the students in a whole group discussion about sinking and floating. The group with the discrepant event (Tier II) needs to share what they found and try to figure out what happened. Students should understand that whether an object sinks or floats depends on the liquid in which it is placed. End the lesson by reading the story Mr. Archimedes'

Bath. Ask students if they can help solve the problem before you come to the end of the story. Draw on their experiences by tying this in with swimming, floating in the pool and in the ocean, and what happens to the water when they get in the bath tub at night. Have them investigate when taking their next bath and report back to the class. Introduce the concept of “buoyancy.”