

# Physical Science for 3<sup>rd</sup> Grade Students

## Properties of Matter: “Sink or Swim”

**Question/Problem:** Can the same object both sink and swim?

**Standards:** 3.2.4 C –Recognize and use the elements of scientific inquiry to solve problems

- . Generate questions about objects, organisms and/or events that can be answered through scientific investigations.
- . State a conclusion that is consistent with the information.

3.4.4 A - Recognize basic concepts about the structure and properties of matter.

- . Describe properties of matter.
- . Know different material characteristics.

**Content Objective:** Third grade students will be able to determine that different materials will have different properties which can be observed such as texture and buoyancy.

**Process Objective:** Third grade students will be able to compare and contrast through observation the ability of some objects to float because of the action of carbonation on its texture.

**Background Knowledge/Science Content:** Solids have observable properties that can be described and compared. Some properties of solids are shape, color and texture. Components of differing liquids can cause identical matter to behave differently. When beans and raisins were put in water, they both sank because of density. When they were both put in a carbonated soda, the beans still sank but the raisin was enabled to float because its furrowed texture trapped carbonated bubbles that caused them to rise. When the carbonation dissipated and the raisins became engorged with liquid, they sank from density and lack of support. Students will have read Chapter 3 in the science text which discusses physical and chemical changes, changing states of water and changes of behavior in water because of their particular properties. The students will be familiar with appropriate vocabulary.

**Materials:** clear plastic cups, plain water, carbonated clear soda, dried beans, raisins, hand lens, clock or watch.

**Set Induction:** Before lab, place an assortment of objects such as coins, styrofoam packing peanuts, pebbles and cork in a clear container of plain water for students to observe. Before lab work, students will fill out the “What I Know” and “What I Want to Know” about soaking and floating on the KWL worksheet, with teacher direction and class discussion.

**Procedures:** Review safety procedures: Keep all items out of your mouth. Use hand lens carefully. Wipe up spills.

**Lab:**

1. Observe beans and raisins with a hand lens comparing similarities and differences. Students will draw and label in their journals beans and raisins before immersion in liquids. Students will fill in a Venn Diagram worksheet according to shared and non-shared properties before immersion in liquids.
2. Place 4 beans and 4 raisins in a clear cup with plain water and label.
3. Place 4 beans and 4 raisins in a clear cup with carbonated clear soda and label.
4. During the 10 minutes, observe what happens to the raisins and beans in the plain water and clear carbonated soda and discuss. Students will draw and label in their journals beans and raisins after 10 minutes of immersion in liquids. Students will fill in a Venn Diagram worksheet according to shared and non-shared properties after immersion in liquids after 10 minutes.
5. Students will fill in the “What I Learned” section of the KWL together and discuss.
6. Students complete lab activity with written assessment.

**Worksheets:**

1. KWL
2. Venn Diagram
3. Teacher assessment

**Assessment/Post Lab:**

1. Student journals with pictures and labels.
2. Venn Diagram of shared and non-shared properties
3. Teacher checklist
4. Written assessment

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| <b>Rubric: Journal (1 point for each before and after picture)</b>      | <b>4 points</b>  |
| <b>Venn Diagram (2 points each for the before and after properties)</b> | <b>4 points</b>  |
| <b>Teacher checklist (1 point for each item checked)</b>                | <b>6 points</b>  |
| <b>Written assessment</b>   | <b>6 points</b>  |
| <b>Total</b>  | <b>20 points</b> |

**Resources:**

**1. National Science Resources Center**

National Science Resources Center, STC Meets the Standards, Washington. 1998. Pg. 27-30.

2. Addison-Wesley Science, Second Edition, grade 3
3. Internet, Ask Jeeves, carbonation