Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_ Period:\_\_\_\_\_\_  
8th Grade Science: Buoyancy Lab

Part 1- Buoyancy and Object Density

Problem: When I change an objects density, how does it change how an object floats?

Hypothesis: If\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Then \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
Because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Materials:

Graduated Cylinder

Water

Density block set

Triple Beam Balance

Ruler

Procedure:

1. Measure the mass and volume of each block. Record them in the table below.
2. Calculate the density of each of the blocks. (Remember- density = mass/volume. Make sure you have the correct units.)
3. Record any qualitative observations about the blocks in the data table.
4. Place one block in the graduated cylinder.
5. Does it float or sink? Record in the data table.
6. Repeat steps 4-7 with each block and record in the table.

Data Table 1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Block ID** | **Qualitative Observations** | **Mass** | **Volume** | **Density** | **Float or Sink?** |
| **A** |  |  |  |  |  |
| **B** |  |  |  |  |  |
| **C** |  |  |  |  |  |
| **D** |  |  |  |  |  |

Analysis Questions:

1. What is the independent variable? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What is the dependent variable? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What are some things we must control to make the experiment valid? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Conclusion

1. What CLAIM can you make about our question, “When I change an objects density, how does it change how an object floats?”
   1. If an object is heavy it will sink. If an object is light, it will float.
   2. An object with a density greater than water will sink and an object with a density less than water will float.
   3. The more dense objects will win.
2. What EVIDENCE, in your data, supports your claim?
   1. Block C has a density of 1.49g/cm3 and sank. Block D with a density of 0.97g/cm3.
   2. The gray block was heavier than the clear block- so it sank.
   3. The silver block sank.
   4. The black block sank because it’s bigger.
3. What REASON explains your claim and evidence?
   1. The block looks like metal and this is why it sinks.
   2. The gray, silver and black cubes sink because their density is greater than the density of water. This makes them more buoyant than the water.
   3. If the mass is greater than the volume, the cube will sink.
   4. A black will float if it’s clear.