Density

**Introduction: Density is a physical property of matter that is calculated by dividing the mass of an object by its volume. Volume can be computed for a regular object by multiplying length x width x height. Another way to compute volume is by submerging an object into a liquid. You must record the starting volume of the liquid and the final volume after the object has been submerged. Then subtract the starting volume from the final volume.**

**Procedure:**

* Open the internet browser and enter the address: <http://phet.colorado.edu>
* Click on “Play with Sims” and select “Chemistry” from the menu on the left.
* Open the “Density” Simulation and select “Run Now”

**Objectives**:

* Describe how the concept of density relates to an object's mass and volume.
* Explain how objects of similar mass can have differing volume, and how objects of similar volume can have differing mass.
* Measure the volume of an object by observing the amount of fluid it displaces.
* Identify an unknown material by calculating its density and comparing to a table of known densities.

**Investigate**:

1. On the Blocks menu (top right) select Same Mass.
2. One at a time, take a block, lower it into the liquid, and record its volume. If it floats, you will need to hold it under the water to record its volume. Then compute each block’s density.

Blue: mass 5 kg

volume

Yellow mass

volume

Green mass

volume

Red mass

volume

1. Repeat for Same Volume.

Blue: mass

volume

Yellow mass

volume

Green mass

volume

Red mass

1. Repeat for Same Density

Blue: mass

volume

Yellow mass

volume

Green mass

volume

Red mass

1. Repeat for Mystery. This time you will also have to take the mass of each object. After computing the density, select Show Table and identify each object.

IDENTIFICATION

A: mass

volume

B mass

volume

C mass

volume

D mass

E mass