**Virtual Density Lab**

**Essential Vocabulary:**

**Volume** =

**Remember**: Final Volume – Initial Volume = Volume of Object **units**

**Density** =

**Formula to calculate density**: density = **units**

1. **Click on the first website.** On the left side of your screen click on the drop down menu for material and select a material for your block, record its mass, volume, and calculate its density. To complete this table change the size of your block **two times**, and record its new mass, volume, and calculate its new density each time you change its size.

# Note: Make sure that the block is completely submerged under the water. Round the answers for density to the nearest tenths place.

1. Record your observations on the data table below:

# Table A-Show your calculations for volume & density.

|  |  |  |
| --- | --- | --- |
| **Name of the material:** | | |
| **Mass (Kg)** | **Volume (L)** | **Density (kg/ L)** |
|  |  |  |
|  |  |  |
|  |  |  |

Did the density change?

Explain why the density did/did not change:

1. **On the right side of your screen click on mystery blocks**. Find the density of these objects to help you identify each one of the materials. Once you have found their density, click on “show table” to identify what EACH object is made of.

# Table B

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Object** | **Mass (kg)** | **Volume (L)** | **Density (kg/L)** | **What is it?** |
| **A** |  |  |  |  |
| **B** |  |  |  |  |
| **C** |  |  |  |  |
| **D** |  |  |  |  |
| **E** |  |  |  |  |

1. How does finding density of an object help you identify the material that each block is made of?
2. Now click on the ***second website***, to find out why some objects sink and others float.

# Table C

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Material** | **Mass (g)** | **Volume (mL)** | **Density (g/mL)** | **Does it Sink or Float?** |
| **Wood** |  |  |  |  |
| **Aluminum** |  |  |  |  |
| **Plastic** |  |  |  |  |
| **Lead** |  |  |  |  |
| **Candle** |  |  |  |  |
| **Rubber** |  |  |  |  |

1. Which materials sunk?
2. Which materials floated?
3. The density of water is 1 g/cm3 (1 gram per cubic centimeter); using this fact as a reference & Table C, how would you determine if an object sinks or floats?

First website:

<http://phet.colorado.edu/sims/density-and-buoyancy/density_en.html>

Second website: <http://glencoe.mheducation.com/sites/dl/free/0078741858/365081/CT01.html>

Extra practice: <http://www.karlyoder.com/flash_density.html>