PhET Simulator Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Density Activity Date: \_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_

Type in the web address: [**http://phet.colorado.edu/en/simulation/density**](http://phet.colorado.edu/en/simulation/density)and click the “**Play**” button.

**Warm Up**! Use the options at the top right to complete the **Same Mass**, **Same Volume** and **Same Density** Data Tables below. For each section, record and calculate the mass, volume and densities of the four blocks. *Hint- Make sure you find the volume of the ENTIRE object!*

**Part A: Same Mass Part B: Same Volume**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Material** | **Mass (kg)** | **Volume (L)** | **Calculate the**  **Density (kg/L)** | **Does it Float?** |
| Blue |  |  |  |  |
| Yellow |  |  |  |  |
| Green |  |  |  |  |
| Red |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Material** | **Mass (kg)** | **Volume (L)** | **Calculate the**  **Density (kg/L)** | **Does it Float?** |
| Blue |  |  |  |  |
| Yellow |  |  |  |  |
| Green |  |  |  |  |
| Red |  |  |  |  |

**Part C: Same Density**

Water has a density of:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_

D =

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Material** | **Mass (kg)** | **Volume (L)** | **Density (kg/L)** | **Does it Float?** |
| Blue |  |  |  |  |
| Yellow |  |  |  |  |
| Green |  |  |  |  |
| Red |  |  |  |  |

**C:\Documents and Settings\53315\Local Settings\Temporary Internet Files\Content.IE5\EHWBE1YD\MCj04344110000[1].wmf**

**Part D: Custom Section**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Material** | **Mass (kg)** | **Volume (L)** | **Density (kg/L)** | **Does it Float?** |
| Styrofoam |  |  |  |  |
| Wood |  |  |  |  |
| Ice |  |  |  |  |
| Brick |  |  |  |  |
| Aluminum |  |  |  |  |

**Use the dropdown box of materials on the top left corner of your screen to select your material.** Adjust the mass and volume for each type of material and record in the table below to whatever you wish! *Notice that the density DOES NOT CHANGE regardless of the mass and volume settings!*

Why doesn’t the density of the object change when you adjust the mass and volume of the objects in this section? Explain your answer.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Choose the “My Block” option in the material drop down box. Type in the mass to **4 kg**. What is the **minimum** volume needed to make the object float?

a) Volume: \_\_\_\_\_\_\_\_\_

b) Density at this mass/volume: \_\_\_\_\_\_\_\_\_\_

c) Notice the sliding scale- Which other material’s

density is it closest to? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Part E: Mystery Section: Can you Figure Out What Each Block is Made of?! ☺**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Material** | **Mass (kg)** | **Volume (L)** | **Density (kg/L)** | **Does it Float?** | **What is it made of? (Click on “show table” once you have calculated the density to find out!)** |
| A |  |  |  |  |  |
| B |  |  |  |  |  |
| C |  |  |  |  |  |
| D |  |  |  |  |  |
| E |  |  |  |  |  |