## Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Partner’s Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## SNC1D7 - LAB: Identifying Substances Using Density

**Problem:**

The labels have fallen off bottles of different liquids. You will be given samples of three liquids. It is your challenge to identify each of your liquids. You will be given a table of densities of common liquids. You must design an experiment to determine their identities.

**Table 1: Densities of Common Substances**

|  |  |
| --- | --- |
| **Substance** | **Density (g/ mL or g/mL3)** |
| Ice | 0.92 |
| Glycerol | 1.26 |
| Distilled Water | 1.0 |
| Vegetable Oil | 0.92 |
| Isopropanol | 0.79 |

**Materials:**

* Samples of each liquid
* 3 beakers
* Graduated cylinder
* Balance

**Experimental Design :**

Your task is to design an experiment to determine the identity of each of your unknowns. Steps 1-3 must be completed and signed off by your teacher before you may begin your lab.

1. Write out the design as a series of numbered steps. [5]
2. Include with your design a fully labeled data table to record your results. [3]

**Title :**

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1. Identify any safety precautions that need to be considered. [2]
2. Record Observations in your data table. [3]
3. Calculation of densities of your unknown liquids. Show ALL WORK! [6]

|  |  |  |
| --- | --- | --- |
| **Density of Unknown A :** | **Density of Unknown B :** | **Density of Unknown C :** |

**Answer the following Questions :**

1. Identify each of your unknown liquids : [3]
2. Would ice sink or float in each of your liquids. [3]
3. Identify any sources of error in your experimental design or ways in which your experiement could be improved. [2]
4. 1. A man has a 50.0 cm3 bottle completely filled with 163.0g of a slimy green liquid. What is the density of the liquid?
5. What is the mass of an object that has a density of 8.0g/cm3 and a volume of 64.0cm3?
6. Diamonds have a density of 3.5 g/cm3. How big is a diamond that has a mass of 0.10g?
7. Two liquids, A and B, have densities of 0.75g/mL and 1.14g/mL respectively. When both liquids are poured into a container, one liquid floats on top of the other. Which liquid is on top?