Volume and data table

An old riddle asks “ Which is heavier, a pound of feathers or a pound of lead? ” The answer is obvious, of course, since a pound of feathers and a pound of lead both weigh the same, one pound. However, there is clearly something different about a small piece of lead and a large bag of feathers, even though they weigh the same. What is this difference? The relationship between the lead and feathers is expressed by the physical property called density. Density is defined as the ratio of a substance’s mass to the volume it occupies.

Density (g/ml)= Mass (g) Volume (ml) In this laboratory exercise, you will be using skills and techniques learned earlier to determine the identity of different substances. To determine the precision of your technique, you will calculate the percent error, which is a comparison of the differences between the measured value and accepted value.

The volume of the liquid is read from the bottom of the meniscus. 4. Record the water level to the nearest 0. 1 ml in the data table. 5. Mass the cylinder with the 50 ml of water. 6. Record the mass of the cylinder and water to the nearest 0. 01 g in the data table. 7. Calculate the mass of water by subtracting the mass of the empty cylinder from the mass of the cylinder and water. I Mass of empty cylinder (ml) I Volume of water (ml) and water (g) Determine the mass of the metal cylinder. I Mass of cylinder 2.

Record ten mass to ten nearest u 1 g In ten data TA Volume using the water displacement method: 1 . Fill your 100 ml graduated cylinder to approximately the 50 ml mark. 2. Record the volume to the nearest 0. 1 ml in the data table. 3. Tilt the cylinder and slide the metal cylinder into the

water slowly. Be sure the metal cylinder is completely submersed. 4. Record the new volume to the nearest 0. 1 ml in the data table. 5. The volume of the metal cylinder is the difference between the two water levels.

I Accepted values (g/cam or g/ml) I Lulls cylinder by water displacement Metal cylinder by formula method 4. Calculate the percent error for each item using your measured values from analysis 1 and the accepted values from analysis 3. Show all work to correct significant figures. C) Metal cylinder by water displacement 5. Name the possible sources of error. 6. The students were given the task of finding the density of a brownie. Johnny decided to eat h of his brownie. How would Johnny's results compare with the rest of the class? Explain. 1.

Describe In detail now you would determine rage to fit into a graduated cylinder. Or app t TA o Tanat Is o Read the entire laboratory investigation and the relevant pages of your textbook. Then answer the questions that follow. 1 . What two properties of matter are used to determine its density? 2. What pieces of laboratory equipment would you use to measure the properties needed to determine the density of a substance? 3. Using the properties stated in question 1, write the formula for density. 4. What two sets of units can be used to describe density?

Why are they interchangeable? 5. A solid block with a length of 6. 0 CM, a width of 3. 0 CM, and a height of 3. 0 CM has a mass of 146 g. What is the blocks density? Show all work. 6. To determine the density of an irregularly shaped object, a student immersed the object in 21. 2 ml of water in a graduated cylinder causing the level of the water to rise to 27. 8 ml. If the

object has a mass of 22. 4 grams, what is the density of the object? Show all work. 7. The formula for the volume off cylinder is: V = (rah. Determine the volume (V) of a cylinder that has a height (h) of 3. 52 CM and a radius (r) of 0. 89 cm. An old riddle asks “ Which is heavier, a pound of feathers or a pound of lead? ” The answer is obvious, of course, since a pound of feathers and a pound of lead both weigh the same, one pound. However, there is clearly something different about a small piece of lead and a large bag of feathers, even though they weigh the same. What is this difference? The relationship between the lead and feathers is expressed by the physical property called density. Density is defined as the ratio of a substance’s mass to the volume it occupies.

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