

It's All About Density

Pre-Lab Activity

Perform the following pre-laboratory exercise before beginning the lab activity. Sample data is provided. Use the data to calculate the density of each material. Then, use the chart of densities of common substances from the Background Section to identify each substance. Be sure to include units in the data table.

Type of Material	M or V Data	Mass (grams)	Volume (mL or cm ³)	Density (g/mL or g/cm ³)	Identity of Solid
Rectangular Solid	L = 1.23 cm W = 2.34 cm H = 3.45 cm	10.6 g			
Cylindrical Solid	h = 3.45 cm d = 1.12 cm	26.72 g			
Irregular Solid	Vol water + solid = 37.4 mL Vol water = 25.2 mL	61.1 g			
Liquid	Mass cylinder + liquid = 93.2 g Mass cylinder = 40.1 g		67.2 mL		

Name _____

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Data Table

Station No.	Name of Object	Mass (g)	Volume (mL or cm ³)	Density (g/mL or g/cm ³)
1	Clear Liquid I	Cylinder + liquid = Cylinder = Liquid =		
2	Clear Liquid II	Cylinder + liquid = Cylinder = Liquid =		
3	White Block		V = L × W × H L = W = H = V =	
4	Foam Block		V = L × W × H L = W = H = V =	
5	Rubber Stopper		Water = Water + stopper = Stopper =	
6	Glass Sphere <i>Water Displacement Method</i>		Water = Water + glass = Glass =	
	Glass Sphere <i>Measurement Method</i>		V = $\frac{4}{3} \pi r^3$ d = r = V =	
7	Metal Cylinder <i>Water Displacement Method</i>		Water = Water + metal = Metal =	
	Metal Cylinder <i>Measurement Method</i>		V = $\pi r^2 h$ d = r = h = V =	

Post-Lab Questions

After completing the lab, answer the following questions in the space provided below.

1. Rank the materials tested in this lab in order from most dense to least dense.
2. If the foam block was cut in half, would the density change? Explain.
3. List the items in this lab that would float on water. How was this determined?
4. Consider the following six materials—water, mercury, mineral oil, cork stopper, rubber stopper, and a piece of lead. If these materials were added to a graduated cylinder, in what order would they be found from top to bottom?
5. Why is density an important factor to know about a material?
6. Use the Table of Densities of Common Substances to identify Clear Liquids I and II.
7. Observe the metal cylinder tested at Lab Station 7. Using the density you obtained and observations, identify the metal.
8. From your answer to question 7, which method for determining density did you find to be more accurate? Explain.
9. Explain how you would find the density of your own body.