

Name _____

Date _____

Hour _____

Density Lab

By appropriately using the lab equipment, determine the mass, volume, and density of the objects in the table.

Formulas that might be helpful:

$$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$$

Volume of a cube $V = L \times W \times H$

Volume of a cylinder $V = \pi \times r^2 \times h$

Volume of a Sphere $V = \frac{4}{3} \times \pi \times r^3$

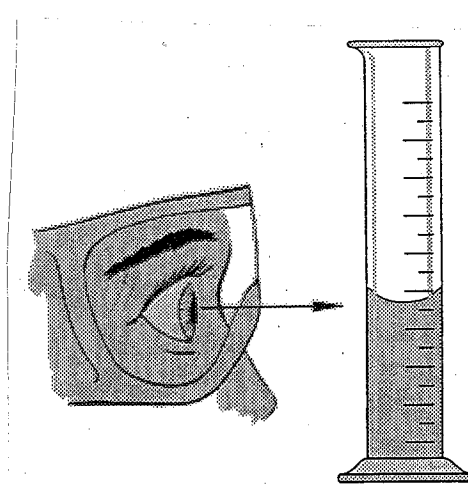


Figure 1

Densities of Common Substances

Note: Values may vary slightly since density is temperature-dependent

Substance	Density (g/cm ³)	Substance	Density (g/cm ³)
Helium	0.0002	Sulfur	2.07
Air	0.001	Silicon	2.33
Balsa wood	0.11–0.14	Glass	2.4–2.8
Cork	0.22–0.26	Aluminum	2.70
Maple wood	0.65–0.75	Calcium carbonate	2.93
Ethanol	0.789	Fool's gold (FeS ₂)	5.0
Mineral oil	0.86–0.93	Iron	7.86
Polyethylene plastic	0.92	Copper	8.92
Water	1.000	Lead	11.3
Polystyrene plastic	1.06	Mercury	13.6
Ebony wood	1.11–1.33	Gold	19.3
Rubber	1.34		

Object	Mass (g)	Volume (ml or cm ³)	Density (g/ml or g/cm ³)
Penny		Water = Water + penny = Penny =	
White Block		L = W = H = V =	
Marble (Measurement method)		$V = \frac{4}{3} \pi r^3$ r = V =	
<hr/> (Water displacement method)		<hr/> Water = Water + marble = Marble =	
Rubber Stopper		Water = Water + stopper = Stopper =	
Foam Block		L = W = H = V =	
Metal Cylinder		Water = Water + metal = Metal =	
Unknown Liquid	Cylinder + liquid = Cylinder = Liquid =		

Post-Lab Questions

1. What is density?

2. What measurements must you make to find the density of a sample of matter?

3. How can you determine whether a solid substance is more or less dense than water?

4. What is the density of water?

5. A piece of metal has a volume of 38cm^3 and a mass of 277g . Calculate the density of the metal, and identify it based on the information below.
 - a. Iron 7.9 g/cm^3
 - b. Lead 11.3 g/cm^3
 - c. Tin 7.3 g/cm^3
 - d. Zinc 7.1 g/cm^3

6. If the foam block was cut in half, would the density change? Explain.

7. List the items in this lab that would float on water.

8. Using the Table of Densities of Common Substances, identify the unknown liquid from the lab.

9. Using the density that you obtained in the lab, identify the metal using the Table of Densities of Common Substances.

10. Explain how you would find the density of your own body.