

Density Practice – Worksheet

Name: _____ Date: _____

Density is a measure of the amount of mass in a certain volume. This **quantitative physical** property is often used to identify and classify substances. It is usually expressed in **grams per cubic centimeters**, or **g/cm³**. The chart on the right lists the densities of some common materials.

$$D = \frac{m}{V}$$

Conversion: 1 ml = 1cm³

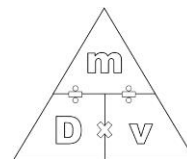
Substance	Density (g/cm ³)
Gold	19.3
Mercury	13.5
Lead	11.4
Iron	7.87
Aluminum	3.7
Bone	1.7-2.0
Gasoline	0.66-0.69
Air (dry)	0.00119
Water	1.0
Ice	0.92
Wood	0.85

1. A block of aluminum occupies a volume of 15.0 mL and weighs 40.5 g. Calculate the density?

2. Mercury metal is poured into a graduated cylinder that holds exactly 22.5 mL. The mercury used to fill the cylinder weighs 306.0 g. From this information, calculate the density of mercury.

3. A rectangular block of copper metal weighs 1896 g. The dimensions of the block are 8.4 cm by 5.5 cm by 4.6 cm. From this data, what is the density of copper?

4. Calculate the mass of the ethyl alcohol that exactly fills a 200.0 mL container? The density of ethyl alcohol is 0.789 g/cm^3 .



5. A flask that weighs 345.8 g is filled with 225 mL of carbon tetrachloride. The weight of the flask and carbon tetrachloride is found to be 703.55 g. From this information, calculate the density of carbon tetrachloride.
6. Calculate the mass of 250.0 mL of benzene. The density of benzene is 0.8765 g/mL .
7. You find a piece of lead metal on a shelf that is irregularly shaped. The block has a mass of 1587 g. Using the density table above; calculate the volume of the lead.
8. Iron shot is added to a graduated cylinder containing 45.50 mL of water. The water level rises to the 49.10 mL mark, from this information and the table above, calculate the mass of the iron that was added to the water.

9. Calculate the volume of silver metal will weigh exactly 2500.0 g. The density of silver is 10.5 g/cm^3 .

Density is a very good way of **quantitatively determining the identity of a material**. It is used in forensics, laboratories, etc.

10. You find a piece of metal on the lab bench. You measure that the mass of the metal is 40 g. You place it in an overflow can and 148 mL of water is displaced. Using this information determine the type of metal that you found (use the table to help).

Extension: *Sink or Float?*

Objects will either sink or float when placed in water.

- Objects that are **LESS** dense than water will **FLOAT**.
- Objects that are **MORE** dense than water will **SINK**.

11. List the materials from the table that will float:
-

The Lightest (Least Dense) Solid in the World!

Watch this cool video about the least dense material made so far on Earth. ([use link or QR code](#))

<https://youtu.be/AeJ9q45Pfd0>



The name of this material is: _____

Name the person who made the first one of these materials: _____

What is at least one cool property of this material?