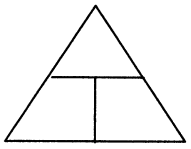
Density Practice: Worksheet #1

Calculate density, and identify substances using a density chart.

Density is a measure of the amount of mass in a certain volume. This physical property is often used to identify and classify substances. It is usually expressed in grams per cubic centimeters, or g/cm^3. The chart on the right lists the densities of some common materials.

Equation: **Density = $\frac{\text{mass}}{\text{Volume}}$** or **$D = \frac{m}{V}$**



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

Problem Statement	Formula	Define Variables	Substitution	Answer
Sample: What is the density of a billiard ball that has a volume of 100 cm^3 and a mass of 250 g?	$D = \frac{m}{V}$	M = 250 g V = 100 cm^3	$D = \frac{250\text{ g}}{100\text{ cm}^3}$	2.5 g/cm^3
1. A loaf of bread has a volume of 2270 cm^3 and a mass of 454 g. What is the density of the bread?	$D = \frac{m}{V}$	$V = 2270\text{ cm}^3$ $m = 454\text{ g}$	$D = \frac{454\text{ g}}{2270\text{ cm}^3}$	.2 g/cm^3
2. A block of wood has a density of 0.6 g/cm^3 and a volume of 1.2 cm^3. What is the mass of the block of wood?	$D = \frac{m}{V}$	$D = .6\text{ g/cm}^3$ $V = 1.3\text{ cm}^3$	$0.6 = \frac{m}{1.2\text{ cm}^3}$ $m = (.6)(1.2)$	.72g
3. A 800g boulder has a density of 8 g/cm^3. What is the volume of the boulder?	$D = \frac{m}{V}$	$m = 800\text{g}$ $D = 8\text{g/cm}^3$	$8 = \frac{800}{V}$ $V = \frac{800}{8}$	100 cm^3
4.What is the mass of the block of iron illustrated below? 2 cm, 5 cm, 10 cm	$D = \frac{m}{V}$ $m = (D)(V)$	$V = 100\text{cm}^3$ $D = 7.879\text{g/cm}^3$	$(100\text{cm}^3)(7.879\text{g/cm}^3)$	m = 787g

Use the data below to calculate the density of each unknown substance. Then use the density chart above to determine the identity of each substance.

Mass (g)	Volume (cm^3)	D = m/v Variable Substitutions	Density (g/cm^3)	Substance
4725	350	$D = \frac{4725}{350}$	D = 13.5	Mercury
171	15	$D = \frac{171}{15}$	11.4	Lead
148	40	$D = \frac{148}{40}$	3.7	Aluminum
475	250	$D = \frac{475}{250}$	1.9	Bone
680	1000	$D = \frac{680}{1000}$	.68	Gasoline