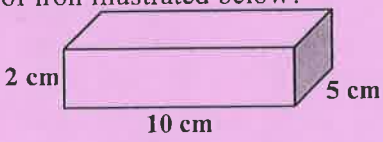
Density Practice: Worksheet #1

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	$D = \frac{250\ g}{100\ cm^3}$	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?	$D = \frac{M}{V}$	$M = 454\ g$ $V = 2270\ cm^3$	$D = \frac{454\ g}{2270\ cm^3}$	$0.2\ g/cm^3$
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?	$M = DV$	$D = .06\ g/cm^3$ $V = 1.2\ cm^3$	$M = .06 \times 1.2$	$.072\ g$
3. A 800g boulder has a density of 8 g/cm^3. What is the volume of the boulder?	$V = \frac{m}{D}$	$m = 800\ g$ $D = 8\ g/cm^3$	$V = \frac{800\ g}{8\ g/cm^3}$	$100\ cm^3$
4. What is the mass of the block of iron illustrated below?  	$M = DV$	$V = 2 \times 10 \times 5 = 100\ cm^3$ $D = 7.87\ g/cm^3$	$M = 100\ cm^3 \times 7.87\ g/cm^3$	787 g

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	$D = \frac{171}{15}$	D = 11.4	lead
148	40	$D = \frac{148}{40}$	D = 3.7	aluminum
475	250	$D = \frac{475}{250}$	D = 1.9	bone
680	1000	$D = \frac{680}{1000}$	D = .680	gasoline