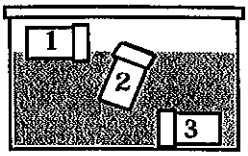
Mystery Canisters

Name _____

Part A: Using the materials at your desk, modify three film canisters so that they will float, sink, or remain suspended in the middle of a tub of tap water. One canister should float (1), another should remain suspended in the middle of the tank (2), and another should sink to the bottom (3). Have your teacher check your canisters before you proceed to the next part.



Part B: Once you have completed Part A, use the equipment provided to find the mass and volume of each canister. Record the information in the chart and calculate the density for each.

	Mass (g)	Volume (ml)	Density (g/ml)
1			
2			
3			

Part C: Based on each density, predict the location of each item in a tub of tap water. ~~Choose from: float, sink, or suspended.~~

A. 0.2 g/ml _____ D. 1.0 g/ml _____

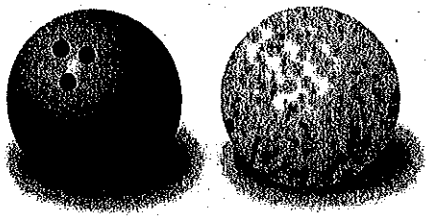
B. 2.3 g/ml _____ E. 0.5 g/ml _____

C. 0.99 g/ml _____ F. 1.9 g/ml _____

Name: _____ Date: _____

Density

You have learned that in some objects the atoms are packed very tightly. This makes the object very **dense.** In other objects, the atoms are not so tightly packed. The object is less dense. Bowling balls and foam balls are both made of matter. The matter (atoms) in the bowling ball is very dense. The matter (atoms) in the foam ball is not dense. As a result, the mass of the bowling ball is greater than the mass of the foam ball, and it weighs a great deal more too.



Density is a ratio used to express how much matter is in a given volume. For our purposes, we will treat mass and weight as the same to find the density of objects. The formula to measure density is **Density = mass/volume.** Density is measured in grams per cubic centimeter.

Cubic centimeter: 1 cm • 1 cm • 1 cm = 1 cm^3

Example: The mass of an object is 4 grams (g).
The volume of the object is 8 cubic centimeters (cm^3).
Density = mass/volume or D = m/v
D = 4/8 D = 0.5 or $\frac{1}{2}$ gram per cubic centimeter

Find the density.

1. The mass of an object is 38.6 grams. The volume is 2 cubic centimeters.
   D = m/v D = _____ g ÷ _____ cm^3 D = 18.3 g/cm^3 (grams per cubic centimeter)
2. The mass of an object is 23.4 g. The volume is 3 cm^3.
   D = m/v D = _____ g ÷ _____ cm^3 D = 7.8 g/cm^3
3. The mass of an object is 9 g. The volume is 9 cm^3.
   D = m/v D = _____ g ÷ _____ cm^3 D = _____ g/cm^3
4. The mass of an object is 10.8 g. The volume is 2 cm^3.
   D = m/v D = _____ g ÷ _____ cm^3 D = _____ g/cm^3
5. The mass of an object is 24 g. The volume is 4 cm^3.
   D = m/v D = _____ ÷ _____ D = _____ g/cm^3