

Density: property of matter that measures mass per unit of volume

$$\text{Density} = \frac{\text{Mass (g)}}{\text{Volume (mL or cm}^3\text{)}}$$

Density of water is 1g/mL

If an object **floats** in water it has a density less than water.

If an object **sinks** in water it has a density greater than water.

If an object is floating in water, it has the **SAME** density as water



Describe the density of these objects:

Less than water

Same as water

Greater than water

The density of an object always remains the same!

1 drop of water = 1 puddle of water = 1 lake of water



How to find density?

Find the Mass of the object using the **triple beam balance** to the nearest 0.1 g.

Find the Volume:

A regular shaped object, Find the **Length X Width X Height** to the nearest 0.1 cm³.

OR

An irregular shaped object, **Water displacement:**

A known amount of volume of liquid, place object into liquid, observe how much the volume increases, **subtract** new volume from old volume, then you have the volume of the object.

Measured in **mL**

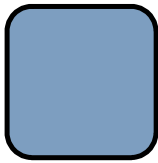
Density g/mL or cm³ = Mass/Volume

Divide the Mass (g)/ Volume (mL or cm³)

Density of a substance never changes!

If you cut an object in half the density

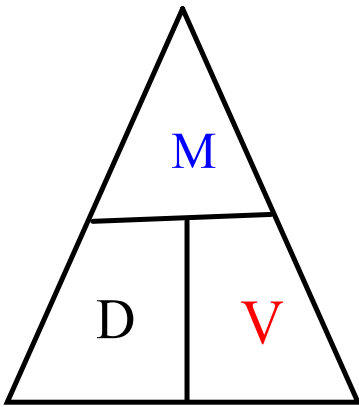
Remains the SAME. Density = $\frac{\text{Mass (g)}}{\text{Volume (mL or cm)}}$



Mass: 8.0 g
Volume: 4.0 cm³
Density: 2.0 g/ cm³



Mass: 4.0 g
Volume: 2.0 cm³
Density: 2.0 g/ cm³



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

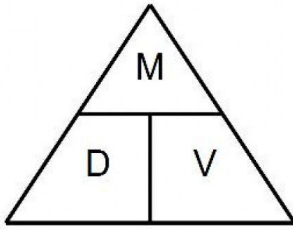
$$V = \frac{M}{D}$$

$$M = D V$$

How to use the
Density Triangle?

yName _____

Period _____



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

Density Questions, write the formula and show your work:

1. You have a rock with a volume of 15.0 cm³ and a mass of 45.0 g. What is its density?

2. If the density of a diamond is 3.0 g/cm³, what would be the mass of a diamond whose volume is 1.5 cm³?

3. If a 100.0 g piece of aluminum has a density of 2.5 g/cm³, what is its volume?