Revising Density

Year 8

Week Commencing 3rd December 2012

Density

WALT: Calculate volume and density of regular and irregular shaped objects

I must be able to calculate density using the equation and include correct units

I should be able to calculate the volume and density of irregular shaped objects

I could conclude what makes things float or sink

Density

Density is the amount of a substance that is packed into a certain volume.

The density of an object can change. Can you think of a situation?

- **Expansion** …… a hot object expands because its particles get further apart – its density will therefore change.

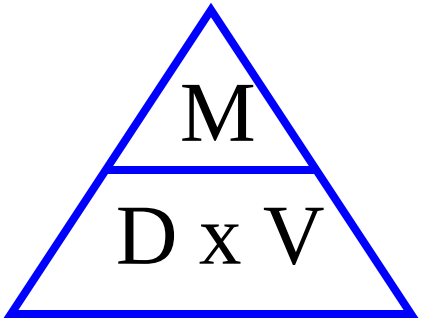
g/cm^3

$$\text{Density} = \frac{\text{mass}}{\text{volume}}$$

g

cm^3

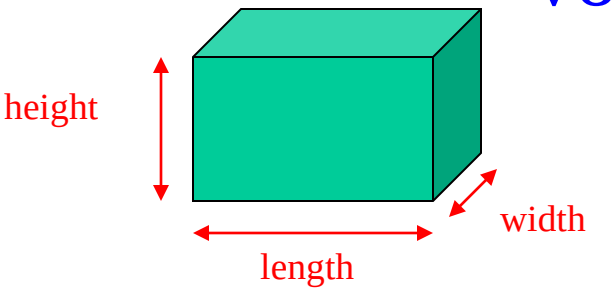
Or using the formula triangle;



The unit of density is always in g/cm3 or kg/m3

Density of regular shapes

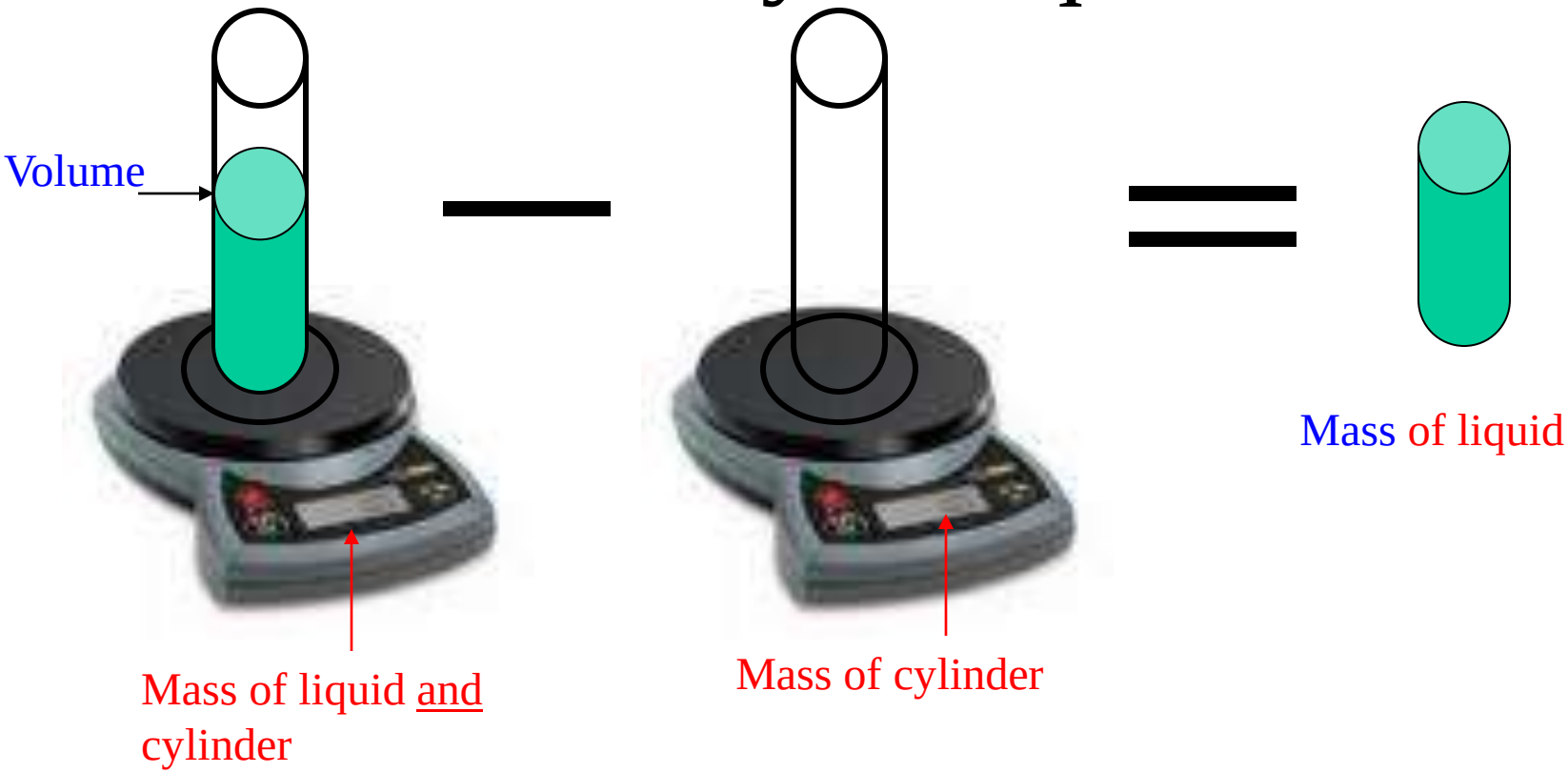
volume = length x width x height



$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

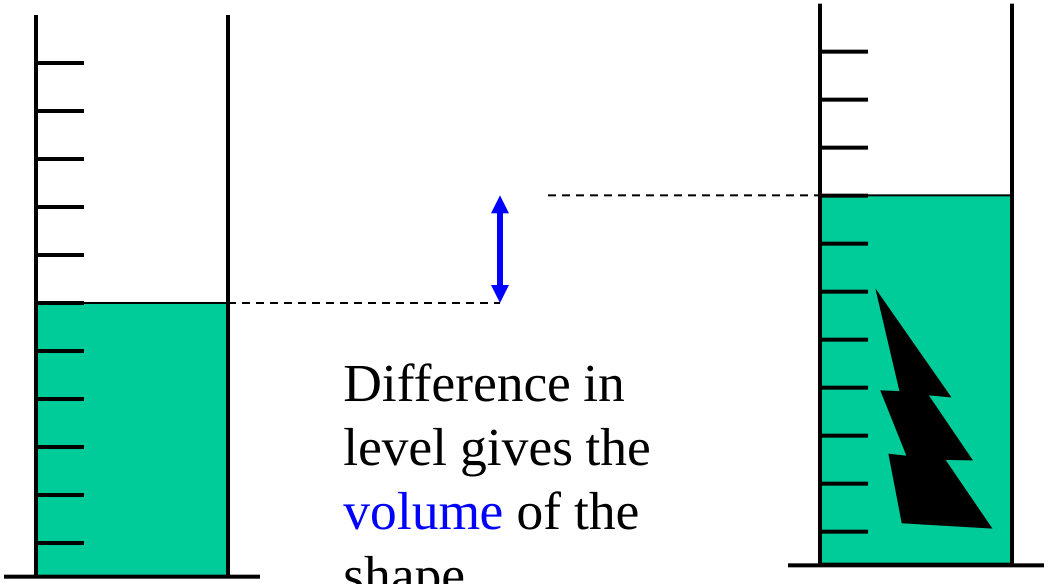
mass using a scale

Density of liquids



$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

Density of irregular shapes (1)

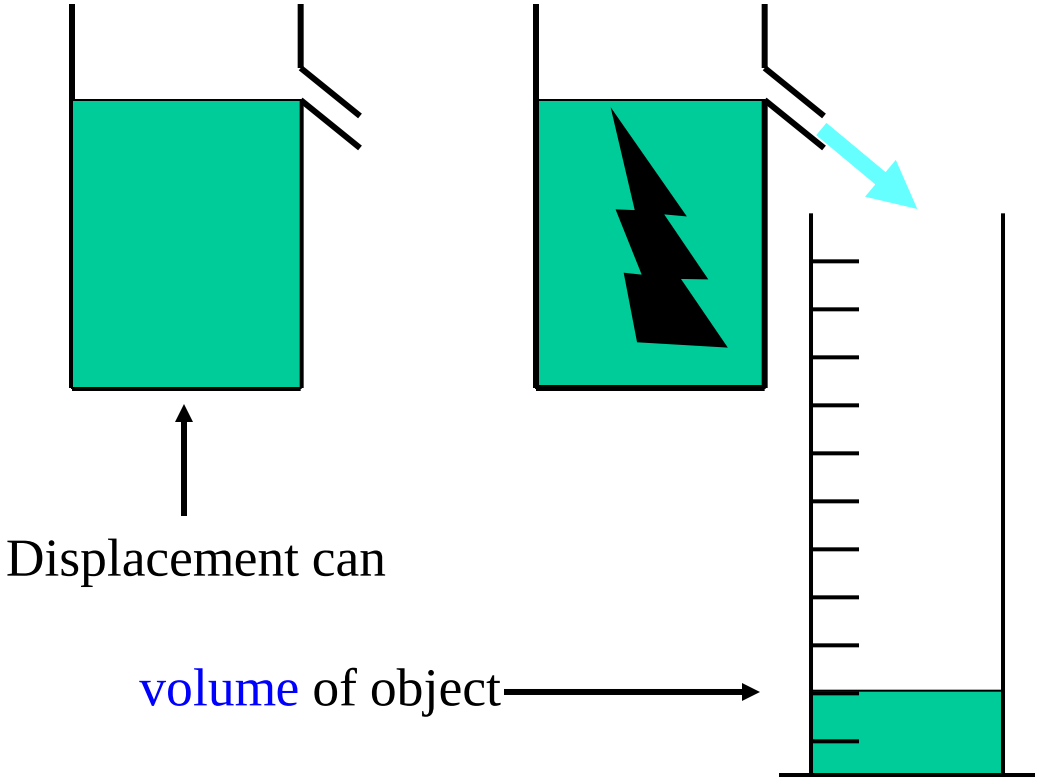


Difference in level gives the volume of the shape

mass

Density = mass/volume

Density of irregular shapes (2)



mass

Density = mass/volume

Let’s read the examples in the book on page 146

Now it's your turn to calculate the densities of some objects

Calculate the density of ONE **regular shaped object that floats** and ONE **irregular shaped object that sinks**.

After that, **calculate the density of some water**.

Can you work out why some things float and other things sink?

Now we are going to make a lava lamp……

YOU WILL NEED

Clear jar with lid
Water
Food colouring
Vegetable oil
Salt
Torch

Fill the jar three-quarters full of water. Add drops of food colouring until you like the colour you see. A few drops go a long way!
Fill the jar almost to the top with vegetable oil and let the mixture separate. Pour salt into the jar until you see the cool lava lamp effect. When the bubbles stop, add more salt to see it again. Shine a flashlight behind the jar to watch your lava lamp really glow!

HOW DOES IT WORK?

The secret behind the lamp's "lava" is science.

1. Oil is lighter, or less dense, than water, so it rises to the surface.
2. Salt is heavier, or more dense, than water, and sinks to the bottom.
3. When you add the salt, blobs of oil attach to the grains and sink.
4. Then the salt dissolves, and the oil returns to the top. The result? A liquid show for the eyes.

Plenary

- If a salt solution has a density of 1.2g/cm3, what volume of the solution would have a mass of 840g.