Density

➢ Density is defined as:

Density is the measure of Compactness of a substances

Or

The mass per unit volume of a material

➢ Density of an Object :

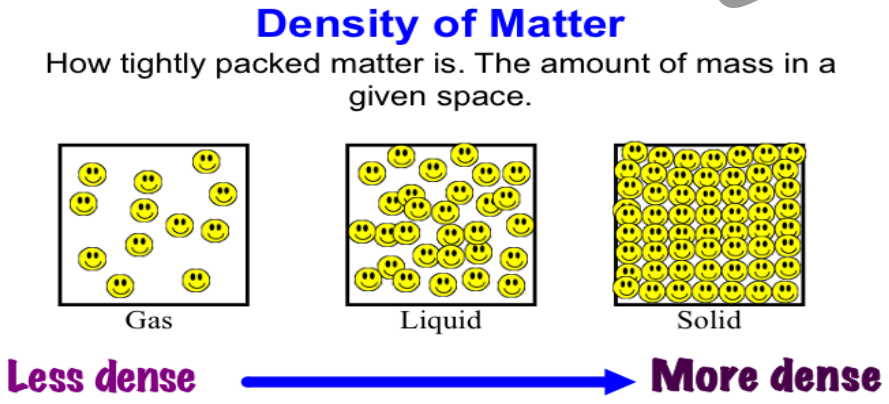
Density of an object depends on what it's made of

a) Tightly packed particles in an object are called Dense material
b) Lose packed particles in an object are call Less dense material
c) Objects made from **low density** materials typically have a **low mass**
d) Similarly sized objects made from **high density** materials have a **high mass**
e) For example

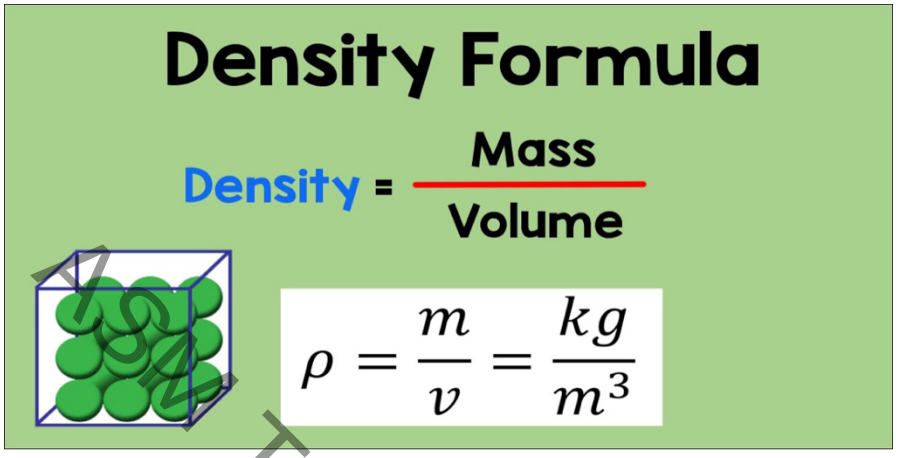
- A balloon is less dense than a small bar of lead despite occupying a larger volume.
- A bag full of feathers is far lighter compared to a similar bag full of metal

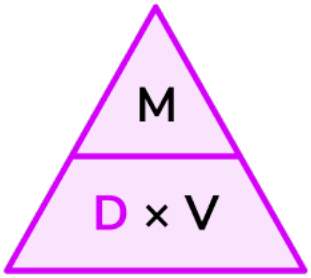
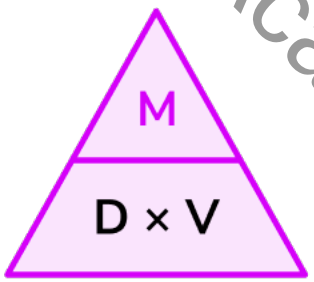
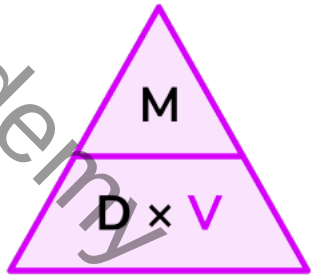
f) Density varies between the different states of matter Solid are denser, gases are less dense than liquid

Density of Solid > density of Liquid > Density of Gases

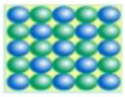
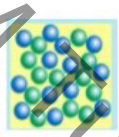
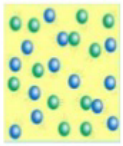


- **Formula of measuring Density:**



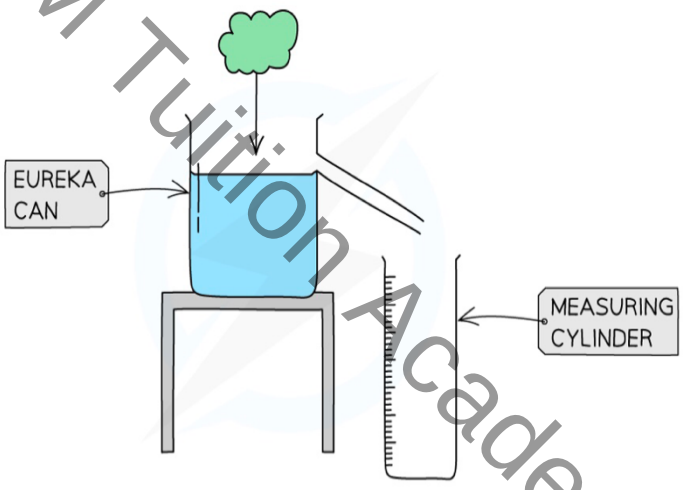
To find density:	To find mass:	To find volume:
		
$D = \frac{M}{V}$	$M = D \times V$	$V = \frac{M}{D}$

- **Difference between density of 3 states of matter**

	Picture	Particles	Density	Motion	Example
SOLID		Tightly packed	Usually the most dense	Particles locked into place	ICE
LIQUID		Loosely packed	Usually less dense than solids, denser than gases	Particles move past each other	Water
GAS		Not packed at all	Least dense	Particles move past each other	Water Vapor

➤ How to find Density of solid object

1. Place the object on a digital balance and note down its mass
2. Fill the eureka can with water up to a point just below the spout
3. Place an empty measuring cylinder below its spout
4. Carefully lower the object into the eureka can
5. Measure the volume of the displaced water in the measuring cylinder
6. Repeat these measurements and take an average before calculating the density



➤ How to Find Density of Liquid

1. Place an empty measuring cylinder on a digital balance and note down the mass
2. Fill the cylinder with the liquid and note down the volume
3. Note down the new reading on the digital balance
4. Repeat these measurements and take an average before calculating the density