

# Volume, Mass

And properties of matter

# Volume

- Volume is the quantity of three-dimensional space enclosed by a closed surface.

To calculate volume:  $(l) \times (w) \times (h)$

Length (l) x Width (w) x height (h)

l

# What Is Volume?

**VOLUME IS THE THREE-DIMENSIONAL SPACE OCCUPIED BY A SOLID, LIQUID, OR GAS**



$$l \times w \times h$$



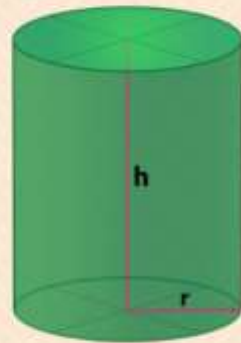
$$\frac{1}{3}\pi r^2 h$$



$$\frac{1}{3}l^2 h$$



$$\frac{4}{3}\pi r^3$$



$$\pi r^2 h$$

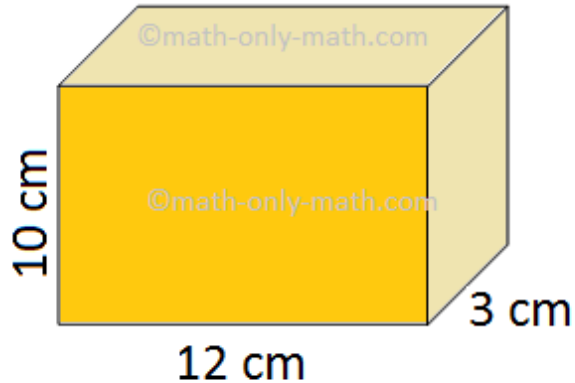
Units include liters, cubic meters, cubic centimeters, fluid ounces, gallons, and quarts.

Calculate the Volume of these shapes

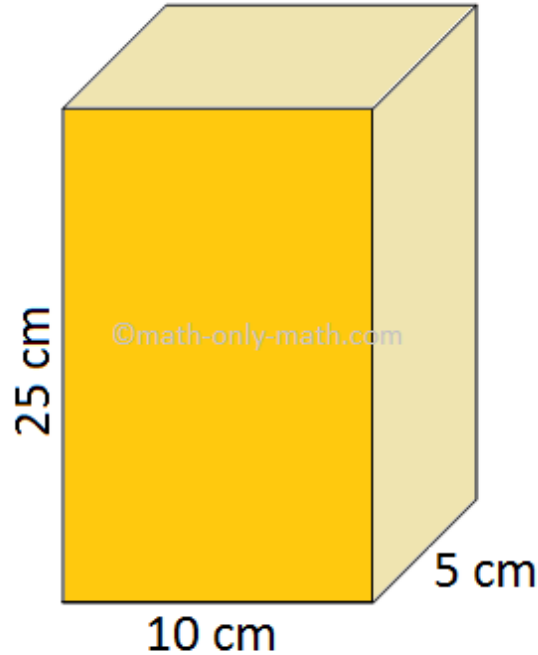
## Volume of a Solid ©math-only-math.com

©math-only-math.com

(i)



(ii)



# Mass

- Mass is **the amount of matter or substance that makes up an object.**

To calculate Mass: **Mass = volume × density**

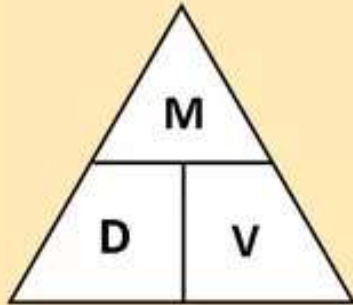
$$M = V \times D$$

# Variations of the Mass Equation

**Mass Density Volume**

[www.cazoommaths.com](http://www.cazoommaths.com)

**Mass Density Volume**



$$\text{Volume} = \frac{\text{Mass}}{\text{Density}}$$

$$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$$

$$\text{Mass} = \text{Density} \times \text{Volume}$$

# Density, Mass and Volume

<https://www.youtube.com/watch?v=if2aH9OKZLU>

# The 3 States of Matter

1. Solid
2. Liquid
3. Gas

What are some examples of each?



# Properties of Matter

The properties of matter include any traits that can be measured, such as an object's:

**density, color, mass, volume, length, boiling point, melting point, hardness, odor, temperature...and more**

# Physical Properties of Matter

Density  
sink or float?



Texture  
rough



colors

volume



length

melting point



boiling point



electrical  
conductivity

Shapes



magnetism



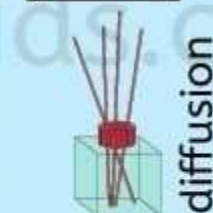
solid



liquid



gas



diffusion



solubility

mass



temperature

states of matter



elasticity



transparency