

## Summary

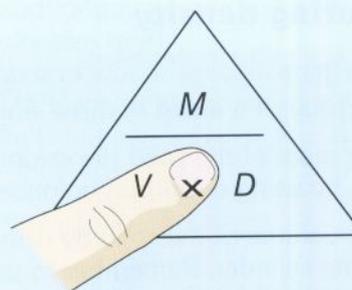
1. Density =  $\frac{\text{mass}}{\text{volume}}$

Changing round the formula (see page 390):

2. Volume =  $\frac{\text{mass}}{\text{density}}$

3. Mass = volume  $\times$  density

Density of water =  $1000 \text{ kg/m}^3 = 1 \text{ g/cm}^3$ .



To find the one you want, cover up that letter in the triangle and the remaining letters show you the formula.

## Questions

- An object has a mass of 100 grams and a volume of 20 cubic centimetres. What is its density?
- An object has a mass of 40 000 kilograms and a volume of 5 cubic metres. What is its density?
- An object has a volume of 3 cubic metres and a density of 6000 kilograms per cubic metre. What is its mass?
- Copy and complete this table.

Object	Density (kg/m <sup>3</sup> )	Mass (kg)	Volume (m <sup>3</sup> )
A		4000	2
B	8000		4
C	2000	1000	
D		2000	4

- Which object has the greatest mass?
  - Which has the smallest volume?
  - Which objects could be made of the same substance?
  - Which object would float on water?
- A water tank measures  $2 \text{ m} \times 4 \text{ m} \times 5 \text{ m}$ . What mass of water will it contain?
  - An object has a mass of 20 000 kilograms and a density of 4000 kilograms per cubic metre. What is its volume?
  - A stone of mass 30 grams is placed in a measuring cylinder containing some water. The reading of the water level increases from  $50 \text{ cm}^3$  to  $60 \text{ cm}^3$ . What is the density of the stone?
  - Professor Messer wants to load some bricks into his van. There are 1000 bricks, and when stacked neatly they measure 2 m by 1 m by 1 m.
    - What is the volume of the stack?
    - What is the volume of one brick?
    - If the density of brick is  $2500 \text{ kg/m}^3$ , what is the mass of the stack?
    - If his van's maximum load is 1000 kg, how many bricks can he load?
  - The density of air is  $1.3 \text{ kg/m}^3$ . What mass of air is contained in a room measuring  $2.5 \text{ m} \times 4 \text{ m} \times 10 \text{ m}$ ? How does this compare with your mass?
  - Describe, in detail, with diagrams, how you would find the density of a rock.
  - Professor Messer has been offered a 'gold medallion' by a woman in the market.
    - How (in detail) could he test it?
    - He found its mass was 550 g and its volume was  $50 \text{ cm}^3$ . What do you think? (See the table on page 74.)
    - What is the connection with Archimedes in ancient Greece?

**Have you started to revise? See page 382.**