

GCSE Physics Density Calculations

Density is a measure of how much mass is packed into a given volume.

Density = Mass \div Volume

1. A gold ring has a mass of 19.3 g and a volume of 1.0 cm³. Calculate its density.
2. A block of pine wood has a mass of 240 g and a volume of 600 cm³. Calculate its density.
3. A bottle contains 1.5 litres of cooking oil (1500 cm³) with a mass of 1380 g. Calculate the density of the oil.
4. A small steel bolt has a density of 7.8 g/cm³ and a volume of 5 cm³. Calculate its mass.
5. A block of aluminium has a density of 2.7 g/cm³ and a volume of 40 cm³. Calculate its mass.
6. A container holds 50 litres of water (50 000 cm³). Water has a density of 1.0 g/cm³. Calculate the mass of the water in kilograms.
7. A silver necklace has a mass of 105 g and a density of 10.5 g/cm³. Calculate its volume.
8. A plastic toy has a mass of 60 g and a density of 1.2 g/cm³. Calculate its volume.
9. A tanker delivers 25 000 litres of milk (25 m³). The density of milk is 1030 kg/m³. Calculate the mass of the milk.
10. A concrete block has a mass of 18 kg and a density of 2400 kg/m³. Calculate its volume in m³.
11. A fish tank contains 120 litres of water (0.120 m³). Water has a density of 1000 kg/m³. Calculate the mass of the water.
12. A granite kitchen worktop has a volume of 0.08 m³ and a density of 2700 kg/m³. Calculate its mass.
13. A fuel tank contains 60 litres of petrol (0.060 m³). Petrol has a density of 750 kg/m³. Calculate the mass of the petrol.
14. A cargo crate has a mass of 480 kg and occupies a volume of 0.60 m³. Calculate its density in kg/m³.
15. A metal cylinder has a mass of 3.6 kg and a density of 7200 kg/m³. Calculate its volume in m³.

16. A water butt contains 250 litres of rainwater (0.250 m^3). Water has a density of 1000 kg/m^3 . Calculate the mass of the water and then calculate its weight using $g = 10 \text{ N/kg}$.
17. A delivery company needs to transport 500 litres of copper (0.500 m^3). Copper has a density of 8900 kg/m^3 . Calculate the mass of the copper and determine whether it exceeds a van's maximum load of 4000 kg.