

OCR (B) Physics GCSE

PAG 1: Materials



Determining the densities of a variety of objects, both solid and liquid

Determining the density of a solid

1. Use a **mass balance** to calculate the **mass**, m , of the solid in kg
 - Ensure the balance is calibrated to avoid a **zero error**
- 2a. Find the **volume** of an **irregular** solid via **submersion**
 - Fill a **measuring cylinder** with water and read **initial volume**
 - Submerge the object and measure the **final volume**
 - **The change in volume** is the volume of the solid
- 2b. Find the volume of a **regular** solid via **calculation**
 - For common shapes (cube, cone, prism etc.)
 - Use a **ruler** to measure dimensions (length, width, height, or radius etc.)
 - Calculate the volume using the appropriate formula for the shape
3. Calculate **density**, ρ (in kg/m^3) using:

$$\rho = \frac{m}{v}$$

Determining the Density of a Liquid

1. Place an **empty beaker** on top of the mass balance and zero the device
2. Pour the liquid into the beaker to determine its **mass**, m
3. Pour the liquid into a measuring cylinder and read off its **volume**, v
4. Use the above equation to determine density

