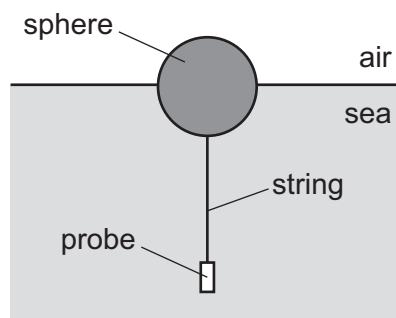


- 14 A probe is used to monitor the quality of the water in the sea. The probe is suspended by a vertical string which is attached to a sphere. The stationary sphere floats in equilibrium on the surface of the sea, as shown.



The sphere has a weight of 5.00 N. The probe and string have a combined weight of 2.00 N.

The density of the seawater is  $1.03 \times 10^3 \text{ kg m}^{-3}$ . The upthrust acting on the probe and thread is negligible.

What is the volume of the sphere below the surface of the sea?

- A  $1.98 \times 10^{-4} \text{ m}^3$   
B  $2.97 \times 10^{-4} \text{ m}^3$   
C  $4.95 \times 10^{-4} \text{ m}^3$   
D  $6.93 \times 10^{-4} \text{ m}^3$
- 15 What is the centre of gravity of an object?
- A the geometrical centre of the object  
B the point at which the weight of the object may be considered to act  
C the point on the object about which there is a zero net torque  
D the point where gravity acts on the object
- 16 A system with an efficiency of 74% wastes 230 W of power.
- What is the useful output power of the system?
- A 170 W      B 310 W      C 650 W      D 880 W
- 17 A projectile of mass 0.25 kg is at a height of 30 m above horizontal ground and travelling at a speed of  $15 \text{ m s}^{-1}$ . A short time later, it is at a height of 35 m above the horizontal ground and travelling at a speed of  $5.0 \text{ m s}^{-1}$ .
- How much work is done against air resistance during this time?
- A 0 J      B 13 J      C 25 J      D 37 J