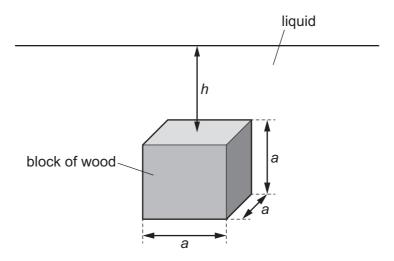
15 A block of wood of density $\rho_{\rm w}$ has sides of length a.

The block is immersed in a liquid of density ρ_L . The top surface of the block is at a depth h below the surface of the liquid.



The acceleration of free fall is g.

What is the upthrust acting on the block from the liquid?

- **A** $\rho_{\mathsf{L}} \mathsf{a}^3 \mathsf{g}$
- B $\rho_{\rm W}a^3g$
- **C** ρ_{L} hg
- **D** ρ_{L} ag
- **16** A technical article about diesel engines expresses the energy available from diesel fuel both as $41.8\,\mathrm{MJ\,kg^{-1}}$ and as $34.9\,\mathrm{GJ\,m^{-3}}$.

What is the density of diesel fuel?

- **A** $8.35 \times 10^2 \, \text{kg m}^{-3}$
- **B** $1.20 \times 10^3 \, \text{kg m}^{-3}$
- $C = 8.35 \times 10^5 \, kg \, m^{-3}$
- $\bm{D} = 1.20 \times 10^6 \, kg \, m^{-3}$
- **17** What is meant by the efficiency of a system?
 - A the difference between the useful energy output from the system and the total energy input
 - **B** the difference between the useful energy output from the system and the wasted energy output
 - **C** the ratio of the useful energy output from the system to the total energy input
 - **D** the ratio of the useful energy output from the system to the wasted energy output