

8 Buoyancy and flowing fluids – Part 2

—Answers

Answers

Work through these after you have tried the questions yourself.

2.1 the buoyant force points **upward**, and it equals the weight of the fluid the object pushes aside (displaces).

2.2 fraction below = $\frac{\rho_{\text{object}}}{\rho_{\text{fluid}}} = \frac{800}{1000} = 0.80$, i.e. 80%.

2.3 $v_2 = \frac{A_1 v_1}{A_2} = \frac{0.020 \times 3.0}{0.0060} = 10 \text{ m/s}$.

2.4 the same volume of water must pass each second, so through a smaller area ($A_1 v_1 = A_2 v_2$) the water must move faster.

2.5 the upward buoyant force is greater than its weight (it is less dense than water), so the net force is upward and it accelerates up.