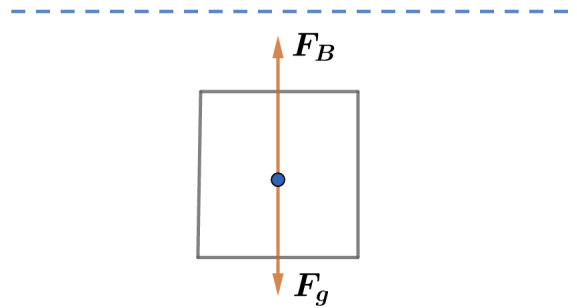


2011 F=ma Exam: Problem 8

Kevin S. Huang



We are given

$$F_g = \rho_{\text{wood}} V g = 30 \text{ N}$$

$$F_B = \rho_{\text{water}} V g = 50 \text{ N}$$

yielding the ratio

$$\frac{\rho_{\text{wood}}}{\rho_{\text{water}}} = \frac{3}{5}$$

Recall the fraction of an object that floats is given by

$$f_{\text{float}} = 1 - \frac{\rho_{\text{obj}}}{\rho_{\text{water}}}$$

In our case, we have

$$f_{\text{float}} = 1 - \frac{3}{5} = \frac{2}{5}$$

so the answer is D.