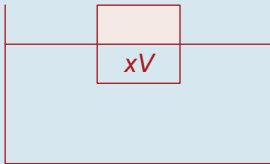


Q. 6.



Let  $V$  = its volume,  
 $xV$  = volume under the sea.

$B$  = weight of liquid displaced  
 $= (xV)(1,030)g$

$W$  = weight of the object  
 $= V(900)g$

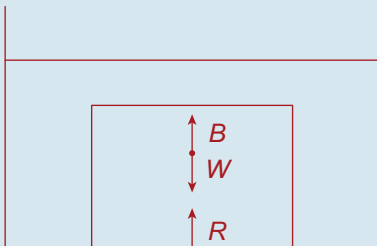
Since  $B = W$ ,

$$xV(1,030)g = V(900)g$$

$$\Rightarrow x = 0.87$$

Answer: 87%

Q. 7.  $V = (0.8)(0.6)(0.4) = 0.192 \text{ m}^3$



$$W = V\rho g$$

$$= (0.192)(2,500)g = 480g$$

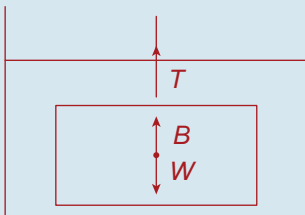
$$B = (0.192)(1,000)g = 192g$$

$$B + R = W$$

$$\Rightarrow 192g + R = 480g$$

$$\Rightarrow R = 288g = 2,822.4 \text{ N}$$

Q. 8.



$$(i) \quad V = \frac{M}{\rho}$$

$$= \frac{12.5}{2,500}$$

$$= 0.005 \text{ m}^3$$

$$(ii) \quad M = V\rho$$

$$= 0.005(800)$$

$$= 4 \text{ kg}$$

$$(iii) \quad W = 12.5g, B = 4g$$

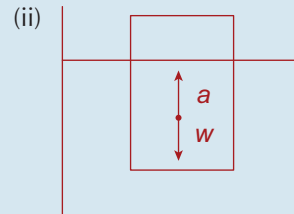
$$W = T + B$$

$$\Rightarrow T = 12.5 - 4 = 8.5g$$

$$= 83.3 \text{ N}$$

Q. 9. (i)  $V = (0.1)(0.2)(0.08)$

$$= 0.0016 \text{ m}^3$$



$$M = V\rho$$

$$\Rightarrow 1 = 0.0016\rho$$

$$\Rightarrow \rho = 625$$

$$\therefore S = \frac{625}{1,000} = \frac{5}{8}$$

$\frac{5}{8}$ th of its length is submerged

$$\therefore \text{Depth} = \frac{5}{8} \times 20 = 12.5 \text{ cm}$$

Q. 10.  $B = 40 - 35 = 5$

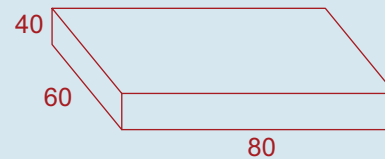
$$B = \frac{W}{S} \Rightarrow 5 = \frac{40}{S} \Rightarrow S = 8$$

Q. 11. Total area =  $(80 \times 60) + 2(80 \times 40)$

$$+ 2(60 \times 40)$$

$$= 16,000 \text{ cm}^2$$

$$= 1.6 \text{ m}^2$$



$$\text{Volume} = 1.6 \times 0.0015$$

$$= 0.0024 \text{ m}^3$$

$$\text{Weight} = V\rho g$$

$$= (0.0024)(8,000)g = 19.2g$$

Let  $X$  = the depth of the tank in the lake.

$B$  = weight of liquid displaced

$$= (0.6 \times 0.8 \times X)(1,000)g = 480Xg$$

$$B = W$$

$$\Rightarrow 480Xg = 19.2g$$

$$\Rightarrow X = 0.04 \text{ m}$$

$$= 4 \text{ cm}$$