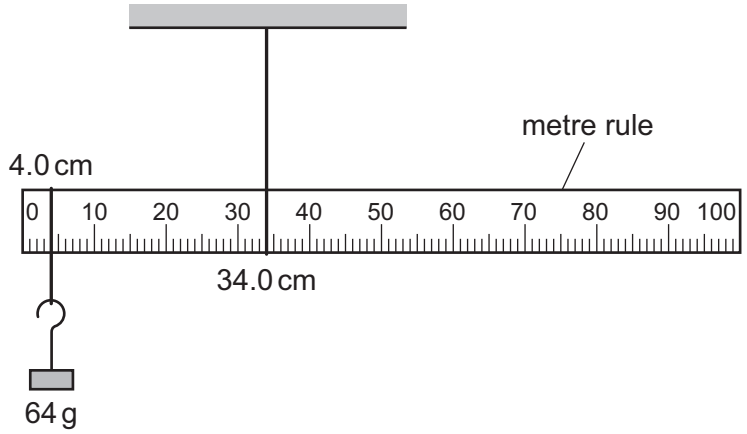
12 A uniform metre rule is pivoted at the 34.0 cm mark, as shown.



The rule balances when a 64 g mass is hung from the 4.0 cm mark.

What is the mass of the metre rule?

A 38 g **B** 44 g **C** 120 g **D** 136 g

13 A volume of 1.5 m^3 of water is mixed with 0.50 m^3 of alcohol. The density of water is 1000 $kg\,m^{-3}$ and the density of alcohol is 800 $kg\,m^{-3}$.

The volume of the mixture is 2.0 m^3.

What is the density of the mixture?

A 850 $kg\,m^{-3}$ **B** 900 $kg\,m^{-3}$ **C** 940 $kg\,m^{-3}$ **D** 950 $kg\,m^{-3}$

14 An object is falling at a constant speed through a viscous liquid. F_U is the upthrust on the object due to the liquid. W_L is the weight of the liquid displaced by the object. W_O is the weight of the object.

Which equation **must** be correct?

A $F_U = W_L$

B $F_U = W_O - W_L$

C $F_U = W_O$

D $F_U = W_O + W_L$