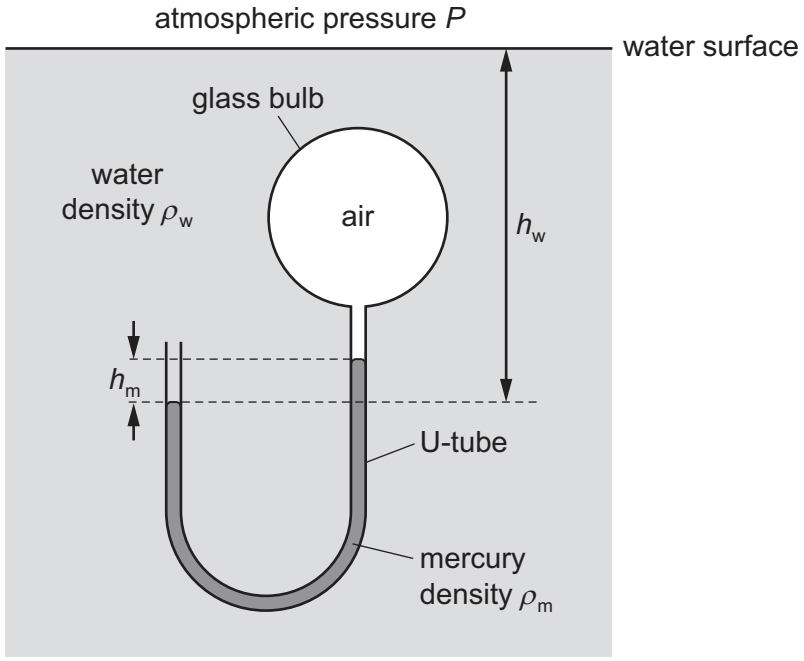
15 Air is trapped inside a glass bulb which is immersed in water and attached to a U-tube containing mercury. The densities of water and mercury are ρ_w and ρ_m respectively. The surface of the water is open to the atmosphere where atmospheric pressure is P.



The acceleration of free fall is g.

What is the pressure of the air in the glass bulb?

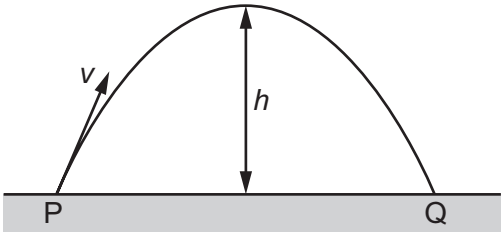
A $P + g\rho_w h_w + g\rho_m h_m$

B $P + g\rho_w h_w - g\rho_m h_m$

C $g\rho_w h_w + g\rho_m h_m$

D $g\rho_w h_w - g\rho_m h_m$

16 A ball of mass m is thrown up to height h in air with an initial velocity v, as shown.



Air resistance is negligible. The acceleration of free fall is g.

What is the **total** work done by the gravitational force on the ball during its flight from P to Q?

A zero **B** $\frac{1}{2}mv^2$ **C** mgh **D** $2mgh$