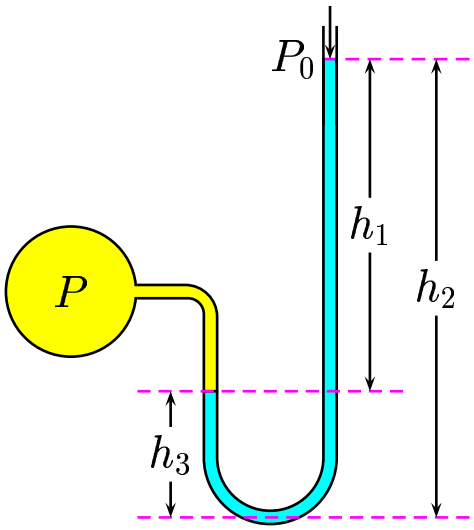
An open-tube manometer is simple device for measuring pressure. It has a U-shaped tube containing liquid with a density ρ. One end opens to the air, and the other is connected to a system of unknown pressure P. Here P is the absolute pressure. The Gage pressure is defined to be $P_g = P - P_0$,



Which is equal to

A) $P_g = \rho\, g\, h_1$.
B) $P_g = \rho\, g\, h_2$.
C) $P_g = \rho\, g\, h_3$.

Since

$$P + \rho\, g\, h_3 = P_0 + \rho\, g\, h_2\,.$$

So

$$P_g = P - P_0 = \rho\, g\, (\, h_2 - h_3\,) = \rho\, g\, h_1\,.$$

Answer **A**