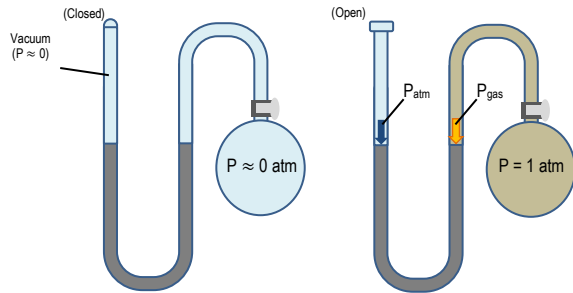


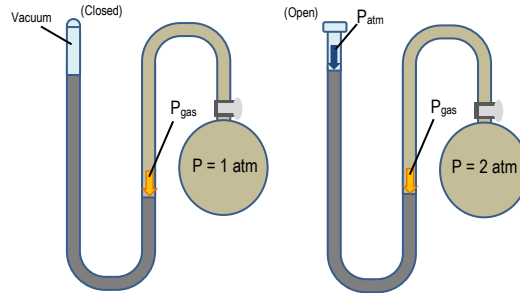
PRESSURE GAUGES: MANOMETER

- Pressure Gauges use height differences to calculate pressure $\rightarrow P_{\text{BOT}} = P_{\text{TOP}} + \rho gh$

(1) Equal Pressure $\rightarrow$ Equal Height:



(2) Different Pressures:

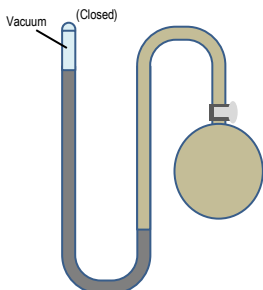
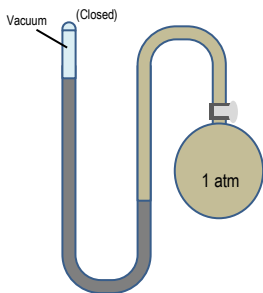


- Remember, P_{gas} does *not* change much with height difference

EXAMPLE:

(a) To find the density of an unknown liquid, you pour some of it into a classic manometer (as shown above). The manometer is closed at one of its ends (vacuum), and has 1 atm air at the other end (at the "bulb" side). You measure the height difference between the two sides of the liquid to be 60 cm. Calculate the density of the liquid.

(b) When you replace the 1 atm air from the end of the manometer with an unknown gas, the height difference for the same liquid is now 80 cm. Calculate the pressure of the unknown gas.



PRACTICE: MANOMETER / FIND ATMOSPHERIC PRESSURE

PRACTICE: A classic manometer (as shown below) has one of its ends open, and a 2 atm gas on the other. When mercury ($13,600 \text{ kg/m}^3$) is added to the manometer, you measure the top of the mercury column on the left to be 40 cm higher than the mercury column on the right. Calculate the atmospheric pressure (in atm) that the manometer is exposed to.

