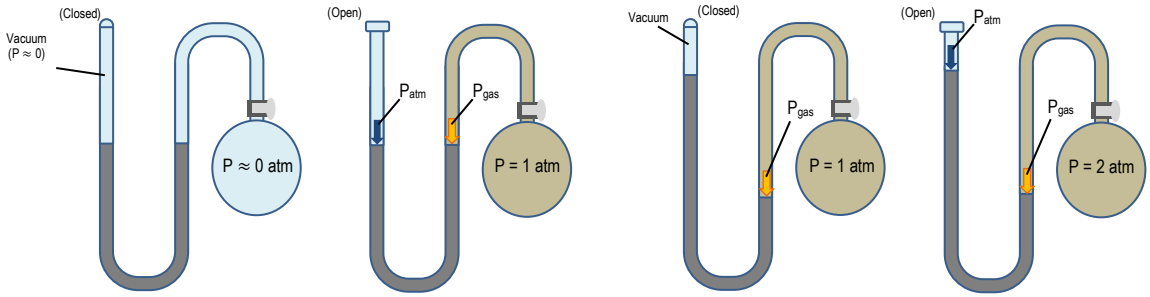
PRESSURE GAUGES: MANOMETER

● Pressure Gauges use height differences to calculate pressure → $\mathbf{P_{BOT} = P_{TOP} + \rho gh}$

(1) Equal Pressure → Equal Height**:** **(2)** Different Pressures**:**

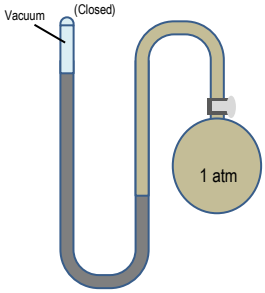


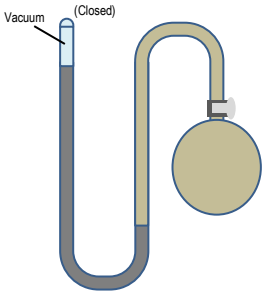
- Remember, P_{gas} does *not* change much with height difference

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 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**.**