6. **What is the pressure of compound X gas in XY bottle? (Pressure conversion)**

For gases that are considered “Ideal” the following is a good approximation**: 

**Ideal gas Law:** \( PV = nRT \)

- **P** = Pressure in atmospheric pressure (atm)
- **V** = Volume of cylinder (Liters)
- **n** = Number of moles
- **R** = Universal Gas Constant = 0.0821 atm-liter/ (mol-K)
- **T** = Temperature (Kelvin); Kelvin = 273.2K + Celsius (C)

**Quick Approximation** \( \frac{V_{\text{gas}}}{V_{\text{cylinder}}} = \text{atm} \)

**Example:** If a customer buys 1 Liter of CO\(_2\) in a lecture bottle the volume is

- ~0.45L volume of bottle
- 1 liter of CO\(_2\) = 2.2 atmospheres
- 0.45-liter cylinder

**Please Note:**
- 1 atmosphere = 14.7 PSIA
- PSIA = pounds per square inch absolute
- Absolute Pressure = gauge pressure + barometric pressure

** For liquefiable gases this does not hold true thus you need to contact ISOTEC\textsuperscript{TM}. These pressures vary for each liquefiable gas and are dependent on the quantity desired in a particular cylinder. Please bother us with your questions.

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