

AP Chemistry
Thou Shalt Not Forget
Credit: Dan Reid

Gases

1. Gas mixtures are homogeneous b/c of the constant random motion of the particles.
2. Gases are compressible b/c of the large spaces between the particles.
3. Gas pressure is caused by collisions of particles with the walls of the container. More Collisions = More Pressure
4. P and V are inversely related...doubling the volume of a container will cut the pressure of the gas in half.
5. T and V are directly related...If you heat a balloon, it will expand.
6. T and P are directly related...If you heat a rigid container, the pressure of the gas will increase.
7. $PV=nRT$ Units: Temperature = Kelvin; Volume = Liters; Pressure = atm Use this gas constant→
 $R=0.08206$
8. One mole of an ideal gas = 22.4 Liters ONLY at STP!!
9. Gas pressure and # of moles are directly related...if you double the mole of gas in a container, the pressure will double.
10. Molar Mass = dRT/P The “d” stands for density in units of g/L Use this gas constant→
 $R=0.08206$
11. The more molar mass a gas has, the slower it moves at a given temperature.
12. Temperature = Average Kinetic Energy (Gases at the same temperature have the same average kinetic energy.)
13. When collecting a gas by water displacement: $P_{total} = P_{dry\ gas} + P_{water\ vapor}$
14. Real gases behave most like an ideal gas at high temperature and at low pressure. The more polar a gas is and the larger a gas is, the more it will **deviate** from ideal behavior. Consequently, small, nonpolar gases are the most ideal.