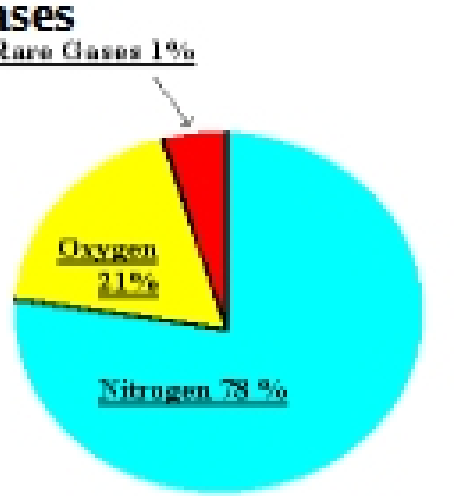
Chapter 10: Gases

Material to Learn on Your Own

- I do not have time to cover Sections 10.1-10.2 in lecture.
  - ➢ A **Pre-recorded** lecture is located on UB Learns, located:
    - Gulde Folder-PreRecorded Folder-**Chapter10_IntroGases**
      - *You MUST watch this prior to next lecture!!*
- Turn to Page 3 "**Gas Laws**" of lecture Notes



Gas Substances

- **Air**: _____ of many gases
- **Common gases**: Usually have _____
  - ➢ Noble gases
  - ➢ Diatomics
  - ➢ Ozone (O_3)
  - ➢ Molecular compounds
    - Ex: CO, CO_2, N_2O

Composition of Earth's Atmosphere	
Component	% (by Vol)
N_2	78.08
O_2	20.95
Ar	0.934
CO_2	0.0386
CH_4	$2x10^{-4}$
H_2	$5x10^{-5}$

- **Solids or liquids** can be *forced* to exist as gases called _____
  - ➢ Ex. H_2O

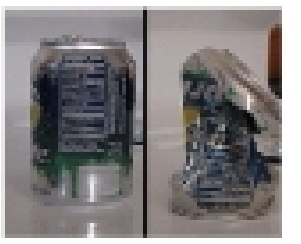
Physical Characteristics of Gases

1. Automatically take the _____ & _____ of its container
   - ★ Molecules are _____ in a **gas** than either a **solid or a liquid**
     - Lots of _____ between molecules
2. Highly _____
   - ➢ Able to _____ gases into _____ volumes
3. Always make _____ mixtures (_____)

Gases Exert Pressure

$$P = \frac{\text{Force}}{\text{Area}}$$

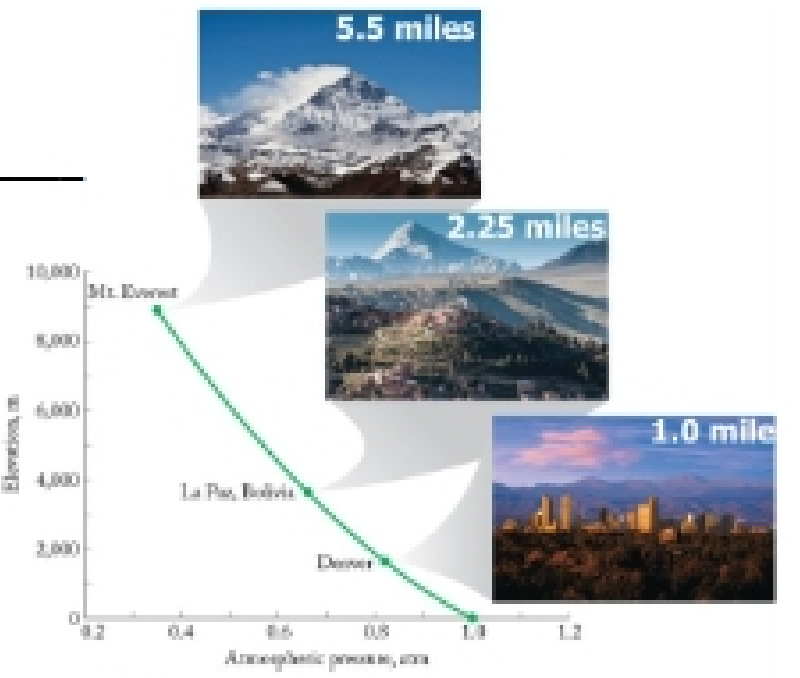
- **Pressure (P)** – _____ exerted by molecules *in motion*
  - ➢ _____ pulls *atmospheric gases* to Earth's surface
    - Exerting _____ psi (lbs/in^2)
      - *Perspective:* car tires usually _____ psi
    - Felt _____



  - ➢ How come we aren't **crushed** under this pressure?
    - Pressure _____ our bodies
      _____ this pressure

- SI Unit = **Pascal (Pa)** $\frac{1N}{m^2} = \frac{1kg}{m \cdot s^2}$
  - ➢ Pascal proposed atmospheric pressure _____
    w/_____ altitude

- Other common units:
  - ➢ ***Atmospheres (atm)*** = pressure at _____
    & _____ =
    - 1 atm = **1 x10^5 Pa**



  - ➢ ***Millimeter of mercury (mmHg)*** = from barometer
    - Also known as **torr** (Torricelli invented barometer)
      - 1 mmHg = **1 torr**
      - 1 atm = **760mmHg**
    - If **increase** Air Pressure
      - Height _____

$$P = gdh$$

P=pressure
g=gravity
d=density of liquid
h=height of liquid