

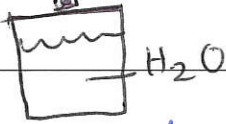
GASES AND AIR PRESSURE NOTES

Pressure: is a measure of force per unit area

high heels \rightarrow body wt. is concentrated in small area vs. Boots + large area

Units of Pressure: mmHg; atm; lb/in² (PSI) torr KPa

Pressure and Temperature (no change in volume): as temp \uparrow the molecules move faster and as a result \uparrow # of collisions (w/ each other w/ walls of container)



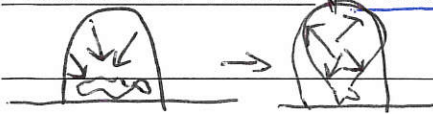
$\uparrow P$

- direct/linear relationship
no Δ volume

\uparrow temperature and \uparrow pressure

\downarrow temperature and \downarrow pressure

Pressure and Volume (no change in temperature): as $V \uparrow$ then $P \downarrow$



Demo - Marshmallows in syringe: as we create a vacuum ($\downarrow P$) the marshmallow grows ($\uparrow V$)

- inverse relationship
"Boyle's Law" = $P_1 V_1 = P_2 V_2$
1 = initial 2 = final

\uparrow volume and \downarrow pressure

\downarrow volume and \uparrow pressure

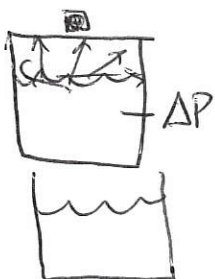
Volume and Temperature (no change in pressure): as $T \uparrow$ particles move faster (\uparrow collisions) ΔV

Demo - Tank Demo
Can Crusher: Tank was clean w/ steam (hot water vapor) & sealed all openings (release valves) as steam cools $T \downarrow V \downarrow$

- direct/linear relationship
"Charles Law"

\uparrow temperature and \uparrow volume

\downarrow temperature and \downarrow volume



$$\frac{V_1}{T_1} = \frac{V_2}{T_2}$$

$$\text{or } V_1 T_2 = V_2 T_1$$

1 = initial 2 = final