

## Unit 6 – Gas Laws

### Chapter 14 – The Behavior of Gases

## STUDY GUIDE

### Vocabulary

- Boyle's law
- Charles' law
- Gay Lussac's Law
- Combined gas law
- Dalton's law of partial pressure
- Ideal gas law

### Equations/Conversions

$$P_1V_1 = P_2V_2$$

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

$$\frac{P_1}{T_1} = \frac{P_2}{T_2}$$

$$\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$$

$$PV = nRT$$

$$P_{\text{total}} = P_1 + P_2 + \dots P_n$$

$$R = 8.314 \text{ (L}\cdot\text{kPa)/(K}\cdot\text{mol)}$$

$$R = 0.0821 \text{ (L}\cdot\text{atm)/(K}\cdot\text{mol)}$$

$$1 \text{ atm} = 760 \text{ mm Hg} = 101.3 \text{ kPa} = 760 \text{ torr}$$

$$\text{Kelvin} = \text{°Celsius} + 273$$

### Core Concepts

- Gases are easily compressed because of the space between particles in a gas.
- Factors affecting gases:
  - Amount
  - Temperature
  - Pressure
- Boyle's Law
- Charles' Law
- Gay-Lussac's Law
- Combined Gas Law
- Ideal Gas Law
- Real gases differ most from an ideal gas at low temperatures and high pressures
- Dalton's Law of partial pressure