Unit 8: Ch 14 – Gas Laws Part 2: Combined Gas/Ideal Gas/Partial Pressure

COMBINED GAS LAW:

- _____ to one another remains the _____:
  - Pressure – Volume → _____ related
  - Volume – Temperature → _____ related
  - Pressure – Temperature → _____ related

- **FORMULA:**

  - Ex #1) A gas at 110 kPa and 30.0 ˚C fills a container with an initial volume of 2.00 L. If the temperature and pressure are raised to 80.0 ˚C and 440 kPa, respectively, what is the new volume?

IDEAL GAS LAW:

- Describes the _____ behavior of gases.
  - Includes temperature, volume, pressure, and _____.

- **FORMULA:**

  - P = _____ R = _____
  - V = _____ T = _____
  - n = _____

- **IDEAL GAS CONSTANT "R" :**
  - "_____" depends on the unit of _____.

Pressure Unit	"R" Value	"R" Unit

- Ex #2) How many moles of gas are contained in a 3.00 L vessel at 3.00×10^2 K and 1.50 atm?

DALTON'S LAW OF PARTIAL PRESSURE:

- When _____, gases exert pressure _____ of other gases present at the same _____ and _____.
- ***"PARTIAL" Pressure:***
  - Pressure exerted by a _____ gas in a mixture.
- ***"TOTAL" Pressure:***
  - The _____ of all _____ pressures.
- **FORUMULA:**
  - Ex #3) What is the pressure (kPa) of oxygen in a mixture of He, CH_4, NH_3, and CO_2 if the total pressure is 545 mmHg? Gas pressures are 145 mmHg, 156 mmHg, 275 mmHg, and 392 mmHg, respectively.

MIXED PRACTICE:

1) A gas of unknown pressure occupies 0.766 L at 298 K and is then tested at 32.6 kPa and occupies 0.644 L at 303 K. What was the original pressure?

2) What temperature is required for 0.0470 moles of gas to fill a balloon to 1.20 L under 0.988 atm?

3) What is the total pressure of a gas mixture at 2.44 kPa, 3.23 kPa, 3.54 kPa, 5.83 kPa, and 1.85 kPa?