# MIXED GAS LAWS WORKSHEET

Created by Tara L. Moore at www.learning.mgccc.cc.ms.us/pk/sciencedocs/gaslawwksheet.htm

**Directions**: Answer each question below. Then **write the name of the gas law used t**o solve each question in the left margin next to each question.

1. A gas occupies 3.5L at 2.5 mm Hg pressure. What is the volume at 10 mm Hg at the same temperature?

1. A constant volume of oxygen is heated from 100°C to 185°C. The initial pressure is 4.1 atm. What is the final pressure?

1. A sample of 25L of NH3 gas at 10°C is heated at constant pressure until it fills a volume of 50L. What is the new temperature in °C?

1. A certain quantity of argon gas is under 16 torr pressure at 253K in a 12L vessel. How many moles of argon are present?

1. An unknown gas weighs 34g and occupies 6.7L at 2 atm and 245K. What is its molecular weight?

1. An ideal gas occupies 400ml at 270 mm Hg and 65°C. If the pressure is changed to 1.4 atm and the temperature is increased to 100°C, what is the new volume?

1. What is the volume of 23g of neon gas at 1°C and a pressure of 2 atm?

1. If 11 moles of HCl gas occupies 15L at 300°C, what is the pressure in torr?

1. The pressure is 6.5 atm, 2.3 mole of Br2 gas occupies 9.3 L . What is the temperature in °C?

1. A 600mL balloon is filled with helium at 700mm Hg barometric pressure. The balloon is released and climbs to an altitude where the barometric pressure is 400mm Hg. What will the volume of the balloon be if, during the ascent, the temperature drops from 24 to 5°C?

1. An unknown gas has a volume of 200L at 5 atm and -140°C. What is its volume at STP?

1. In an autoclave, a constant amount of steam is generated at a constant volume. Under 1.00 atm pressure the steam temperature is 100°C. What pressure setting should be used to obtain a 165°C steam temperature for the sterilization of surgical instruments?

1. Air contains oxygen, nitrogen, carbon dioxide, and trace amounts of other gases. What is the partial pressure of oxygen (PO2) at **101.3kPa of total pressure** if it’s known that the partial pressures of nitrogen, carbon dioxide, and other gases are 79.1kPa, 0.040kPa, and 0.94kPa, respectively? What is the name of the gas law used for this?
2. Explain why the rates of diffusion of nitrogen gas and carbon monoxide gas are almost identical at the same temperature?
3. What distinguishes effusion from diffusion? How are these processes similar?
4. Which of the gases effuses faster at the same temperature: molecular chlorine, nitrogen dioxide, ammonia or molecular nitrogen gas? And why?
5. Explain what each of the following changes would do to the pressure in a closed container (increase or decrease pressure). A) Part of the gas is removed, B) The container size (volume) is decreased, and C)Temperature is increased.
6. Determine the total pressure of a gas mixture that contains oxygen, nitrogen and helium in the following partial pressures of 2.0atm for oxygen, 4.7atm for nitrogen and **253.25kPa** for helium.