

**Chemistry**  
**Gas Laws – All practice I**

Name \_\_\_\_\_

Date \_\_\_\_\_

1. What is the relationship between pressure and temperature?
2. How many grams of  $\text{Cl}_2(\text{g})$  can be stored in a 10.0 L container at 1000 kPa and  $30^\circ\text{C}$ ?
3. A gas with a pressure of 5.4 atm and at  $25^\circ\text{C}$  is raised to a new temperature of  $78^\circ\text{C}$ . What is the new pressure?
4. A sample of argon gas is cooled and its volume went from 2.3 L to 3.8 L. If its final temperature was  $45^\circ\text{C}$ , what was the original temperature?
5. A gas with a pressure of 550 torr and at  $110^\circ\text{C}$  is raised to a new pressure of 760 torr. What is the new temperature?
6. 5.98 mL of an unknown gas weighs 0.081 g at STP. Calculate the molar mass of the gas. Can you determine the identity of this unknown gas?
7. What is the relationship between pressure and volume?
8. What is the atmospheric pressure if the partial pressures of nitrogen, oxygen, and argon are 77.75 kPa, 19.94 kPa, and 1.999 kPa, respectively?
9. A gas at 355 torr has a volume of 850 mL. What pressure would you need to decrease the volume to 550 mL?
10. What is the relationship between volume and temperature?
11. At  $150^\circ\text{C}$  and 100 kPa, 1.00 L of a compound has a mass of 2.506 g. Calculate its molar mass.
12. A gas at  $5^\circ\text{C}$  occupies a volume of 7.5 L. What volume will the gas occupy at  $100^\circ\text{C}$ ?
13. Oxygen at  $25^\circ\text{C}$  and 760 torr pressure occupies a volume of 21.2 L. What is the volume of oxygen gas at  $133^\circ\text{C}$  and 830 torr?
14. An environmental testing lab uses a pump and cylinder to collect a sample of air near a leaking natural gas line. The lab finds the total pressure in their sample cylinder is 776.134 mm Hg. Analyzing the sample, they find it contains oxygen, nitrogen, and methane. What is the partial pressure of the methane in units of kPa if the partial pressure of the oxygen is 253.948 mm Hg and the partial pressure of the nitrogen is 515.30 mm Hg?
15. A toy balloon filled with air has an internal pressure of 1.25 atm and a volume of 2.50 L. If the balloon is taken to the bottom of the ocean where the pressure is 95 atm, what will the new volume of the balloon be? How many moles of gas does the balloon hold? Assume  $T = 285\text{ K}$ .