

GASES 3 – Review

- 1) A gas occupies a volume of 2.45 L at a pressure of 1.03 atm and temperature of 293 K. What volume will the gas occupy if the pressure changes to 0.980 atm and the temperature remains unchanged?
- 2) A gas occupies a volume of 458 mL at a pressure of 1.01 kPa and temperature of 295 K. When the pressure is changed, the volume becomes 477 mL. If there has been no change in temperature what is the new pressure?
- 3) A metal container holds a gas at a pressure of 0.55 atm at a temperature of -125°C . What will the pressure be when the temperature is increase to 175°C ?
- 4) A weather balloon is filled with 80.0 L of hydrogen gas. The pressure at ground level is 89.0 kPa, and the temperature is 21.0°C . As the balloon rises to a certain altitude, the pressure drops to 8.1 psi, and the temperature *decreases* by 80.0°C . What is the volume of the balloon at this altitude?
- 5) What will be the volume of a gas sample at 309 K if its volume at 215 K is 3.42L?
- 6) A gas sample at 83°C occupies a volume of 1400 m^3 . At what temperature will it occupy 1200 m^3 ?
- 7) A helium balloon with a volume of 3.00 L, a pressure of 100 kPa, and a temperature of 295 K is put into an environment where the pressure is 650 torr and the temperature is 250 K. What is the new volume of the balloon?
- 8) A sample of gas has a volume of 852 mL at 189 K. What volume does the gas occupy at 293 K?
- 9) A sample of gas has a volume of 234.9 L at a temperature of 23°C . What temperature is necessary to have a volume of 200.0 L?
- 10) A carbon dioxide cylinder at a pressure of 325 kPa and a temperature of -5.2°C is delivered to a restaurant. What is the pressure inside the cylinder (in atmospheres) after it warms to room temperature (25°C)?
- 11) A partially inflated weather balloon has a volume of 1500 L at 0.988 atm of pressure. What is the volume of the balloon when released to a height where the pressure is 0.441 atm?
- 12) The air in a balloon has a volume of 3.00 L and exerts a pressure of 101.1 kPa at 27°C . What pressure does the air in the balloon exert if the temperature is increased to 127°C and the air is allowed to expand to 15.0L?
- 13) What is the temperature in Celsius of a gas that has a volume of 7800 cm^3 if it is $10,900\text{ cm}^3$ at 38°C ?
- 14) If a 600 mL gas is at STP, what would be the new volume if the pressure is altered to 18.5 psi and the temperature remains constant?