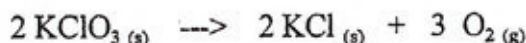


Gas Unit Review

1. List the six postulates of the Kinetic Molecular Theory for Gases
2. Complete the following unit conversions:
 - a) 44.1 p.s.i. = _____ kPa
 - b) 115 Pa = _____ mmHg
 - c) 80 mmHg = _____ torr
 - d) 84.5 kPa = _____ atm
 - e) 203 K = _____ °C
3. State the following gas laws and their formula:
 - a) Avogadro's
 - b) Boyle's
 - c) Charle's
 - d) Dalton's Law of Partial Pressures
 - e) Gay-Lussac's
4. Define the following terms:
 - a) pressure
 - b) absolute zero
 - c) STP
5. Explain why a balloon expands as it ascends in the atmosphere. (Assume temperature remains constant.)
6. Some nitrogen is held in a 2.00 L tank at a pressure of 101 kPa. The tank is attached to a 5.00 L tank that is completely empty and a valve is opened to connect the two. No temperature change occur in the process. Determine the total pressure in this two tank system after the nitrogen gas stops flowing. (28.9 kPa)
7. A gas originally at a temperature of 26.5 °C is cooled at a constant pressure. Its volume decreases from 5.40 L to 5.26 L. Determine its new temperature in degrees Celsius. (19 °C)
8. A certain thin-walled glass bottle generally withstands a pressure difference across its wall of 127 kPa before it bursts. A typical such bottle is sealed on a day when the temperature is 20 °C and the pressure is 99.2 kPa. It is immediately heated in an oven. Estimate the temperature in degrees Celsius at which the bottle will explode. (395 °C)
9. The partial pressure of O_{2(g)} in a mixture of O_{2(g)} and N_{2(g)} is 101 kPa. The total pressure of the mixture is 246 kPa. Determine the partial pressure N_{2(g)}. (145 kPa)
10. A scuba diver's tank contains 0.30 kg of oxygen gas compressed into a volume of 2.32 L.
 - a) Use the ideal gas law to estimate the gas pressure inside the tank at 5 °C. (9.34 x 10³ kPa)
 - b) What volume would this oxygen occupy at 30 °C and a pressure of 0.98 atm? (245 L)
11. Potassium chlorate decomposes when heated, giving oxygen and potassium chloride:



87.6 g of KClO_{3(s)} is heated and the reaction goes to completion. What volume of O_{2(g)} will be evolved if it is collected at a pressure of 105 kPa and a temperature of 13.2 °C. (24.3 L)