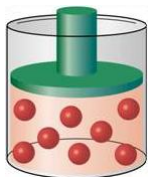


Name: _____

Date: _____

- [4 pt] 1. Define each variable in the equation $PV=nRT$ and give the standard units for each
- [5 pt] 2. Based on the 4 laws discussed in class and/or the ideal gas law ($PV=nRT$) answer the following questions with either (Directly Proportional, Inversely Proportional, or Neither).
- (a) Pressure and Volume are: 2(a) _____
- (b) Volume and Temperature are: 2(b) _____
- (c) Pressure and Temperature are: 2(c) _____
- (d) Number of Moles and Pressure: 2(d) _____
- (e) Pressure and The Gas Constant (R): 2(e) _____
- [4 pt] 3. How many mols of gas are in a 15.0 L container with a pressure of 660. mmHg at a temperature of 45.0 °C? 3. _____
- [4 pt] 4. What is the density (g/L) (4SF) of oxygen gas at STP? 4. _____
- [4 pt] 5. What is the molecular weight (MW in g/mol) of a gas with density 5.380 g/L at 15.0 °C and 736 mm Hg pressure? What gas do you think it is? 5. _____

- [8 pt] 6. Assume that you have a cylinder with a movable piston. What would happen to the gas volume of the cylinder if you were to do the following? Where possible indicate by what factor the volume will increase or decrease. Explain.



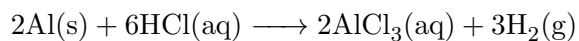
(a) Double the temperature in Kelvin while holding the pressure constant. 6(a) _____

(b) Decrease the amount of gas by 1/4 while holding the temperature and pressure constant. 6(b) _____

(c) Decrease the pressure by 75% at constant temperature. 6(c) _____

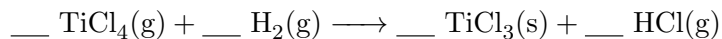
(d) Halve the temperature in Kelvin while halving the pressure. 6(d) _____

- [4 pt] 7. What volume (in L) of hydrogen gas at 30.0 °C and 700. torr will be formed by the reaction of 45.5 grams of Al with excess HCl? 7. _____



CHE 111 - Homework - Ch 8b

- [4 pt] 8. Using the following reaction, how many grams of TiCl_4 are needed for complete reaction 8. _____
with 155 L of H_2 gas at 435 °C and 795 mm Hg?



- [4 pt] 9. At what temperature (°C) will 25.2 mols of Xe gas occupy a volume of 645 L
at a pressure of 732 torr? 9. _____

- [4 pt] 10. A small cylinder of helium gas used for filling balloons has a volume of 2.50 L
and a pressure of 13,800 kPa at 25 °C. How big of a balloon can you fill at a gas pressure
of 1.35 atm? 10. _____

- [5 pt] 11. Given an unknown gas you perform several tests on it to determine that it is composed of 87.42%
Nitrogen 12.58% Hydrogen and a sample filling a 1.00 L flask at 0.950 atmospheres and 35.0 °C weighed
3.61 grams.

(a) What is the Empirical Formula of the gas? 11(a) _____

(b) What is the Molecular Weight of the gas? 11(b) _____

(c) What is the Molecular Formula of the gas? 11(c) _____