AP WORKSHEET 03DEF: Gas Laws I

In Questions 1 through 3 the temperature and the amount of gas are both constant.

1. Which gas law relates volume and pressure? Express the law mathematically? (2)

2. Calculate the new pressure if a 2.45 L of a gas at a pressure of 1.01 atm is contracted to a volume of 2.29 L. (1)

3. Calculate the new volume if a 13.3 L of a gas initially at a pressure of 2.51 atm is subjected to an increase in pressure equivalent to 65.0 mmHg. (2)

In Questions 4 through 6 the pressure and the amount of gas are both constant.

4. Which gas law can relates volume and temperature? Express the law mathematically. (2)

5. Calculate the new volume of a particular gas if 1.23 L of it, initially at a temperature of 32.0 °C is subjected to a drop in temperature of 19.0 degrees Celsius. (1)

6. Calculate the new volume of a gas if a 12.78 L of it, initially at a temperature of –50.00 °C is heated to a temperature of 28.00 °C. (1)

In Questions 7 and 8, the pressure and temperature of gas are both constant.

7. Which gas law can relates volume and number of moles? Express the law mathematically. (2)

8. What mass of nitrogen occupies a volume of 11.2 L, if 4.20 g of nitrogen occupies 100. L? (2)

In questions 9 and 10, assume the gas behaves ideally.

9. A sample of a group 1 bromide weighing 2.000 g was converted to a gas at 504.0 °C and 1.000 atm pressure. The resulting vapor occupied a volume of 1238 mL. Identify the group 1 metal present in the compound. (3) R = 0.0821 (atm L K^{-1} mol^{-1})

10. What volume does 1.24 g of fluorine gas occupy under conditions of 5.20 °C and 2.04 atm? (1)