Honors Chemistry Hour\_\_\_\_\_ Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
Dr. Wexler
Gas Laws Worksheet 1 (HS-PS1-3; HSN-Q.A.1)
Date\_\_\_\_\_

Use the ideal gas law, “PV = nRT” to solve the following problems:

*Given: If* pressure is needed in kPa then convert by multiplying pressure in atmospheres by *101.3kPa*R =8.314 JoulesK-1mol-1

K = degrees C + 273

1) If I have 4 moles of a gas at a pressure of 5.6 atm and a volume of 12 liters, what is the temperature in celsius?

2) If I have 7.7 moles of gas at a pressure of 0.09 atm and at a temperature of 56 0C, what is the volume of the container, in liters, that the gas is in?

3) If I have 17 moles of gas at a temperature of 67 0C, and a volume of 88.89 liters, what is the pressure of the gas in atmospheres?

Given the following gas laws:

Gay-Lussac’s Law P1/T1 = P2/T2
Charles’s Law V1/T1 = V2/T2
Boyle’s Law P1V1 = P2V2

4) In a closed, rigid gas-filled container, as the temperature increases what happens to the:

 A. volume \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 B. air pressure \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 C. number of air molecules \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5) In a gas-filled balloon, as the temperature increases what happens to the:

 A. volume \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 B. air pressure \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 C. number of air molecules \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6) Which gas law(s) applies to a closed, rigid gas-filled container?

7) Which gas law(s) applies to a gas-filled balloon?

8) Referring to a heated gas-filled balloon, as volume increases Boyle’s Law states that the pressure should decrease. However, the air pressure inside the balloon actually increases slightly.

Explain why Boyle’s Law is not violated in this case. That is, air pressure did go down. How is that?