Chapter 14 Quiz Review

1. If the volume of a container doubles, what happens to the pressure inside the container assuming temperature is constant? Why does this happen?
2. What Law explains the concept described above? Formula?
3. If the temperature of the container were to be tripled, what happens to the volume inside the container assuming the pressure is constant? Why does this happen?
4. What Law explains the concept described above? Formula?
5. If the temperature of the container were to be cut in half, what happens to the pressure inside the container assuming the volume is constant? Why does this happen?
6. What Law explains the concept described above? Formula?
7. When you combine all three of the laws described above, what formula do you eventually have?
8. How does the Ideal Gas Law differ from any of the four laws described above? What variables in its equation allow you to distinguish it from the rest? What do these variables represent?
9. Write the Ideal Gas Law equation, and include what units each of your variables need to be in. Additionally, explain if you were given other units (ex. mmHg, kPa, mL, oC), how you would get to the ideal units.
10. For the following questions, solve the problem, including the law that allows you solve it. Express your answers in three significant figures.
    1. You are given a gas in a 50.0 mL container under STP conditions. If the volume of this container remains constant, how would the pressure of this gas change if the temperature was tripled?
    2. You are given Nitrogen Dioxide gas in a 6.7 L container with a pressure of 800 mmHg and a temperature of 25oC. Find how many moles of gas you have? How many grams of gas do you have?
    3. You are given dihydrogen monoxide vapor at a pressure of 146 kPa. If you quadruple the size of the volume, what will the pressure inside the container be, assuming constant temperature?
    4. You have 1 mol of CO2 gas in STP conditions. How will the pressure of the container be affected if the volume of the container is now 10 L and the temperature is 400K?
11. Why would gasses tend to effuse at a faster rate than if they were diffusing? In your answer, state how these two processes are similar.
12. Do all gasses move at the same speed? If not, what influences their speed? Show this relationship in the formula and Law given to you in class.
13. Which of these gasses will move faster: carbon monoxide or nitrogen gas? Why have you chosen this answer?
14. You are comparing oxygen gas to a mystery gas. You have figured out that this gas moves four times faster than oxygen gas. Find this mystery gas.
15. You have a container filled with four gasses at a pressure of 400 kPa. The pressures for the first three gasses are: 0.80 atm, 104 kPa and 590 mmHg respectively. With this information, find the pressure of the fourth gas in your container.
16. Which law allows you to solve the problem above? Provide the formula for it.