**CST Review: Topic 3– Kinetics**

**Gases and their Properties:**

1. Describe the motion of gas particles. **(p. 386)**

2. What will happen to the pressure on an object when you move to a higher altitude (ex. top of a mountain)? What will happen to the boiling point of water? **(p. 426)**

3. What values represent standard temperature and pressure (STP)? **(p. 431)**

4. Convert the following. **(p. 30)**

a) 100 °C to K

b) 250 K to °C

c) -35 °C to K

5. How does changing the volume of gas, and temperature affect the gas pressure? **(p. 421-428)**

**For Q’s #6-8, name the gas law and show all your work. (p. 421-428)**

6. The pressure on 2.00 L of anesthetic gas changes from 100 kPa to 40 kPa. What will be the new volume if the temperature remains constant?

7. Exactly 600 mL of air at -45.0 °C is warmed to 115 °C. What is the new volume if the pressure remains constant?

8. A 500 mL air sample at a temperature of -50 °C has a pressure of 1.3 atm. What will be the new pressure if the temperature is raised to 102 °C and the volume expands to 700 mL?

**Solutions:**

1. Define solute and solvent. Salt is dissolved in a glass of water. Which is the solute? Which is the solvent? **(p. 292)**

2. Calculate the number of grams of solute needed to prepare each of the following solutions: **(p. 464-466)**

a) 4500.0 mL of a 2.0*M* solution of potassium hydroxide.

b) 2.0 liters of 3.0*M* nitric acid solution.

3. Calculate the molarity of each of the following solutions: **(p. 464-466)**

a) 0.60 mol of NaCl dissolved in 1.6 L of solution.

b) 25.2 g of potassium nitrate in enough water to make 150.0 mL of solution.

4. You must prepare 500.0 mL of 0.750*M* NaBr solution using a 3.00*M* NaBr stock solution. How many milliliters of stock solution should you use? **(p. 467)**