Practice Test Questions 1
Math and Stoichiometry Review

1. 1 mL = 1 cm^3
   How many liters are in 1 m^3?

2. A 125 mL flask contains 75 kPa Cl_2 at 22 ˚C.

(a) How many moles of Cl_2 are in the flask?

(b) What mass of Cl_2 is in the flask?

3. The density of pure ethanol (C_2H_5OH) is 0.789 g/mL at room temperature. Calculate the number of hydrogen atoms in 1.00 L of ethanol.

4. If 6.25 grams of calcium metal are added to 2 liters of water, what mass of hydrogen gas is produced?

$$Ca(s) + 2H_2O(l) \rightarrow Ca(OH)_2(s) + H_2(g)$$

5. Club soda is an aqueous solution of carbon dioxide. A sample of club soda is titrated with 0.04202 M $NaOH_{(aq)}$ according to the reaction equation below:

$$CO_2(aq) + 2NaOH(aq) \rightarrow Na_2CO_3(aq)$$

If it takes 32.14 mL of 0.04202 M $NaOH_{(aq)}$ to react with a 25.00 mL sample of club soda, what is the concentration of CO_2 in club soda *(in g/L)*?

6. A piece of magnesium with a mass of 185 mg is dropped into a beaker containing 75 mL of 1.25 M $HCl_{(aq)}$:

$$Mg(s) + 2HCl(aq) \rightarrow MgCl_2(aq) + H_2(g)$$

Once the reaction is complete, what is the concentration of $HCl_{(aq)}$ remaining in the beaker? *Assume that the volume of solution does not change.*