Review Questions

1. How many total atoms are present in 4.8 mols of C (**Answer: 2.89 x 10^{24}**)
2. Calculate the molar mass of $Fe(CH_3COO)_2$ **(Answer: 3295.7 g/mol)**
3. Calculate the percent of Fe in $Fe_3(PO_4)_2$ **(Answer: 0.5265 %)**
4. Use the Bronsted-Lowry definition of acids and bases to label the problem
   $CH_3COOH_{(aq)} + H_2O_{(L)} <----> CH_3COO^-_{(aq)} + H_3O^+_{(aq)}$
5. Describe three experiments if an acid is strong or weak? (Explain 3 ways) **(Answer: Is very bubbly, conducts electricity, phenolphthalein paper turns red)**
6. Name all the strong bases **(Answer: NaOH, KOH, $Ca(OH)_2$, $Ba(OH)_2$, everything below Ca in group 1 and 2)**
7. Calculate the concentration of NaOH if 30.60 ml of NaOH is neutralized with 10.00 ml of 0.401 mol of oxalic acid $H_2C_2O_4$ **(Answer: 3707 x 10^{-2} mol/L)**
8. Calculate the pH of a solution with a H_3O of 3.7 x 10^{-11} mols **(Answer: 10.43)**
9. What is the pOH of a solution containing 0.0080 mol/L of Barium Hydroxide $Ba(OH)_2$ **(Answer: 2.09)**
10. Calculate the volume of 2.00 mol HCl that is required to completely react with 5.80 g of Ga. $2Ga + 6HCl ---> 2GaCl_3 + 3H_2$ **(Answer: 0.1248L)**
11. You have a 200 L box of 30.5 mol Helium gas that is being stored at 16°C. What is the pressure of the box? **(Answer: 367 kPa)**
12. You have a 30.0 L container of water. The pressure in this container is 195.5 kPa and the water is 26.0°C. What is the mass of the container? **(Answer: 44.80 g)**
13. A 1.05 L container of poisonous gas has a pressure of 99.0 kPa and is being stored at 37.0℃. Calculate how many moles of the poisonous gas are in the container. **(Answer: 2.43 x 10^{22})**
14. A 10 L balloon filled with Helium starts at the ground with the helium inside being 22.0℃ and a pressure of 96.0 kPa. The balloon floats up and is caught my a person in a hot air balloon. Now the temperature inside the balloon is -5.0℃ and the pressure has dropped to 23.7 kPa. What is the volume of the balloon at this point? **(Answer: 36.0 L)**
15. 7.40g of O_3 react with 0.67g of NO. Determine the LR and XS and the mass of the product
    $O_3 + NO ----> O_2 + NO_2$ **(Answer: 46.0055 g)**