Review of Chem 170

1. Report the answer for $\left(\frac{21.15}{3.46}\right) + 5.7$ to the correct number of significant figures.
2. A portable radiator provides 2050 BTUs of energy per hour. Given that 1 BTU is equivalent to 1.055 kJ, how many megajoules are produced if the radiator is operated 24 hours per day for 90 days?
3. How many hydrogen atoms are in 5.10 mol of NH_4S?
4. A 30.6 g sample of the compound X_2O_3 contains 14.4 g of oxygen atoms. What is the identity of the element X?
5. A compound is 54.33% C, 9.15% H, and 36.32% O by mass. What is its empirical formula?
6. When heated, $KClO_3$ decomposes to form KCl and O_2. Write a balanced chemical reaction for this process and report the mass of O_2 produced by the reaction of 20.5 g of $KClO_3$.
7. Zinc reacts with hydrochloric acid to form a solution of zinc chloride and hydrogen gas. Write a balanced chemical reaction for this process and report the mL of 4.50 M HCl needed to react with 3.45 g Zn.
8. Write a balanced reaction showing the precipitation of PbI_2 upon combining separate solutions of $Pb(NO_3)_2$ and NaI. What mass of PbI_2 forms when mixing 1.50 L of 0.04 M $Pb(NO_3)_2$ and 0.600 L of 0.140 M NaI.