1. What is the mass of 5.00×10^{20} atoms of Cr?

2. How many moles are in a 50.0 g sample of ammonium carbonate?

3. What is the mass of one molecule of dinitrogen tetroxide?

4. Balance the following two reactions.

$$\underline{\hspace{1cm}} \; H_2 \, (g) \quad + \quad \underline{\hspace{1cm}} \; N_2 \, (g) \quad \rightarrow \quad \underline{\hspace{1cm}} \; NH_3 \, (g)$$

$$\underline{\hspace{1cm}} \; Pb(N_3)_2 \, (s) \quad + \quad \underline{\hspace{1cm}} \; O_2 \, (g) \quad \rightarrow \quad \underline{\hspace{1cm}} \; PbO \, (s) \quad + \quad \underline{\hspace{1cm}} \; N_2 \, (g)$$

5. A compound is composed of only C, H, and N atoms.

    A) Determine the empirical formula if the compound is found to be 74.1% C and 8.70% H by mass.

    B) If the mass of 0.123 moles of the compound has a mass of 19.94 g, what is the molecular formula of the compound?

6. You react 10.0 g of hydrogen gas with 60.0 g of oxygen gas to form water vapor. How much water can be formed from this reaction?

7. Solid iron(III) oxide reacts with carbon monoxide to form elemental iron and carbon dioxide gas.
    A) Write a balanced chemical equation for the reaction described above.

    B) How much iron metal is obtained if 433.2 g of iron(III) oxide reacts with 250. L of carbon monoxide (density of carbon monoxide is 1.145 g/L).

    C) How much starting material would be left over after the reaction is complete?

8. If you have equal mass samples of each of the following compounds, which sample contains the greatest number of oxygen atoms?

H_2SO_4 $C_{12}H_{22}O_{11}$ $KClO_3$