1. In what molar ratio do the following substances react?
   a. hydrochloric acid with calcium hydroxide
   b. nitric acid with ammonia

2. Write an ionic equation, including state symbols, for each of the following reactions.
   a. precipitation of silver(I) chloride when aqueous silver(I) nitrate is mixed with aqueous sodium chloride
   b. reaction of aqueous potassium carbonate with sulfuric acid

3. What mass of aluminium reacts with 258 mg of chlorine?

4. Find the mass of one mole of $^{7}_3$Li atoms given the following data.
   - mass of proton = $1.6726 \times 10^{-24}$ g
   - mass of electron = $9.1094 \times 10^{-28}$ g
   - mass of neutron = $1.6749 \times 10^{-24}$ g
   - Avogadro constant = $6.022 \times 10^{23}$ mol$^{-1}$