SHOW ALL WORK
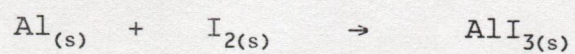
1. A gaseous mixture containing 10.0 moles of H_2 and 12.0 moles of Cl_2 react to form $HCl_{(g)}$.

    A) How many grams of HCl can be formed?

    B) What mass of each reactant remains unused?

2.   Consider the reaction

$$Al_{(s)} + I_{2(s)} \rightarrow AlI_{3(s)}$$

Determine the limiting reactant and the mass of aluminum iodide that will be formed if we start with 1.20 g of aluminum and 2.40 g of iodine.

3.   Hydrogen bromide is produced in a double replacement reaction
      starting with 50.0 g of sodium bromide and excess phosphoric
      acid.   What mass of hydrogen bromide is obtainable?

4.   74.1 liters of oxygen gas is

A)   how many moles of oxygen gas?

B)   how many molecules of oxygen?

C)   how many atoms of oxygen?

D)   how many grams of oxygen?