Chemistry - Gas Stoichiometry Worksheet

Show your work, including units.

1. Determine the volume, in liters, occupied by 0.030 moles of a gas at STP.

2. How many moles of argon atoms are present in 11.2 L of argon gas at STP?

3. What is the volume of 0.05 mol of neon gas at STP?

4. What is the volume of 1.2 moles of water vapor at STP?

1. What volume of nitrogen at STP would be required to react with 0.100 mol of hydrogen to produce ammonia? **N2(g) + 3H2(g) → 2NH3(g)**
2. What volume of nitrogen at STP would be required to react with 0.100 g of hydrogen to produce ammonia? **N2(g) + 3H2(g) → 2NH3(g)**
3. What volume of dry NO(g) at STP could be produced by reacting 8.74 g of Cu with an excess of HNO3? **3Cu + 8 HNO3 → 3 Cu(NO3)2 + 2 NO(g) + 4 H2O(l)**
4. What volume of hydrogen would be required to produce 0.400 mole of HCl at STP?

**H2(g) + Cl2 (g) → 2HCl(g)**

1. If a 0.500 mole of carbon disulfide reacts with oxygen completely, what would be the total volume of the products at STP? **CS2(l) + 3 O2(g) → CO2(g) + 2 SO2(g)**
2. What volume of oxygen gas will be produced when 13.5 g of potassium chlorate is decomposed at STP? **2KClO3(s) → 2KCl(s) + 3 O2(g)**
3. For the reaction 2 H2(g) + O2(g) 🡪 2 H2O(g), how many liters of water can be made from 5 L of oxygen gas and an excess of hydrogen?
4. How many liters of water can be made from 55 grams of oxygen gas and an excess of hydrogen at STP?
5. How many liters of water can be made from 34 grams of oxygen gas and 6.0 grams of hydrogen gas at STP? What is the limiting reactant for this reaction?