5) If the experiment in 4) is carried out, and you only get 14.35 g of Ammonia, what is the percent yield for the reaction?

$$\frac{\text{actual}}{\text{theoretical}} \times 100\% \qquad \frac{14.35\,g}{18.7\,g} \times 100\% = 76.7\%$$

6) 73.4 g of 79% pure Hydrogen us reacted with 113.4 L of 92.1% pure Nitrogen gas at STP. What is the theoretical yield of Ammonia?

If H_2 limits)

$$0.79 \times 73.4\,g\,H_2 \times \frac{1\,mol}{2.0\,g\,H_2} \times \frac{2\,mol\,NH_3}{3\,mol\,H_2} = 19\,mol\,NH_3$$

$$0.921 \times 113.4\,L\,N_2 \times \frac{1\,mol}{22.4\,L} \times \frac{2\,mol\,NH_3}{1\,mol\,N_2} = 9.32\,mol\,NH_3$$

pick the smallest amount

7) Household Ammonia is a 0.50 M aqueous solution of Ammonia. How many L of water would we have to use to make household Ammonia from the answer to 6).

$$M = \frac{n}{V} \Rightarrow 0.50\,M = \frac{9.32\,mol\,NH_3}{x\,L}$$

$$x\,L = \frac{9.32\,mol\,NH_3}{0.50\,M} \qquad x = 18.65025\,L = 19\,L$$

8) What would the molarity of the solution from 6) be if 12.1 L of water was accidentally spilled into it?

$$M_f = M_i \times \frac{V_i}{V_f}$$

$$M_f = 0.50 \times \frac{19\,L}{19\,L + 12.1\,L} = 0.30\,M$$