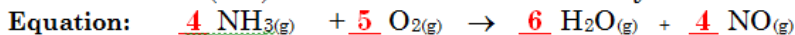


**Perfect answers to #8 and #4 from the “Homework #2”, which has a picture of my mom...**

8. Determine the mass of water vapor you would expect to form (and the percent yield) in the reaction between 15.8 g of NH<sub>3</sub> and excess oxygen to produce water and nitric oxide (NO). The mass of water actually formed is 21.8 g.

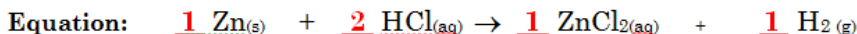


Before	0.928	xs	0	0
Change	-0.928		+1.39	
After	0		1.39	

$$15.8 \text{ g NH}_3 \times \frac{1 \text{ mol NH}_3}{17.0 \text{ g NH}_3} = 0.928 \text{ mol NH}_3 \times \frac{6 \text{ mol H}_2\text{O}}{4 \text{ mol NH}_3} = 1.39 \text{ mol H}_2\text{O} \times \frac{18.0 \text{ g H}_2\text{O}}{1 \text{ mol H}_2\text{O}} = 25.1 \text{ g H}_2\text{O}$$

$$\frac{21.8 \text{ g H}_2\text{O}}{25.1 \text{ g H}_2\text{O}} \times 100\% = 86.9\% \text{ yield}$$

4. Suppose 4.61 g of zinc was allowed to react with hydrochloric acid to produce zinc chloride and hydrogen gas. How much zinc chloride should you get? Suppose that you actually recovered 8.56 g of zinc chloride. What is your percent yield? From here on, moles are understood in the BCA table.



Before	0.0705	xs	0	0
Change	-0.0705		+0.0705	
After	0		0.0705	

$$4.61 \text{ g Zn} \times \frac{1 \text{ mol Zn}}{65.4 \text{ g Zn}} = 0.0705 \text{ mol Zn} \times \frac{1 \text{ mol ZnCl}_2}{1 \text{ mol Zn}} = 0.0705 \text{ mol ZnCl}_2 \times \frac{136.3 \text{ g ZnCl}_2}{1 \text{ mol ZnCl}_2} = 9.61 \text{ g ZnCl}_2$$

$$\frac{8.56 \text{ g ZnCl}_2 \text{ actual}}{9.61 \text{ g ZnCl}_2 \text{ theoretical}} \times 100\% = 89.1\% \text{ yield}$$