

Percent Yield

The quantities that we have been calculating in mass-mass problems are theoretical amounts. We are calculating the maximum possible amount of a substance that could be produced through a reaction.

Throughout your lab experience, you have identified sources of error in different procedures. Often times, these sources of error cause the actual amount of product that we produce in a lab to be much less than the theoretical amount we determined.

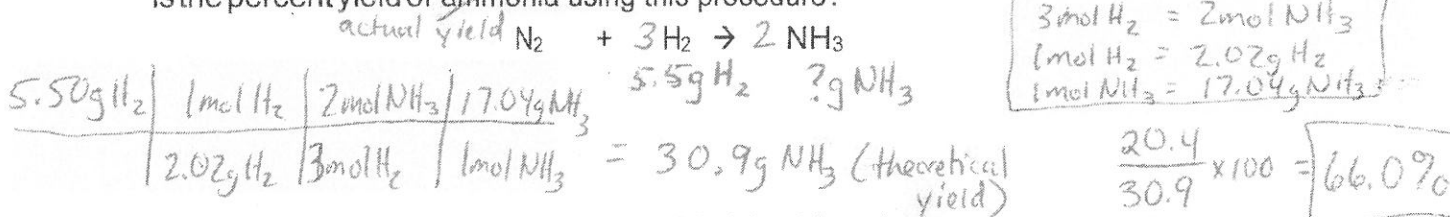
Chemists want to compare the experimental amount of a substance they produce in lab with the theoretical amount they should be able to produce. This is called the **percent yield** of a product.

$$\text{Percent yield} = \frac{\text{(actual) experimental amount}}{\text{theoretical amount}} \times 100$$

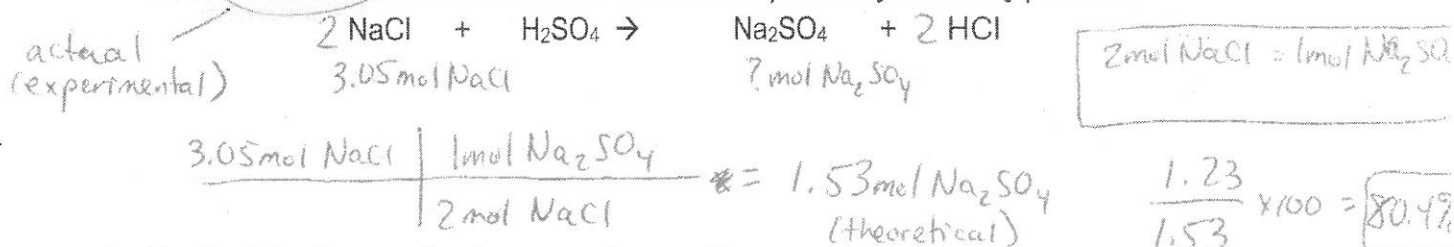
1. The experimental amount of a product in a reaction is 39.7 g although a mass-mass calculation predicted 65.6 g. What is the percent yield of this product?

$$\frac{39.7 \text{ g}}{65.6 \text{ g}} \times 100 = 60.5\% \text{ yield}$$

2. A chemist was able to form 20.4 g of ammonia using 5.50 g of hydrogen gas. What is the percent yield of ammonia using this procedure?



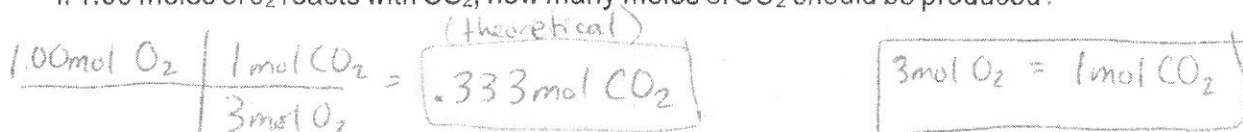
3. In lab, I reacted 3.05 moles of sodium chloride with sulfuric acid and I was able to form 1.23 moles of sodium sulfate. What is the percent yield of my product?



4. Use the following equation to answer the questions:



If 1.00 moles of O_2 reacts with CS_2 , how many moles of CO_2 should be produced?



If 0.300 moles are actually produced in lab, what is the percent yield?

$$\frac{0.300}{0.333} \times 100 = 90.1\%$$