SCH3U Quantitative Chemistry	# PERCENT YIELD

THEORETICAL VS. ACTUAL YIELD	
THEORETICAL yield	ACTUAL yield

Stoichiometric calculations allow us to calculate the amounts of reactants required or the amounts of products generated from a chemical reaction. Usually, the actual yield of the reaction is less than the theoretical yield. This is due to:_____.
Hence the amount of product recovered is often less than whould be predicted from stoichiometric calculations.

Percentage yield is calculated as follows:

$$\text{Percentage Yield} = \frac{\text{actual yield}}{\text{theoretical yield}} \times 100\%$$

EXAMPLE 1: **Methanol, CH_3OH, can be made in a synthesis reaction using carbon dioxide and hydrogen. 20.0 g of H_2 was reacted with excess CO_2 to yield 102.0g of methanol. What is the percentage yield of this reaction?**

STEP 1: Write out the balanced chemical equation and knowns and unknowns from the question.

STEP 2: convert mass of reactants to moles of reactants

STEP 3: Find the LR first and/or convert moles of LR to moles of required product

STEP 4: Convert moles of product to mass of product

STEP 5: Calculate the percentage yield of the product

$$\text{Percentage Yield} = \frac{\text{actual yield}}{\text{theoretical yield}} \times 100\%$$

EXAMPLE 2: When 30.0 g of benzene (C_6H_6) and 65.0 g of bromine are reacted together as shown below 56.7 g of bromobenzene (C_6H_5Br) is formed. What is the percent yield of this reaction?