**Limiting Reagent Notes**

First of all **REAGENT** is the same as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Let’s say you are making a ham and cheese sandwich.

You have 10 pieces of cheese, 10 pieces of bread and 10 pieces of ham.

i) How many sandwiches can you make?

ii) Will there be anything left over?

**2 bread + 3 slices ham + 1 cheese 🡪 1 sandwich**

**Math by Dimensional Analysis**

ii) How much and what will be left over?

**A BCE is just a recipe for a chemical reaction!**

\_\_\_\_\_\_\_\_**N2 ( ) + \_\_\_\_\_\_\_\_H2 ( ) 🡪 \_\_\_\_\_\_\_\_NH3 ­( )**

i) If you had 10.00 g of nitrogen and 10.00 g of hydrogen, how many grams of ammonia could be formed??

ii) Which reactant is the **limiting reagent**? How do you know?

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iii) Which reactant is in excess? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

iv) How much of it is left over?

**Theoretical Yield**

* The theoretical yield is the quantity of a product obtained from the complete conversion of the limiting reactant in a chemical reaction.
* It is the calculated yield and assumes that all of the limiting reagent reacts completely.
* The theoretical yield is commonly expressed in terms of grams or moles.

**Actual Yield**

* The actual yield is the quantity of a [product](https://www.thoughtco.com/definition-of-product-in-chemistry-604617) that is actually obtained from a chemical [reaction](https://www.thoughtco.com/definition-of-reaction-604632).
* Usually, the actual yield is lower than the theoretical yield because few reactions truly proceed to completion (i.e., aren't 100% efficient) or because not all of the product in a reaction is recovered.

**Percent Yield**

* The relationship between actual yield and theoretical yield is used to calculate [percent yield](https://www.thoughtco.com/definition-of-percent-yield-605899):

**Percent Yield = Actual Yield x 100**

**Theoretical Yield**

In the previous problem if \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ was actually obtained, what was the percent yield?