**Percent Yield**

% error = Theoretical – Experimental x 100

Theoretical

* How far away you are from theoretical or “actual” value.

Percent Yield

* Stoichiometry tells us the theoretical yield of a chemical reaction.
* *Actual yield* is **less.**
  + Incomplete reactions
  + Impure reactants
  + Side reactions occurring
  + Reversible reations

Actual Yield = Theoretical x % Yield

**% Yield =**  **Actual Yield x 100**

**Theoretical Yield**

**Practice**

If 5.50 g of hydrogen reacts with nitrogen to form 20.4 g of ammonia, what is the percent yield?

N2(g) + 3 H2(g) 🡪 2 NH3(g)

So, now. . .

You are given that 20.4 g NH3 is the actual yield, we now need to find the theoretical yield of NH3.

* To do that we use the amount of hydrogen we have to find the theoretical yield of NH3.

5.50 g H2 x 1 mol H2 x 2 mol NH3 x 17 g NH3 = 31.2 g NH3 (theoretical Value)

2.0 g H2 3 mol H2 1 mol NH3

* Now calculate the % yield by using the actual yield (given) and theoretical yield (calculated) values.

% Yield = 20.4 g NH3 x 100% = **65.4 % NH3**

31.2 g

\*\* actual yield 🡪 what you **ACTUALLY** get (lab results) 🡪 ALWAYS a product\*\*

\*\* theoretical yield 🡪 what you **SHOULD** get (use stoichiometry to calculate)\*\*