

The following chart shows that amount of products that form when various amounts of copper nitrate and sodium hydroxide are used, assuming 100% yield. All masses are in grams.

Starting Masses (Reactants)		Final Masses (Products)	
$\text{Cu}(\text{NO}_3)_2$	NaOH	$\text{Cu}(\text{OH})_2$	NaNO_3
100.00	0.00	0.00	0.00
100.00	5.00	6.10	10.62
100.00	10.00	12.19	21.25
100.00	15.00	18.29	31.87
100.00	20.00	24.39	42.49
100.00	25.00	30.48	53.12
100.00	30.00	36.58	63.74
100.00	35.00	42.68	74.37
100.00	40.00	48.77	84.99
100.00	45.00	52.02	90.64
100.00	50.00	52.02	90.64
100.00	55.00	52.02	90.64
100.00	60.00	52.02	90.64
100.00	65.00	52.02	90.64
100.00	70.00	52.02	90.64
100.00	75.00	52.02	90.64
100.00	80.00	52.02	90.64
100.00	85.00	52.02	90.64
100.00	90.00	52.02	90.64
100.00	95.00	52.02	90.64
100.00	100.00	52.02	90.64

1. Explain what is happening with this data and why.
2. On the chart above, label:
 - when is sodium hydroxide the "limiting reactant"?
 - when is copper II nitrate the "limiting reactant"?
3. Calculate the amount of sodium hydroxide (in grams) that can react with 100.0 grams of copper (II) nitrate.

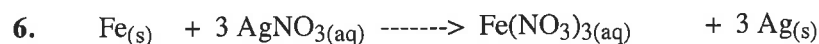
4a. If 65.00 grams of sodium hydroxide are allowed to react with 100.0 grams of copper (II) nitrate, how many grams of copper (II) hydroxide precipitate will form?

- b. Which reactant will be used up? _____ This reactant is called the "limiting reactant."
- c. Which reactant will be leftover after the reaction? _____ This is called the "excess reactant."



a. If 50.0 grams of iron are allowed to react with 2.2 moles of hydrochloric acid, how many molecules of hydrogen gas should form?

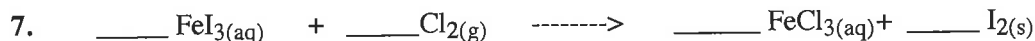
b. In part (a), which reactant was limiting? _____



a. If 1.41×10^{22} iron atoms are allowed to react with 10.0 grams of silver nitrate, how many grams of silver should form?

b. What was the limiting reactant in (a)? _____

c. Suppose that the reaction is done in lab, and the actual amount of silver collected is 6.09 grams. What was the percent yield for the reaction?



a. Balance the equation.

b. If 12.0 grams of iron (III) iodide are allowed to react with .0500 moles chlorine gas, how many grams of solid iodine would be expected to form?

c. When the reaction has completed as much as possible, which reactant will still be leftover; which reactant was not entirely consumed? _____