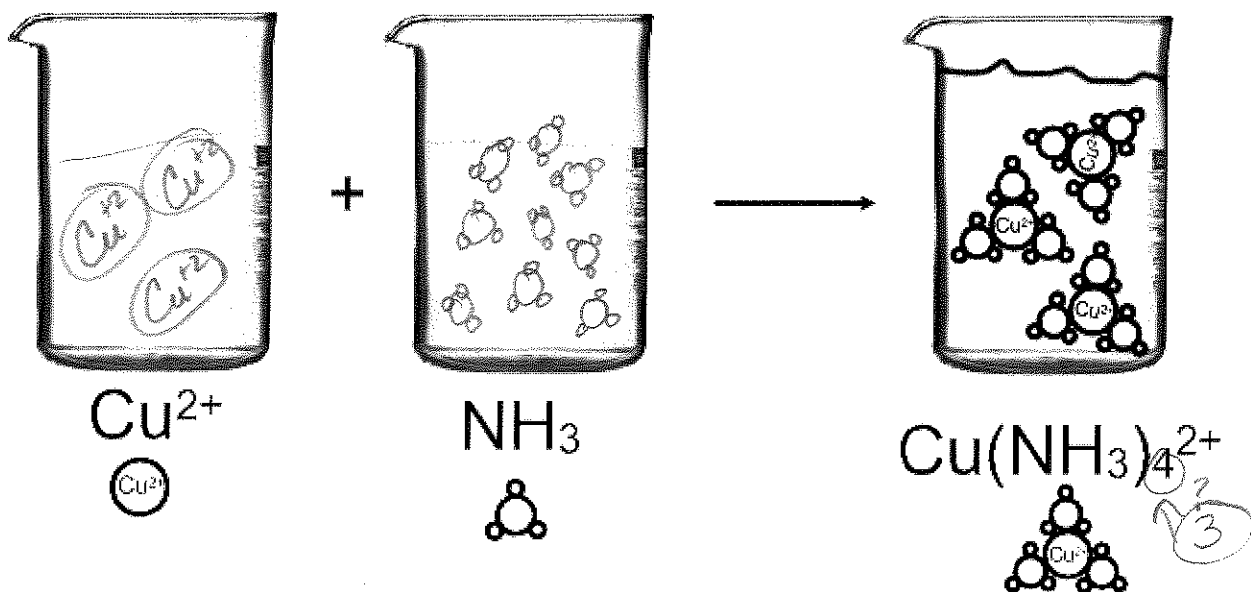


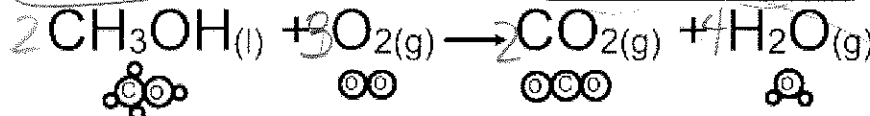
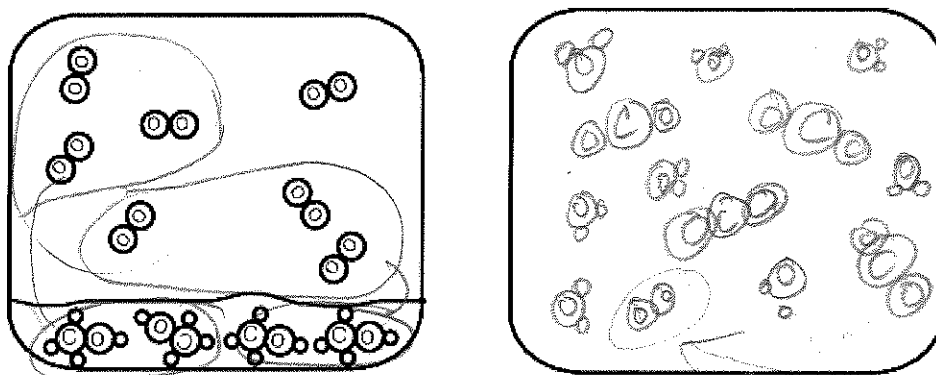
Name \_\_\_\_\_

Limiting and excess calculations – Draw

1. Balance and Draw the original quantity of atoms present in each reactant beaker.



2. Balance, complete ISE table, and Draw the products of the following chemical reaction.



I	4	7	0	0
S	4	-6	+4	+8
E	0	1	4	8

*leave room for CO2*

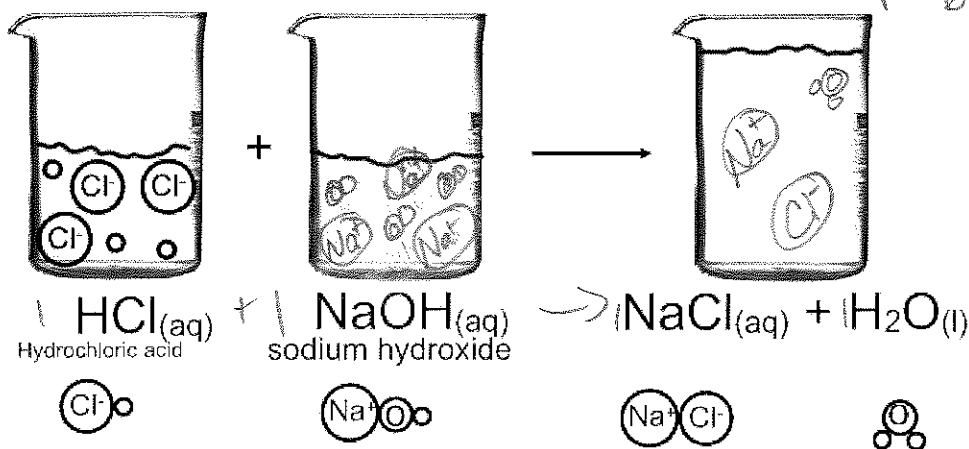
- What is the limiting reactant? *O<sub>2</sub>*
- Does the pressure in the container increase or decrease or stay the same? (think)

$$\frac{7 \text{ O}_2}{3 \text{ O}_2} \bigg/ \frac{2 \text{ CO}_2}{2 \text{ CH}_3\text{OH}} = 4.6 \text{ CO}_2$$

$$\text{LR } 7 \text{ CH}_3\text{OH} \bigg/ \frac{2 \text{ CO}_2}{2 \text{ CH}_3\text{OH}} = 4 \text{ CO}_2$$

3. In the beakers below a neutralization reaction is taking place.

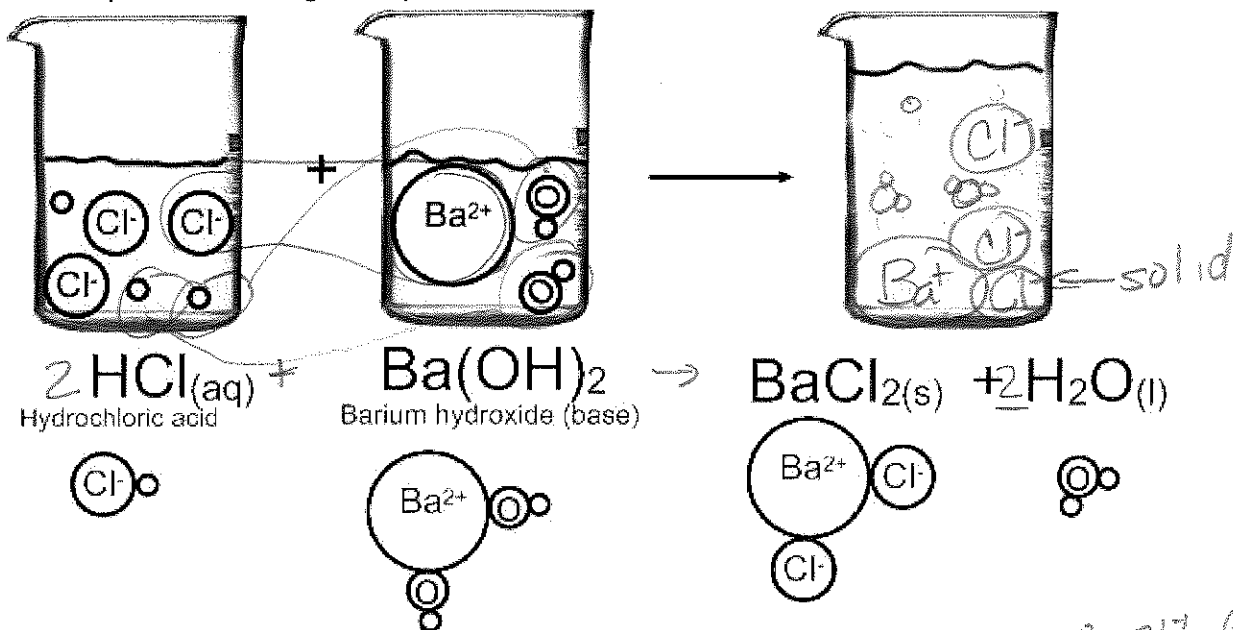
- Re-write and balance the chemical reaction.
- Draw the NaOH at an equal concentration (NaOH is ionic)
- Draw the products.



- Which substance is the limiting reactant?
- If the concentration HCl and NaOH = "x" then what is the concentration of the NaCl? *NaCl = X*
- Does the water have a concentration? *no*
- These model is showing Cl<sup>-</sup> as an equal size to Na<sup>+</sup>. Justify or nullify this aspect of the model.

*Na<sup>+</sup> has 2 full shells - smaller  
Cl<sup>-</sup> has 3 full shells - larger*

4. In the beakers below there is a neutralization and precipitation reaction taking place Balance and complete the drawing of the products.



- Which of these chemicals is forms molecules and which form bulk crystals?
- Is the ending beaker acidic or basic?

*→ Ba<sup>2+</sup> + Cl<sup>-</sup> → BaCl<sub>2</sub> (s)*

*→ H<sup>+</sup> + OH<sup>-</sup> → H<sub>2</sub>O(l)*

*↳ acidic → extra H<sup>+</sup>*