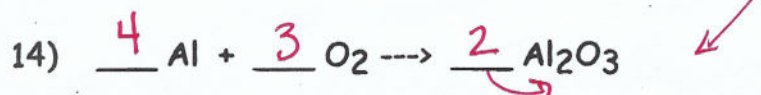
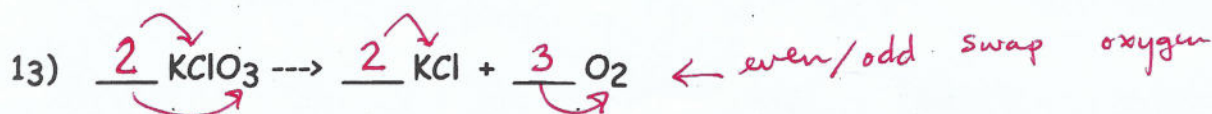
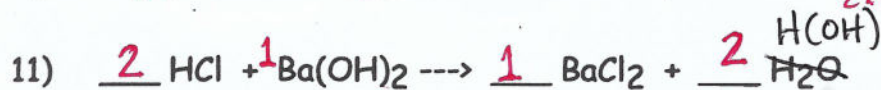
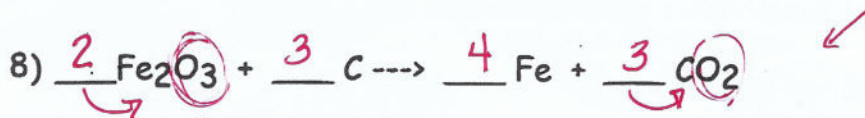
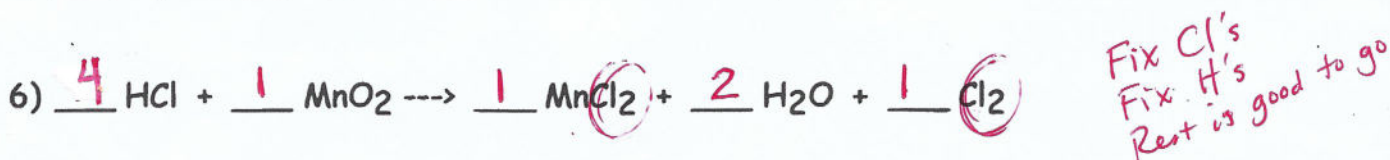
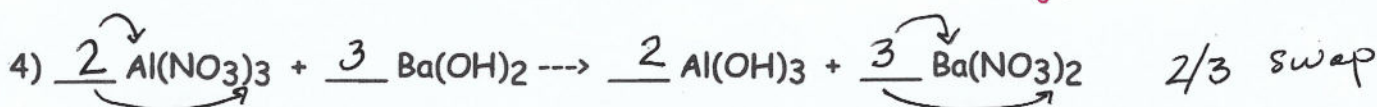
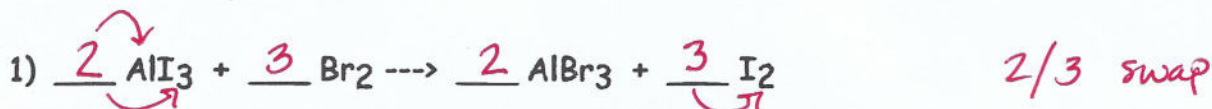
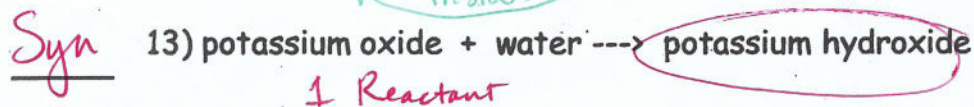
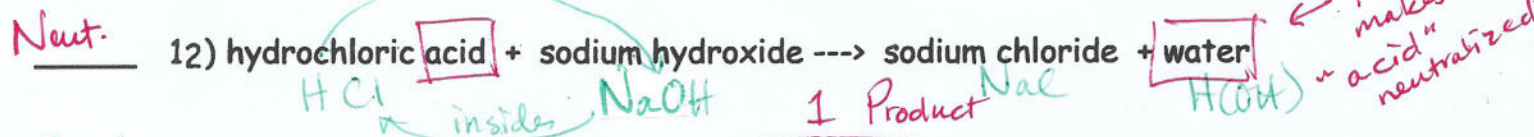
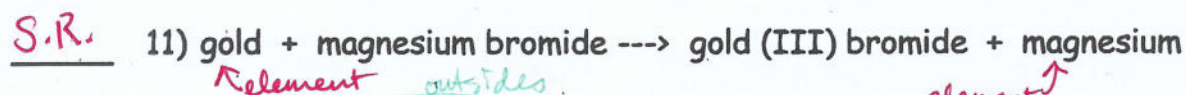
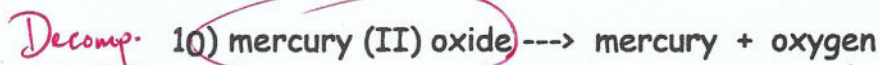
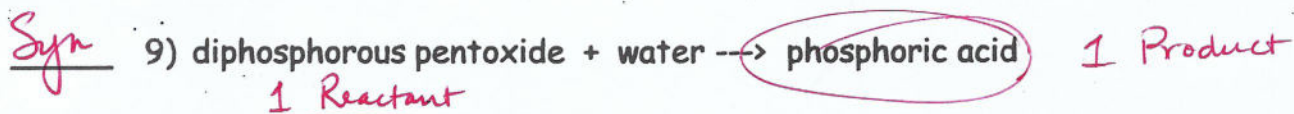
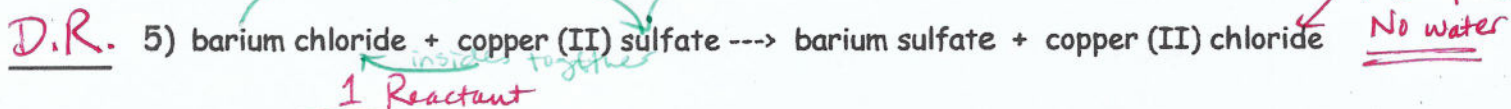
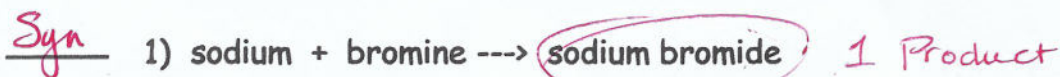


Part A: Balancing Chemical Equations



## B: Identifying the Type of Reaction

For each reaction below, identify the type of reaction.



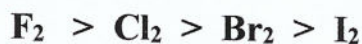


\* Elements are Always capable of replacing other elements lower in the series b/c the lower elements require less energy

## Activity Series of Elements

|                                                                                                                                                                                                                                                                                        | Metal                                   | Oxidation Reaction                                 |                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|----------------------------------------------------|------------------------------------------------------|
| <div>React vigorously with cold H<sub>2</sub>O to form H<sub>2</sub></div> <div>↓</div> <div>React with steam to form H<sub>2</sub></div> <div>↓</div> <div>React with simple acids to form H<sub>2</sub></div> <div>↓</div> <div>Will not dissolve in simple acids</div> <div>↓</div> | Lithium                                 | Li → Li <sup>+</sup> + e <sup>-</sup>              | <div>↑</div> <div>Increasing ease of oxidation</div> |
|                                                                                                                                                                                                                                                                                        | Potassium                               | K → K <sup>+</sup> + e <sup>-</sup>                |                                                      |
|                                                                                                                                                                                                                                                                                        | Barium                                  | Ba → Ba <sup>2+</sup> + 2e <sup>-</sup>            |                                                      |
|                                                                                                                                                                                                                                                                                        | Calcium                                 | Ca → Ca <sup>2+</sup> + 2e <sup>-</sup>            |                                                      |
|                                                                                                                                                                                                                                                                                        | Sodium                                  | Na → Na <sup>+</sup> + e <sup>-</sup>              |                                                      |
|                                                                                                                                                                                                                                                                                        | Magnesium                               | Mg → Mg <sup>2+</sup> + 2e <sup>-</sup>            |                                                      |
|                                                                                                                                                                                                                                                                                        | Aluminum                                | Al → Al <sup>3+</sup> + 3e <sup>-</sup>            |                                                      |
|                                                                                                                                                                                                                                                                                        | Manganese                               | Mn → Mn <sup>2+</sup> + 2e <sup>-</sup>            |                                                      |
|                                                                                                                                                                                                                                                                                        | Zinc                                    | Zn → Zn <sup>2+</sup> + 2e <sup>-</sup>            |                                                      |
|                                                                                                                                                                                                                                                                                        | Chromium                                | Cr → Cr <sup>3+</sup> + 3e <sup>-</sup>            |                                                      |
|                                                                                                                                                                                                                                                                                        | Iron                                    | Fe → Fe <sup>2+</sup> + 2e <sup>-</sup>            |                                                      |
|                                                                                                                                                                                                                                                                                        | Cadmium                                 | Cd → Cd <sup>2+</sup> + 2e <sup>-</sup>            |                                                      |
|                                                                                                                                                                                                                                                                                        | Cobalt                                  | Co → Co <sup>2+</sup> + 2e <sup>-</sup>            |                                                      |
|                                                                                                                                                                                                                                                                                        | Nickel                                  | Ni → Ni <sup>2+</sup> + 2e <sup>-</sup>            |                                                      |
|                                                                                                                                                                                                                                                                                        | Tin                                     | Sn → Sn <sup>2+</sup> + 2e <sup>-</sup>            |                                                      |
|                                                                                                                                                                                                                                                                                        | Lead                                    | Pb → Pb <sup>2+</sup> + 2e <sup>-</sup>            |                                                      |
|                                                                                                                                                                                                                                                                                        | Hydrogen                                | H <sub>2</sub> → 2H <sup>+</sup> + 2e <sup>-</sup> |                                                      |
|                                                                                                                                                                                                                                                                                        | Copper                                  | Cu → Cu <sup>2+</sup> + 2e <sup>-</sup>            |                                                      |
|                                                                                                                                                                                                                                                                                        | Silver                                  | Ag → Ag <sup>+</sup> + e <sup>-</sup>              |                                                      |
| Mercury                                                                                                                                                                                                                                                                                | Hg → Hg <sup>2+</sup> + 2e <sup>-</sup> |                                                    |                                                      |
| Platinum                                                                                                                                                                                                                                                                               | Pt → Pt <sup>2+</sup> + 2e <sup>-</sup> |                                                    |                                                      |
| Gold                                                                                                                                                                                                                                                                                   | Au → Au <sup>+</sup> + e <sup>-</sup>   |                                                    |                                                      |

Also note that the reactivity of halogens decreases as you go down the group because of increased shielding and lower electronegativity.



\* If an element is trying to replace another element higher on the series, the reaction will not occur because it requires more energy \*

## Part F: Predicting the Products

Predict the products for each reaction below. Then write the balanced chemical equation.  
**Hint:** It will help to identify the type of reaction first.

