

What type of reactions are taking place?

- 1) $K_2O + H_2O \rightarrow 2KOH$ synthesis
 - 2) $2H_2O_2 \rightarrow 2H_2O + O_2$ decomposition
 - 3) $4Al + 3O_2 \rightarrow 2Al_2O_3$ synthesis
 - 4) $SiO_2 + 4HF \rightarrow SiF_4 + 2H_2O$ double displacement
 - 5) $C + H_2O \rightarrow CO + H_2$ single displacement
 - 6) $2KClO_3 \rightarrow 2KCl + 3O_2$ decomposition
 - 7) $Al_2(SO_4)_3 + 3Ca(OH)_2 \rightarrow 2Al(OH)_3 + 3CaSO_4$
 - 8) $FeCl_3 + 3NH_4OH \rightarrow Fe(OH)_3 + 3NH_4Cl$
- double displacement

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Predicting Products

-given reactant(s) only

Step 1: Determine the type of reaction based on the reactants given.

* Given 2 elements ---> Synthesis/Combination

* Given 1 Compound ---> Decomposition

Given 1 compound and 1 element ---> Single Displacement

Given 2 compounds ---> Double Displacement

Given a hydrocarbon and oxygen ---> Combustion

Step 2: Determine the products based on the reaction type.

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1. copper + sulfur --> copper(II) sulfide
Synthesis

2. aluminum chloride --> aluminum + chlorine
decomposition

3. octane + oxygen --> water + carbon dioxide
Combustion

4. lithium + oxygen --> lithium oxide
Synthesis

5. sodium + water (single rep.) --> sodium oxide + hydrogen
 $\text{Na}_2\text{O} + \text{H}_2$

6. water (decomp.) --> hydrogen + oxygen
 $\text{H}_2 + \text{O}_2$

7. hydrogen chloride + silver nitrate (double rep.) -->
silver chloride + nitric acid
 $\text{HCl} + \text{AgNO}_3 \rightarrow \text{AgCl} + \text{HNO}_3$

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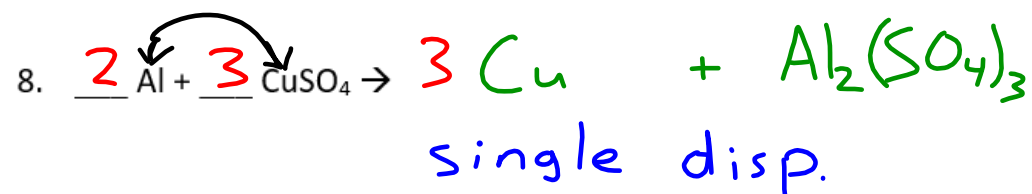
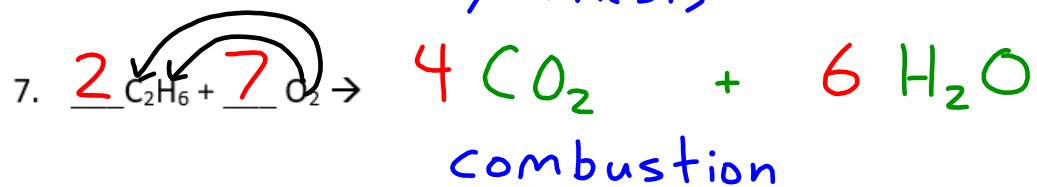
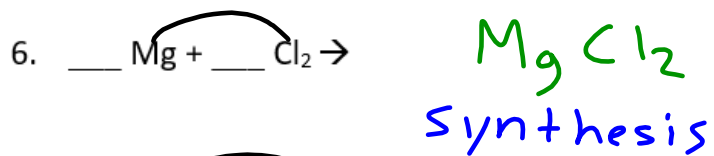
1. $\text{Zn} + 2\text{AgNO}_3 \rightarrow 2\text{Ag} + \text{Zn}(\text{NO}_3)_2$
single disp.

2. $2\text{KF} + \text{Pb}(\text{NO}_3)_2 \rightarrow 2\text{KNO}_3 + \text{PbF}_2$
double disp.

3. $\text{CaBr}_2 + 2\text{AgNO}_3 \rightarrow \text{Ca}(\text{NO}_3)_2 + 2\text{AgBr}$
double disp.

4. $2\text{H}_2\text{O} \rightarrow 2\text{H}_2 + \text{O}_2$
decomposition

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