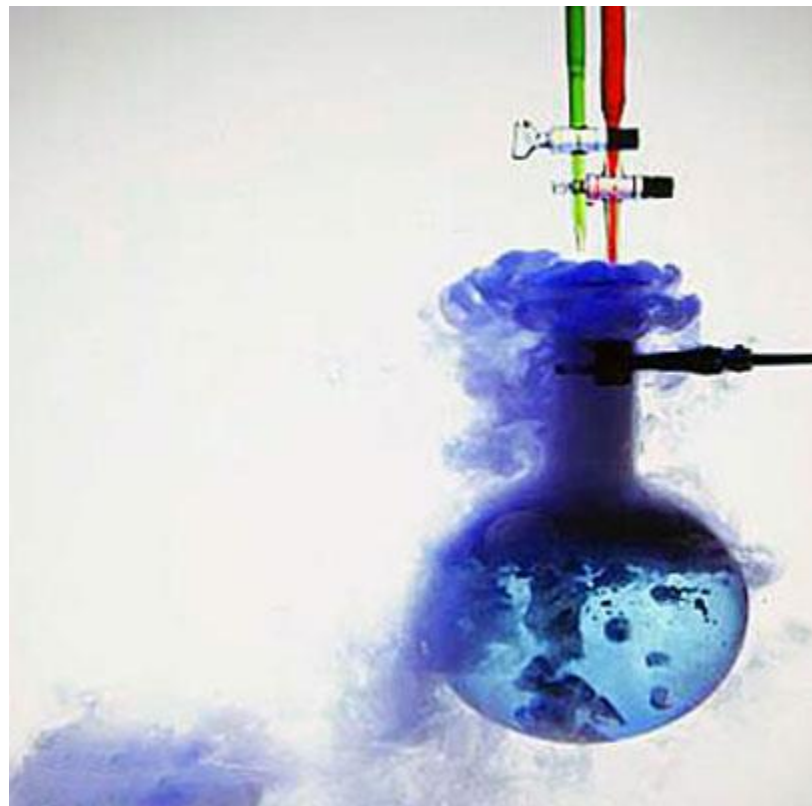
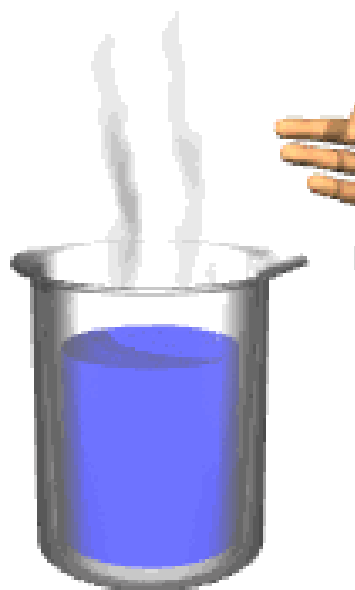
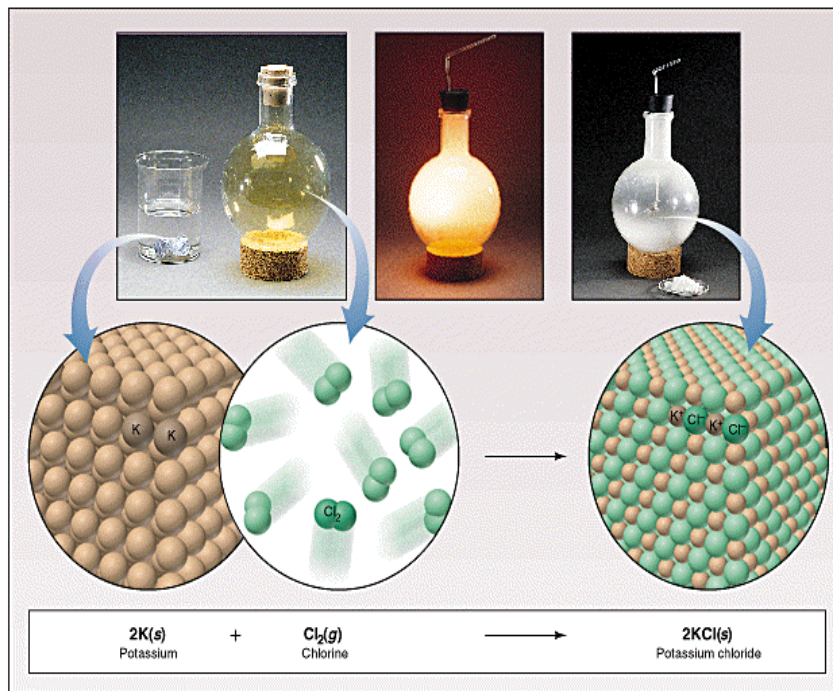


Types of reactions





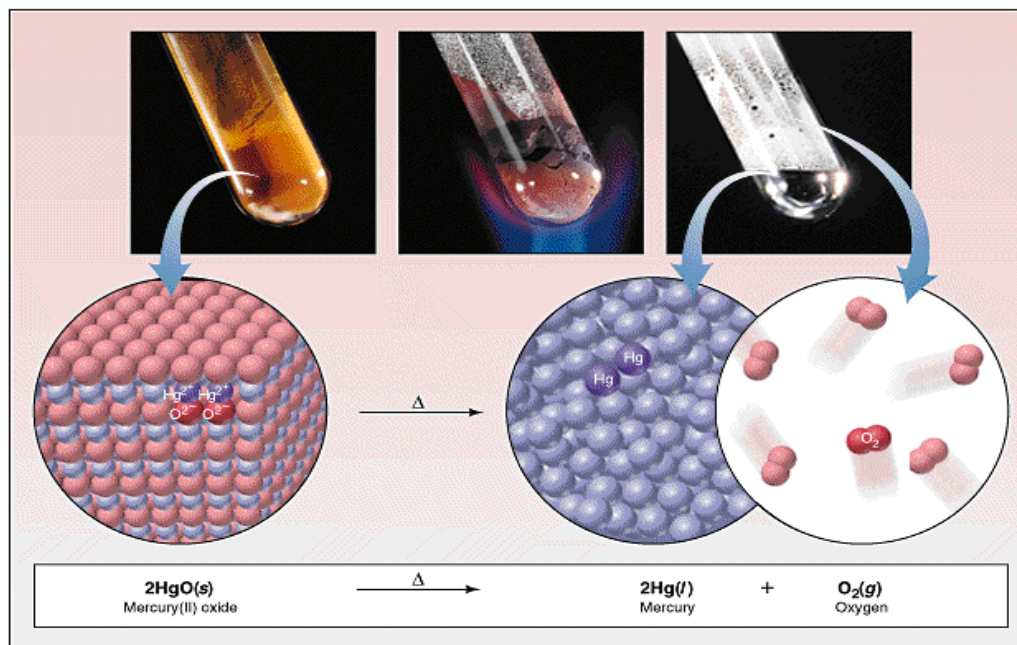
Synthesis reactions occur when two substances (generally elements) combine and form a compound. (Sometimes these are called combination or addition reactions.)

reactant + reactant \rightarrow 1 product

A + B \rightarrow AB

Example: $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$

Example: $\text{C} + \text{O}_2 \rightarrow \text{CO}_2$



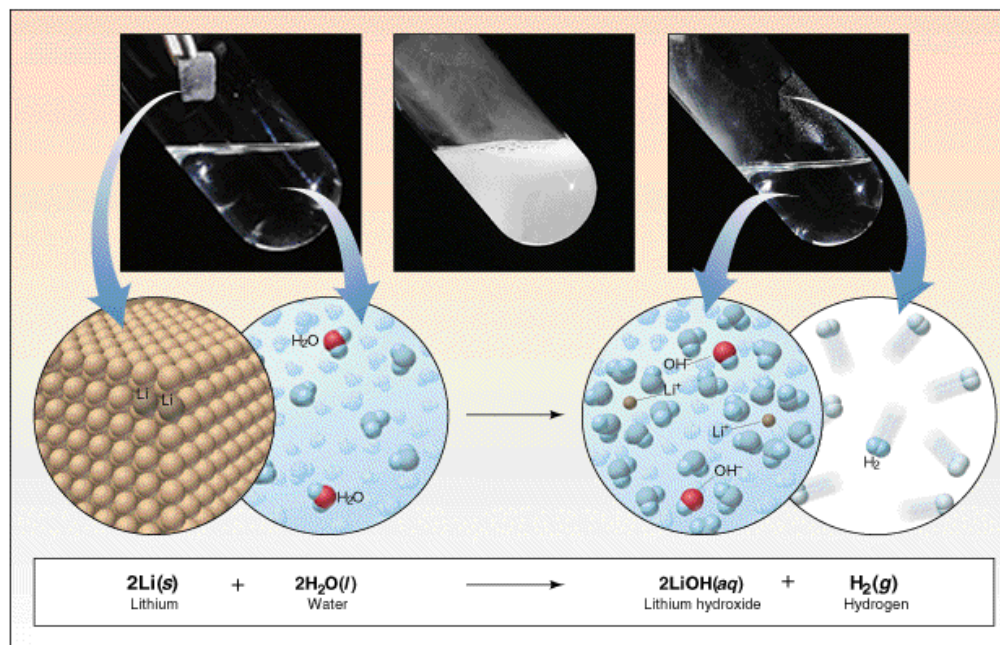
Decomposition reactions occur when a compound breaks up into the elements or in a few to simpler compounds

1 Reactant \rightarrow Product + Product

In general: $\text{AB} \rightarrow \text{A} + \text{B}$

Example: $2 \text{H}_2\text{O} \rightarrow 2\text{H}_2 + \text{O}_2$

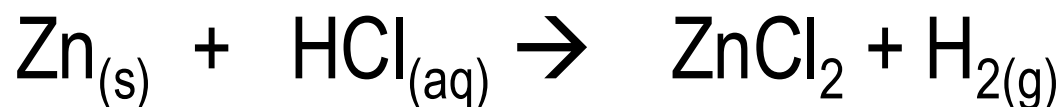
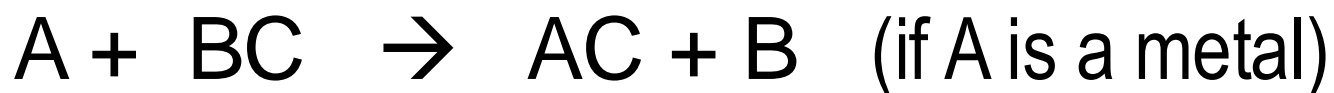
Example: $2 \text{HgO} \rightarrow 2\text{Hg} + \text{O}_2$



Single Replacement Reactions occur when one element replaces another in a compound.

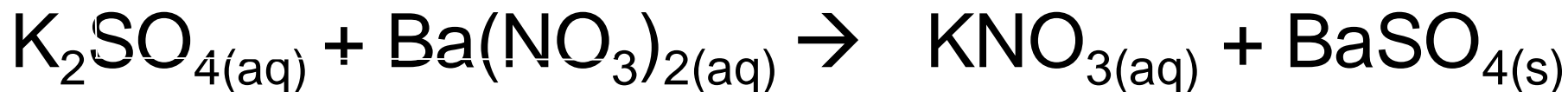
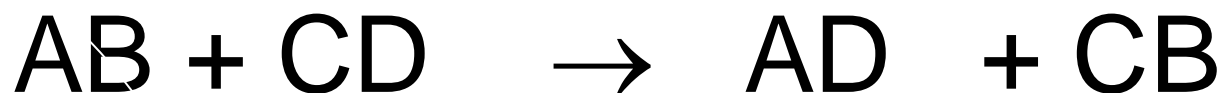
A metal can replace a metal (+) **OR**
 a nonmetal can replace a nonmetal (-).

element + compound → product + product



Double Replacement Reactions

- Think about it like “foil” in algebra, first and last ions go together + inside ions go together



Combustion Reactions



When a hydrocarbon reacts with oxygen to produce carbon dioxide and water.

→ Reactants → hydrocarbon (compounds of hydrogen and carbon) and oxygen gas

Products → carbon dioxide, water, and energy (heat or light)

Example:



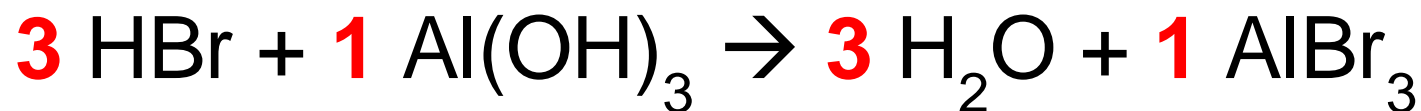


- The term redox comes from the two concepts of reduction and oxidation. It can be explained in simple terms:
- * Oxidation describes the loss of electrons / hydrogen or gain of oxygen / increase in oxidation state by a molecule, atom or ion.
- * Reduction describes the gain of electrons / hydrogen or a loss of oxygen / decrease in oxidation state by a molecule, atom or ion.

Common Household Acids & Bases



- An acid – base reaction is a type of reaction that forms water:



- In any reaction the number and kind of atoms in the reactants must = the number and kind of atoms in the product . We do this with coefficients (in red) to balance the equation