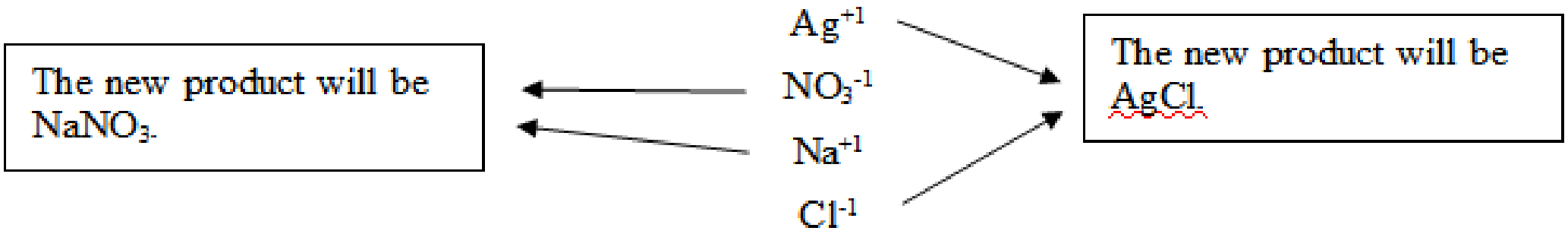
Predicting Products



$$AgNO_3 + NaCl \rightarrow AgCl + NaNO_3$$

http://catkelbelbayabz.weebly.com/chapter-7.html

Outcome:

Predict the products of a chemical reaction given reactants and type of reaction.

Predicting Reaction Products…

If we are given the type of reaction, and the reactants present, we can predict the products of the reaction.

- Use the **TYPE** of reaction to **DETERMINE** what will be **PRODUCED**.
- Use **IONIC CHARGES** to determine the correct **FORMULA** of the products (don't worry about **BALANCING** yet).
- When you have the products, **GO BACK** and **BALANCE** the reaction.

Examples:

Synthesis Reactions:

- Two elements or compounds **COMBINE**.

$2\,Na + Cl_2 \rightarrow 2\,NaCl$

$Na + Na + Cl_2 \rightarrow NaCl + NaCl$ $Na^+ \; Cl^-$

Decomposition:

- A compound **BREAKS DOWN** to its elements compounds.

$2\,K_2O \rightarrow 4K + O_2$

- **HYDROXIDES often decompose into OXIDES and WATER:** $Ca^{2+} \; O^{2-}$

$Ca(OH)_2 \rightarrow CaO + H_2O$

Examples:

Single Displacement:

- **POSITIVE** ion of a compound **SWITCHES** with a **METAL**.

Mg^{2+} Cl^-

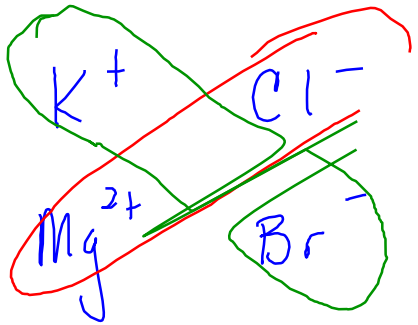
$Mg + 2NaCl \rightarrow MgCl_2 + 2Na$

- **NEGATIVE** ion of the compound can **SWITCH** with a **NON-METAL**.

Na^+ Cl^-

$Cl_2 + 2NaBr \rightarrow 2NaCl + Br_2$

Examples:



Double Displacement:

- **POSITIVE** ions of two **COMPOUNDS** switch places.

$2KCl + MgBr_2 \rightarrow MgCl_2 + 2KBr$

Combustion: $C_?H_?O_?$

- **HYDROCARBONS** ***always*** react with **OXYGEN** to produce **CARBON DIOXIDE** and **WATER**

$2C_8H_{18} + 25O_2 \longrightarrow 16CO_2 + 18H_2O$

$C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$