

## Outcome 2

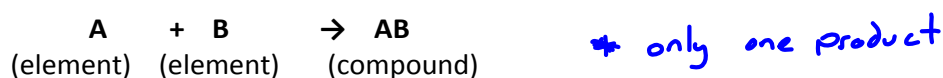
### Topic 2 – Types of Chemical Reactions

There are 5 major types of chemical reactions that we will discuss that involve compounds and elements:

1. Formation (Composition)
2. Decomposition
3. Hydrocarbon Combustion
4. Double Replacement
5. Single Replacement

#### 1. Formation Reactions – pg. 91-93

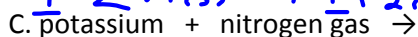
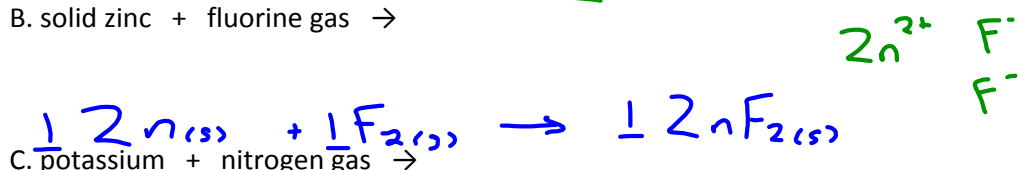
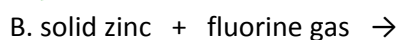
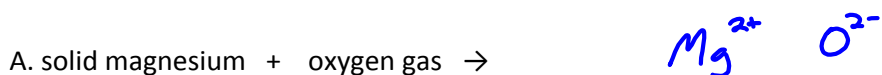
*or more*  
- Two elements combine to form either an ionic or molecular compound



**Word equation:** sodium metal combines with chlorine gas to produce solid sodium chloride.

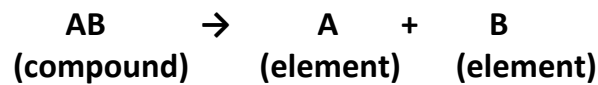


**Practice:** Predict the products for the following formation reactions. Name the product in words first, then write the skeleton reaction first. Finally, balance the equations.  
\*\*\*Include the states\*\*\*



## 2. Decomposition Reactions

- A compound is broken down into its elements



\* only one reactant

**Word equation:** Water is decomposed by electrolysis into hydrogen and oxygen



**Pracce:** Predict the products for the following decomposition reactions. Name the products in words first, then write the skeleton reaction first. Finally, balance the equations. \*\*\*Include the states\*\*\*

A. solid magnesium sulfide  $\rightarrow$



B. solid potassium iodide  $\rightarrow$



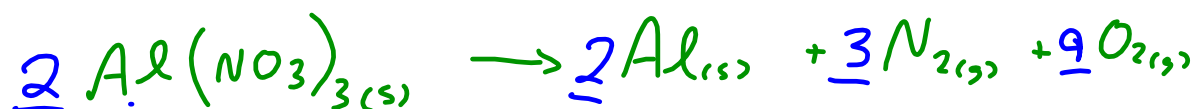
C. solid aluminum oxide  $\rightarrow$



D. nickel (II) chloride  $\rightarrow$



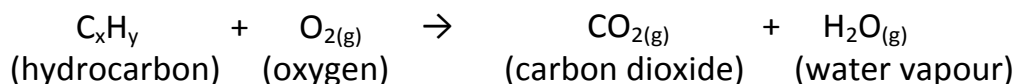
E. Aluminum nitrate  $\rightarrow$



### 3. Hydrocarbon combustion reactions – pg. 95

- Hydrocarbons are compounds that contain both hydrogen and carbon atoms.

- Combustion (burning) of a hydrocarbon in the presence of oxygen will always result in two products being formed, carbon dioxide, and water vapour.



**Word equation:** methane + oxygen → carbon dioxide + water

**Skeleton equation:**  $\text{CH}_{4(g)} + \text{O}_{2(g)} \rightarrow \text{CO}_{2(g)} + \text{H}_2\text{O}_{(g)}$

**Balanced equation:**  $\underline{1} \text{CH}_{4(g)} + \underline{2} \text{O}_{2(g)} \rightarrow \underline{1} \text{CO}_{2(g)} + \underline{2} \text{H}_2\text{O}_{(g)}$

**Practice:** Predict the products for the following hydrocarbon combustion reactions. Name the products in words first, then write the skeleton reaction first. Finally, balance the equations. \*\*\*Include the states\*\*\*

