

# Monday January 9

Types of Chemical Reactions  
Combustion Reactions

**Test Monday Jan 16!!!**

Recall what a chemical reaction is:

- change that takes place when two or more substances (reactants) change into one or more new substances (products)

Based on what is happening in the reaction and what chemicals are involved there are various classifications of chemical reactions.

There are 5 different types of chemical reactions we are going to study.

Combustion  
Synthesis  
Decomposition  
Single Replacement  
Double Replacement

# Types of Chemical Reactions

## I. Combustion

The reaction of a substance with oxygen to produce oxides and energy.

light or heat



Ex. fuel + oxygen  $\Rightarrow$  oxides + energy

There are two types of combustion reactions that can happen the reactants can burn completely (**complete combustion**) or when there is not enough oxygen available an **incomplete combustion** can occur.

### Complete Combustion

Substance being 'burned' completely.

For hydrocarbons, the products will always be carbon dioxide and water vapour.

Ex. butane + oxygen  $\Rightarrow$  carbon dioxide + water vapour

### Incomplete Combustion

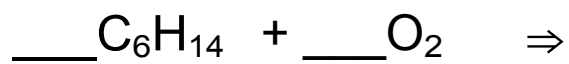
Occurs when there is not enough oxygen available to burn a substance completely.

For hydrocarbons, the products will be carbon dioxide, carbon monoxide, carbon and water vapour.

Ex. butane + oxygen  $\Rightarrow$  carbon dioxide + carbon monoxide + carbon + water

Example: Write a word and chemical equation to represent the complete combustion of methane (CH<sub>4</sub>)

Example: Given the following chemical equation write the products of an incomplete combustion and balance the equation.



**Read p. 230-232**

**#1,3-5a (HW)**