Notes: Combustion

# Combustion

A reaction that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a large amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the form of \_\_\_\_\_\_\_\_\_\_\_\_**.**

All combustion reactions are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*2C8H18 + 25 O2 → 16CO2 + 19H2O + energy*

# Oxidation

A chemical change involving \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* + *Combustion is a form of* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*!*

## How to recognize oxidation/combustion reactions

Look for the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Other Oxidation/Combustion examples:**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Combustion reactions

For combustion to occur, three requirements must occur:

1. There exists an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	* *something to cause the fuel to burn – oxygen is the most common*
2. There exists \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	* *what’s burning*
3. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is surpassed
	* *minimum temperature for fuel to ignite*



#### Categories of combustion reactions

Three categories

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**:** Occurs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_once ignition temperature is reached.
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**:** occurs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ since ignition temperature is reached \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**. Often unpredictable**.
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**:** occurs over \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; energy released is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.**

## Cellular Respiration

*Form of* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***,*** *and therefore a type of* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*trapped in* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *is released and used for bodily functions*

|  |
| --- |
|  |

## Photosynthesis

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, therefore is an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Solar energy is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_into chemical bonds, forming \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)

|  |
| --- |
|  |

### Difference between cellular respiration and photosynthesis

Cellular respiration is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of photosynthesis

* Cellular respiration \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ glucose, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Photosynthesis \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ glucose, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Past Exam Question

A fire is extinguished by removing at least one of the three conditions required for combustion to occur. These conditions are indicated in the fire triangle below.

**Table I -Functions of a CO2 Extinguisher**

|  |  |
| --- | --- |
|  | **Function** |
| 1 | The main function of the carbon dioxide (CO2) is to smother the fire by reducing the amount of oxygen gas (O2) that feeds it |
| 2 | In the very early stages of a fire, the CO2 has a cooling effect, since it comes out of the extinguisher at a temperature of -78°C. |
| 3 | The gas comes out of the extinguisher as a powerful spray that puts out small paper fires by scattering the pieces of material involved. |

**State the part of the fire triangle each descriptor is referring to**