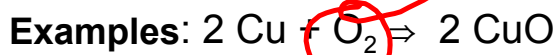


Combustion & Oxidation

Oxidation: A chemical change involving oxygen.

Combustion: A form of oxidation that releases a large amount of energy usually in the form of heat.



fire, rust, apple rotting

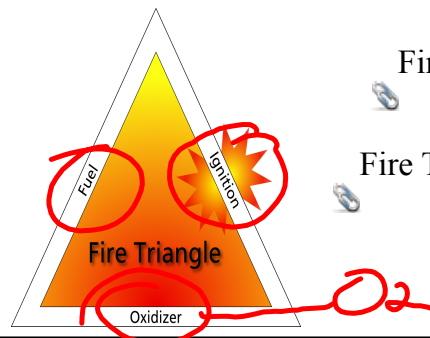
must have O₂ for oxidization

Gummy Bear Sacrifice.avi

How do you recognize a combustion reaction?

Fire triangle p.122

Gives the three conditions necessary for combustion to occur.



Fire & The Fire Triang


Fire Triangle.wmv.avi

fuel	Substance which will combust (wood, gas).
ignition temperature	A specific temperature the fuel must reach in order for it to combust. (wood 450°F)
oxidizing agent	O₂ - substance which allows fuel to continue to combust.

Types of combustion

rapid	Occurs quickly and releases a lot of energy. Ex- fire
spontaneous	As above, but ignites on its own. Ex- Forest fire
slow	Occurs slowly and releases little energy. Ex- rust, apple turning brown

 Rusty Nail Time Lapse.mp4

 Why do Apples Turn Brown_ - Coma Niddy University.avi

 Linseed Oil and Spontaneous Combustion.mp4

Cellular respiration and photosynthesis

Photosynthesis Vs. Respiration.avi

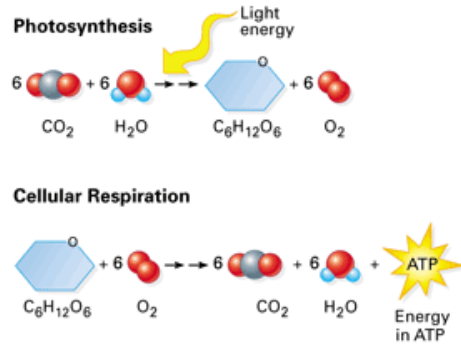
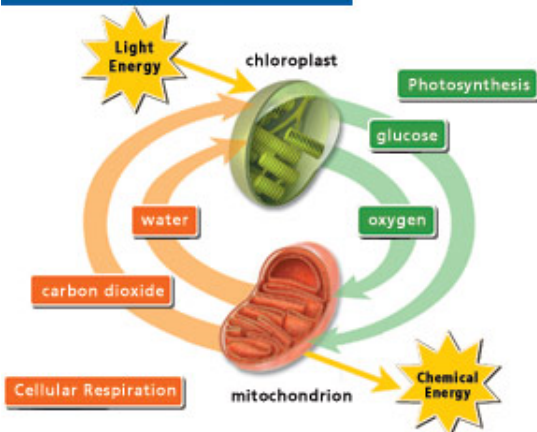
The simple story of photosynthesis and fo

Cellular Respiration: chemical change in which glucose and oxygen are used to generate energy. Produces CO₂ and water.

Photosynthesis: chemical change that produces glucose and oxygen from solar energy, water and CO₂.

	Cellular respiration	Photosynthesis
who	humans	plants
formula	$\overset{\text{Glucose}}{\text{C}_6\text{H}_{12}\text{O}_6} + 6 \text{O}_2 \Rightarrow 6 \text{H}_2\text{O} + 6 \text{CO}_2 + \text{energy}$	$6 \text{H}_2\text{O} + 6 \text{CO}_2 + \text{sun} \Rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6 \text{O}_2$
energy	released after reaction	needed for the reaction
waste	CO ₂	O ₂

Photosynthesis and Respiration Cycle



Past Exam Questions

1. 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.

The following table describes three functions of a CO₂ extinguisher.

Table I -Functions of a CO₂ Extinguisher

1	The main function of the carbon dioxide (CO ₂) is to smother the fire by reducing the amount of oxygen gas (O ₂) that feeds it	oxidizer
2	In the very early stages of a fire, the CO ₂ has a cooling effect, since it comes out of the extinguisher at a temperature of -78°C.	temp.
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.	fuel

Which of the following shows the correct match between the numbered functions of the CO₂ extinguisher and the conditions required for combustion to occur?

- A) 1 – fuel 2 – ignition temp. 3 – oxidizer
 B) 1 – oxidizer 2 – ignition temp. 3 – fuel
 C) 1 – ignition temp. 2 – oxidizer 3 – fuel
 D) 1 – fuel 2 – oxidizer 3 – ignition temp.

2. It is said that using wood to build houses helps in the fight against climate change because trees store some of the atmospheric carbon. Through what carbon cycle process do trees store atmospheric carbon?

- A) Photosynthesis
 B) Plant decomposition
 C) Cellular respiration
 D) Fossil fuel combustion

3. On a hot and dry afternoon, some hay in a barn caught fire, but there were no external causes involved. Water was used to put out the fire. Spraying the water with fire affected one of the fire triangle components in particular. Which statement indicates both the type of combustion that caused the fire triangle component that the water affected?

- A) Slow combustion and the water affected the fuel.
 B) Slow combustion and the water affected the oxidizer.
 C) Spontaneous combustion and the water affected the ignition temperature
 D) Spontaneous combustion and the water affected the fuel.

Attachments



Gummy Bear Sacrifice.avi



Fire & The Fire Triangle.avi



Fire Triangle.wmv.avi



Why do Apples Turn Brown_ - Coma Niddy University.avi



Photosynthesis Vs. Respiration.avi



The simple story of photosynthesis and food - Amanda Ooten.avi



Linseed Oil and Spontaneous Combustion.mp4



Rusty Nail Time Lapse.mp4