

	<b>8E Combustion</b>
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### 1. Burning Fuels

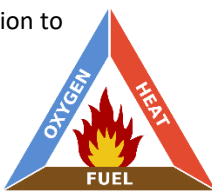


<b>Fuel</b>	A chemical substance from which stored energy can be transferred usefully to make things happen.
<b>Fuel Cell</b>	Used in hydrogen-powered vehicles, releasing energy from hydrogen.
<b>Fuel Cell Word Equation</b> Hydrogen + oxygen → water	
<b>Reactants</b>	The starting substances- on left of word equation.
<b>Products</b>	The new substances made- on right of word equation.
<b>Combustion</b>	Burning, usually in air. The reaction gives out energy which is transferred to the surroundings by heating or light.
<b>Fossil Fuels</b>	Fuels formed from living organisms that died millions of years ago- <i>petrol, diesel</i>
<b>Hydrocarbons</b>	Only contain carbon and hydrogen atoms- <i>petrol, diesel</i>
<b>Combustion of Hydrocarbons</b>	The carbon and hydrogen atoms react with oxygen. The carbon reacts to form carbon dioxide.
<b>Carbon Dioxide</b>	Carbon dioxide will turn limewater cloudy.


### 2. Oxidation

<b>Oxidation</b>	Reacting with oxygen.
<b>Oxide</b>	Compound formed by oxidation.

<b>Metal Oxides</b>	Formed when metals react with oxygen. <i>metal + oxygen → metal oxide</i>
<b>Conservation of Mass</b>	Mass is never gained or lost in a chemical reaction. The atoms in reactants just rearrange to form the products, no new atoms are made and none disappear.
<b>Heating Zinc in Air</b>	Forms a white powder zinc oxide. The mass will appear to increase because the zinc has combined with the oxygen in air.
<b>Gas Products</b>	If the product is a gas it may escape and make it seem like the mass has decreased.
<b>Phlogiston</b>	A substance scientists used to think explained why things burned that was then proven not to exist.

### 3. Fire Safety

<b>Exothermic</b>	A reaction that releases energy that we can feel as heat- <i>combustion</i>
<b>Thermometer</b>	Used to measure a change in the temperature.
<b>Fire Triangle</b>	Three factors allow combustion to occur. 
<b>Putting Out a Fire</b>	You must remove at least one of the three factors.
	<b>Explosive</b> Heating may cause an explosion.
	<b>Flammable</b> These substances catch fire easily.

	<b>Oxidising</b> These substances release oxygen.
<b>Fire Extinguishers</b>	Work by cooling a fire or stopping oxygen getting to the fuel.
<b>Oil Fire</b>	Water will sink through the oil and turn to steam making the fire spread out. Use foam or a fire blanket to keep oxygen away.
<b>Electrical Fire</b>	Water conducts electricity so you may get a serious shock. Turn off the electricity and use a powder or carbon dioxide extinguisher.

### 4. Air Pollution

<b>Complete Combustion</b>	Carbon burns in plenty of air only forming carbon dioxide.
<b>Incomplete Combustion</b>	Not enough oxygen for all the carbon to react with.
<b>Products of Incomplete Combustion</b>	<ul style="list-style-type: none"> <li>carbon dioxide- linked to global warming</li> <li>carbon monoxide- poisonous gas</li> <li>soot- damage lungs and trigger asthma</li> </ul>
<b>Impurities</b>	Small amounts of other substances in fuels.
<b>Sulfur Dioxide</b>	Formed when hydrocarbons have a sulfur impurity.
<b>Nitrogen Oxide</b>	Formed by high engine temperatures causing nitrogen and oxygen in air to react.
<b>Pollutants</b>	Something that can harm living things and damage the environment.
<b>Catalytic Converter</b>	Found in cars to react carbon monoxide with more oxygen forming carbon dioxide. Also breaks down nitrogen oxides.

<b>Acid Rain</b>	Sulfur dioxide and nitrogen oxides rise into the air and dissolve in water vapour. The rain is now more acidic.
<b>Controlling Acid Rain</b>	Neutralisation reactions used to remove acidic gases from chimney smoke. Acidic soil /water can be neutralised by adding calcium carbonate.

### 5. Global Warming

<b>Greenhouse Gases</b>	Trap energy from the Sun in the atmosphere <i>e.g. carbon dioxide</i>
<b>Greenhouse Effect</b>	Energy trapped by greenhouse gases is transferred back to the Earth's surface causing it to warm up.
<b>Earth's Temperature Over Time</b>	The temperature of the Earth has fluctuated over time it is rising rapidly now though.
<b>Global Warming</b>	Increase in global temperature due to more greenhouse gases in the air and the greenhouse effect.
<b>Climate Change</b>	Resulting from global warming- changes to weather patterns, more storms, flood, droughts, etc.
<b>Evidence</b>	There is now lots of evidence for global warming. average temperatures are increasing and ice caps are melting.

Lesson	Memorised?
1. Burning Fuels	
2. Oxidation	
3. Fire Safety	
4. Air Pollution	
5. Global Warming	