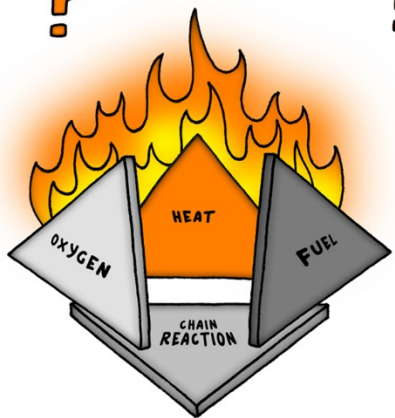
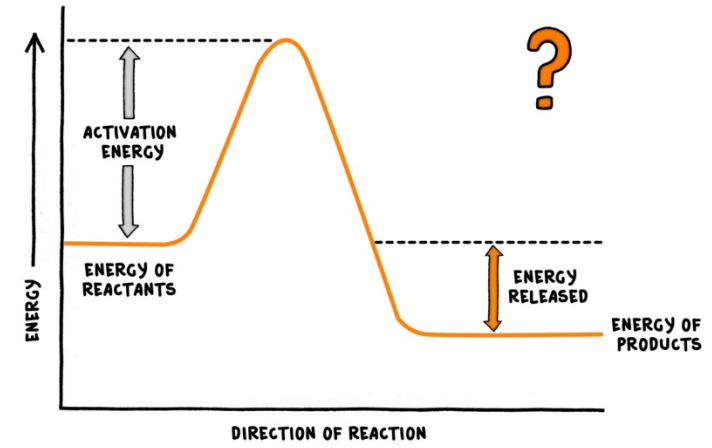
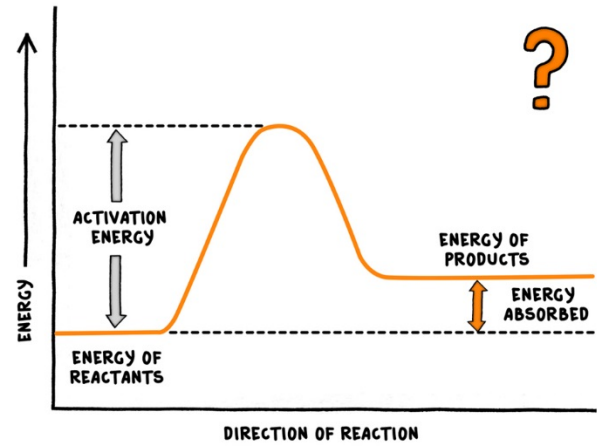
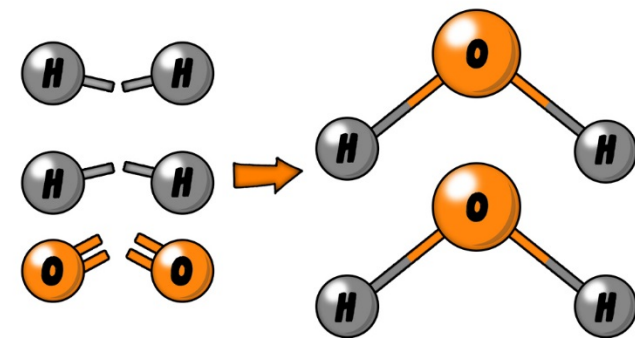


*How do they work?*



# AQA GCSE ENERGY CHANGES THINK IT!



### Exothermic Reactions:

- "Energy cannot be created or destroyed". Explain how chemical reactions obey this law.
- Explain why it is difficult to measure the energy released from an exothermic reaction in the classroom. Suggest control measures you could use to do this as accurately as possible.
- Describe how the reaction between nitric acid and sodium hydroxide is exothermic.

### Exothermic Uses:

- When sugar is broken down in the body energy is released. Explain where this energy comes from in terms of the bonds in molecules.
- Reusable hand warmers give an instant heat that is ideal for keeping hands warm while travelling, skiing and hiking. Describe how they work.

### Endothermic Reactions:

- Explain why a temperature decrease in surroundings is an endothermic reaction.
- Explain how the reaction between ammonium nitrate and water is an endothermic reaction.

### Cells and Fuel Cells (chemistry only):

- Hydrogen fuel cells are used in some buses, but are not yet used in cars. Discuss why this is the case.
- Hydrogen is sometimes described a "perfect fuel" evaluate this statement.
- **HT only** – describe what happens at the electrodes in a fuel cell, giving the half equations.

# AQA Energy Changes

# ThinkIT!

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### Endothermic Uses:

- Instant cold packs are used to treat sports injuries. Explain how a sports injury pack works.
- Describe the attractions in a covalent bond and explain why bond breaking is endothermic.
- Explain why the thermal decomposition of calcium carbonate is endothermic.

### Energy Change (HT):

- Describe what bond energy is.
- Ethylene and bromine react together to produce ethylene bromide,  $C_2H_4Br_2$ . Use your knowledge of bond energy to suggest why this is an exothermic reaction.
- Explain how much energy is needed to break all the bonds in 0.960g of oxygen gas.

### Reaction Profiles:

- Explain what activation energy is.
- Describe, using a reaction profile to help, the bonds being broken and the new bonds being made in the reaction between methane and oxygen which burns to produce carbon dioxide and water.

### Investigating temperature change:

- The temperature of hydrochloric acid changes when it reacts with different metals. Explain a safe method to investigate the temperature change and include how the investigation should be made a fair test and what results should be collected.