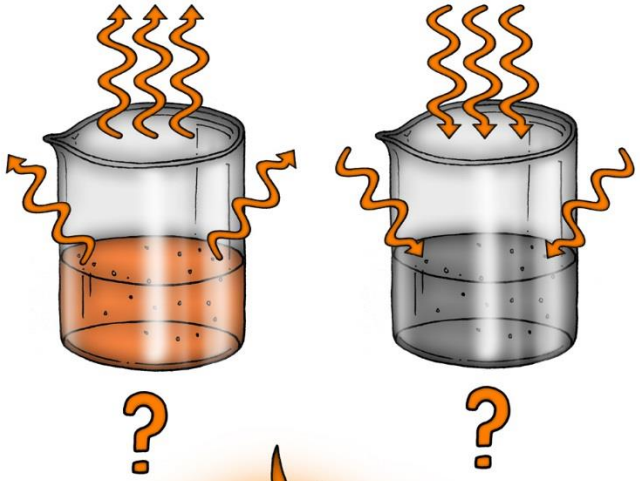
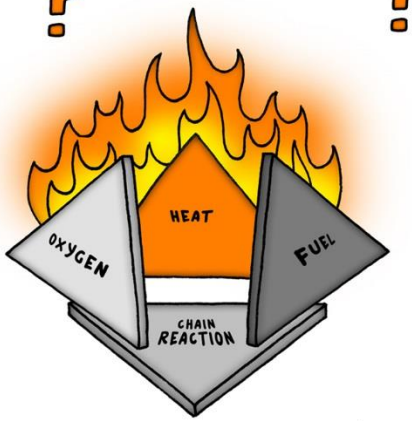
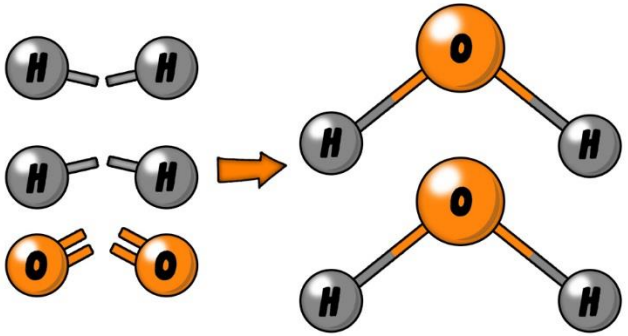


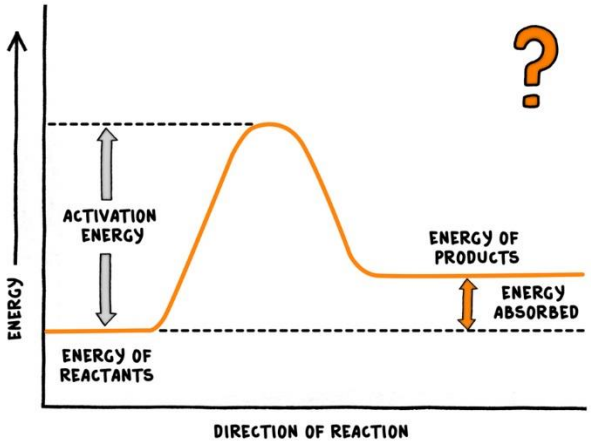
How do they work?

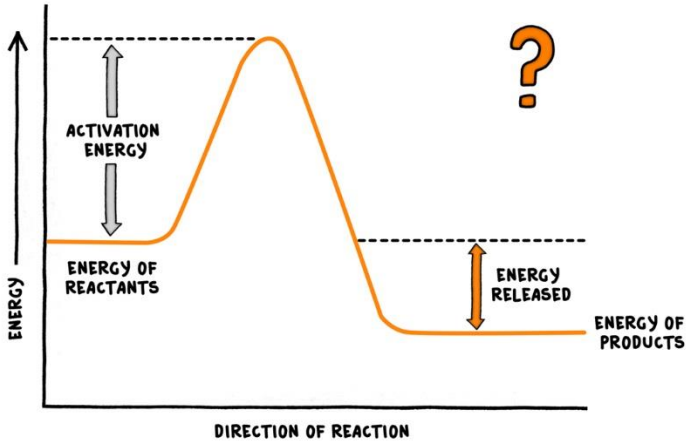


AQA GCSE ENERGY CHANGES THINK IT!



Reactions





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!

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.