

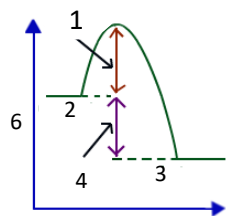
# Chemistry Topic 5: Energy changes

## 1. Keywords

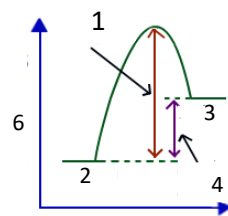
Conservation of energy	Energy can not be created or destroyed just transferred from one for to another
Exothermic reaction	Reaction which releases heat to the surroundings. Causing an increase in temperature
Endothermic reaction	Reaction which absorbs heat from the surroundings. Causing a decrease in temperature

## 2. Reaction profiles

1	Activation energy
2	Reactants
3	Products
4	Energy released
5	Reaction progress
6	Potential energy



**Exothermic reaction**



**Endothermic reaction**

## 3. Energy changes of reactions (HT ONLY)

Reaction type	Temperature change	Amount of energy absorbed to break bonds	Amount of energy released when making new bonds
Exothermic	Increases	Less	More
Endothermic	Decreases	More	Less

## 4. Cells and batteries (TRIPLE ONLY)

Simple cell	Made from connecting two different metals in contact with an electrolyte
Battery	Two or more cells joined together in series to make a greater voltage
Non-rechargeable cell	Type of cell where the reactions stop when one of the reactants is used up. E.g Alkali batteries
Rechargeable cell	Type of cell where the chemical reactions can be reversed when an electric current is supplied
Fuel cell	Type of cell that makes electricity from reacting a fuel (eg Hydrogen) with oxygen

## 5. Hydrogen fuel cell (TRIPLE ONLY)

Overall equation	$2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$
Anode equation (HT ONLY)	$4\text{H}^+(\text{aq}) + \text{O}_2(\text{g}) + 4\text{e}^- \rightarrow 2\text{H}_2\text{O}(\text{g})$
Cathode equation (HT ONLY)	$\text{H}_2(\text{g}) - 2\text{e}^- \rightarrow 2\text{H}^+(\text{aq})$