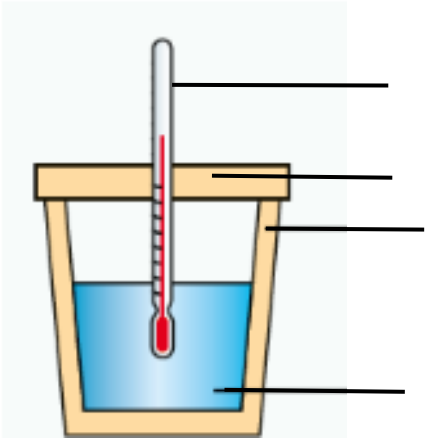
CHEMISTRY REVISION – TOPIC 5 – ENERGY CHANGES

What is an endothermic reaction?
Give one use of an endothermic reaction.
What is an exothermic reaction?
Give one use of an exothermic reaction.
Name some factors which can affect the temperature change of a reaction.

Label the apparatus below:
Why is a lid used in the apparatus?



What is activation energy?
Sketch a reaction for each of the following and explain the energy changes taking place:

Endothermic:

Exothermic:

On both diagrams

- Label the activation energy
- Draw and label the reaction pathway if a catalyst was used
- Label the overall energy change

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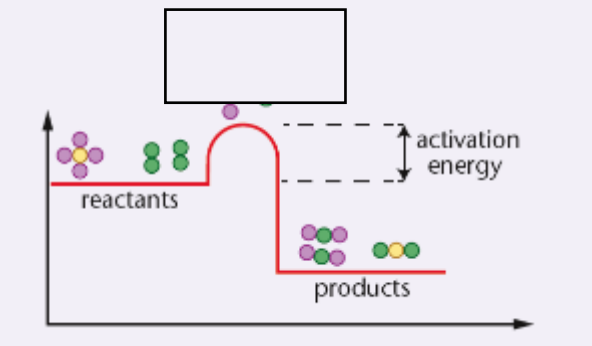
When a reaction happens, bonds must be broken in the _____ and bonds must be formed in the _____.
Bond breaking is an e_____ process (energy is given ____), whilst bond making is an e_____ process (energy is given ____).
Complete the box to show what happens to the atoms in a reaction.



Bond energy is the amount of energy needed to break a bond.
To calculate the overall energy change:
The amount of energy needed to _____ bonds minus the energy released to _____ bonds.
In an _____ reaction, the amount of energy needed to break bonds is **greater than** the energy released when bonds are made.
In an _____ reaction, the amount of energy needed to break bonds is **less than** the energy released when bonds are made.
To calculate overall energy change:-

1) Add up the bond energies for the _____.
2) Add up the bond energies for the products.
3) Take the total bond energies for products away from the total bond energies of the _____.

Hydrogen peroxide decomposes as shown:

$2\ H_2O_2 \rightarrow O_2 + 2\ H_2O$

2 H-O-O-H → O=O + 2 H-O-H

Calculate the energy change for the reaction

Bond	Energy (kJ)
H-O	464
O-O	146
O=O	498