

In an exothermic reaction heat e\_\_\_\_\_ the reaction to the surrounding environment.

The surrounding temperature i\_\_\_\_\_.

In an endothermic reaction heat e\_\_\_\_\_ the chemical reaction.

The surrounding temperature d\_\_\_\_\_.

Circle the exothermic reactions and underline the endothermic reactions:

combustion  
 photosynthesis  
 electrolysis  
 neutralisation  
 water reacting with calcium oxide  
 ammonium chloride reacting with water

Name some every day uses of exothermic reactions.

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\_\_\_\_\_

\_\_\_\_\_

Give an example of an every day use of an endothermic reaction.

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\_\_\_\_\_

\_\_\_\_\_

What is activation energy?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Describe how energy transfer can be measured in a practical. Draw a diagram to show the practical.

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**Keywords:** temperature change, rises, falls, lid, cotton wool, polystyrene cup, reactants.

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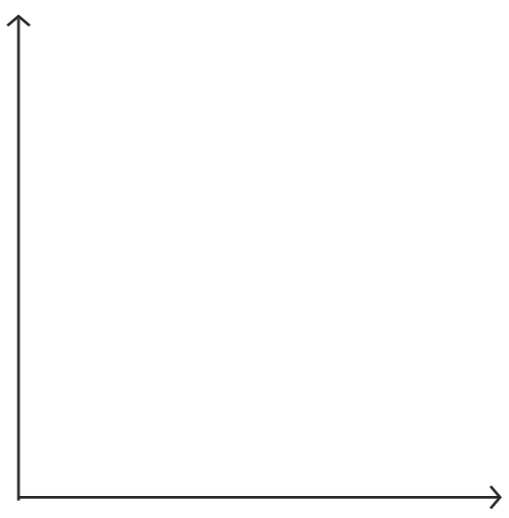
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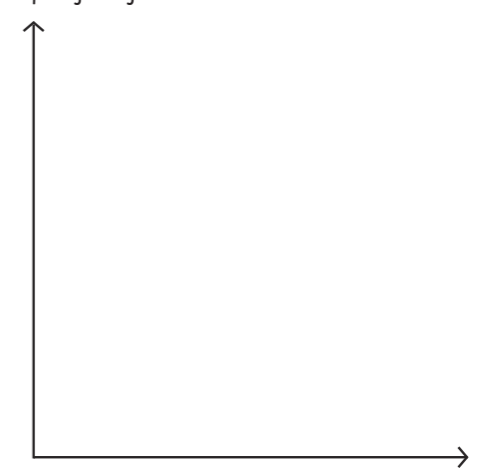
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Sketch a reaction profile for an endothermic reaction.



Sketch a reaction profile for an exothermic reaction.



Describe the reaction profile of an endothermic reaction.  
**Keywords:** reactant, product, lower, higher, activation energy.

\_\_\_\_\_

\_\_\_\_\_

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Describe the reaction profile of an exothermic reaction.  
**Keywords:** reactant, product, lower, higher, activation energy.

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\_\_\_\_\_

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What other things can affect the temperature change in a reaction?

M\_\_\_\_\_ of the reactants used.  
 C\_\_\_\_\_ of the reactants used.

Describe how you may test one of the above.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

In an exothermic reaction heat **exits** the reaction to the surrounding environment.

The surrounding temperature **increases**.

In an endothermic reaction heat **enters** the chemical reaction.

The surrounding temperature **deceases**.

Circle the exothermic reactions and underline the endothermic reactions:

combustion **exothermic**

photosynthesis **endothermic**

electrolysis **exothermic**

neutralisation **exothermic**

water reacting with calcium oxide **exothermic**

ammonium chloride reacting with water **endothermic**

Name some every day uses of exothermic reactions.

**Hand warmers, self-heating cans, matches, etc.**

Give an example of an every day use of an endothermic reaction.

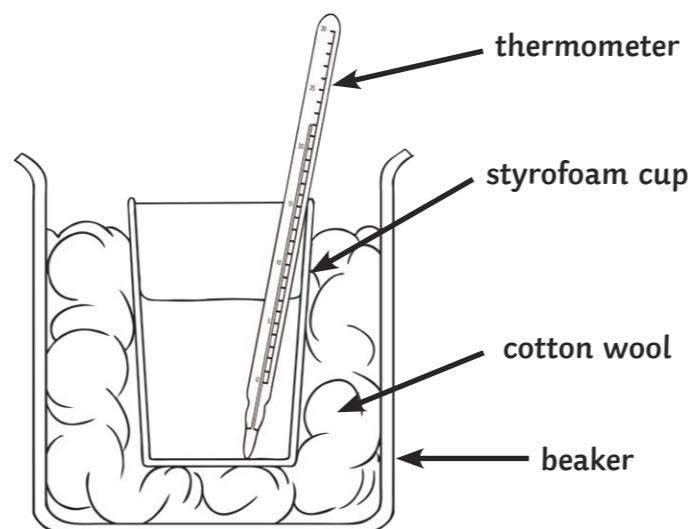
**sports injury packs, etc.**

What is activation energy?

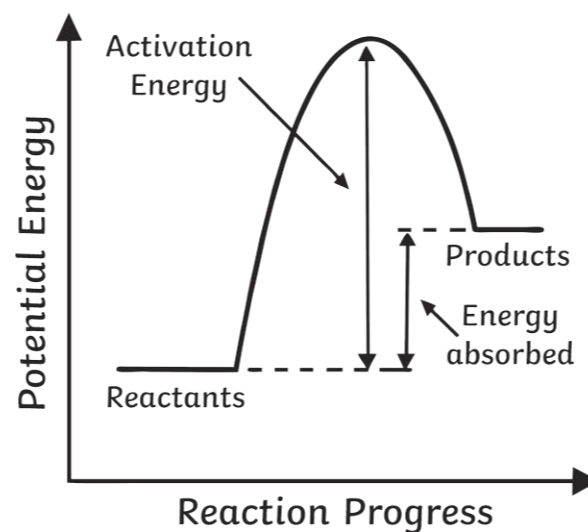
**The minimum amount of energy needed by the reactants to start the reaction.**

Describe how energy transfer can be measured in a practical. Draw a diagram to show the practical.

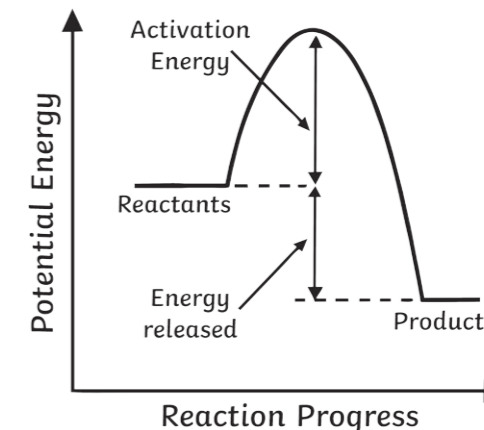
1. Take the start temperature of the reactants.
2. Record the highest temperature.
3. Record the lowest temperature.
4. Take away the temperature from the temperature of the reactants.



Sketch a reaction profile for an endothermic reaction.



Sketch a reaction profile for an exothermic reaction.



Describe the reaction profile of an endothermic reaction.

**The products are at a higher energy level because energy has come into the chemical reaction.**

Describe the reaction profile of an exothermic reaction.

**The products are at a lower energy level because energy has gone out of the chemical reaction.**

What other things can affect the temperature change in a reaction?

**Mass** of the reactants used.

**Concentration** of the reactants used.

Describe how you may test one of the above.

**Concentration**

**Place the same amount of acid and alkali in beakers, place in a water bath to get them to the same temperature. Add to a polystyrene cup. Measure the temperature every 30 seconds and record the highest temperature. Calculate the change in temperature then repeat with different concentrations.**