# Temperature changes in exothermic and endothermic reactions

***Education in Chemistry***August 2020
[rsc.li/2EijKwA](https://rsc.li/2EijKwA)

Follow the experiment instructions and safety advice from your teacher. Note your temperature measurements in the table below.

## 1. Results

### Reaction 1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Reactant 1** | **Reactant 2** | **Starting temperature /°C** | **Maximum temperature /°C** | **Final temperature /°C** |
| **Reactant solution** | **Surrounding air** | **Product solution** | **Surrounding air** | **Product solution** | **Surrounding air** |
|  |  |  |  |  |  |  |  |

### Reaction 2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Reactant 1** | **Reactant 2** | **Starting temperature /°C** | **Minimum temperature /°C** | **Final temperature /°C** |
| **Reactant solution** | **Surrounding air** | **Product solution** | **Surrounding air** | **Product solution** | **Surrounding air** |
|  |  |  |  |  |  |  |  |

## 2. Exothermic reaction

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| --- |
| a. Based on your results, decide which reaction was exothermic. Use the results to fill in the gaps in the chemical story. |
| **Chemical story** |
| **Starting temperature**At the start, the cup contains \_\_\_\_\_\_\_\_\_\_\_\_\_\_. This reactant is dissolved in water,A close up of a logo  Description automatically generated\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is added. | **Maximum temperature**The products of the reaction are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.The product \_\_\_\_\_\_\_\_\_\_\_\_\_ is dissolved in water.A close up of a logo  Description automatically generated | **Final temperature**The products are left in the cup for 15 minutes.A close up of a logo  Description automatically generated |
| b. Circle the correct word(s) in the energy story. |
| **Energy story** |
| The reactant solution and surrounding air are at the same temperature. Energy **is/ is not** being transferred to or from the surroundings. | During the chemical reaction energy is transferred **to/from** the water. The product solution is at a higher temperature than the surrounding air. Energy will start to transfer **to/from** the surrounding air. | The product solution and surrounding air are at the same temperature. The energy has transferred **to/from** the surrounding air where it has dissipated. |

## 3. Endothermic reaction

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| --- |
| a. Based on your results, decide which reaction was endothermic. Use the results to fill in the gaps in the chemical story. |
| **Chemical story** |
| **Starting temperature**At the start, the cup contains \_\_\_\_\_\_\_\_\_\_\_\_\_\_.This reactant is dissolved in water.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is added.A close up of a logo  Description automatically generated | **Maximum temperature**The products of the reaction are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.The product \_\_\_\_\_\_\_\_\_\_\_\_\_ is dissolved in water.A close up of a logo  Description automatically generated | **Final temperature**The products are left in the cup for 15 minutes.A close up of a logo  Description automatically generated |
| b. Circle the correct word(s) in the energy story. |
| **Energy story** |
| The reactant solution and surrounding air are at the same temperature. Energy **is/ is not** being transferred to or from the surroundings | During the chemical reaction energy is transferred **to/from** the water. The product solution is at a higher temperature than the surrounding air. Energy will start to transfer **to/from** the surrounding air. | The product solution and surrounding air are at the same temperature. The energy has transferred **to/from** the surrounding air. |