

# CHEMICAL ENERGETICS

1. In an exothermic reaction does the temperature go up or down?

.....

2. In an endothermic reaction does the temperature go up or down?

.....

3. Name two examples of exothermic reactions

.....

4. Name two examples of endothermic reactions

.....

5. Circle the correct answers.

The bonds between the atoms of the reactants / products need to be broken first, this is an endothermic / exothermic process. These bonds are made between the atoms of the reactants / products, this is an endothermic / exothermic process.

6. Use the table to answer this question

Reaction	Starting temperature C <sup>o</sup>	Final temperature C <sup>o</sup>
A	20	31
B	22	18
C	21	25

a. Decide whether each reaction is endothermic or exothermic, explain how you could tell.

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b. Which reaction has the largest energy change?

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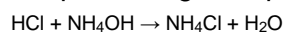
7. In an exothermic reaction, is enthalpy change positive or negative?

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8. In an endothermic reaction, is enthalpy change positive or negative?

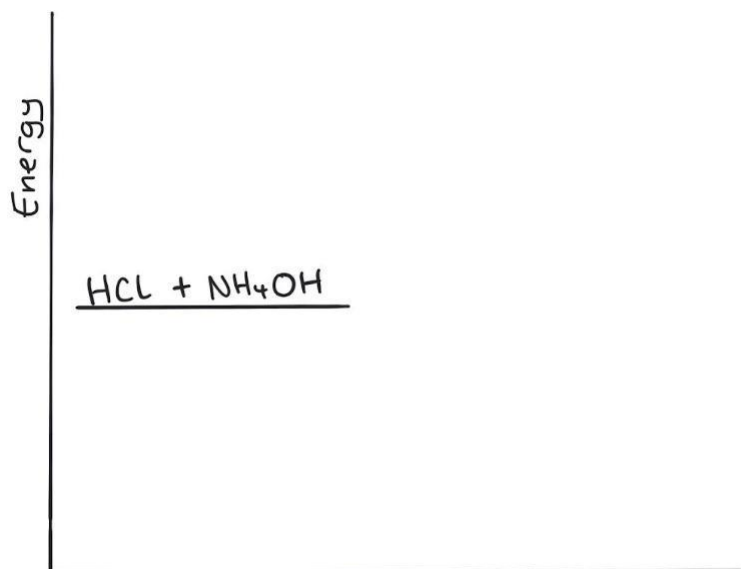
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9. When hydrochloric acid reacts with ammonium hydroxide in a beaker, the temperature goes up.



$$\Delta H = -53.4\text{kJ/mol}$$

Complete the energy profile diagram and state whether the reaction is endothermic or exothermic, explain your answer.



10. What are the units for enthalpy change,  $\Delta H$

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You may like to watch this lesson on the different types of Chemical reactions.

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## Worksheet (Answers)

1. In an exothermic reaction does the temperature go up or down? **The temperature will increase**
2. In an endothermic reaction does the temperature go up or down? **The temperature will decrease**
3. Name two examples of exothermic reactions  
**Neutralisation & combustion**
4. Name two examples of endothermic reactions  
**Photosynthesis & thermal decomposition**
5. Circle the correct answers.

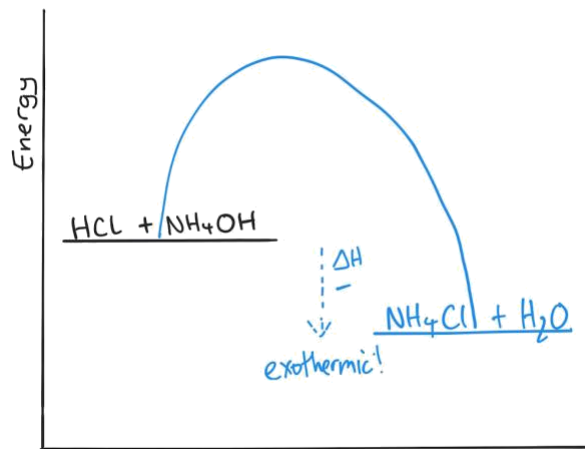
The bonds between the atoms of the reactants / ~~products~~ need to be broken first, this is an endothermic / ~~exothermic~~ process. The bonds are made between the atoms of the ~~reactants~~ / products, this is an ~~endothermic~~ / exothermic process.

6. Use the table to answer this question

Reaction	Starting temperature C °	Final temperature C °
A	20	31
B	22	18
C	21	25

- a. Decide whether each reaction is endothermic or exothermic, explain how you could tell.  
**A - Exothermic (temperature increases)**  
**B - Endothermic (temperature decreases)**  
**C - Exothermic (temperature increases)**
  - b. Which reaction has the largest energy change?  
**A, largest temperature change**
7. In an exothermic reaction, is enthalpy change positive or negative?  
**negative**
  8. In an endothermic reaction, is enthalpy change positive or negative?  
**positive**
  9. When hydrochloric acid reacts with ammonium hydroxide in a beaker, the temperature goes up.  
$$\text{HCl} + \text{NH}_4\text{OH} \rightarrow \text{NH}_4\text{Cl} + \text{H}_2\text{O}$$
$$\Delta H = -53.4\text{kJ/mol}$$
Complete the energy profile diagram and state whether the reaction is endothermic or exothermic, explain your answer.

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Exothermic, more energy is release when bonds are made than is needed to break bonds between reactants.

10. What are the units for enthalpy change,  
ΔH kJ/mol

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