

## C2 Topic 7 Rates, energy and reversible reactions

Chemical reactions and catalysts	
1. What needs to happen for a chemical reaction to take place?	Particles need to collide with each other sufficient energy
2. What is activation energy?	The minimum amount of energy the particles must have to react during a collision
3. What do catalysts do?	Change the rate of chemical reactions, without being used up in the reaction
4. Can we use the same catalyst for all reactions?	No – different reactions used different catalysts
5. Why are catalysts important?	They're used in industrial processes to increase the rate of chemical reactions whilst reducing costs.
Rate of reaction	
6. How can we measure rate of reaction?	By measuring the amount of reactant used up over time <b>or</b> by measuring the amount of product produced over time
7. What effect does increasing the temperature have on the rate of reaction?	It increases the rate of reaction
8. Why does increasing the temperature increase rate of reaction?	By increasing the energy the reacting particles have so increasing their speed so that they collide more frequently and more energetically
9. Describe the effect of increasing pressure on rate of reaction	Increasing the pressure increases the frequency of collisions, so increasing the rate of reaction
10. Describe the effect of increasing concentration on rate of reaction	Increasing the concentration increases the frequency of collisions, so increasing the rate of reaction
11. Describe the effect of increasing surface area on rate of reaction	Increasing the surface area increases the frequency of collisions, so increasing the rate of reaction
Exothermic and endothermic reactions	
12. What happens, in terms of heat, during chemical reactions?	Heat is transferred either from or to the surroundings
13. What happens during an exothermic reaction?	Heat is transferred to the surroundings
14. Give an example of an exothermic reaction:	Combustion
15. Give an example of a use of exothermic reactions:	Self-heating cans / hand warmers

16. What happens during an endothermic reaction?	Heat is transferred from the surroundings
17. Give an example of an exothermic reaction:	Thermal decomposition
18. Give an example of a use of exothermic reactions:	Sports injury packs
<b>Reversible reactions</b>	
19. What is a reversible reaction?	A reaction in which the products of the reaction can reform to make the original reactants
20. Give an example of a reversible reaction	Ammonium chloride $\leftrightarrow$ ammonia + hydrochloric acid
21. If a reversible reaction is exothermic in one direction, what will it be in the other direction?	Endothermic
22. If a reversible reaction is endothermic in one direction, what will it be in the other direction?	Exothermic
23. Describe the energy transferred during a reversible reaction in each direction	The same amount of energy is transferred in the forward and reverse reactions