

Topic 6

1. How can we calculate the mean rate of reaction?	$= \frac{\text{quantity of reactant used}}{\text{Time taken}}$ $= \frac{\text{quantity of product formed}}{\text{Time taken}}$
2. What are the possible units for rate of reaction?	g/s cm ³ /s mol/s
3. What are the two conditions required for a reaction to take place according to collision theory?	<ul style="list-style-type: none"> • Reactant particles must collide. • They must collide with enough energy to start a reaction (activation energy)
4. What happens to the rate of reaction if we increase the surface area reactants? Why?	As surface area increases the area for collisions increases. The frequency of collisions increases. The number of successful collisions increases As surface area increases the rate increases.
5. What happens to the rate of reaction if we increase the pressure of reacting gases? Why?	As pressure increases the particles are closer together The frequency of collisions increases. The number of successful collisions increases As pressure increases the rate increases.
6. What happens to the rate of reaction if we increase the concentration of reactants? Why?	As concentration increases there are more reactant particles. The frequency of collisions increases. The number of successful collisions increases As concentration increases the rate increases.
7. What happens to the rate of reaction if we increase the temperature? Why?	As temperature increase particles collide more frequently and with more energy. The number of successful collisions increases As temperature increases the rate increases.
8. What is a catalyst?	A catalyst speeds up the rate of reaction but is not used up in the reaction.
9. How do catalysts work?	Catalysts provide alternative pathways with a lower activation energy in a reaction. As a result more collisions are successful. So the rate of reactions increases.
10. Why are catalysts used in industry?	Catalysts speed up reactions without needing to increase temperature. This saves energy so saves money and is better for the environment.
11. What is a reversible reaction?	A reaction where the products can react to produce the original reactants.

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12. In reversible reactions what happens in terms of energy?	The energy transferred to the surroundings in one direction is equal to the energy taken in in the opposite direction.
13. What is dynamic equilibrium?	In a reversible reaction in a closed system the rate of the forward reaction will equal the rate of the reverse reaction.
14. What happens to the amount of products and reactants at equilibrium?	There is no change in the amount of product and reactant.
15. What will happen to equilibrium if concentration is changed?	If the concentration of reactants is increased – more product will be formed until equilibrium is again reached. If the concentration of products is decreased – more reactants will react until equilibrium is again reached.
16. What will happen to equilibrium if the temperature is increased?	If the forward reaction is exothermic - The amount of products will decrease - The amount of reactants will increase If the forward reaction is endothermic - The amount of products will increase - The amount of reactants will decrease
17. What will happen to equilibrium if the pressure is increased in a reaction of gases?	The position of equilibrium will shift to favour the side (make more) of the reaction with less molecules of gas