



	Lessons Sequence					
TOPIC (S) RATE AND EXTENT OF CHEMICAL CHANGE	1. Calculating rate of reaction 2. Factors that affect the rate of reaction 3. Concentration and rate of reaction (required practical)		4. Collision theory and rate of reaction 5. Catalysts 6. Reversible reactions		7. Equilibrium 8. The effect of changing conditions on equilibrium	
Knowledge & Skills development	<ul style="list-style-type: none"> Calculate the mean rate of a reaction Draw, and interpret, graphs showing the quantity of product formed or quantity of reactant used up against time Draw tangents to the curves on these graphs and use the slope of the tangent as a measure of the rate of reaction Explain, using collision theory, how concentration, surface area, pressure and temperature affect the rate of chemical reactions Describe 2 different methods to investigate how concentration affects rate of reaction 			<ul style="list-style-type: none"> Use simple ideas about proportionality when using collision theory to explain the effect of a factor on the rate of a reaction Explain catalytic action in terms of activation energy Use chemical equations to describe reversible reactions and describe them in terms of energy changes Interpret appropriate data to predict the effect of pressure, temperature and concentration changes on reactions at equilibrium 		
Assessment / Feedback Opportunities	Targeted questioning throughout topic	Teacher assessment of practical skills during investigation - verbal	Knowledge Recall Quizzes	Deep marking of written task in students books	Topic Test	Targeted exam questions – teacher or self-assessed
Cultural Capital	<ul style="list-style-type: none"> Opportunity to attend Salters Festival of Chemistry competition 					
SMSC / Promoting British Values (Democracy, Liberty, Rule of Law, Tolerance & Respect)	<ul style="list-style-type: none"> Listening to others during presentations Working in groups during practical work or research tasks 					
Recommended Reading	<ul style="list-style-type: none"> Recommended Read: Reactions: An Illustrated Exploration of Elements, Molecules, and Change in the Universe (Theodore Gray) Recommended Read: All About Chemistry (Big Questions) (Robert Winston) 					
Key Vocabulary	Independent Variable, Dependent Variable, Control Variables, Method, Conclusion, Precaution, Evaluation, Reliable, Precision, Valid, Anomaly, Describe, Explain, Compare, Analyse, Calculate, Suggest					
Digital Literacy	Rate, Reaction, Reactant, Product, Temperature, Pressure, Concentration, Catalyst, Surface Area, Collision, Theory, Activation Energy, Equilibrium					
Digital Literacy	SharePoint resources including topic quizzes Possible use of excel to plot graphs and analyse data, powerpoint, word, etc to present information, internet for research					
Cross-Curricular Links	Numeracy/Maths – averages (means), reading scales, graph plotting, lines of best fit, using and rearranging equations, using scientific calculators					

Careers

Chemist, Pharmacist, Chemical Engineer, Fireworks manufacturer