

Temperance Term

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	HALF TERM	
Topic	B3 Infection and Response and P3 Particle Model of Matter				C3 Quantitative Chemistry and P4 Atomic Structure					
Challenge Objective and Content (for all learners)	<p>B3 - Students should be able to explain how diseases caused by viruses, bacteria, protists and fungi are spread in animals and plants.</p> <ul style="list-style-type: none"> -Explain how diseases caused by pathogens are spread in animals and plants. -Describe diseases caused by viruses, bacteria, fungi and protists. -Describe the defence systems of the human body and explain the role of the immune system. -WS 1.4 Evaluate the global use of vaccination in the prevention of disease. -Describe the development of new medicines. -WS 1.6 Understand the role of peer review before publishing results of trials. <p>P3 – Use the particle model to predict the behaviour in solids, liquids and gases.</p> <ul style="list-style-type: none"> -Students should be able to explain the differences in density between the different states of matter in terms of the arrangement of atoms or molecules. -RP5 Determine the densities of regular and irregular objects and liquids. -MS 1a, 3b,c,d, Calculate change in thermal energy using specific heat capacity 				<p>C3 – Use chemical equations as a way to communicate chemical ideas.</p> <ul style="list-style-type: none"> -Define ‘conservation of mass’ -Calculate relative formula mass and percentage mass. -Investigate mass changes -Make estimations of uncertainty -Understand the term ‘moles’ and calculate moles in a given mass of a substance. -MS1b express data in standard form -MS 3b Change the subject of an equation -MS1c Use ratios, fractions and percentages -Calculate percentage yield <p>P4 – Describe the structure of the atom, the nuclear forces and atom stability.</p> <ul style="list-style-type: none"> -Describe the structure of the atom, with reference to atomic number and mass number -Describe the discovery of the electron led to the plum pudding model of the atom. The plum pudding model suggested that the atom is a ball of positive charge with negative electrons embedded in it. -Describe the properties of alpha, beta and gamma radiation -Use nuclear equations to represent radioactive decay -Calculate half life -Describe the sources of radiation and their dangers and uses 					
Inspire Opportunities	<p>B3 - Justify how the immune system fights against disease successfully.</p> <p>P3 - Explain the differences in density between the different states of matter in terms of the arrangement of atoms or molecules.</p>				<p>C3 – Demonstrate how to calculate moles and rearrange the mole equation.</p> <p>P4 - Compare and contrast isotopes using the correct nomenclature.</p>					
Assessment Opportunities	End of Topic Tests				End of Topic Tests					

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	CHRI
Topic	P5 Forces and C4 Chemical Changes						

<p>Challenge Objective and Content (for all learners)</p>	<p>P5 - Identify and measure forces acting on objects</p> <ul style="list-style-type: none"> -Describe the differences between contact and non-contact forces. -MS 3b,c Calculate weight and work done -MS1c, WS 4.5 Convert between newton-meters and joules -RP6 Investigate the link between force and extension with springs. -MS 3c Describe a moment as a turning force and be able to calculate moment using force and distance. -Express a displacement in terms of magnitude and direction -MS 3b, c Calculate speed using distance travelled and time -Draw and interpret velocity time graphs -Apply Newton's Laws <p>C4 – Investigate and predict chemical changes in substances</p> <ul style="list-style-type: none"> -Explain oxidation and reduction in terms of loss or gain of oxygen -Experiment and describe reactions of metals with water and dilute acids -Interpret and evaluate metal extraction processes -Explain oxidation and reduction in terms of loss and gain of electrons. -Write ionic equations for displacement reactions. -Explain reactions of acids with metals -Predict products from given reactants -Use the pH scale to identify acidic or alkaline solutions -Describe and explain the process of electrolysis -RP Investigate the electrolysis of aqueous solutions -Write half equations 	
<p>Inspire Opportunities</p>	<p>P5 - Determine speed, acceleration and distance from multiple graphs using mathematical tools such as area under line and gradient.</p> <p>C4 - Explain any observed changes in mass in non-enclosed systems during a chemical reaction given the balanced symbol equation for the reaction and explain these changes in terms of the particle model.</p>	
<p>Assessment Opportunities</p>	<p>End of Topic Tests</p>	

Justice Term

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	HALF TERM
Topic	P5 Forces and B4 Bioenergetics				C5 Energy Changes and B5 Homeostasis and Response		
Challenge Objective and Content (for all learners)	<p>P5 - Identify and measure forces acting on objects</p> <ul style="list-style-type: none"> -Describe the differences between contact and non-contact forces. -MS 3b,c Calculate weight and work done -MS1c, WS 4.5 Convert between newton-meters and joules -RP6 Investigate the link between force and extension with springs. -MS 3c Describe a moment as a turning force and be able to calculate moment using force and distance. -Express a displacement in terms of magnitude and direction -MS 3b, c Calculate speed using distance travelled and time -Draw and interpret velocity time graphs -Apply Newton's Laws <p>B4 - Describe and explain the processes of respiration and photosynthesis</p> <ul style="list-style-type: none"> -State the word and symbol equations for photosynthesis. -MS Measure and calculate the rate of photosynthesis as well as extract and interpret graphs. -RP Investigate the effect of light intensity on the rate of photosynthesis -Describe the uses of glucose from photosynthesis. -Explain the processes of aerobic and anaerobic respiration, stating the equations. -Explain how the body responds to exercise. 				<p>C5- Explain how the interaction of particles often involves transfers of energy.</p> <ul style="list-style-type: none"> -Describe the differences between exothermic and endothermic reactions -RP Investigate the variables that affect temperature changes -Draw and analyse simple reaction profiles -Calculate the energy transferred in chemical reactions -Describe the effects of changing conditions on a system at equilibrium can be predicted using Le Chatelier's Principle <p>B5 – Describe the structure and function of the nervous system and the hormonal system.</p> <ul style="list-style-type: none"> -Define 'homeostasis' -Explain the role of homeostasis in the control of blood glucose, body temperature and water levels. -Describe the structure and function of the nervous system 		
Inspire Opportunities	<p>P5 - Determine speed, acceleration and distance from multiple graphs using mathematical tools such as area under line and gradient.</p> <p>B4 - Explain the importance of sugars, amino acids, fatty acids and glycerol in the synthesis and breakdown of carbohydrates, proteins and lipids.</p>				<p>C5 - Interpret appropriate given data to predict the effect of a change in temperature on given reactions at equilibrium</p> <p>B5 - Explain the role of the reflex arc in reflex actions.</p>		
Assessment Opportunities	End of Topic Tests				End of Topic Tests		

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	E
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Topic	C5 Energy Changes and B5 Homeostasis and Response	B5 Homeostasis and Response and C6 The Rate and Extent of Chemical Change	C6 The Rate and Extent of Chemical Change and B6 Inheritance, Variation and Evolution
Challenge Objective and Content (for all learners)	<p>C5- Explain how the interaction of particles often involves transfers of energy.</p> <ul style="list-style-type: none"> -Describe the differences between exothermic and endothermic reactions -RP Investigate the variables that affect temperature changes -Draw and analyse simple reaction profiles -Calculate the energy transferred in chemical reactions -Describe the effects of changing conditions on a system at equilibrium can be predicted using Le Chatelier's Principle <p>B5 – Describe the structure and function of the nervous system and the hormonal system.</p> <ul style="list-style-type: none"> -Define 'homeostasis' -Explain the role of homeostasis in the control of blood glucose, body temperature and water levels. -Describe the structure and function of the nervous system -MS Extract and interpret data from graphs -RP 7 Investigate the effect of a factor on human reaction time. -Explain how the human endocrine system is controlled. -WS 1.3 Evaluate information around the relationship between obesity and diabetes. -Describe the role of hormones in human reproduction, including the menstrual cycle. -WS 1.3 Discuss why the issues regarding contraception cannot be answered by science alone. <p>C6 - Understand energy changes that accompany chemical reactions.</p> <ul style="list-style-type: none"> -MS 1a Recognise and use expressions in decimal form. -MS4a Translate information between graphical and numerical form -Calculate mean rate of reaction. -Describe and explain factors which effect the rate of reaction, including concentration and surface area. -RP5 Investigate how changes in concentration affect the rates of reaction. -Predict and explain changes in rate of reaction by using the collision theory. -Explain the effects of a catalyst -Define endothermic and exothermic reactions and describe the term 'equilibrium' <p>B6 Compare asexual and sexual reproduction, with relation to number of chromosomes and explain how favoured characteristics can be selectively bred.</p> <ul style="list-style-type: none"> -Understand the differences between mitosis and meiosis. -WS 1.2 Model behaviour of chromosomes during meiosis. -Describe the structure of DNA 	<p>B5 – Describe the structure and function of the nervous system and the hormonal system.</p> <ul style="list-style-type: none"> -Define 'homeostasis' -Explain the role of homeostasis in the control of blood glucose, body temperature and water levels. -Describe the structure and function of the nervous system -MS Extract and interpret data from graphs -RP 7 Investigate the effect of a factor on human reaction time. -Explain how the human endocrine system is controlled. -WS 1.3 Evaluate information around the relationship between obesity and diabetes. -Describe the role of hormones in human reproduction, including the menstrual cycle. -WS 1.3 Discuss why the issues regarding contraception cannot be answered by science alone. <p>C6 - Understand energy changes that accompany chemical reactions.</p> <ul style="list-style-type: none"> -MS 1a Recognise and use expressions in decimal form. -MS4a Translate information between graphical and numerical form -Calculate mean rate of reaction. -Describe and explain factors which effect the rate of reaction, including concentration and surface area. 	<p>C6 - Understand energy changes that accompany chemical reactions.</p> <ul style="list-style-type: none"> -MS 1a Recognise and use expressions in decimal form. -MS4a Translate information between graphical and numerical form -Calculate mean rate of reaction. -Describe and explain factors which effect the rate of reaction, including concentration and surface area. -RP5 Investigate how changes in concentration affect the rates of reaction. -Predict and explain changes in rate of reaction by using the collision theory. -Explain the effects of a catalyst -Define endothermic and exothermic reactions and describe the term 'equilibrium' <p>B6 Compare asexual and sexual reproduction, with relation to number of chromosomes and explain how favoured characteristics can be selectively bred.</p> <ul style="list-style-type: none"> -Understand the differences between mitosis and meiosis. -WS 1.2 Model behaviour of chromosomes during meiosis. -Describe the structure of DNA
Inspire Opportunities	<p>C5 - Interpret appropriate given data to predict the effect of a change in temperature on given reactions at equilibrium</p> <p>B5 - Explain the role of the reflex arc in reflex actions.</p>	<p>B5 - Explain the role of the reflex arc in reflex actions.</p>	<p>C6 - Explain why catalysts increase the rate of reaction by providing a different pathway for the reaction that has a lower activation energy.</p> <p>B6 Consider and debate the ethical considerations of cloning</p>

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		C6 - Explain why catalysts increase the rate of reaction by providing a different pathway for the reaction that has a lower activation energy		
Assessment Opportunities	End of Topic Tests	End of Topic Tests	End of Topic Tests	

Courage Term

	Week 1	Week 2	Week 3	Week 4	Week 5	HALF TERM
Topic	C6 The Rate and Extent of Chemical Change B6 Inheritance, Variation and Evolution		B6 Inheritance, Variation and Evolution and C7		Revision	
Challenge Objective and Content (for all learners)	<p>C6 - Understand energy changes that accompany chemical reactions.</p> <ul style="list-style-type: none"> -MS 1a Recognise and use expressions in decimal form. -MS4a Translate information between graphical and numerical form -Calculate mean rate of reaction. -Describe and explain factors which effect the rate of reaction, including concentration and surface area. -RP5 Investigate how changes in concentration affect the rates of reaction. -Predict and explain changes in rate of reaction by using the collision theory. -Explain the effects of a catalyst -Define endothermic and exothermic reactions and describe the term 'equilibrium' <p>B6 Compare asexual and sexual reproduction, with relation to number of chromosomes and explain how favoured characteristics can be selectively bred.</p> <ul style="list-style-type: none"> -Understand the differences between mitosis and meiosis. -WS 1.2 Model behaviour of chromosomes during meiosis. -Describe the structure of DNA 		<p>B6 Compare asexual and sexual reproduction, with relation to number of chromosomes and explain how favoured characteristics can be selectively bred.</p> <ul style="list-style-type: none"> -Understand the differences between mitosis and meiosis. -WS 1.2 Model behaviour of chromosomes during meiosis. -Describe the structure of DNA -Describe the importance of the human genome -Draw genetic diagrams to show the possible genotype and phenotype of offspring -MS 1c, 3a use direct proportion and simple ratios to express outcomes of genetic crosses. <p>C7-Explain the importance of carbon compounds as organic compounds, in terms of structure and properties.</p> <ul style="list-style-type: none"> -Recognise substances as alkanes given their formulae in these forms. -Recognise substances as alkenes given their formulae in these forms -Describe the process of fractional distillation 		Revision of paper 1 topics	
Inspire Opportunities	<p>C6 - Explain why catalysts increase the rate of reaction by providing a different pathway for the reaction that has a lower activation energy.</p> <p>B6 Consider and debate the ethical considerations of cloning</p>		<p>B6 Consider and debate the ethical considerations of cloning</p> <p>C7 - Determine name and therefore properties from chemical formula.</p>			

Assessment Opportunities	End of Topic Tests	End of Topic Tests		
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	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	
Topic	Mock Exams	C8 – Chemical Analysis and P7 Magnetism and Electromagnetism					SUMMER
Challenge Objective and Content (for all learners)		<p>C8 Explain a variety of instrumental methods can be used to analyse substances</p> <ul style="list-style-type: none"> -Use melting point and boiling point data to distinguish pure from impure substances. -Explain how paper chromatography separates mixtures and calculate retention factor -RP 6 Investigate how paper chromatography can be used to separate and tell the difference between coloured substances -Explain the tests for a variety of gases, including oxygen and chlorine <p>P7-Explain how electromagnetic effects are used in a variety of devices</p> <ul style="list-style-type: none"> -Describe the differences between permanent and induced magnetism Draw the magnetic field pattern of a bar magnet -Describe how the magnetic effect of a current can be demonstrated 					
Inspire Opportunities		<p>C8 – Use chromatography to calculate Rf values.</p> <p>P7 - Show that Fleming's left-hand rule represents the relative orientation of the force, the current in the conductor and the magnetic field</p>					
Assessment Opportunities		End of Topic Tests					