




		Year:	8	Subject:	Science	Autumn 1	Autumn 2	Spring 1
Intent	Subject Concepts (Substantive knowledge) 	<ul style="list-style-type: none"> KS3 Science 	Energy (11 lessons) (teaching support/practical ideas for support of topic Support energy)	Prior Knowledge: <ul style="list-style-type: none"> Identify the 8 energy stores and the 4 transfer pathways including the conservation of energy. 	Forces Continued Prior Knowledge: <ul style="list-style-type: none"> List different types of forces identify forces Describe the effect of forces Describe the differences between vectors and scalars 	Waves and light (8 lessons) Prior Knowledge: <ul style="list-style-type: none"> Describe the type of wave for light and sound (giving examples) Identify waves in relation to electricity and musical instruments respectively. 		
			Takeaway Learning: <ul style="list-style-type: none"> Describe the methods of heat transfer, Explain the differences between heat and temperature Calculate energy using the equation appropriately e.g. Kinetic energy, GPE 	Takeaway Learning: <ul style="list-style-type: none"> Explain the effect of forces i.e. in motion, and in stretched objects e.g. how forces affect the extension of a stretched material. 			Takeaway Learning: <ul style="list-style-type: none"> Describe the properties of a wave Explain the differences between a transverse and a longitudinal wave. 	
			<ul style="list-style-type: none"> KS3 Science 	Energy in chemical reactions (7 lessons) Prior Knowledge: <ul style="list-style-type: none"> State the difference between energy and work Relate this idea of energy and work to everyday energy changes. 			Chemical interactions (12 lessons) Prior Knowledge: <ul style="list-style-type: none"> Understand the collision theory Explain exothermic and endothermic reactions in terms of bonds broken and bonds formed. 	Life Processes (11 lessons) Prior Knowledge: <ul style="list-style-type: none"> Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. Identify the 7 life processes
	Takeaway Learning: <ul style="list-style-type: none"> Understand the collision theory Explain exothermic and endothermic reactions in terms of bonds broken and bonds formed. 	Takeaway Learning: <ul style="list-style-type: none"> Explain the bonding between molecules Use the appropriate separation techniques to separate mixtures e.g. chromatography for coloured dyes and inks 	Takeaway Learning: <ul style="list-style-type: none"> Explain the difference between Aerobic and anaerobic respiration Describe the structure and function of the circulatory system including the three blood vessels, arteries veins and capillaries. 					
	<ul style="list-style-type: none"> KS3 Science 	Forces (11 lessons) Prior Knowledge: <ul style="list-style-type: none"> List different types of forces <ul style="list-style-type: none"> identify forces Describe the effect of forces Describe the differences between vectors and scalars 	Prior Knowledge: <ul style="list-style-type: none"> List different types of forces identify forces Describe the effect of forces Describe the differences between vectors and scalars 	Prior Knowledge: <ul style="list-style-type: none"> 	Prior Knowledge: <ul style="list-style-type: none"> 			
			Takeaway Learning: <ul style="list-style-type: none"> Explain the effect of forces i.e. in motion, and in stretched objects e.g. how forces affect the extension of a stretched material. 	Takeaway Learning: <ul style="list-style-type: none"> 	Takeaway Learning: <ul style="list-style-type: none"> 			
	Disciplinary Knowledge	<ul style="list-style-type: none"> Using scientific ideas and models to explain phenomena and developing students creatively to generate and test theories. Critically analyse and evaluate evidence from observations and experiments. Examining the ethical and moral implications of using and applying science. Enable students to use science to act responsibly in the real world. 	<ul style="list-style-type: none"> Using scientific ideas and models to explain phenomena and developing students creatively to generate and test theories. Critically analyse and evaluate evidence from observations and experiments. Examining the ethical and moral implications of using and applying science. Enable students to use science to act responsibly in the real world. 	<ul style="list-style-type: none"> Using scientific ideas and models to explain phenomena and developing students creatively to generate and test theories. Critically analyse and evaluate evidence from observations and experiments. Examining the ethical and moral implications of using and applying science. Enable students to use science to act responsibly in the real world. 				
Implementati	Common Misconceptions	<ul style="list-style-type: none"> https://spark.iop.org/misconceptions Difference between temperature and heat Understand that balanced forces produce no change. “Anything that is moving has an unbalanced force acting on it.” “Unbalanced forces always make things go faster.” “If anything is stationary it has no forces acting on it.” 	<ul style="list-style-type: none"> “Anything that is moving has an unbalanced force acting on it.” “Unbalanced forces always make things go faster.” “If anything is stationary it has no forces acting on it.” Objects have to be in contact to exert a force on each other”. An object that has balanced forces or no force acting on it must be stationary.” 	<ul style="list-style-type: none"> Most students think of waves ‘carrying’ material from one place to another 				

		<ul style="list-style-type: none"> Objects have to be in contact to exert a force on each other.” An object that has balanced forces or no force acting on it must be stationary.” A force used to start an object moving continues to act throughout the whole time the object is moving.” Gravity accelerates heavy objects more than light ones.” Weight and mass are the same thing.” There is no gravity on the Moon.” The terms "energy" and "force" are interchangeable. An object at rest has no energy. The only type of potential energy is gravitational. Doubling the speed of a moving object doubles the kinetic energy. Energy can be changed completely from one form to another useful (no energy losses as unwanted energy). 	<ul style="list-style-type: none"> A force used to start an object moving continues to act throughout the whole time the object is moving.” Gravity accelerates heavy objects more than light ones.” Weight and mass are the same thing 	
Enabling or Adapting the Curriculum	SEND Students	<ul style="list-style-type: none"> Writing frames (scaffolding) for long answer questions Keywords with definitions available Short sentences/not over stimulated powerpoints Paired work where possible Modelling ie waves with slinky 	<ul style="list-style-type: none"> Writing frames (scaffolding) for long answer questions Keywords with definitions available Short sentences/not over stimulated powerpoints Paired work where possible Modelling ie waves with slinky 	<ul style="list-style-type: none"> Writing frames (scaffolding) for long answer questions Keywords with definitions available Short sentences/not over stimulated powerpoints Paired work where possible Modelling ie waves with slinky
	Disadvantaged Students	<ul style="list-style-type: none"> Making parachutes Bring career links into lessons (aspirational) External trips – linked with STEM co-ordinator? Access to revision guides Support with exam questions through use of displays and key terminology Support long answer questions with sentence starters Use of CGP books to support in PLC lessons 	<ul style="list-style-type: none"> Bring career links into lessons (aspirational) External trips – linked with STEM co-ordinator? Access to revision guides Support with exam questions through use of displays and key terminology Support long answer questions with sentence starters Use of CGP books to support in PLC lessons 	<ul style="list-style-type: none"> Bring career links into lessons (aspirational) External trips – linked with STEM co-ordinator? Access to revision guides Support with exam questions through use of displays and key terminology Support long answer questions with sentence starters Use of CGP books to support in PLC lessons
	More Able Students	<ul style="list-style-type: none"> Develop greater use of the more challenging command words – ie analyse, synthesize or evaluate. Develop extended writing opportunities Opportunities for extended projects further reading around subjects Build into lessons well-designed extension tasks promote higher-order skills such as speculation, inference, prediction, hypothesis and synthesis, as well as nurturing independence and self-knowledge. Asking probing questions Encourage effective discussion between teacher and pupil open-ended tasks that do not have one right answer Set an independent task, such as a further investigation invite students to decide how they would like to demonstrate their learning to you or the rest of the class after an agreed length of time. 	<ul style="list-style-type: none"> Develop greater use of the more challenging command words – ie analyse, synthesize or evaluate. Develop extended writing opportunities Opportunities for extended projects further reading around subjects Build into lessons well-designed extension tasks promote higher-order skills such as speculation, inference, prediction, hypothesis and synthesis, as well as nurturing independence and self-knowledge. Asking probing questions Encourage effective discussion between teacher and pupil open-ended tasks that do not have one right answer Set an independent task, such as a further investigation invite students to decide how they would like to demonstrate their learning to you or the rest of the class after an agreed length of time. 	<ul style="list-style-type: none"> Develop greater use of the more challenging command words – ie analyse, synthesize or evaluate. Develop extended writing opportunities Opportunities for extended projects further reading around subjects Build into lessons well-designed extension tasks promote higher-order skills such as speculation, inference, prediction, hypothesis and synthesis, as well as nurturing independence and self-knowledge. Asking probing questions Encourage effective discussion between teacher and pupil open-ended tasks that do not have one right answer Set an independent task, such as a further investigation invite students to decide how they would like to demonstrate their learning to you or the rest of the class after an agreed length of time.
Literacy/Numeracy Skills 	LITERACY	<ul style="list-style-type: none"> Use of keywords, reading of information, interpreting information, effective use of communicating ideas 	<ul style="list-style-type: none"> Use of keywords, reading of information, interpreting information, effective use of communicating ideas 	<ul style="list-style-type: none"> Use of keywords, reading of information, interpreting information, effective use of communicating ideas
	Reading:	<ul style="list-style-type: none"> Reading textbook, slides, questions Display keywords on slides Teach keyword vocabulary and break down ie photo – light, lysis to split 	<ul style="list-style-type: none"> Reading textbook, slides, questions Display keywords on slides Teach keyword vocabulary and break down ie photo – light, lysis to split 	<ul style="list-style-type: none"> Reading textbook, slides, questions Display keywords on slides Teach keyword vocabulary and break down ie photo – light, lysis to split
	Writing:	<ul style="list-style-type: none"> Answering questions – end of topic and exam style Making notes on covered topics Word and symbol equations 	<ul style="list-style-type: none"> Answering questions – end of topic and exam style Making notes on covered topics Word and symbol equations 	<ul style="list-style-type: none"> Answering questions – end of topic and exam style Making notes on covered topics Word and symbol equations

			<ul style="list-style-type: none"> End of topic and term tests 			<ul style="list-style-type: none"> End of topic and term tests 			<ul style="list-style-type: none"> End of topic and term tests 	
		Oracy:	<ul style="list-style-type: none"> Cold calling, answering questions in class Class discussion on topic areas being addressed Reading out loud Answering questions Feedback through discussion and debates Targeted questioning 			<ul style="list-style-type: none"> Cold calling, answering questions in class Class discussion on topic areas being addressed Reading out loud Answering questions Feedback through discussion and debates Targeted questioning 			<ul style="list-style-type: none"> Cold calling, answering questions in class Class discussion on topic areas being addressed Reading out loud Answering questions Feedback through discussion and debates Targeted questioning 	
		NUMERACY	<ul style="list-style-type: none"> Calculating work done/using the equation correctly Plotting data and drawing graphs Calculating moments Calculating pressure and stress Conservation of mass Word and symbol equations Analysis of data 			<ul style="list-style-type: none"> Plotting data and drawing graphs Calculating moments Calculating pressure and stress Conservation of mass Word and symbol equations Analysis of data Calculating bond energies 			<ul style="list-style-type: none"> Plotting data and drawing graphs 	
	Digital Strategy		<ul style="list-style-type: none"> Interactive whiteboards for ipads - https://whiteboard.fi/ Use of ipads to complete forms quiz to support PLC and teacher assessment Interactive physics simulation and questions - phycis concept builder 			<ul style="list-style-type: none"> Interactive whiteboards for ipads - https://whiteboard.fi/ Use of ipads to complete forms quiz to support PLC and teacher assessment Interactive physics simulation and questions - phycis concept builder 			<ul style="list-style-type: none"> Interactive whiteboards for ipads - https://whiteboard.fi/ Use of ipads to complete forms quiz to support PLC and teacher assessment Interactive physics simulation and questions - phycis concept builder 	
	Home Learning									
Impact	Composite Assessment	Date:	Content:	Synoptic test on energy, energy in chemical reactions and forces.	Date:	Content:	Synoptic test on all topics taught in terms 1 and 2.	Date:	Content:	Synoptic test on all topics taught in autumn term 1,2 & 3