Curriculum Map

Subject: Combined Science (Physics) **Year Group: 10**

	Autumn 1/Autumn 2	Autumn 2	Spring Term	Summer Term
Content	**1 Review Year 9 Topics** **2 Energy Transfer By Heating** Conductors and insulators Thermal conductivity Specific heat capacity Heating and insulating houses	**1 Energy Resources** National and global energy resources. Advantages and disadvantages of specific renewable and non-renewable energy sources Supply and demand – how energy supply is managed to meet variations in demand	**1 Molecules and Matter** -Density of materials -Changes of state -Internal energy -Temperature changes in a system and specific heat capacity -Changes of heat and specific latent heat -Particle motion in gases	**Forces in Balance** 1. Scalar and Vector quantities 2. Contacts and Non-contact forces 3. Gravity and Weight 4.Resultant Forces 5. Forces and Elasticity 6. Moments, lever and gears 7. Pressures, pressure in fluids and atmospheric pressure (HT only content within lesson - archimedes principle) 8. Atmospheric pressure **Motion** 9. Distance and Displacement 10. Speed and Velocity 11. Distance-time graphs 12. Acceleration and Velocity-time graphs and equations of motion (HT only content within lesson - area under graph) **Forces in Motion** Newton's 1st, 2nd and 3rd Law's Braking distances Momentum
Skills	Understand how heat energy is transferred Measure and calculate specific heat capacity 2.Investigate thermal conductivity using rods of different materials. 3.an investigation to determine the specific heat capacity of one or more materials. The investigation will involve linking the decrease of one energy store (or work done) to the increase in temperature and subsequent	Compare the advantages and disadvantages of different renewable and non-renewable energy resources Give simple explanations of how different renewable energy resources produce electricity. Explain in simple terms how a non-renewable power station works. Give a simple explanation of how	Equation application 1. Recall and apply equations for; density, specific heat capacity, specific latent heat, Practical Experiments 1.Perform an experiment to determine the densities of regular and irregular solid objects and liquids. 2.Perform an experiment to measure the latent heat of fusion of water.	Equation application 1.Students should be able to recall, apply and link the equations for: weight, extension applied, force applied, elastic potential energy, moments, pressure, speed, acceleration, change in velocity, acceleration and displacement, force, mass and acceleration and momentum Practical Experiments 1. Investigate the relationship between force and extension for a spring. 2. Investigate the effect of varying the force on the acceleration of an object of constant mass, and the effect of varying the mass of an object on the acceleration produced by constant force

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	increase in thermal energy stored.	nuclear power is used to generate electricity.		
Key questions	What are conductors and what are insulators? Why are both types of material useful? What is specific heat capacity an how can we investigate it? How are buildings heated and insulated efficiently?	What different energy resources are available? How are these resources used to generate electricity? What are the advantages and disadvantages of different types of renewable and non-renewable energy resources? What are the big energy issues that society needs to resolve?	What is density and how can we measure it? How can we use the kinetic theory of matter to understand changes of state aand properties of solids, liquids and gases? How can you find the melting point of a substance? What is latent heat and how can we measure it? What is gas pressure and how is it related to temperature?	How do we represent forces and what is meant by a resultant force? How can you work out the effect of a resultant force on an object? What is the difference between vectors and scalars? What is the centre of mass of an object and how can we identify it? What is the parallelogram of forces and how do we use it? How can we resolve forces? How can we calculate speed? What can we find out from distance-time graphs? What is velocity? What can we find out from velocity-time graphs? What is acceleration and how can it be calculated? What is the relationship between the resultant force, an object's mass, and its acceleration? What is meant by inertia? What is the difference between weight and mass? What effect does gravity have on a falling object? What is terminal velocity? What is the relationship between the stopping distance, braking distance and thinking distance, and what factors affect them? What is momentum and how is it calculated? What is Hooke's Law and how do we investigate it?

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Assessment	Formative 'low stakes' assessments to take place more frequently throughout the term. This could be in the form of a range methods: Quiz Homework task Microsoft Forms short tests In class short tests Questions and answer sessions Spelling tests Group work tasks Peer assessments Literacy and numeracy activities	Formative 'low stakes' assessments to take place more frequently throughout the term. This could be in the form of a range methods: Quiz Homework task Microsoft Forms short tests In class short tests Questions and answer sessions Spelling tests Group work tasks Peer assessments Literacy and numeracy activities End of term summative assessments	Formative 'low stakes' assessments to take place more frequently throughout the term. This could be in the form of a range methods: Quiz Homework task Microsoft Forms short tests In class short tests Questions and answer sessions Spelling tests Group work tasks Peer assessments Literacy and numeracy activities End of term summative assessments	Formative 'low stakes' assessments to take place more frequently throughout the term. This could be in the form of a range methods: Quiz Homework task Microsoft Forms short tests In class short tests Questions and answer sessions Spelling tests Group work tasks Peer assessments Literacy and numeracy activities End of Year summative assessments
Literacy/ Numeracy/ SMSC/ Character	Using scientific models to explain physical phenomena. Applying scientific understanding to real world examples. Using scientific equations to carry out calculations. Plotting graphs and bar charts. Interpreting data presented graphically.	Using scientific models to explain physical phenomena. Applying scientific understanding to real world examples. Using scientific equations to carry out calculations. Plotting graphs and bar charts. Interpreting data presented graphically.	Using scientific models to explain physical phenomena. Applying scientific understanding to real world examples. Using scientific equations to carry out calculations. Plotting graphs and bar charts. Interpreting data presented graphically.	Using scientific models to explain physical phenomena. Applying scientific understanding to real world examples. Using scientific equations to carry out calculations. Plotting graphs and bar charts. Interpreting data presented graphically.