



Curriculum Map: Year 7 Subject: Science 21/22

Topic	Key Knowledge <i>What will all students KNOW by the end of the topic?</i>	Key Skills <i>What key skills will be learnt/developed by the end of the topic? What will all students be able to DO by the end of the topic?</i>	Assessment Opportunities <i>What are the key pieces of assessment? How will students be assessed?</i>
Introduction to Science	How to plan and carry out a scientific investigations related to dissolving How to access and use Seneca and BBC Bitesize How to use textbooks to aid learning Halloween – forensic Analysis	An introduction to planning and carrying out scientific enquiries which includes development of the following skills: - Evaluating risks. - Selecting, drawing and naming appropriate scientific apparatus. - Labelling a diagram of a Bunsen burner. - Using specialised scientific apparatus, including Bunsen burners. - Making predictions, asking questions and developing a line of enquiry. - Identifying variables - Awareness of anomalous results. - Presenting observations in graphs. - Interpreting observations (patterns). - Using data to draw conclusions. - Presenting reasoned explanations (in relation to prediction and hypothesis). - Evaluating data, showing awareness of potential sources of random and systematic error. - Evaluating the reliability of methods and suggesting possible improvements. - Identifying further questions arising	- Questioning and reviews within lessons - Assessed Tasks -- Knowledge Organiser Test. - Mid Topic SMHW Quiz - Extended write up on Dissolving Sugar Practical - Questions in Autumn Assessment
Energy	<ul style="list-style-type: none"> • A fuel stores energy that can be transferred by heating. 	- Identify which energy stores are changing for a variety of situations.	- Questioning and reviews within lessons - Assessed Tasks

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	<ul style="list-style-type: none"> - The names of six energy stores (chemical, kinetic, gravitational potential, elastic potential and thermal). - An energy store of some kind is necessary for something to happen. - When something happens, energy is transferred between energy stores. - Energy can be quantified, and this quantity is conserved 	<ul style="list-style-type: none"> - Compare the amount of energy in different stores before and after a change. - Apply mathematical concepts to determine amount of energy in different stores to conserve energy 	<ul style="list-style-type: none"> -- Knowledge Organiser Test. - Mid Topic SMHW Quiz - Extended write up on Energy Stores - Questions in Autumn Assessment
Space	<ul style="list-style-type: none"> - The make up of the solar system - The force due to gravity keeps the moon orbiting the Earth and the Earth orbiting the Sun. - Gravitational field strength is different on different planets and stars. - Our sun is a star. - Our galaxy contains other stars. - Our galaxy is one of billions of galaxies. - Ideas about the nature of the solar system have changed over time 	<ul style="list-style-type: none"> - Apply mathematical concepts and calculate results. - Calculate weight on different planets using the formula: weight = mass x gravitational field strength. - Use a light year as a unit of astronomical distance. - Explain how the Earth's tilt causes seasons. - Explain why seasons are different in the northern and southern hemispheres. - Describe how day length varies at different times of year. 	<ul style="list-style-type: none"> -Starter tasks to review previous learning -Questioning and review of book work. -Assessed Tasks - Knowledge Organiser Test - Moon phases and space research task
Matter	<ul style="list-style-type: none"> - How to use the particle model to describe elements. - States of matter including properties, arrangement of particles and the changes that occur during state changes. - Energy changes during changes of state. - How to describe if objects float or sink - Dissolving and solubility of solutes - How to separate mixtures 	<ul style="list-style-type: none"> - Recall key terminology. - Make and record measurements for heating / cooling curves. - Begin to develop the skills required for identifying substances using the particle model. - Apply knowledge of particles to changes in state. - Apply knowledge of separating mixtures to contextual examples eg separating salt from sand 	<ul style="list-style-type: none"> - Starter tasks to review prior learning. Questioning and review of class work - Assessed task: Journey of Ice Cube extended writing - Knowledge Organiser Test - Questions in end of topic test
Organisms- Cells, tissues	<ul style="list-style-type: none"> - Structure of plant and animal cells. - Function of cell organelles. - Structure and function of a microscope. - How to prepare and view cells under a microscope. - Examples of specialised cells and how they are adapted. 	<ul style="list-style-type: none"> - Recall key terminology. - Accurate labelling of diagrams (cells and microscope). - How to focus and correctly use a microscope to view cells. - Carry out basic magnification calculations. 	<ul style="list-style-type: none"> -Questioning and review of class work - Assessed Tasks: -SMH Homework Quiz - Specialised Cells Question Grid

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	<ul style="list-style-type: none"> - Examples of unicellular organisms and how they are adapted. - Role of diffusion in cells. - How cells, tissues, organs and organ systems work together - How food can be categorised into food groups 	<ul style="list-style-type: none"> - Begin to develop the skills required for cell drawing (Make and record observations). - Apply knowledge of cells to contextual examples. - Apply knowledge of diffusion to contextual examples - Apply knowledge of food groups to design balanced diets 	
Earth	<ul style="list-style-type: none"> - The rock cycle and its use in explaining how rocks (over long periods of time) can turn into other types of rocks. - Earth's resources are limited including which ones are most limited. - Advantages, disadvantages and efficacy of recycling. 	<ul style="list-style-type: none"> - How models can be used to represent an idea or structure. - Making accurate observations. - Application of the ideas within the rock cycle. 	<ul style="list-style-type: none"> -Questioning and review of class work -Assessed Tasks: -Structure of the Earth Extended Writing Task -Knowledge Organiser Test -SMHW Homework Quiz -Questions in end of topic test
Waves	<ul style="list-style-type: none"> - Know that sound is produced by vibrations of objects. - Describe the properties of transverse and longitudinal waves. - Sound is a longitudinal wave - The keywords: amplitude, wavelength, frequency and pitch. - The unit of frequency is Hz. - How frequency affects pitch. - How amplitude affects loudness. - Sound needs a medium to travel 	<ul style="list-style-type: none"> - Compare the speed of sound in air, water and solids. - Explain what an echo is. - Identify materials that absorb sound well. - Use oscilloscope to identify properties of waves - Apply mathematical concepts & calculate results 	<ul style="list-style-type: none"> -Questioning and review of class work -Assessed Tasks: -Knowledge Organiser Test -Detecting Sound Exam Question
Forces	<ul style="list-style-type: none"> -The unit of force as Newtons. - A force is a push or pull between two objects. - Names of non-contact/contact forces. -Know and use the units and formula to calculate speed. - A resultant force is needed to cause objects to stop or start moving or to change speed or direction. -Understand why objects float and sink 	<ul style="list-style-type: none"> -Apply mathematical concepts and calculate results. - Take experimental measurements that demonstrate forces changing motion. - Explain how shape effects floating and sinking - Apply moment equation 	<ul style="list-style-type: none"> -Questioning and review of classwork -Assessed Tasks: -KO Test -Friction practical write up

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	<ul style="list-style-type: none"> - A moment is a turning effect of a force. - The size of the turning effect depends on the size of the force and on its (perpendicular) distance from the pivot 		
Electricity and Magnetism	<ul style="list-style-type: none"> - The magnetic field between two magnetic pole causes them to feel a force even when not in contact (noncontact force). -Know key circuit symbols -Know definitions of current, potential difference 	<ul style="list-style-type: none"> -Apply the idea that ‘like’ poles will repel and ‘unlike’ poles will attract -Plot the fields lines around a bar magnet using a plotting compass. -Problem solve circuit problems -Build circuits to measure current and potential difference -Construct Series and Parallel circuits. 	<ul style="list-style-type: none"> -Questioning and review of classwork -Assessed Tasks: -SMH Quiz Building Circuits -PD Worksheet -KO Test
Organisms- Reproduction	<ul style="list-style-type: none"> - The structure and function of the male and female reproductive systems. - The stages of the menstrual cycle. - The adaptations of the sperm and egg. - The stages involved in fertilisation, gestation, and birth. - The effect of maternal lifestyle on the foetus <ul style="list-style-type: none"> • The structure and function of the reproductive system of plants • Methods of seed dispersal 	<ul style="list-style-type: none"> -Recall key terminology. - Accurate labelling of diagrams. - Seed dipersal practical 	<ul style="list-style-type: none"> -Questioning and review of classwork -Assessed Tasks: -Menstrual Cycle Exam Ques -Plants Comprehension Task
Reactions	<ul style="list-style-type: none"> -How to recognise elements, compounds and mixtures from particle diagrams and know that they are pure substances. - The difference between physical and chemical changes in terms of the combining and rearrangement of different atoms. - What happens when metals react with water -Understand what the pH scale is -Know what happens in reactions between acids and metals 	<ul style="list-style-type: none"> -Recall key terminology. - Using correct chemical nomenclature from the periodic table when writing word and symbol equations. - Using a wider range of more complex laboratory apparatus when carrying out experiments and paying attention to health & safety. - Making and recording accurate observations and using them to draw conclusions -Use of acids and alkali to make neutral solutions - Know how to make cabbage indicator 	<ul style="list-style-type: none"> -Questioning and review of classwork -Assessed Tasks: -KO Test -Making NaCl extended writing

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Genes	<ul style="list-style-type: none"> -Adaptations of plants and animals to their environment -How variation leads to competition between organisms. - The process of natural selection. - The causes of extinction. 	-Analysis of organisms to identify adaptations	<ul style="list-style-type: none"> -Questioning and review of classwork -Assessed Tasks: -SHM Quiz -Natural Selection 6 Mark Ques
Ecosystems	<ul style="list-style-type: none"> -The factors that affect organism distribution. - How to construct food chains, food webs and pyramids of number. - The factors that organisms compete for. - Adaptions of plants and animals to their environment. - How to interpret predator-prey cycles. - How organisms depend on each other for survival. - Why changes to a habitat can impact plants and animals 	<ul style="list-style-type: none"> -Recall key terminology. - To construct food chains, food webs and pyramids of number, to scale. - Interpret graphs showing predator-prey cycles. - Apply theoretical knowledge to contextual examples. - Apply sampling techniques in an investigation. <p>Skills to include: -Select, plan and carry out a scientific enquiry.</p> <ul style="list-style-type: none"> - Make and record observations. - Present observations in table and graph. 	<ul style="list-style-type: none"> -Questioning and review of classwork -Assessed Tasks: -SMH Quiz -Population Change Graph