



## Curriculum Map for Science Year 7

YEAR 7	Autumn 1		
Topics	Organisms/Cells	Forces	Particles and Behaviour
<b>Substantive Knowledge - The Knowledge and Concepts Taught By The Teacher</b>	<ul style="list-style-type: none"><li>• Observing Cells</li><li>• Plant and Animal Cells</li><li>• Specialised Cells</li><li>• Movement of Substances</li><li>• Unicellular Organisms</li></ul>	<ul style="list-style-type: none"><li>• Introduction to Forces</li><li>• Squashing and Stretching</li><li>• Drag Forces and Friction</li><li>• Converting Metric SI Units</li><li>• Forces at a Distance</li><li>• Unbalanced and Balanced Forces</li></ul>	<ul style="list-style-type: none"><li>• Particles and Their Behaviour</li><li>• States of Matter</li><li>• Density</li><li>• Melting and Freezing</li><li>• Boiling</li><li>• More Change of State</li><li>• Diffusion</li></ul>
<b>Disciplinary Knowledge - The Knowledge Scientists Need So They Can Collect, Understand and Evaluate Scientific Evidence</b>	<ul style="list-style-type: none"><li>• The history and discovery of cells and the microscope.</li><li>• Developments in microscopes over time.</li><li>• History of the cell cycle theory.</li></ul>	<ul style="list-style-type: none"><li>• Development of Hooke's law on elastic.</li><li>• History of Newton's laws of motions and how these have changed over time.</li><li>• Use of springs in trampolines and vehicles.</li></ul>	<ul style="list-style-type: none"><li>• The principles and theories underpinning Archimedes' principle.</li><li>• History and development of properties of chemical reactions and substances.</li></ul>
<b>Skills</b>	<ul style="list-style-type: none"><li>• Investigating diffusion in fluids.</li><li>• Using microscopes safely and accurately.</li><li>• Create a microscope slide</li><li>• Use a light microscope to observe and draw cells.</li><li>• Identify features of an investigation which are hazardous and ways of reducing the risk.</li></ul>	<ul style="list-style-type: none"><li>• Identify patterns in data and present data.</li><li>• Identify further questions arising from investigations</li><li>• Make and explain a conclusion.</li><li>• Manage risks and hazards in practicals.</li><li>• Draw line graphs to display relationships.</li></ul>	<ul style="list-style-type: none"><li>• Developing hypothesis.</li><li>• Carry out a method carefully and consistently.</li><li>• Develop practical skills in a science lab and complete a risk assessment.</li><li>• Using a diagram to explain a concept.</li><li>• Presenting and analysing observations made.</li></ul>
<b>Links To Prior Learning</b>	<ul style="list-style-type: none"><li>• Sorting things into living and non-living (KS2).</li><li>• Identifying common plants and animal (KS2).</li><li>• Body part and senses (KS2).</li></ul>	<ul style="list-style-type: none"><li>• Use of everyday materials (KS1).</li><li>• Forces and magnets (KS2).</li><li>• Types of forces (KS2)</li></ul>	<ul style="list-style-type: none"><li>• Properties of everyday materials (KS1).</li><li>• Properties and changes of materials (KS1).</li></ul>

<b>Literacy/ Numeracy</b>	<ul style="list-style-type: none"> <li>• Magnification calculations.</li> <li>• Use the measuring instrument correctly.</li> <li>• Writing detailed descriptions.</li> <li>• Targeted vocabulary instruction of tier 2/3 words.</li> </ul>	<ul style="list-style-type: none"> <li>• Draw a force diagram for a problem involving gravity.</li> <li>• Use the measuring instrument correctly.</li> <li>• Make an experimental prediction.</li> <li>• Mental calculations using +, -, x and /</li> <li>• Extended writing tasks (English).</li> </ul>	<ul style="list-style-type: none"> <li>• Collecting data and data tables.</li> <li>• Construct explanations for observations.</li> <li>• Displaying data using graphs.</li> <li>• Analysing and summarising.</li> </ul>
<b>Cross Curricular</b>	<ul style="list-style-type: none"> <li>• Safe and Ethical Handling of Living Things -PSHCE</li> <li>• Microscopes and Technology - Engineering</li> <li>• Writing Descriptive Pieces - English</li> <li>• Number Size and Quantities - Maths</li> </ul>	<ul style="list-style-type: none"> <li>• Threading of Tyres and Friction - DT</li> <li>• Forces and Their Uses in DT and Product Design</li> <li>• Drawing Force Diagrams - Art</li> <li>• Displaying Data - Maths</li> </ul>	<ul style="list-style-type: none"> <li>• Elements in Materials - DT</li> <li>• Storage/Cooking Techniques - Food Tech</li> <li>• Displaying Data - Maths</li> <li>• Writing Reports – English</li> <li>• Drawing Models - Art</li> </ul>
<b>Assessment</b>	<ul style="list-style-type: none"> <li>• Baseline Assessment</li> <li>• Mini Checkpoints</li> <li>• Baseline Assessment: SMART CURRICULUM</li> <li>• End of chapter and end of unit tests: <b>ASSESSMENT 1 – ORGANISMS, MATTER &amp; FORCES</b></li> </ul>		

<b>YEAR 7</b>	<b>Autumn 2</b>		
<b>Topics</b>	<b>Elements, Atoms and Compounds</b>	<b>Body Systems</b>	<b>Sound</b>
<b>Substantive Knowledge - The Knowledge and Concepts Taught By The Teacher</b>	<ul style="list-style-type: none"> <li>• Elements</li> <li>• Atoms</li> <li>• Compounds</li> <li>• Properties of Compounds</li> <li>• Chemical Formulae</li> </ul>	<ul style="list-style-type: none"> <li>• Levels of Organisation</li> <li>• Gas Exchange</li> <li>• Breathing</li> <li>• Skeleton</li> <li>• Movement- Joints</li> <li>• Movement - Muscles</li> </ul>	<ul style="list-style-type: none"> <li>• Waves</li> <li>• Sound, Vibrations and Energy Transfers</li> <li>• Loudness and Pitch</li> <li>• Detecting Sound</li> <li>• Ultrasound and Echoes</li> </ul>
<b>Disciplinary Knowledge - The Knowledge Scientists Need So They Can Collect, Understand and Evaluate Scientific Evidence</b>	<ul style="list-style-type: none"> <li>• Understand the role of a theories and models in Science.</li> <li>• History and development of properties of chemical reactions and substances.</li> </ul>	<ul style="list-style-type: none"> <li>• Understand the use of body system knowledge in organ transplant, blood transfusion etc.</li> <li>• Application of body system knowledge to treating diseases and ailments.</li> </ul>	<ul style="list-style-type: none"> <li>• History of the discovery of waves and the EM spectrum.</li> <li>• Development of technologies such as ultrasounds and microphones.</li> </ul>

<b>Skills</b>	<ul style="list-style-type: none"> <li>Representing chemical reactions using formulae and using equations.</li> <li>Balance a symbol equation.</li> <li>Identify patterns in data and present data.</li> <li>Make a model to explain an idea.</li> </ul>	<ul style="list-style-type: none"> <li>Identify patterns in data and present data.</li> <li>Make a model to explain an idea.</li> <li>HSW: Investigating gas exchange and breathing.</li> <li>Develop the written report with scientific writing.</li> <li>Ability to consider social, ethical, and moral views.</li> </ul>	<ul style="list-style-type: none"> <li>Add/use a diagram if it helps to make a concept clearer.</li> <li>Make and explain a conclusion.</li> <li>Use of models in science to demonstrate waves.</li> <li>Suggest a scientific idea that might explain an observation.</li> </ul>
<b>Links To Prior Learning</b>	<ul style="list-style-type: none"> <li>Properties of everyday materials (KS1).</li> <li>Properties and changes of materials (KS1).</li> <li>Particle and their behaviour (KS3).</li> </ul>	<ul style="list-style-type: none"> <li>Sorting things into living and non-living (KS2).</li> <li>Identifying common plants and animal (KS2).</li> <li>Body part and senses (KS2).</li> <li>Cells (KS3).</li> </ul>	<ul style="list-style-type: none"> <li>Nature of sight and sound (KS2).</li> <li>How light and sound travel (KS2).</li> <li>States of matter (KS3).</li> <li>Particles and their behaviour (KS3).</li> </ul>
<b>Literacy/ Numeracy</b>	<ul style="list-style-type: none"> <li>Use appropriate units and correct chemical nomenclature.</li> <li>Using correct case alphabets when writing symbols.</li> <li>Using models to explain theory.</li> <li>Calculating percentages and proportions.</li> <li>Ratios.</li> </ul>	<ul style="list-style-type: none"> <li>Draw and use bar and pie graphs to show collected data.</li> <li>Calculating percentages and proportions.</li> <li>Write in a style to fit purpose and audience.</li> <li>Use scientific vocabulary.</li> <li>Reading for comprehension.</li> </ul>	<ul style="list-style-type: none"> <li>Rearranging and use of equations to calculate wave speed.</li> <li>Develop the written report- scientific writing.</li> <li>Write in a style to fit purpose and audience.</li> <li>Defining tier 2/3 key words.</li> </ul>
<b>Cross Curricular</b>	<ul style="list-style-type: none"> <li>Elements in Materials - DT</li> <li>Compounds Used in Food - Food Tech</li> <li>Displaying Data - Maths</li> <li>Writing Reports – English</li> <li>Drawing Models - Art</li> </ul>	<ul style="list-style-type: none"> <li>Muscles, skeleton and movement - PE</li> <li>Drawing Graphs and Calculating Mean - Maths</li> <li>Exercise and Breathing – PSHCE</li> <li>Descriptive and Comparative Writing - English</li> </ul>	<ul style="list-style-type: none"> <li>Light and Sound - Performing Arts</li> <li>Lighting in Photography - Media</li> <li>Dangers of Cooking in Microwaves - Food Tech</li> <li>Ultrasound and Echoes - Medicine</li> <li>Speakers and Microphones – Drama</li> <li>Musical Instruments - Music</li> </ul>
<b>Assessment</b>	<ul style="list-style-type: none"> <li>Baseline Assessment</li> <li>Mini Checkpoints</li> <li>End of chapter and end of unit tests: <b>ASSESSMENT 2 – BODY SYSTEMS, SOUNDS, ELEMENTS, ATOMS &amp; COMPOUNDS</b></li> </ul>		

YEAR 7	Spring 1		Spring 2	
Topics	Reproduction	Reactions	Light	How Science Work Skills
<b>Substantive Knowledge - The Knowledge and Concepts Taught By The Teacher</b>	<ul style="list-style-type: none"> <li>• Adolescence</li> <li>• Male and Female Reproductive Systems</li> <li>• Fertilisation &amp; Implantation</li> <li>• Development of a Fetus</li> <li>• The Menstrual Cycle</li> <li>• Flowers &amp; Pollination</li> <li>• Fertilisation &amp; Germination</li> <li>• Seed Dispersal</li> </ul>	<ul style="list-style-type: none"> <li>• Chemical Reactions</li> <li>• Word Equations</li> <li>• Oxidation</li> <li>• Decomposition Reactions</li> <li>• Ratios &amp; Application to Chemical Equations</li> <li>• Conservation of Mass</li> <li>• Exothermic &amp; Endothermic</li> </ul>	<ul style="list-style-type: none"> <li>• Light</li> <li>• Reflection</li> <li>• Refraction</li> <li>• The Camera &amp; The Eye</li> <li>• Reflection &amp; Refraction</li> </ul>	<ul style="list-style-type: none"> <li>• Asking Scientific Questions*</li> <li>• Planning Investigations*</li> <li>• Collecting, Recording &amp; Presenting Data*</li> <li>• Analysing Pattern in Data*</li> <li>• Evaluating &amp; Methods*</li> </ul>
<b>Disciplinary Knowledge - The Knowledge Scientists Need So They Can Collect, Understand and Evaluate Scientific Evidence</b>	<ul style="list-style-type: none"> <li>• Development of contraceptive methods to prevent pregnancy.</li> <li>• Advancement in food technologies to increase food production.</li> </ul>	<ul style="list-style-type: none"> <li>• History and development of properties of chemical reactions and substances.</li> <li>• The principles underpinning the Mendeleev Periodic Table.</li> <li>• Understand the role of a theories.</li> </ul>	<ul style="list-style-type: none"> <li>• History and discovery of lenes and their uses in technologies such as the camera, spectacles, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• History and development in scientific research to solve problems or deepen scientific understanding.</li> <li>• Understanding the principles surrounding the scientific method.</li> </ul>
<b>Skills</b>	<ul style="list-style-type: none"> <li>• Drawing scientific diagram to represent a specimen.</li> <li>• Add/use a diagram if it helps to make a concept clearer.</li> <li>• Use of models in science to demonstrate waves.</li> <li>• Suggest a scientific idea that might explain an observation.</li> </ul>	<ul style="list-style-type: none"> <li>• Identifying risks and precautions in an experiment.</li> <li>• Develop practical skills in a science lab and complete a risk assessment</li> <li>• Use appropriate units and correct chemical nomenclature.</li> <li>• Manage risks and hazards in practicals.</li> </ul>	<ul style="list-style-type: none"> <li>• Analyse strengths and weaknesses in a method.</li> <li>• Draw and label ray diagrams.</li> <li>• Use the measuring instrument correctly.</li> <li>• Carry out the method carefully and consistently.</li> <li>• Choose a type of chart or graph to draw based on its purpose.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify patterns in data and present data.</li> <li>• Write an observation, fair test or pattern seeking enquiry question.</li> <li>• Identify dependent variable, independent and control variables.</li> <li>• Identify risks and hazards, and control measures.</li> </ul>

<b>Links To Prior Learning</b>	<ul style="list-style-type: none"> <li>Life Cycle of Flowering Plants</li> <li>Transport in Plants</li> <li>Living Things and Their Habitats</li> <li>Animal Life Cycles</li> <li>Grouping Living Things</li> </ul>	<ul style="list-style-type: none"> <li>Properties of Everyday Materials (KS1)</li> <li>Properties and Changes of Materials (KS1)</li> <li>Particle and Their Behaviour (KS3)</li> <li>Atoms, Elements and Compounds (KS3)</li> </ul>	<ul style="list-style-type: none"> <li>Nature of Sight and Sound (KS2)</li> <li>How Light and Sound Travel (KS2)</li> <li>States of Matter (KS3)</li> <li>Particles and Their Behaviour (KS3)</li> </ul>	<ul style="list-style-type: none"> <li>Manage Risks and Hazards in Practicals</li> <li>Variables in Experiments</li> <li>Experiments</li> <li>Planning Cycle</li> </ul>
<b>Literacy/ Numeracy</b>	<ul style="list-style-type: none"> <li>Use scientific vocabulary accurately.</li> <li>Identifying anomalies and calculating mean.</li> <li>Displaying data using graphs.</li> <li>Reading for comprehension.</li> </ul>	<ul style="list-style-type: none"> <li>Collecting data and data tables.</li> <li>Construct explanations for observations.</li> <li>Displaying data using graphs.</li> <li>Analysing and summarising.</li> </ul>	<ul style="list-style-type: none"> <li>Measuring angles using protractors.</li> <li>Using pie or bar charts to display data.</li> </ul>	<ul style="list-style-type: none"> <li>Project writing- write like a scientist.</li> <li>Articulate and present research findings form research project.</li> <li>Analysing and summarising.</li> <li>Displaying and presenting data.</li> <li>Selecting relevant data for calculations.</li> </ul>
<b>Cross Curricular</b>	<ul style="list-style-type: none"> <li>Puberty and Growing Up - PSHCE</li> <li>Sexual Reproduction - PSHCE</li> <li>Plants for Food - Food Tech</li> <li>Drawing Models - Art</li> </ul>	<ul style="list-style-type: none"> <li>Elements in Materials - DT</li> <li>Compounds Used in Food - Food Tech</li> <li>Displaying Data - Maths</li> <li>Writing Reports - English</li> <li>Drawing Models – Art</li> <li>Reactions - Product Design and DT</li> </ul>	<ul style="list-style-type: none"> <li>Angles – Maths</li> <li>Drawing Straight Lines - DT and Art</li> <li>Lenses of The Camera – Photography</li> <li>Colour Spectrum - Art</li> </ul>	<ul style="list-style-type: none"> <li>Accurate Use of Internet - IT</li> <li>Comprehension and Summarising Information - English</li> <li>Draw and Present Graphs - Maths</li> <li>Draw and Colour a Model - Art</li> <li>Oral Presentation - Drama</li> </ul>
<b>Assessment</b>	<ul style="list-style-type: none"> <li>Baseline Assessment</li> <li>Mini Checkpoints</li> <li>End of chapter and end of unit tests: <b>REPRODUCTION and REACTIONS Topic Test – LIGHT, REPRODUCTION and REACTIONS Unit Test</b></li> </ul>			

YEAR 7	Summer 1		Summer 2	
Topics	Acids and Alkalis	Space	Light	How Science Work Skills
<b>Substantive Knowledge - The Knowledge and Concepts Taught By The Teacher</b>	<ul style="list-style-type: none"> <li>Acids and Alkalis</li> <li>pH and Indicators</li> <li>Neutralisation</li> <li>Making Salts</li> </ul>	<ul style="list-style-type: none"> <li>The Night Sky</li> <li>The Solar System</li> <li>The Earth</li> <li>The Moon</li> </ul>	<ul style="list-style-type: none"> <li>Idea and Aim</li> <li>Research/Variables</li> <li>Investigation/Record Results/Analyse Results</li> <li>Finalising Project/Presentation Boards</li> <li>Revision for End of Year Exams</li> </ul>	<ul style="list-style-type: none"> <li>Acids and Alkalis</li> <li>pH and Indicators</li> <li>Neutralisation</li> <li>Making Salts</li> </ul>
<b>Disciplinary Knowledge - The Knowledge Scientists Need So They Can Collect, Understand and Evaluate Scientific Evidence</b>	<ul style="list-style-type: none"> <li>History and development of properties of chemical reactions and substances.</li> <li>The principles underpinning the production and extraction of salts from the Earth.</li> <li>Understand the role of a theories.</li> </ul>	<ul style="list-style-type: none"> <li>Discovery of space and its elements.</li> <li>History and moral issues surrounding the Big Bang theory.</li> <li>Astronomical readings from the Moon and Sun.</li> <li>The moon and its effect on weather and seasonal change.</li> </ul>	<ul style="list-style-type: none"> <li>History and development in scientific research to solve problems or deepen scientific understanding.</li> <li>Understanding the principles surrounding the scientific method.</li> </ul>	<ul style="list-style-type: none"> <li>History and development of properties of chemical reactions and substances.</li> <li>The principles underpinning the production and extraction of salts from the Earth.</li> <li>Understand the role of a theories.</li> </ul>
<b>Skills</b>	<ul style="list-style-type: none"> <li>Representing chemical reactions using formulae and using equations.</li> <li>Balance a symbol equation.</li> </ul>	<ul style="list-style-type: none"> <li>Describe the role of a theory and use of evidence in supporting theories.</li> <li>Collaboration and team building.</li> <li>Suggest a scientific idea that might explain an observation.</li> </ul>	<ul style="list-style-type: none"> <li>Design, evaluate, modify and improve a model.</li> <li>Research skills, exam techniques and revision techniques.</li> <li>Devise questions and plan variables.</li> <li>Presenting data (line, bar, pie charts).</li> <li>Use SI units (eg kg, g, mg; km, m, mm; kJ, J) and IUPAC chemical nomenclature unless inappropriate.</li> </ul>	<ul style="list-style-type: none"> <li>Representing chemical reactions using formulae and using equations.</li> <li>Balance a symbol equation.</li> </ul>

<b>Links To Prior Learning</b>	<ul style="list-style-type: none"> <li>• Properties of Everyday Materials (KS1)</li> <li>• Properties and Changes of Materials (KS1)</li> <li>• Particle and Their Behaviour (KS3)</li> <li>• Atoms, Elements and Compounds (KS3)</li> <li>• Reactions (KS3)</li> </ul>	<ul style="list-style-type: none"> <li>• Seasonal Change (KS1)</li> <li>• How Light and Sound Travel (KS2)</li> <li>• Rocks (KS2)</li> <li>• Earth and Space (KS2)</li> </ul>	<ul style="list-style-type: none"> <li>• Manage Risks and Hazards in Practicals</li> <li>• Variables in Experiments</li> <li>• Experiments</li> <li>• Planning Cycle</li> <li>• How Science Works Skills</li> </ul>	<ul style="list-style-type: none"> <li>• Properties of Everyday Materials (KS1)</li> <li>• Properties and Changes of Materials (KS1)</li> <li>• Particle and Their Behaviour (KS3)</li> <li>• Atoms, Elements and Compounds (KS3)</li> <li>• Reactions (KS3)</li> </ul>
<b>Literacy/ Numeracy</b>	<ul style="list-style-type: none"> <li>• Use appropriate units and correct chemical nomenclature.</li> <li>• Using correct case alphabets when writing symbols.</li> <li>• Using models to explain theory.</li> <li>• Calculating percentages and proportions.</li> <li>• Ratios.</li> </ul>	<ul style="list-style-type: none"> <li>• Calculating mean.</li> <li>• Drawing and interpreting graphs.</li> <li>• Targeted vocabulary instruction of tier2/3 key words.</li> <li>• Pie charts and percentages.</li> </ul>	<ul style="list-style-type: none"> <li>• Project writing- write like a scientist.</li> <li>• Articulate and present research findings form research project.</li> <li>• Analysing and summarising.</li> <li>• Displaying and presenting data.</li> <li>• Selecting relevant data for calculations.</li> </ul>	<ul style="list-style-type: none"> <li>• Use appropriate units and correct chemical nomenclature.</li> <li>• Using correct case alphabets when writing symbols.</li> <li>• Using models to explain theory.</li> <li>• Calculating percentages and proportions.</li> <li>• Ratios.</li> </ul>
<b>Cross Curricular</b>	<ul style="list-style-type: none"> <li>• Elements in Materials - DT</li> <li>• Compounds Used in Food - Food Tech</li> <li>• Displaying Data - Maths</li> <li>• Writing Reports - English</li> <li>• Drawing Models - Art</li> </ul>	<ul style="list-style-type: none"> <li>• Religion vs. The Big Bang Theory - PSHCE/RE</li> <li>• Displaying Data - Pie Charts and Percentages - Maths</li> <li>• Writing Reports - English</li> <li>• Seasonal Change – Geography</li> <li>• Displaying Data - Maths</li> </ul>	<ul style="list-style-type: none"> <li>• Accurate Use of Internet - IT</li> <li>• Comprehension and Summarising Information - English</li> <li>• Draw and Present Graphs - Maths</li> <li>• Draw and Colour A Model - Art</li> <li>• Oral Presentation - Drama</li> </ul>	<ul style="list-style-type: none"> <li>• Elements in Materials - DT</li> <li>• Compounds Used in Food - Food Tech</li> <li>• Displaying Data - Maths</li> <li>• Writing Reports - English</li> <li>• Drawing Models - Art</li> </ul>
<b>Assessment</b>	<ul style="list-style-type: none"> <li>• Baseline Assessment</li> <li>• Mini Checkpoints</li> <li>• Unit Tests: <b>ASSESSMENT 5: SPACE, ACIDS and ALKALIS</b></li> <li>• <b>END OF YEAR EXAM</b></li> </ul>			