

# Curriculum Knowledge Map - Science



## CHS Curriculum Intent

**SUCCESSFUL:** An education where imagination, curiosity and resilience enable us to ignite our learning.

**CREATIVE:** A shared belief that optimism, empathy and responsibility are the foundations for a respectful, safe and inclusive community.

**HAPPY:** Individuals who are ready to learn, practise being reflective, and are motivated to become champions.

## CHS Curriculum Area Framework for Learning – Year 7

<b>SUBJECT</b>	<b>Science</b>
<b>INTENT</b>	<p>The intent of the science department is to teach students that Science underpins everything.</p> <p>At Chorlton High School we study</p> <ul style="list-style-type: none"><li>• Physics to be able to understand the principles that govern all Energy and Matter in the Universe.</li></ul> <p>Physics gives us tools to understand nature from the scale of sub-atomic particles up to the inter-galactic scale of the universe.</p> <ul style="list-style-type: none"><li>• Chemistry to be able to understand the nature of substances: how they are composed, their behaviour, and their physical and chemical properties.</li></ul> <p>Chemistry allows us to identify unknown substances, monitor concentrations and make new chemicals. Above all, Chemistry is about finding solutions to the problems that concern us and our surroundings.</p> <ul style="list-style-type: none"><li>• Biology to be able to understand life and thereby understand ourselves.</li></ul>



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Biology allows us an understanding of the amazing complexity of many life processes and mechanisms. Biology encourages us to seek out reasons for strange, surprising and sometimes unusual observations.

<b>Year Group</b>	<b>7</b>					
<b>Rationale/ Narrative</b>	To learn the “big ideas” associated with Science. To develop firm foundations in Biology, Chemistry and Physics and to explore and engage pupil’s curiosity of the natural world. Students will learn how to carry out and write scientifically and then explore the fundamental areas of science which include; cells, reproduction, atoms, electricity, photosynthesis and states of matter.					
	<b>Autumn 1 - Skills</b>	<b>Autumn 2 – Atoms and Elements</b>	<b>Spring 1 – Cells and Reproduction</b>	<b>Spring 2 – Electricity and magnetism</b>	<b>Summer 1 – States of matter and separating techniques</b>	<b>Summer 2 – Plant structure and interdependence</b>
<b>Declarative What they should know?</b>	<p>HSW Skills Practical skills and writing scientifically Command words Repeats, means, anomalies, accuracy, errors. Variables and methods. Graphs Sample size (range, intervals and scale) Control groups.</p>	<p>Elements, compounds and mixtures Using the Periodic table Group 1 in the periodic table Chemical reactions Chemical Equations Structure of an atom Electron shells Atomic and mass number Reactivity of metals Investigating the reactivity of metals</p>	<p>Menstrual cycle Animal and Plant cells Specialised cells Movement in and out of cells Labelling and describing cell organelles Reproductive system Foetal development Fertilisation Puberty Using microscopes</p>	<p>Circuit Component Series and parallel circuits Conductors and insulators Measuring current and Voltage Magnetism Electromagnetism Static Resistance</p>	<p>States of matter (solids, liquids and gases) Conservation of matter Boiling Melting Stearic acid (latent heat investigation) Solubility Separating techniques Filtration, evaporation, condensation, distillation and chromatography</p>	<p>Photosynthesis Testing leaves for starch Investigating photosynthesis Food chains Food webs Predator/Prey relationships Insect pollination Leaf structure Seed dispersal Observing Stomata Ecosystems and Habitats</p>





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<p><b>Procedural</b> <i>What should they be able to do?</i></p>	<ul style="list-style-type: none"> <li>Identifying key Scientific Equipment</li> <li>Learning how to keep themselves and others safe in a lab</li> <li>Carrying out/writing up scientific equations</li> <li>Effectively using key terms such as anomaly, range, mean, repeats, resolution, interval, scale</li> <li>Understanding how to write a conclusion</li> <li>Explaining the findings of practical results</li> <li>Identifying variables</li> <li>Learning how to plot a line graph</li> <li>Learning how to plot a bar chart</li> <li>Choosing an appropriate scale</li> <li>Analysing a graph</li> </ul>	<ul style="list-style-type: none"> <li>Identify properties of certain elements</li> <li>Become familiarised with the periodic table</li> <li>Write word equations for the reactions including the reactions of metals and non-metals and the formation of oxides from nonmetals.</li> <li>Students will investigate reactions to see if they are exo or endothermic</li> <li>Students will investigate metals with acid to see the temperature change (reactivity)</li> <li>Students will heat metals with oxygen.</li> </ul>	<ul style="list-style-type: none"> <li>Learning how to use a microscope</li> <li>Memory recall – for cell parts and the reproductive system</li> <li>Creative writing – journey of a sperm</li> <li>Information retrieval on specialised cells</li> <li>Comparison of egg and sperm cell</li> <li>Modelling the menstrual cycle by creating a bracelet</li> </ul>	<ul style="list-style-type: none"> <li>Make predictions on whether materials are conductive or not, then testing their predictions</li> <li>Correctly building series and parallel circuits</li> <li>Investigate current in series and parallel circuits</li> <li>Investigate voltage in series and parallel circuits</li> <li>Investigate static electricity and use a Van der graff generator.</li> <li>Using magnets to understand the difference between repel and attract</li> <li>Use compasses to draw magnetic field lines</li> <li>Demonstrate magnetic field lines using permanent magnets and iron shaving</li> <li>Learn how to make an electromagnet and investigate what happens when its strength is increased or decrease</li> </ul>	<ul style="list-style-type: none"> <li>Learning how to annotate a graph</li> <li>Retrieval practice</li> </ul> <p>Students will carry out/write up scientific investigations:</p> <ul style="list-style-type: none"> <li>Conservation of mass</li> <li>Rate of evaporation</li> <li>Cooling curve for stearic acid</li> <li>Investigating solubility, melting and boiling points</li> <li>Evaporation and condensation</li> <li>Chromatography</li> <li>Distillation</li> </ul>	<ul style="list-style-type: none"> <li>Students work as a team to complete complex food webs</li> </ul> <p>Students will carry out/write up scientific investigations:</p> <ul style="list-style-type: none"> <li>Iodine test for starch</li> <li>Testing rate of photosynthesis using pond weed</li> <li>Observe stomata using a microscope</li> </ul>
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# Curriculum Knowledge Map - Science



<p><b>Disciplinary literacy (Tier 3 vocab)</b></p>	<p>SEEC:</p> <ul style="list-style-type: none"> <li>• Categorical</li> <li>• Continuous</li> <li>• Describe</li> <li>• Explain</li> <li>• Conclusion</li> <li>• Evaluation</li> <li>• Independent</li> <li>• Dependent</li> </ul>	<p>SEEC:</p> <ul style="list-style-type: none"> <li>• element</li> <li>• compound</li> <li>• mixture</li> <li>• reactivity</li> <li>• exothermic</li> <li>• endothermic</li> </ul>	<p>SEEC:</p> <ul style="list-style-type: none"> <li>• reproduction</li> <li>• specialised</li> <li>• adapted</li> <li>• fertilisation</li> <li>• magnification</li> </ul>	<p>SEEC:</p> <ul style="list-style-type: none"> <li>• state</li> <li>• matter</li> <li>• conservation</li> <li>• conduction</li> <li>• convection</li> <li>• evaporation</li> <li>• condensation</li> </ul>	<p>SEEC:</p> <ul style="list-style-type: none"> <li>• voltage</li> <li>• current</li> <li>• conductor</li> <li>• insulator</li> <li>• attract</li> <li>• repel</li> </ul>	<p>SEEC:</p> <ul style="list-style-type: none"> <li>• photosynthesis</li> <li>• pollination</li> <li>• dispersal</li> <li>• producer</li> <li>• consumer</li> </ul>
<p><b>ASSESSMENTS</b></p>	<p>EOT low stakes testing - <b>Specific focus on how to draw a line graph and a bar chart.</b></p> <p>EOT low stakes testing graph skills and HSW skills. <b>Specific focus on variables and analysing graphs.</b></p>	<p>EOT low stakes testing - <b>specific focus on writing a long answer question about the conservation of mass.</b></p> <p>EOT low stakes testing - Reactivity of metals with hydrochloric acid. <b>Specific focus on data and hypothesis.</b></p>	<p>EOT low stakes testing - <b>Specific focus on the use of models to explain ideas in science.</b></p> <p>EOT low stakes testing - <b>specific focus on the analysis of the menstrual cycle (graph).</b></p> <p><b>Progress test (all knowledge content from Autumn 1 and 2).</b></p>	<p>EOT low stakes testing - <b>Including specific focus about how to measure voltage and current in series and parallel (method with diagrams).</b></p> <p>EOT low stakes testing - <b>Including specific focus on hypothesis and conclusions.</b></p>	<p>EOT low stakes testing - <b>Including describing and explaining a cooling curve. Latent heat.</b></p> <p>EOT low stakes testing - <b>Including extended writing on choosing the appropriate separating technique for separating soluble solutions and soluble salts.</b></p>	<p>EOT low stakes testing - <b>Method for how the rate of photosynthesis is affected by the intensity of a light.</b></p> <p><b>Progress test (all knowledge content from Autumn, spring and summer)</b></p>



# Curriculum Knowledge Map - Science



<b>HOME LEARNING</b>	TEAMS homework's relevant to the topic being studied – four per half term	TEAMS homework's relevant to the topic being studied – four per half term	TEAMS homework's relevant to the topic being studied – four per half term  Revision booklet relevant to the END OF TOPIC TEST.	TEAMS homework's relevant to the topic being studied – four per half term	TEAMS homework's relevant to the topic being studied – four per half term	TEAMS homework's relevant to the topic being studied – four per half term  Revision booklet relevant to the END OF TOPIC TEST.
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