

## Science department - Year 7 scheme of work

National Curriculum: <a href="https://www.gov.uk/government/publications/national-curriculum-in-england-science-programmes-of-study">https://www.gov.uk/government/publications/national-curriculum-in-england-science-programmes-of-study</a>				
Term	Title	Unit content	Key vocabulary	Resource links:
<b>Autumn one</b>				
Week 1 06.09.23	Introduction to Science (1)	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• What is the theory behind the scientific method</li> <li>• Using data to refine our theories of the world</li> <li>• Hazards in lab, Bunsen burners to demonstrate safety measures</li> <li>• Equipment and taking measurement</li> </ul> <p><b>Practical ideas:</b></p> <ul style="list-style-type: none"> <li>• Flame tests is a nice practical for bunsen burners</li> <li>• Match up apparatus with name activity using labels in envelopes – in science prep room</li> </ul> <p><b>Key skills developed:</b></p> <ul style="list-style-type: none"> <li>• Pupils know how to be safe in the science lab</li> <li>• To understand and describe hazard symbols used in science</li> <li>• To be able to evaluate the risks and precautions for varying scenarios</li> <li>• To know the names of key scientific apparatus used in a lab</li> <li>• To understand and describe the use of specific scientific apparatus are used</li> <li>• To know the reasons why people investigate science</li> <li>• To be able to investigate science practical's with a focus on observations</li> </ul>		<p><u><a href="#">Lesson 1 - Intro to science</a></u></p> <p><u><a href="#">Unit 1 Transition scheme</a></u></p> <p><u><a href="#">Autumn 1</a></u></p>
Week2	Introduction to Science (2)	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• Independent, dependent and control variables</li> <li>• Biscuit investigation to demonstrate variables</li> </ul>		<u><a href="#">Autumn 1</a></u>

		<ul style="list-style-type: none"> <li>• Bar charts to show categoric data</li> </ul> <p><b>Practical ideas:</b></p> <ul style="list-style-type: none"> <li>• Bar charts: Different colour M&amp;Ms, Biscuit investigation results</li> </ul> <p><b>Key skills developed:</b></p> <ul style="list-style-type: none"> <li>• To know the components of scientific investigation write up</li> <li>• To understand and define the key words used in a scientific investigation</li> <li>• To be able to structure a scientific investigation write up</li> <li>• To know that scientific investigations have different aims</li> <li>• To understand and plan a scientific investigation</li> <li>• To be able to evaluate peers plans with appropriate improvements</li> </ul>		
Week 3	Introduction to Science (3)	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• Line graphs to show continuous data</li> <li>• Meanings of accuracy and precision</li> <li>• The importance of calculating means, and writing conclusions</li> </ul> <p><b>Practical ideas:</b></p> <ul style="list-style-type: none"> <li>• Students take turns to throw small wet tissue balls at target drawn on whiteboard and discuss if the shots are accurate/precise</li> <li>• Speed of football. Students perform 3 kicks with right foot and 3 kicks with left foot. Calculate mean of results</li> </ul> <p><b>Key skills developed:</b></p> <ul style="list-style-type: none"> <li>• To know the different types of graphs commonly used in science</li> <li>• To understand how to plot graphs given scientific data</li> <li>• To be able to interpret graphs and describe using point data</li> <li>• To know what is meant by scale</li> <li>• To understand the importance of scale and how it is used in science</li> <li>• To be able to explain which scientific equipment should be used based on scale</li> <li>• To know the units of measurement for common examples</li> </ul>		<u>Autumn 1</u>

		<ul style="list-style-type: none"> <li>To understand how to convert to appropriate units of measurements in science</li> </ul>		
Week 4	Particles and states of matter (1)	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>Models as a simplifying tool for helping us understand how things behave.</li> <li>Three states of matter, particles equivalent size in all three</li> <li>Changing states, changing arrangements and movements of these particles</li> <li>Melting and boiling</li> </ul> <p><b>Practical ideas:</b></p> <ul style="list-style-type: none"> <li>Ice cube practical, pupils have a cube of ice and apply spirit burner to show change is state</li> <li>Chocolate investigation: Investigate melting point of White/milk/dark chocolate</li> </ul> <p><b>Key skills developed:</b></p> <ul style="list-style-type: none"> <li><b>Know all objects around us are made of matter and atoms</b></li> <li><b>To be able to create models of different states of matter of everyday objects</b></li> <li><b>Know the definitions of the state of matter interconversions</b></li> <li><b>Understand and explain how energy changes to given examples</b></li> </ul>		<p>Particles and separation booklet: <a href="#">7cp-particles-and-separation-techniques-booklet-tta-20-21.docx</a></p> <p><a href="#">Unit 2 Particle model of matter</a></p> <p><a href="#">Autumn 1</a></p>
Week 5	Particles and states of matter (2)	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>Condensing and evaporating</li> <li>Sublimation and deposition as extension</li> <li>Touch on density by showing floating and sinking using particle diagrams</li> <li>Diffusion</li> </ul> <p><b>Practical ideas:</b></p> <ul style="list-style-type: none"> <li>Finding the boiling point of water</li> </ul>		<a href="#">Autumn 1</a>

		<ul style="list-style-type: none"> <li>• Skittles diffusion</li> <li>• Teabag and food colouring demonstrations (hot and cold water)</li> </ul> <p><b>Key skills developed:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>		
Week 6	<b>Forces basics</b>	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• Contact and non-contact forces</li> <li>• Drag and friction</li> <li>• Water and air resistance</li> </ul> <p><b>Practical ideas:</b></p> <ul style="list-style-type: none"> <li>• Separated two books with pages interleaved</li> <li>• Egg parachute</li> </ul> <p><b>Key skills developed:</b></p> <ul style="list-style-type: none"> <li>• Understand how weight can be measured and their units</li> <li>• Investigate the use of newton meters to explore forces</li> <li>• Know that some objects whilst other sink</li> <li>• Understand that the force exerted by water is called up thrust</li> <li>• Be able to explain that an object floats because the forces are balanced (upthrust=weight)</li> </ul>		<p>Forces booklet: <a href="#">forces-and-motion-mastery-booklet.docx</a></p> <p><a href="#">Unit 3 Forces and their interactions</a></p> <p><a href="#">Autumn 1</a></p>
Week 7	<b>Types of forces</b>	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• Streamlining</li> <li>• Gravity</li> <li>• Balanced and unbalanced forces</li> </ul> <p><b>Practical ideas:</b></p>		<a href="#">Autumn 1</a>

		<ul style="list-style-type: none"> <li>• Make the most streamlined paper airplane</li> </ul> <p><b>Key skills developed:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>		
<b>Autumn two</b>				
Week 1	<b>Cells and microscopes</b>	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• Animal cells</li> <li>• Plant cells compared to animal cells</li> <li>• Microscopes and scales</li> </ul> <p><b>Practical ideas:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul> <p><b>Key Skills developed:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>		<p>Booklet: <a href="#">7bc-cells-tissues-organs-booklet-tta-20-21.docx</a></p> <p><a href="#">Unit 4 Cells, tissues and organs</a></p> <p><a href="#">Autumn 2</a></p>
Week 2	<b>Specialised cells – human reproduction</b>	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• Adolescence vs puberty</li> <li>• Menstrual cycle</li> <li>• Development of a foetus</li> </ul> <p><b>Practical ideas:</b></p> <p><b>Key skills developed:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>		<p><a href="#">Unit 5 Reproductive systems</a></p> <p>Booklet: <a href="#">7br-reproduction-booklet.docx</a></p> <p><a href="#">Autumn 2</a></p>

Week 3	<b>Assessment week</b>	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• Plant reproductive organs</li> <li>• Pollination</li> <li>• Germination</li> </ul> <p><b>Practical ideas:</b></p> <ul style="list-style-type: none"> <li>• Lilies dissection for organs</li> </ul> <p><b>Key skills developed:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>		<u>Autumn 2</u>
Week 4	<b>Human reproduction</b>	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• Adolescence vs puberty</li> <li>• Menstrual cycle</li> <li>• Development of a foetus</li> </ul> <p><b>Practical ideas:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul> <p><b>Key skills developed:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>		<u>Autumn 2</u>
Week 5	<b>Plant reproduction</b>	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• Plant reproductive organs</li> <li>• Pollination</li> </ul>		<u>Autumn 2</u>

		<ul style="list-style-type: none"> <li>• Germination</li> </ul> <p><b>Practical ideas:</b></p> <ul style="list-style-type: none"> <li>• Lilies dissection for organs</li> </ul> <p><b>Key skills developed:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>		
Week 6	sound	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• Intro to waves</li> <li>• Transverse waves</li> <li>• Longitudinal waves</li> </ul> <p><b>Practical ideas:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul> <p><b>Key skills developed:</b></p> <ul style="list-style-type: none"> <li>• Know that waves can transfer energy and information and not matter</li> <li>• Understand the difference between transverse and longitudinal waves</li> <li>• Know how to label a transverse wave with wavelength and amplitude</li> <li>• Recall that sound waves travel through different materials by vibration</li> </ul>		<p><u>Unit 6 Sound and waves</u></p> <p><u>Autumn 2</u></p>
Week 7	sound	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• Loudness and pitch</li> <li>• Echoes and ultrasound</li> </ul>		<p><u>Autumn 2</u></p>

		<ul style="list-style-type: none"> <li>• The ear</li> </ul> <p><b>Practical ideas:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul> <p><b>Key skills developed:</b></p>		
Week 8	sound	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• Calculating speed of sound</li> <li>• Christmas science!</li> </ul> <p><b>Practical ideas:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul> <p><b>Key skills developed:</b></p> <ul style="list-style-type: none"> <li>• Recall that sound waves travel through different materials by vibration</li> <li>• Compare how fast sound is transmitted by solids, liquids, gases using particle theory</li> <li>• Be able to explain why sound does not travel in space</li> </ul>		<u>Autumn 2</u>
<b>Assessment point 1 (this may be moved)</b> <a href="#">NewY7AutumnAssessment2022-2023 amended.doc.rtf</a>				
<b>Spring one</b>				
Week 1	<b>Light, wave behaviour and colour</b>	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• Waves recap</li> <li>• Light and shadows</li> <li>• Reflection</li> </ul>		<u>Unit 8 Light and colour</u>  <u>Spring 1</u>



		<p><b>Practical ideas:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul> <p><b>Key skills developed:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>		
Week 2	<b>Light, wave behaviour and colour</b>	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• Refraction</li> <li>• Colour</li> <li>• Filtering colours</li> </ul> <p><b>Practical ideas:</b></p> <p><b>Key skills developed:</b></p> <ul style="list-style-type: none"> <li>• Know the parts of the eye that allow us to see</li> <li>• Understand how we are able to see using parts of the eye and light waves</li> <li>• Know that light is a mixture of different colours</li> <li>• Recall the colours of the spectrum</li> <li>• Be able to use prisms to split white light</li> <li>• Recall that light can be reflected</li> <li>• Be able to identify good surfaces for reflection</li> <li>• Be able to investigate the law of reflection</li> <li>• Be able to recall light rays can bend at a surface and this is called refraction</li> </ul>		<u>Spring 1</u>

Week 3	<b>Adaptations, variation and genetics</b>	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• Heredity (nice place to revisit fertilisation)</li> <li>• Continuous variation (link back to graphs)</li> <li>• DNA structure and the genome</li> </ul> <p><b>Practical ideas:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul> <p><b>Key skills developed:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>		<p><u>Unit 7 Adaptations and variation</u></p> <p><u>Spring 1</u></p>
Week 4	<b>Adaptations, variation and genetics</b>	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• Competition and adaptation</li> <li>• Adapting to changes</li> <li>• Natural selection</li> </ul> <p><b>Practical ideas:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul> <p><b>Key skills developed:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>		<p><u>Spring 1</u></p>

Week 5	<b>Elements, compounds and separating mixtures</b>	<b>Key knowledge taught:</b> <ul style="list-style-type: none"> <li>• Elements</li> <li>• Atoms and their structure</li> <li>• Compounds</li> </ul> <b>Practical ideas:</b> <ul style="list-style-type: none"> <li>•</li> </ul> <b>Key skills developed:</b> <ul style="list-style-type: none"> <li>•</li> </ul>	Matter Structure Arrangement Elements Mixtures Compounds	Booklet: <a href="#">chemical-reactions.docx</a> Booklet: <a href="#">particles-mastery-booklet.docx</a>  <a href="#">Unit 9 Elements, compounds and separating mixtures</a>  <a href="#">Spring 2</a>
<b>Spring two</b>				
Week 1	<b>Elements, compounds and separating mixtures</b>	<b>Key knowledge taught:</b> <ul style="list-style-type: none"> <li>• Chemical formulae</li> <li>• Mixtures</li> <li>• Solutions</li> </ul> <b>Practical ideas:</b>  <b>Key skills developed:</b>		<a href="#">Spring 2</a>
Week 2	<b>Elements, compounds and separating mixtures</b>	<b>Key knowledge taught:</b> <ul style="list-style-type: none"> <li>• Solubility</li> <li>• Filtration and evaporation</li> <li>• Distillation</li> </ul>		<a href="#">Spring 2</a>

		<p><b>Practical ideas:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul> <p><b>Key skills developed:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>		
Week 3	<b>Assessment Week</b>	<p style="text-align: center;"><b>Revision</b></p> <p style="text-align: center;">Go over anything which has been highlighted as an area for development from the assessment</p>		
Week 4	<b>SCIENCE WEEK</b>			
Week 5	<b>Earth, moon and sun</b>	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• Mass and weight recap</li> <li>• Day and night, and the seasons (use double lesson for this)</li> <li>• Temperature difference in the seasons (they need a specific lesson on why this happens)</li> </ul> <p><b>Practical ideas:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul> <p><b>Key skills developed:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>		<p><u>Unit 10</u> <u>Earth, moon and sun</u></p> <p><u>Spring 2</u></p>

Week 6	<b>Earth, moon and sun</b>	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• The phases of the moon</li> <li>• Eclipses</li> <li>• The solar system</li> </ul> <p><b>Practical ideas:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul> <p><b>Key skills developed:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>		<p>Maths skills unit: <u>Unit 17 Maths skills unit</u></p> <p><u>Spring 2</u></p>
Assessment		<u>NewY7SpringAssessment.doc</u>		
<b>Summer one</b>				
Week 1	<b>Beyond our solar system</b>	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• Life cycle of a star</li> <li>• Types of stars and their characteristics</li> <li>• Identifying stellar objects</li> </ul> <p><b>Practical ideas:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul> <p><b>Key skills developed:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>		<p><u>Unit 11 Beyond our solar system</u></p>

Week 2	<b>Earth and the rock cycle</b>	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• Composition of the Earth</li> <li>• Volcanoes</li> <li>• lava</li> </ul> <p><b>Practical ideas:</b></p>		<p><u>Unit 12 The Rock Cycle</u></p> <p><u>The Rock Cycle</u></p>
Week 3	<b>Earth and the rock cycle</b>	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• Igneous rocks</li> <li>• Sedimentary rocks</li> <li>• Fossils and metamorphic rocks</li> </ul> <p><b>Practical ideas:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul> <p><b>Key skills developed:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>		<p><u>The Rock Cycle</u></p>
Week 4	<b>Human organisation (muscular and skeletal systems)</b>	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• The rock cycle</li> <li>• Skeleton</li> <li>• Joints</li> </ul> <p><b>Practical ideas:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>		<p>Cells,tissues and organs booklet: <u>cells-tissues-organs.docx</u></p> <p><u>Unit 13 Muscular and skeletal systems</u></p>

		<b>Key skills developed:</b> <ul style="list-style-type: none"> <li>•</li> </ul>		<u>Summer 2</u>
Week 5	<b>Human organisation (muscular and skeletal systems)</b>	<b>Key knowledge taught:</b> <ul style="list-style-type: none"> <li>• Muscles</li> <li>• Musculoskeletal systems and exercise</li> <li>• Atoms recap</li> </ul> <b>Practical ideas:</b> <ul style="list-style-type: none"> <li>•</li> </ul> <b>Key skills developed:</b> <ul style="list-style-type: none"> <li>•</li> </ul>		<u>Summer 2</u>
Week 6	<b>The Periodic table</b>	<b>Key knowledge taught:</b> <ul style="list-style-type: none"> <li>• The periodic table (groups and periods)</li> <li>• Development of the periodic table</li> <li>• Metals and non-metals</li> </ul> <b>Practical ideas:</b> <ul style="list-style-type: none"> <li>•</li> </ul> <b>Key skills developed:</b> <ul style="list-style-type: none"> <li>•</li> </ul>		<u>Unit 14</u> <u>Periodic Table</u> <u>Unit 14</u> <u>Periodic Table</u> <u>Summer 2</u>
Week 7				

Assessment		<u>NewY7SummerAssessment.doc</u>		
<b>Summer two</b>				
Week 1	<b>Periodic table: properties and trends</b>	<b>Key knowledge taught:</b> <ul style="list-style-type: none"> <li>• Group 1 metals</li> <li>• Group 7 halogens</li> <li>• Group 1 and 7 trends</li> </ul> <b>Practical ideas:</b> <ul style="list-style-type: none"> <li>•</li> </ul> <b>Key skills developed:</b> <ul style="list-style-type: none"> <li>•</li> </ul>		<u>Summer 2</u>
Week 2	<b>Periodic table: properties and trends</b>	<b>Key knowledge taught:</b> <ul style="list-style-type: none"> <li>• Group 0 noble gases</li> <li>• Recap and revision</li> </ul> <b>Practical ideas:</b> <ul style="list-style-type: none"> <li>•</li> </ul> <b>Key skills developed:</b> <ul style="list-style-type: none"> <li>•</li> </ul>		<u>Summer 2</u>



Week 3	Assessment			
Week 4	<b>Acids, alkalis and neutralisation</b>	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• Acids (sours) and alkalis (soaps)</li> <li>• PH scale and universal indicator</li> <li>• Types of indicator</li> </ul> <p><b>Practical ideas:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul> <p><b>Key skills developed:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>		<p><u>Unit 14</u> <u>Periodic Table</u></p> <p><u>Summer 2</u></p>
Week 5	<b>Acids, alkalis and neutralisation</b>	<p><b>Key knowledge taught:</b></p> <ul style="list-style-type: none"> <li>• Making red cabbage indicator</li> <li>• Neutralisation</li> <li>• Neutralisation with stomach acid and bee/wasp stings</li> </ul> <p><b>Practical ideas:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul> <p><b>Key skills developed:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>		<u>Summer 2</u>
Week 6				
Week 7				