

**Year: 6 Term: 1a and 1b Cornerstones Unit: Circulatory System**



**National Curriculum Progression**

Y1	Y2	Y3	Y4	Y5	Y6
<p><b>Animals, including Humans</b> iv. identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</p>	<p><b>Animals, including Humans</b> i. notice that animals, including humans, have offspring which grow into adults ii. find out about and describe the basic needs of animals, including humans, for survival (water, food and air) iii. describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>	<p><b>Animals, including Humans</b> i. identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat ii. identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p>	<p><b>Animals, including Humans</b> i. describe the simple functions of the basic parts of the digestive system in humans ii. identify the different types of teeth in humans and their simple functions</p>	<p><b>Animals, including Humans</b> i. describe the changes as humans develop to old age.</p>	<p><b>Animals, including Humans</b> i. identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood ii. recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function iii. describe the ways in which nutrients and water are transported within animals, including humans</p>

**Scientific Enquiry Skills**

Asking Questions	Investigating	Gathering and Recording Data	Presenting and Analysing Findings
<p>♣ planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p>	<p>♣ taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p>	<p>♣ recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p>	<p>♣ using test results to make predictions to set up further comparative and fair tests ♣ reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations ♣ identifying scientific evidence that has been used to support or refute ideas or arguments.</p>

**Key Vocabulary – Scientific Enquiry**

questions, explain, scientific enquiry, research equipment - measuring tape, hand lens, trundle wheel, ruler, data loggers plus sensors, such as light (lux), sound (dB) and temperature (°C); timers (seconds, minutes and hours); thermometers (°C), and measuring tapes (millimetres, centimetres, metres). A force meter can be used to measure an object's mass in grams (g) or kilograms (kg) and its weight in newtons (N), accurate measurements observe, accurate observations, compare, group, classify, feature, similarities, differences, make simple connections, measure, systematic, regular intervals tests, instructions, method, prediction, investigation, comparative test, fair test, variable, constant results, information, investigate, investigation, noticing patterns and relationships, conclusion, evidence record, data, table, charts, Venn diagram, labelled diagrams, bar, line and scatter graphs, timeline, key, models, explain

**Key Vocabulary – Unit Specific****circulatory system - transport oxygen, water, nutrients, body, transported, blood, delivered - explain****circulatory system - heart, blood vessels, blood, pumps, blood vessels, gases (oxygen and carbon dioxide), water, nutrients – describe, purpose, function****lifestyle choices - positive impact, exercise, eating healthily, negative impact, drugs, smoking, alcohol - explain****bodies function - diet, exercise, drugs, lifestyle, impact – recognise, explain, choices**

	<b>Conceptual Learning Goals - Core Knowledge</b>	<b>Procedural Learning Goals - Skills</b>
<b>Substantive Knowledge</b>	<ul style="list-style-type: none"><li>a. Know that the role of the circulatory system is to transport oxygen, water and nutrients around the body. They are transported in blood and delivered to where they are needed.</li><li>b. Know that the circulatory system includes the heart, blood vessels and blood. The heart pumps blood through the blood vessels and around the body. The blood carries gases (oxygen and carbon dioxide), water and nutrients to where they are needed.</li><li>c. Know that lifestyle choices can have a positive (exercise and eating healthily) or negative (drugs, smoking and alcohol) impact on the body.</li><li>d. Know that diet, exercise, drugs and lifestyle has an impact on the way their bodies function.</li></ul>	<ul style="list-style-type: none"><li>a. Know how to explain that the circulatory system in animals transports oxygen, water and nutrients around the body.</li><li>b. Know how to describe the purpose of the circulatory system and the functions of the heart, blood vessels and blood.</li><li>c. Know how to explain the impact of positive and negative lifestyle choices on the body.</li><li>d. Know how to recognise and explain the impact of positive and negative lifestyle choices on the body.</li></ul>
<b>Disciplinary Knowledge</b>	<ul style="list-style-type: none"><li>e. Know that questions can help us find out about the world and can be answered using a range of scientific enquiries, including fair tests, research and observation.</li><li>f. Know that specialised equipment is used to take accurate measurements in standard units. Examples include data loggers plus sensors, such as light (lux), sound (dB) and temperature (°C); timers (seconds, minutes and hours); thermometers (°C) and measuring tapes (millimetres, centimetres, metres).</li><li>g. Know that a method is a set of clear instructions for how to carry out a scientific investigation, including what equipment to use and observations to make. A variable is something that can be changed during a fair test. A prediction is a statement about what might happen in an investigation based on some prior knowledge or understanding.</li><li>h. Know that an observation involves looking closely at objects, materials and living things. Accurate observations can be made repeatedly or at regular intervals to identify changes over time, identify processes and make comparisons.</li><li>i. Know that the results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what has been discovered, using correct, precise terminology and collected evidence.</li><li>j. Know that data can be recorded and displayed in different ways, including tables, bar and line charts, scatter graphs, classification keys and labelled diagrams.</li></ul>	<ul style="list-style-type: none"><li>e. Know how to ask and answer deeper and broader scientific questions about the local and wider world that build on and extend their own and others' experiences and knowledge.</li><li>f. Know how to take accurate, precise and repeated measurements in standard units, using a range of chosen equipment.</li><li>g. Know how to plan and carry out a range of enquiries, including writing methods, identifying and controlling variables, deciding on equipment and data to collect and making predictions based on prior knowledge and understanding.</li><li>h. Know how to independently decide which observations to make, when and for how long and make systematic and careful observations, using them to make comparisons, identify changes, classify and make links between cause and effect.</li><li>i. Know how to report on and validate their findings, answer questions and justify their methods, opinions and conclusions, and use their results to suggest improvements to their methodology, separate facts from opinions, pose further questions and make predictions for what they might observe.</li><li>j. Know how to choose an appropriate approach to recording accurate results, including scientific diagrams, labels, timelines, classification keys, tables, models and graphs (bar, line and scatter), linking to mathematical knowledge.</li></ul>

Scientific Enquiries:				
Observing changes Over a Period of Time	Noticing Patterns	Grouping and Classifying Things	Carrying out comparative and fair tests	Finding things out using a wide range of secondary sources of information.
	Exploring the structure and function of the heart Exploring the structure and function of blood	Classifying foods	Measuring and comparing heart rates Investigation - 'Children with lower resting heart rates can sprint faster than those with higher resting heart rates.' Investigation - Effects of different exercises on heart rate Heart rate investigation	Investigating the circulatory system Exploring the structure and function of the heart Research about the effects of smoking, alcohol and drugs

**Assessment Criteria:**

Disciplinary Knowledge and Skills	Substantiative Knowledge and Skills
<p>The pupil can, using appropriate scientific language from the national curriculum:</p> <ul style="list-style-type: none"> <li>describe and evaluate their own and others' scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources</li> <li>ask their own questions about the scientific phenomena that they are studying, and select the most appropriate ways to answer these questions, recognising and controlling variables where necessary (i.e. observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests, and finding things out using a wide range of secondary sources)</li> <li>use a range of scientific equipment to take accurate and precise measurements or readings, with repeat readings where appropriate</li> <li>record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>draw conclusions, explain and evaluate their methods and findings, communicating these in a variety of ways</li> <li>raise further questions that could be investigated, based on their data and observations.</li> </ul>	<p>The pupil can:</p> <ul style="list-style-type: none"> <li>name and describe the functions of the main parts of the circulatory systems</li> <li>describe the effects of diet, exercise, drugs and lifestyle on how the body functions</li> <li>use the observable features of plants, animals and microorganisms to group, classify and identify them</li> </ul>

**Resources**

<ul style="list-style-type: none"> <li>Heart models</li> <li>Posters, diagrams, information books and leaflets about the circulatory system</li> <li>Sheep hearts (optional)</li> <li>Sharp scissors (optional)</li> <li>Trays (optional)</li> <li>Measuring cylinders</li> <li>Syrup</li> <li>Beakers</li> <li>Spoons or stirrers</li> <li>Red food colouring</li> </ul>	<ul style="list-style-type: none"> <li>Test tubes</li> <li>Test tube holders</li> <li>Pipettes</li> <li>Milk</li> <li>Vegetable oil</li> <li>Heart rate monitors or smartwatches</li> <li>Stopwatches or timers</li> <li>A wide range of food packaging displaying traffic light nutrition labels, including foods high in sugar, salt and fat</li> <li>Measured samples of lard, sugar and salt</li> </ul>
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