



Science - Year 5



<u>Honesty</u> Giving opinions		<u>Love</u> Caring for the environment Looking after yourself		<u>Forgiveness</u>		<u>Respect</u> Understanding difference of opinions Understanding that we share this planet with other creatures and that we have a duty to care for them		Earth Week		<u>Cultural Capital Opportunities</u>			
<u>A Love Of Language</u> see key skills below <u>Reading:</u> <u>Listening:</u> <u>Speaking:</u> <u>Writing:</u>		<u>Aspirations</u> Love of different Sciences, Job potentials (astrophysicist, environmentalist etc.)		<u>Bringing Learning To Life</u> Hands on learning Art/Design and Technology Creative writing Independent Enquires Relevant contexts for learning		<u>Emotional Well-Being</u> Understanding the mental and bodily changes during puberty and why it happens.		<u>Resilience</u> Applying phonics Applying vocabulary in different contexts		<u>Valuing Our Diversity</u> Understanding where we come from Understanding inherited and learnt characteristics of ourselves		<u>Respect and Responsibility</u> Importance of food hygiene/equipment for meal preparation Importance of insulating properties of materials - prevents burning/scolding Understanding that we share this world with other creatures	
What will they learn?				In what order?									
Key Concepts		Key Skills		Autumn		Spring		Summer		End points			

<p>Sc5/1.1 planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>Sc5/1.2 taking measurements, using a range of scientific equipment, with increasing accuracy and precision</p> <p>Sc5/1.3 recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs</p> <p>Sc5/1.4 using test results to make predictions to set up further comparative and fair tests</p> <p>Sc5/1.5 reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations</p> <p>Sc5/1.6 identifying scientific evidence that has</p>	<p>Use their science experiences to explore ideas and raise different kinds of questions</p> <p>Talk about how scientific ideas have developed over time</p> <p>Select and plan the most appropriate type of scientific enquiry to use to answer scientific questions</p> <p>Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why</p> <p>Use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment</p> <p>Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact</p> <p>Choose the most appropriate equipment to make measurements with increasing precision and explain how to use it accurately</p> <p>Take repeat measurements where appropriate</p>	<p><u>Earth and Space</u></p> <p>Sc5/4.1a describe the movement of the Earth, and other planets, relative to the Sun in the solar system</p> <p>Sc5/4.1b describe the movement of the Moon relative to the Earth</p> <p>Sc5/4.1c describe the Sun, Earth and Moon as approximately spherical bodies</p> <p>Sc5/4.1d use the idea of the Earth's rotation to explain day and night, and the apparent movement of the sun across the sky.</p> <p>Create a scale model of the Solar System using either different sized fruits or balls to represent the planets. Can you measure how far away the planets are on a scale?</p> <p>Make an orrery to show how the Solar System works (how planets spin on their axis etc.)</p> <p>Can they show and explain how the Earth spins on its axis? Can they track the sun through shadows (day and night)?</p>	<p><u>Properties of Materials</u></p> <p>Sc5/3.1a compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</p> <p>Sc5/3.1c use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p>Sc5/3.1d give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p> <p>All food prep areas need to meet health and safety standards as well as be made from the best (and hardest) materials around. Your job is to investigate and make recommendations for the right material options.</p> <p>Ice creams need to stay cold, and hot chocolates and coffees need to stay hot. Can you investigate the</p>	<p><u>Living things and their habitats</u></p> <p>Sc5/2.1a describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>Sc5/2.1b describe the life process of reproduction in some plants and animals.</p> <p>Dissect a flower and explore the fascinating world of flowering plant reproduction. Capture the key sexual structures of a flower and its life cycle in the form of a botanical drawing.</p> <p>Investigate ways that plants reproduce asexually and continue to hone your botanical illustration skills. Have a go at growing new plants from a range of parent plant parts - you may be surprised at what will flourish!</p> <p>Watch some online footage of insect and amphibian lifecycles to help create your own life cycle illustrations for display. Set up an in-school habitat for your choice of insect and amphibian so that you can</p>	<p><u>Autumn:</u></p> <p><u>Earth and Space</u></p> <p>Can create a voice over for a video clip or animation</p> <p>Can show using diagrams the movement of the Earth and Moon</p> <p>Can explain the movement of the Earth and Moon</p> <p>Can show using diagrams the rotation of the Earth and how this causes day and night</p> <p>Can explain what causes day and night</p> <p>Can use the model to explain how the Earth moves in relation to the Sun and the moon moves in relation to the Earth</p> <p>Can demonstrate and explain verbally how day and night occur</p> <p>Can explain evidence gathered about the position of shadows in term of the movement of the Earth. Can show this using a model</p> <p>Can explain how a sundial works</p> <p>Can explain verbally using a model why we have time zones</p> <p>Can describe the arguments and evidence used by scientists in the past</p> <p><u>Forces</u></p>
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<p>been used to support or refute ideas or arguments. Sc5/4.1a describe the movement of the Earth, and other planets, relative to the Sun in the solar system</p> <p>Sc5/4.1b describe the movement of the Moon relative to the Earth</p> <p>Sc5/4.1c describe the Sun, Earth and Moon as approximately spherical bodies</p> <p>Sc5/4.1d use the idea of the Earth's rotation to explain day and night, and the apparent movement of the sun across the sky. Sc5/3.1a compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal),</p>	<p>Make their own decisions about what observations to make, what measurements to use and how long to make them for</p> <p>Decide how to record data and results of increasing complexity from a choice of familiar approaches: scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graph</p> <p>Look for different causal relationships in their data and identify evidence that refutes or supports their ideas</p> <p>Identify scientific evidence that has been used to support or refute ideas or arguments</p> <p>Use relevant scientific language and illustrations to discuss, communicate and justify their Evaluate data, showing awareness of potential sources of random</p>	<p>Can you make a working sundial and interview people who live in different time zones?</p> <p>Can you create an investigation to show how the moon changes shape night to night? Create a lunar calendar.</p> <p><u>Forces</u></p> <p>Sc5/4.2a explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>Sc5/4.2b identify the effects of air resistance, water resistance and friction, that act between moving surfaces</p> <p>Sc5/4.2c recognise that some mechanisms including levers, pulleys and gears</p>	<p>insulating properties of a range of materials and make recommendations to food stall holders?</p> <p>Paper bags and bottles seem to be the way to go when it comes to take-out refreshments. But which is the best paper to use? And should stall holders go with glass or plastic for their drinks bottles?</p> <p>The cleaning team needs the best cloths in the business to keep on top of spills and mess. Can you make recommendations on the most absorbent and tough materials for the job?</p> <p>Look at the properties of electrical items - what materials do you need to ensure they are waterproof and insulated? Why is this needed?</p> <p>Test a range of materials to see which act as the best</p>	<p>observe them over time (Frogs).</p> <p>Research mammalian and bird lifecycles for two of your local species and transform what you discover into beautiful natural history illustrations. Hone your research skills as you explore sexual reproduction in animals (Hatching experiment).</p> <p>Find some interesting and quirky animals and plants from around the world and explore their life cycles online. Make sure you find plenty of images so that you can create an informative but artistic representation of their life cycles in the form of scientific illustrations.</p> <p>Learn about some significant naturalists and animal behaviourists and create in-role monologues that explore the</p>	<p>Can demonstrate the effect of gravity acting on an unsupported object</p> <p>Can give examples of friction, water resistance and air resistance</p> <p>Can give examples of when it is beneficial to have high or low friction, water resistance and air resistance</p> <p>Can demonstrate how pulleys, levers and gears work</p> <p>Can explain the results of their investigations in terms of the force, showing a good understanding that as the object tries to move through the water or air or across the surface, the particles in the water, air or on the surface slow it down</p> <p>Can demonstrate clearly the effects of using levers, pulleys and gears</p>
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<p>and response to magnets</p> <p>Sc5/3.1c use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p>Sc5/3.1d give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p> <p>Sc5/2.1a describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>Sc5/2.1b describe the life process of reproduction in some plants and animals.</p> <p>Sc5/4.2a explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>Sc5/4.2b identify the effects of air resistance, water resistance and friction, that act between moving surfaces</p>	<p>and systematic error scientific ideas</p> <p>Use oral and written forms such as displays and other presentations to report conclusions, causal relationships and explanations of degree of trust in results</p> <p>Use their results to make predictions and identify when further observations, comparative and fair tests might be needed</p>	<p>allow a smaller force to have a greater effect</p> <p>A rare and important meteorite has landed in a remote part of Europe. The Natural History Museum recovery team is on its way to retrieve it, but they need a remote back up team with forces expertise. The recovery team needs to parachute in to begin the process of repatriation - but which parachute is best? Look at how a parachute works, looking at air resistance etc. Look at levers and pulleys and how they will help/hinder removing the meteorite. Look at the gears on a bike - which ones are the best for different terrains? (Possibility for children to bring in their bikes?) Look at different path surfaces to the meteorite. Which one will be the perfect path e.g. not too fast or too slow? Test a vehicle on the paths to examine the friction. Look at the effect of water resistance on a boat. Can they make the best boat to reach the end of the course first?</p>	<p>material to soundproof headphones. Consider comfort and style as well.</p> <p><u>Changes of Materials</u></p> <p>Sc5/3.1b know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>Sc5/3.1e demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>Sc5/3.1f explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</p> <p>Investigate soluble and non-soluble materials. Explore an array of methods to separate mixed materials back into their constituent parts. Explore the function of eggs when baking cakes and bread. Some changes in materials can't be reversed and they can produce new materials</p>	<p>importance and impact of their work within the scientific community.</p> <p><u>Animals and Humans</u></p> <p>Sc5/2.2a describe the changes as humans develop to old age.</p> <p>Look at different animals in the animal kingdom to learn about their gestation periods - can they present their findings in a fun and imaginative way? Explore the key stages of foetal development and present your research in the form of annotated diagrams. Are you ready to analyse your own growth data and demonstrate in graphs and charts how the human body develops and grows from birth to five? Puberty and changes. What happens to our bodies as we get old? Can you research and create a 'things to expect as you age'? It will need to include physical and mental changes to the body. You will also need to think about how we care for the elderly and explore attitudes towards older generations across the world.</p>	<p><u>Spring: Properties and Changes of Materials</u></p> <p>Can use understanding of properties to explain everyday uses of materials. For example, how bricks, wood, glass and metals are used in buildings</p> <p>Can explain what dissolving means, giving examples</p> <p>Can name equipment used for filtering and sieving</p> <p>Can use knowledge of liquids, gases and solids to suggest how materials can be recovered from solutions or mixtures by evaporation, filtering or sieving</p> <p>Can describe some simple reversible and non-reversible changes to materials, giving examples</p> <p>Can create a chart or table grouping/comparing everyday materials by different properties</p> <p>Can use test evidence gathered about different properties to suggest an appropriate material for a particular purpose</p> <p>Can group solids based on their observations when mixing them with water</p> <p>Can give reasons for choice of equipment and methods to separate a given solution or mixture such as salt or sand in water</p>
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<p>Sc5/4.2c recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</p> <p>Sc5/2.2a describe the changes as humans develop to old age.</p> <p>Sc5/3.1b know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>Sc5/3.1e demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>Sc5/3.1f explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</p>			<p>in the process. Look at how rust is formed and what happens to an apple when it is cut open. Is there any way of preventing an apple from spoiling so quickly? Learn about some chemists who have invented very useful new materials and have fun creating new materials. Find out about brand new materials that are still in the development phase of their life.</p>	<p>What are the key milestones in a human's life? How do they impact the human body?</p>	<p>Can explain the results from their investigations involving dissolving and non-reversible change</p> <p><u>Summer:</u> <u>Living Things and Their Habitats</u> Can draw the life cycle of a range of animals identifying similarities and differences between the life cycles Can explain the difference between sexual and asexual reproduction and give examples of how plants reproduce in both ways Can present their understanding of the life cycle of a range of animals in different ways e.g. drama, pictorially, chronological reports, creating a game Can identify patterns in life cycles Can compare two or more animal life cycles studied</p>
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