

Year 5 Scheme of Work – Science

Unit	Time (Wks)	Activities	Outcomes	Differentiation	Assessment	NC Links	Other Subject Link
Previous learning: Y3 – types of forces; friction; force of magnets; types/strengths of magnets; magnetic materials				Next learning: KS3 – force diagrams; turning effect of a force; forces associated with deforming objects, springs, resistance; non-contact forces			
5.1 Forces	6-8	L1 - Identify forces acting on objects. L2 - Explain the effect of gravity on unsupported objects. L3 - Investigate the effects of air resistance. L4 - Explore the effects of water resistance. L5 - Investigate the effects of friction. L6 - Explore and design mechanisms.	<ul style="list-style-type: none"> - Identify and explain the different forces acting on objects. - Explain Newton’s role in discovering gravity. - Accurately measure an object’s weight and mass. - Explain how to increase the effects of air resistance. - Explain Galileo’s ‘Tower of Pisa’ experiment into gravity and air resistance. - Identify streamlined shapes. - Explain how friction is used in brake pads. - Investigate the effects of friction. - Explain how different mechanisms work. - Design their own mechanism to achieve a given purpose. - Identify the variables in an investigation. - Make observations and conclusions. - Answer questions based on their learning. <p>Working scientifically</p> <ul style="list-style-type: none"> - Notice links between the weight and mass of an object. - Identify if an object has a lever, gear or pulley. Complete a fair test to investigate if there is a link between the weight and mass of an object. - Carry out a test to investigate which parachute would take the longest time to fall to the ground. - Carry out a comparative test investigating how the shape of a boat has an impact on how much water resistance is created, affecting the speed of the boat. - Carry out a comparative test to find out which material would make the most effective brake pads for a tricycle or scooter. 	<ul style="list-style-type: none"> - Modelling - Practical activities/investigations. - Knowledge organiser 	Continuous throughout. Observations. Discussions.	To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. To identify the effects of air resistance, water resistance and friction. To recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	DT – mechanisms

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Previous learning: Reception – space				Next learning: KS3 - sun as a star, other stars in our galaxy, other galaxies; the seasons and the Earth's tilt, day length at different times of year, in different hemispheres			
5.2 Earth and Space	6-8	<p>L1 – Explain why we know the Sun, Earth and Moon are spherical. Identify scientific evidence which does or does not provide evidence for an idea or argument.</p> <p>L2 – Name and describe features of the planets in our solar system. Order the planets in our solar system.</p> <p>L3 – Explain how planets move in our solar system. Identify scientific evidence which does or does not provide evidence for an idea or argument.</p> <p>L4 - Explain day and night and the apparent movement of the sun across the sky. Identify scientific evidence which does or does not provide evidence for an idea or argument.</p> <p>L5 – Investigate night and day in different parts of the Earth. Report and present findings from enquiries.</p> <p>L6 - Explain the movement of the Moon.</p>	<ul style="list-style-type: none"> - Describe the Sun, Earth and Moon as spherical. - Name the planets in the solar system independently. - Distinguish between heliocentric and geocentric ideas of planetary movement. - Explain that day and night is due to rotation of the Earth. - Support the idea that different places on Earth experience night and day at different times with evidence. - Report and present findings from enquiries. - Explain how the Moon moves relative to the Earth. <p>Working scientifically</p> <ul style="list-style-type: none"> - Observe the apparent movement of the Sun across the sky and map against the time of the day and the Earth's rotation to learn about day and night. - Complete a research enquiry exploring theories for a flat Earth and a spherical Earth. 	<ul style="list-style-type: none"> - Practical activities/investigations. - Modelling - Knowledge organiser 	<ul style="list-style-type: none"> Continuous throughout. Observations. Discussions. Investigation. 	<p>Describing the Sun, Earth and Moon as approximately spherical bodies.</p> <p>Identifying scientific evidence that has been used to support or refute ideas or arguments.</p> <p>Describing the movement of the Earth, and other planets, relative to the Sun in the solar system.</p> <p>Using the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.</p> <p>Reporting and presenting findings from enquiries, including conclusions, in oral and written forms such as displays and other presentations.</p> <p>Describing the movement of the Moon relative to the Earth.</p>	<p>Islamic Studies – Allah created the solar system</p>
		Previous learning: By the end of KS1, children would have learnt about a range of materials and their properties, how they can be changed and what purposes they are suited to. In LKS2, children start to investigate the effects of heat on materials and their states of matter, including in the context of evaporation and the water cycle. They will also begin to explore electrical conductivity as they learn about electrical circuits.				Next learning: In year 6, children will dive deeper into the properties of materials as they explore topics such as Electricity and Light. They'll enhance their understanding of electrical circuits, including how to represent them using symbols in diagrams. Building on what they learnt about electrical conductors in previous years, they'll expand their thinking and apply this knowledge to their circuit investigations.	
5.3 Properties and Changes of Materials	6-8	<p>L1 - Classify and group materials by their properties, including hardness, transparency and magnetism.</p> <p>L2 - Compare and group various materials based on their properties of thermal insulation and suggest materials that would be suitable thermal insulators.</p> <p>L3 - Investigate whether materials are electrical conductors or insulators.</p> <p>L4 - Explore how some materials will dissolve in water and others will not.</p>	<ul style="list-style-type: none"> - Identify the properties of materials with regards to transparency, hardness and magnetism; suggest appropriate and inappropriate materials for a range of purposes, giving explanations as to why these materials are suitable or unsuitable. - Explain what an insulator and a conductor are; sort and classify materials by their thermal conduction properties and can refer to this when giving recommendations of materials to 	<ul style="list-style-type: none"> - Modelling - Practical activities/investigations. - Knowledge organiser 	<ul style="list-style-type: none"> Continuous throughout. Observations. Discussions/debates. Investigation. 	<p>Compare and group together everyday materials on the basis of their properties, including their hardness, transparency, response to magnets and thermal conductivity.</p> <p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</p>	<p>DT – materials</p>

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		<p>L5 - Use knowledge of the processes of magnetism, sieving, evaporation and filtration to separate a mixture of materials. L6 - Explain the differences between reversible and irreversible changes.</p>	<p>use for particular purposes.</p> <ul style="list-style-type: none"> - Explain what an electrical insulator and a conductor are; sort and classify materials by their electrical conduction properties and refer to this when giving recommendations of materials to use for particular purposes. - Describe the process of dissolving and explain how dissolving differs from melting; use the words 'solute', 'solvent' and 'solution' in their explanations. - Identify when to use magnetism, sieving, evaporation and filtration to separate a mixture of materials; use the processes with a good degree of competence. - Explain the differences between reversible and irreversible changes and identify some examples of each. <p>Working scientifically</p> <ul style="list-style-type: none"> - Plan an investigation to answer a question; identify variables that need to be controlled. - Identify which variables in an experiment are independent, dependent and controlled variables; explain how they will keep the controlled variables the same. - Explain how precise their results are and suggest improvements to their enquiry. - Explore and talk about their ideas and scientific experiences to raise enquiry questions about scientific phenomena. - Draw on their experiences of scientific methodology and past results to suggest how to approach further enquiries. - Create informative, labelled scientific diagrams to share the results of enquiries they have carried out. 			<p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</p> <p>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.</p> <p>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</p> <p>Using test results to make predictions to set up further comparative and fair tests.</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</p> <p>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>Previous learning: Y24– sort animals using classification keys/diagrams; invertebrates; characteristics of living things; dangers to wildlife in local/wider environment</p>			<p>Next learning: Y6 – reasons for animal classification; Linnaean classification system; characteristics and effects of microorganisms;</p>				
<p>5.4 Living Things and their Habitats</p>	<p>6-8</p>	<p>L1 – Describe how some plants reproduce. L2 – Describe how some plants reproduce. L3 - Describe the life cycles of different mammals. L4 – Explain what Jane Goodall discovered about chimpanzees. L5 – Compare the life cycles of amphibians</p>	<ul style="list-style-type: none"> - Explain the function of the parts of a flower. - Give two differences between sexual and asexual reproduction. - Identify the features of plants pollinated by insects or the wind. - Describe the stages of sexual reproduction. - Describe the differences between the three 	<ul style="list-style-type: none"> - Practical activities/investigations. - Modelling. - Knowledge 	<p>Continuous throughout.</p> <p>Observations.</p> <p>Discussions.</p>	<p>To describe the life process of reproduction in some plants and animals.</p> <p>To describe the life cycle of a mammal.</p> <p>To describe the differences in the life cycles of an amphibian, an insect and a bird.</p>	<p>RSHE –</p>

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		<p>and insects. L6 – Compare the life cycles of plants, mammals, amphibians, insects and birds.</p>	<p>types of mammals. - Give four facts about Jane Goodall. - Describe the stages of the life cycles of mammals, birds, insects and amphibians. - Identify similarities and differences between the life cycles of different plants and animals.</p> <p>Working scientifically</p> <p>- Take cuttings and observe their growth over time. - Sort flowers into groups of those that are pollinated by the wind and those that are pollinated by insects. - Sort statements into groups of advantages and disadvantages of sexual and asexual reproduction in plants.</p>	<p>organiser</p>	<p>Investigation.</p>		<p>reproduction</p> <p>Islamic Studies – Allah created plants/ animals</p>
<p>Previous learning: Y4 – digestive system; types and function of teeth; food chains</p>				<p>Next learning: Y6 – development of evolutionary theories; adaptation and evolution; selective and crossbreeding; circulatory system; water/nutrient transportation into body; healthy diet/exercise; impact of cigarettes; changes and hygiene during puberty</p>			
<p>5.5 Animals including Humans</p>	<p>3-5</p>	<p>L1 - Explain how babies grow and develop. L2 - Identify the changes that take place in old age. L3 - Describe the stages of human development.</p>	<p>- Explain how babies grow and develop into children. - Describe and explain the main changes that take place in old age. - Describe and explain the stages of human development.</p> <p>Working scientifically</p> <p>-- Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. - Report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.</p>	<p>- Practical activities/investigations. - Modelling. - Knowledge organiser</p>	<p>Continuous throughout. Observations. Discussions. Investigation.</p>	<p>Describe the changes as humans develop to old age. Record data and results of increasing complexity using bar and line graphs, and models. Reporting and presenting findings from enquiries, including causal relationships.</p>	<p>Islamic Studies – Allah created us RSHE – growing up</p>