



Rationale: The science curriculum will help children develop an inquisitive awe and a desire to enhance their basic scientific understanding about the biological and physical aspects of the world, and the processes through which they develop this knowledge and understanding. This will happen through making scientific enquiries, making observations and conducting simple experiments.

<p>Intent:</p> <p>At Zetland Primary, it is our intention to recognise the importance of science in every aspect of daily life. We give the teaching and learning of science the prominence it requires. The Scientific area of learning is concerned with increasing pupils' knowledge and understanding of our world, and with developing skills associated with science as a process of enquiry. It will develop the natural curiosity of the child, encourage respect for living organisms and the physical environment and provide opportunities for critical evaluation of evidence. We intend to build a science curriculum which develops learning and results in the acquisition of knowledge and build a science curriculum which, enables children to become enquiry-based learners.</p>	<p>Implementation:</p> <ul style="list-style-type: none"> • A clear and comprehensive scheme of work in line with the National Curriculum where teaching and learning should show progression across all key stages within the strands of science. • Children have access to key language and meanings in order to understand and readily apply to their written, mathematical and verbal communication of their skills. • Children will use a range of resources to develop their knowledge and understanding that is integral to their learning and develop their understanding of working scientifically. • Clear and comprehensive scheme of work in line with the National Curriculum where teaching and learning should plan for practical investigative opportunities within science lessons. • Children will reflect on previous learning and cross curricular links will be made wherever possible • Children will be able to build on prior knowledge and link ideas together, enabling them to question and become enquiry-based learners. • Attainment will be assessed each half term through related topic assessment tasks • Where applicable links to science will be made to develop the children's topical learning. • Teachers find opportunities to develop children's understanding of their surroundings by accessing outdoor learning and workshops with experts. • Through enrichment days, such as 'science week', we promote the profile of science and allow time for the children to freely explore scientific topics. 	<p>Impact:</p> <ul style="list-style-type: none"> • Most children will achieve age related expectations in science at the end of their cohort year. • Children will retain knowledge that is pertinent to science with a real-life context. • Children will be able to question ideas and reflect on knowledge. • Children will work collaboratively and practically to investigate and experiment. • Children will be able to explain the process they have taken and be able to reason scientifically.
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	EYFS Checkpoint	Y1/2 Cycle A		Y1/2 Cycle B		Y3/4 Cycle B	
Key Concepts:		Knowledge	Skills	Knowledge	Skills	Knowledge	Skills
Plants	I can plant seeds and know what plants need to grow. I can look after the plants. I know the life cycle of a plant.	I know the names of a variety of common wild and garden plants, including deciduous and evergreen trees.	I can label the basic parts of a plant. I can identify deciduous and evergreen trees during a spring walk. I can observe and describe how seeds and bulbs grow into mature plants.			I know how to investigate the way in which water is transported within plants. I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed	I can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. I can explore the requirements of plants for life and growth (air, light, water, nutrients from soil,



		<p>I know how to find out and describe how plants need water, sunlight and space.</p> <p>I know the names of a variety of common wild and garden plants, including deciduous and evergreen trees.</p>	I can classify plants into different groups.			formation and seed dispersal.	and room to grow) and how they vary from plant to plant.
Living Things and their Habitats	<p>I know that some environments are different to the one we live in.</p> <p>I can talk about some animals that live in hot and cold places.</p> <p>I know about the life cycles of frogs, butterflies and chicks.</p> <p>I understand the need to respect and care for the natural environment and all living things.</p> <p>Describe what they see, hear and feel outside.</p>			<p>I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p> <p>I understand that most living things live in habitats to which they are suited.</p> <p>I know how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.</p> <p>I can talk about some animals that live in hot and cold places.</p> <p>I can identify some minibeasts.</p>	<p>I can identify the different stages in the life cycles I have been taught.</p> <p>I can explore and compare the differences between things that are living, dead and have never been alive.</p> <p>I can identify and name a variety of plants and animals in their habitats, including microhabitats.</p>		
Uses of Everyday Materials	<p>I can talk about freezing and melting.</p> <p>I can sort materials that can sink and float.</p>			<p>I can identify and name the everyday materials.</p> <p>I can identify the physical properties of a variety of materials.</p> <p>I can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for different uses.</p>	<p>I can sort materials into groups.</p> <p>I can test the properties of materials.</p> <p>I can name the material an object is made from and why this is suitable.</p> <p>I can find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p> <p>I can compare how things move on different surfaces.</p>		



Seasonal Changes	I can observe the seasons and talk about the different times of year.	I can observe the seasonal changes and identify how they have changed.	I know how the weather and days change during the seasons.				
Electricity						<p>I can identify common appliances that run on electricity.</p> <p>I can construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</p> <p>I can show an understanding that when a switch opens and closes in a simple circuit this will affect whether or not a lamp will light.</p> <p>I can identify some common conductors and insulators.</p>	<p>I know symbols that represent particular parts of an electrical circuit.</p> <p>I know whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery.</p> <p>I know metals are good conductors of electricity.</p>
Light						<p>I recognise that I need light in order to see things and that dark is the absence of light.</p> <p>I know that light is reflected from surfaces</p> <p>I know that light from the sun can be dangerous and that there are ways to protect my eyes</p> <p>I know that shadows are formed when the light from a light source is blocked by a solid object.</p>	<p>I can find patterns in the way that the size of shadows change.</p>



Forces and Magnets						<p>I know that some forces need contact between 2 objects, but magnetic forces can act at a distance.</p> <p>I know magnets have 2 poles.</p>	<p>I can compare how things move on different surfaces.</p> <p>I can observe how magnets attract or repel each other and attract some materials and not others.</p> <p>I can compare and group together a variety of everyday materials based on whether they are attracted to a magnet and identify some magnetic materials.</p> <p>I can predict whether 2 magnets will attract or repel each other, depending on which poles are facing.</p>
Animals Including Humans	<p>I know the body parts of a human.</p> <p>I can use my senses appropriately.</p> <p>I can identify basic food groups and classify foods into these groups.</p>	<p>I know the body parts of a human.</p> <p>I know the 5 senses and which body part this is associated with.</p> <p>I know the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. I can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</p>	<p>I can classify animals.</p> <p>I can sort animals into herbivore, carnivores and omnivores.</p> <p>I know a variety of common animals that are herbivore, carnivore and omnivore.</p> <p>I know how animals obtain their food from plants and animals, using the idea of a simple food chain, and identify and name different sources of food.</p> <p>I can describe and compare the structure of a variety of animals from different groups.</p>	<p>I know that animals, including humans, have offspring which grow into adults.</p> <p>I know about and can describe the basic needs of animals, including humans, for survival (water, food and air)</p>	<p>I can identify some of the changes that occur as animals, including humans grow.</p>		
Working Scientifically	<p>I can use my senses in hands-on exploration of natural materials.</p> <p>I can explore collections of materials with similar</p>	<p>I know how to ask simple scientific questions.</p> <p>I know how to record and gather data.</p>	<p>I can observe simple experiments and use simple equipment to investigate.</p>	<p>I know how to ask simple scientific questions.</p> <p>I know how to record and gather data.</p>	<p>I can observe simple experiments and use simple equipment to investigate.</p>	<p>I can ask relevant questions and using different types of scientific enquiries to answer them.</p>	<p>I can make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using</p>



	<p>and/or different properties. I can talk about what I see, using a wide vocabulary. I can explore how things work including wind up toys and cogs. I can talk about freezing and melting. I can sort materials that can sink and float. I can explore and talk about different forces I can feel.</p>	<p>I can ask simple questions and recognising that they can be answered in different ways. I can use my observations and ideas to suggest answers to questions.</p>	<p>I can identify, sort and classify. I can observe closely, using simple equipment. I can perform simple tests. I can gather and record data to help in answering questions. I can identify and classify.</p>	<p>I can ask simple questions and recognising that they can be answered in different ways. I can use my observations and ideas to suggest answers to questions.</p>	<p>I can identify, sort and classify. I can observe closely, using simple equipment. I can perform simple tests. I can gather and record data to help in answering questions. I can identify and classify.</p>	<p>I know how to set up simple practical enquiries, comparative and fair tests. I know how to use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. I know how to identify differences, similarities or changes related to simple scientific ideas and processes. I know how to report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p>	<p>a range of equipment, including thermometers. I can gather recording, classifying and presenting data in a variety of ways to help in answering questions. I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. I can use straightforward scientific evidence to answer questions or to support findings.</p>
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		Y3/4 Cycle A		Y5/6 Cycle A		Y5/6 Cycle B	
Key Concepts							
		Knowledge	Skills	Knowledge	Skills	Knowledge	Skills
Rocks / Light		<p>I know that soils are made from rocks and organic matter.</p>	<p>I can compare and group together different kinds of rocks based on their appearance and simple physical properties. I can describe in simple terms how fossils are formed when things that have lived are trapped within rock.</p>			<p>I recognise that light appears to travel in straight lines. I can use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. I can explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>	<p>I can demonstrate using investigation that light travels in a straight line. I can create shadows and test materials to see which are effective in this. I can test the which materials are reflective and absorbent.</p>
Sound		<p>I can identify and find patterns between the pitch of a sound and features of the object that produced it. I can identify and find patterns between the volume of a sound and the</p>	<p>I know that vibrations from sounds travel through a medium to the ear. I know that sounds get fainter as the distance from the sound source increases.</p>				



		<p>strength of the vibrations that produced it.</p> <p>I can identify how sounds are made, associating some of them with something vibrating..</p>					
Electricity						<p>I can associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</p> <p>I can compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.</p>	<p>I can physically create and then use recognised symbols to represent a simple circuit in a diagram.</p> <p>I can investigate and explain how to change circuits using different components.</p>
States of Matter		<p>I can compare and group materials together, according to whether they are solids, liquids or gases.</p> <p>I can observe and measure or research the temperature at which some materials melt or freeze in degrees Celsius (°C).</p> <p>I can identify the part played by evaporation and condensation in the water cycle.</p>	<p>I know that some materials change state when they are heated or cooled.</p> <p>I know the rate of evaporation with temperature.</p>				



Properties and Changes of Materials				<p>I know that some materials will dissolve in liquid to form a solution, and I can describe how to recover a substance from a solution.</p> <p>I can give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</p> <p>I can demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>I can 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>I can 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>I can use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</p>		
Earth and Space				<p>I can describe the movement of the Earth, and other planets, relative to the Sun in the solar system.</p> <p>I can describe the movement of the Moon relative to the Earth.</p> <p>I can describe the Sun, Earth and Moon as approximately spherical bodies.</p>	<p>I can 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>I can explain why the Earth has seasons and the reasons why.</p>		
Forces				<p>I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>I can recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.</p>	<p>I can identify the effects of air resistance, water resistance and friction, that act between moving surfaces.</p>		



<p>Evolution</p>						<p>I know that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</p> <p>I recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p>	<p>I can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>
<p>Living Things and Their Habitats</p>		<p>I can recognise that living things can be grouped in a variety of ways.</p> <p>I can use classification keys to group a variety of living things in their local and wider environment.</p> <p>I can discuss and explain that environments can change and that this can sometimes pose dangers to living things.</p>		<p>I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p> <p>I can describe the life process of reproduction in some plants and animals.</p>	<p>I can identify the different stages of an insect/mammal/bird/amphibian's life cycle</p>	<p>I know how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals.</p>	<p>I can give reasons for classifying plants and animals based on specific characteristics.</p>
<p>Working Scientifically</p>	<p>I can ask relevant questions and using different types of scientific enquiries to answer them.</p> <p>I know how to set up simple practical enquiries, comparative and fair tests.</p> <p>I know how to use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</p> <p>I know how to identify differences, similarities or changes related to simple scientific ideas and processes.</p> <p>I know how to report on findings from enquiries, including oral and written explanations, displays or</p>	<p>I can make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers.</p> <p>I can gather recording, classifying and presenting data in a variety of ways to help in answering questions.</p> <p>I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>I can use straightforward scientific evidence to answer questions or to support findings.</p>	<p>I can ask relevant questions and using scientific language.</p> <p>I can set up simple practical enquiries, comparative and fair tests.</p> <p>I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>I can make systematic and careful observations.</p> <p>I can gather, record, classify and present data in a variety of ways to help in answering questions.</p> <p>I can use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</p>		<p>I can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</p> <p>I can take measurements, using a range of scientific equipment, with increasing accuracy and precision.</p> <p>I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs.</p> <p>I can use test results to make predictions to set up further comparative and fair tests.</p> <p>I can report and present findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations.</p>		<p>I can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</p> <p>I can take measurements, using a range of scientific equipment, with increasing accuracy and precision.</p> <p>I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs.</p> <p>I can use test results to make predictions to set up further comparative and fair tests.</p> <p>I can use simple models to describe scientific ideas.</p> <p>I can report and present findings from enquiries,</p>



	presentations of results and conclusions.		I can report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.		I can identify scientific evidence that has been used to support or refute ideas or arguments.		including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations. I can identify scientific evidence that has been used to support or refute ideas or arguments.
Animals Including Humans	<p>I know that humans and some other animals have skeletons and muscles for support, protection and movement.</p> <p>I know 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.</p>	<p>I can describe the simple functions of the basic parts of the digestive system in human.</p> <p>I can identify and name the different types of teeth in humans and their simple functions.</p> <p>I can construct and interpret a variety of food chains.</p> <p>I can identify and name producers, predators and prey.</p>	<p>I know the internal organs involved in the digestive system.</p> <p>I know the location of incisors, canines, pre-molars and molars.</p> <p>I know that food chains consist of a producer, predator and prey.</p> <p>I know environmental factors and human activity can affect the sustainability of food chains e.g. droughts, floods.</p>	I can describe the changes as humans develop to old age.		<p>I know how to identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</p> <p>I recognise the impact of diet, exercise, drugs and lifestyle on the way our bodies function.</p>	I can describe the ways in which nutrients and water are transported within animals, including humans.