

Greenway Science Progression Document

	Year 3	Year 4	Year 5	Year 6
Knowledge, Skills and Understanding breakdown for Working Scientifically				
Planning	<ul style="list-style-type: none"> •Use different ideas and suggest how to find something out •Make and record a prediction before testing •Plan a fair test and explain why it was fair •Set up a simple fair test to make comparisons •Explain why they need to collect information to answer a question 	<ul style="list-style-type: none"> •Set up a simple fair test to make comparisons •Plan a fair test and isolate variables, explaining why it was fair and which variables have been isolated •Suggest improvements and predictions •Decide which information needs to be collected and decide which is the best way for collecting it •Use their findings to draw a simple conclusion 	<ul style="list-style-type: none"> •Plan and carry out a scientific enquiry to answer questions, including recognising and controlling variables where necessary •Make a prediction with reasons •Use test results to make predictions to set up comparative and fair tests •Present a report of their findings through writing, display and presentation 	<ul style="list-style-type: none"> •Explore different ways to test an idea, choose the best way, and give reasons •Vary one factor whilst keeping the others the same in an experiment. Explain why they do this •Plan and carry out an investigation by controlling variables fairly and accurately •Make a prediction with reasons •Use information to help make a prediction •Use test results to make further predictions and set up further comparative tests •Explain, in simple terms, a scientific idea and what evidence supports it •Present a report of their findings through writing, display and presentation

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<p>Obtaining and presenting evidence</p>	<ul style="list-style-type: none"> • Measure using different equipment and units of measure • Record their observations in different ways, labelled diagrams, charts etc • Describe what they have found using scientific language • Make accurate measurements using standard units 	<ul style="list-style-type: none"> • Take measurements using different equipment and units of measure and record what they have found in a range of ways • Make accurate measurements using standard units • Explain their findings in different ways (display, presentation, writing) 	<ul style="list-style-type: none"> • Take measurements using a range of scientific equipment with increasing accuracy and precision • Take repeat readings when appropriate • Record more complex data and results using scientific diagrams, labels, classification keys, tables, scatter graphs, bar and line graphs 	<ul style="list-style-type: none"> • Explain why they have chosen specific equipment (incl ICT based equipment) • Decide which units of measurement they need to use • Explain why a measurement needs to be repeated • Record their measurements in different ways (incl bar charts, tables and line graphs) • Take measurements using a range of scientific equipment with increasing accuracy and precision
<p>Considering evidence and evaluating</p>	<ul style="list-style-type: none"> • Explain what they have found out and use their measurements to say whether it helps to answer their question • Use a range of equipment (including a data-logger) in a simple test 	<ul style="list-style-type: none"> • Find any patterns in their evidence or measurements • Make a prediction based on something they have found out • Evaluate what they have found using scientific language, drawings, labelled diagrams, bar charts and tables • Use straightforward scientific evidence to 	<ul style="list-style-type: none"> • Report and present findings from enquiries through written explanations and conclusions • Use a graph to answer scientific questions 	<ul style="list-style-type: none"> • Find a pattern from their data and explain what it shows • Use a graph to answer scientific questions • Link what they have found out to other science • Suggest how to improve their work and say why they think this • Record more complex data and results using scientific diagrams,

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		<p>answer questions or to support their findings</p> <ul style="list-style-type: none"> • Identify differences, similarities or changes related to simple scientific ideas or processes 		<p>classification keys, tables, bar charts, line graphs and models</p> <ul style="list-style-type: none"> • Report findings from investigations through written explanations and conclusions • Identify scientific evidence that has been used to support to refute ideas or arguments • Report and present 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
Challenging	<ul style="list-style-type: none"> • Record and present what they have found using scientific language, drawings, labelled diagrams, bar charts and tables • Explain their findings in different ways (display, presentation, writing) • Use their findings to draw a simple conclusion • Suggest improvements and predictions for further tests 	<ul style="list-style-type: none"> • Plan and carry out an investigation by controlling variables fairly and accurately • Use test results to make further predictions and set up further comparative tests • Record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models 	<ul style="list-style-type: none"> • Explore different ways to test an idea, choose the best way and give reasons • Vary one factor whilst keeping the others the same in an experiment • Use information to help make a prediction • Explain, in simple terms, a scientific idea and what evidence supports it • Decide which units of measurement they need 	<ul style="list-style-type: none"> • Choose the best way to answer a question • Use information from different sources to answer a question and plan an investigation • Make a prediction which links with other scientific knowledge • Identify the key factors when planning a fair test

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	<ul style="list-style-type: none"> •Suggest how to improve their work if they did it again 	<ul style="list-style-type: none"> •Report findings from investigations through written explanations and conclusions •Use a graph or diagram to answer scientific questions 	<p>to use</p> <ul style="list-style-type: none"> •Explain why a measurement needs to be repeated •Find a pattern from their data and explain what it shows •Can they link what they have found out to other science? •Suggest how to improve their work and say why they think this 	<ul style="list-style-type: none"> •Explain how a scientist has used their scientific understanding plus good ideas to have a breakthrough •Plan in advance which equipment they will need and use it well •Make precise measurements •Collect information in different ways •Record their measurements and observations systematically •Explain qualitative and quantitative data •Draw conclusions from their work •Link their conclusions to other scientific knowledge •Explain how they could improve their way of working
<p>Knowledge, Skills and Understanding breakdown for Plants and Animals, including Humans</p>	<ul style="list-style-type: none"> •Explain the importance of a nutritionally balanced diet •Describe how nutrients, 			

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	<p>water and oxygen are transported within animals and humans</p> <ul style="list-style-type: none"> •Identify that animals, including humans, cannot make their own food: they get nutrition from what they eat •Describe and explain the skeletal system of a human •Describe and explain the muscular system of a human 			
<p>Plants</p>	<ul style="list-style-type: none"> •Identify and describe the functions of different parts of flowering plants (roots, stem/trunk, leaves and flowers) •Explore the requirement of plants for life and growth (air, light, water, nutrients from soil, and room to grow) •Explain how they vary from plant to plant •Investigate the way in which water is transported within plants •Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal 			

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<p>Challenging</p>	<ul style="list-style-type: none"> •Explain how the muscular and skeletal systems work together to create movement •Classify living things and non-living things by a number of characteristics that they have thought of •Explain how people, weather and the environment can affect living things •Explain how certain living things depend on one another to survive •Classify a range of common plants according to many criteria (environment found, size, climate required, etc.) 			
<p>Knowledge, Skills and Understanding breakdown for Rocks</p>	<ul style="list-style-type: none"> •Compare and group together different rocks on the basis of their appearance and simple physical properties •Describe and explain how different rocks can be useful to us •Describe and explain the differences between sedimentary and igneous rocks, considering the way 			

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	<p>they are formed</p> <ul style="list-style-type: none"> •Describe in simple terms how fossils are formed when things that have lived are trapped within rock •Recognise that soils are made from rocks and organic matter 			
<p>Challenging</p>	<ul style="list-style-type: none"> •Classify igneous and sedimentary rocks •Begin to relate the properties of rocks with their uses 			
<p>Knowledge, Skills and Understanding breakdown for Light, Forces and Magnets</p>				
<p>Forces and Magnets</p>	<ul style="list-style-type: none"> •Compare how things move on different surfaces •Observe that magnetic forces can be transmitted without direct contact •Observe how some magnets attract or repel each other •Classify which materials are attracted to magnets and which are not •Notice that some forces need contact between 			

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	<p>two objects, but magnetic forces can act at a distance?</p> <ul style="list-style-type: none">• Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet• Identify some magnetic materials• Describe magnets have having two poles (N & S)• Predict whether two magnets will attract or repel each other depending on which poles are facing			
Challenging	<ul style="list-style-type: none">• Investigate the strengths of different magnets and find fair ways to compare them			
Light	<ul style="list-style-type: none">• Recognise that they need light in order to see things• Recognise that dark is the absence of light• Notice that light is reflected from surfaces• Recognise that light from the sun can be dangerous and that there are ways to protect their eyes			

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	<ul style="list-style-type: none"> •Recognise that shadows are formed when the light from a light source is blocked by a solid object •Find patterns in the way that the size of shadows change 			
Challenging	<ul style="list-style-type: none"> •Explain why lights need to be bright or dimmer according to need •Explain the difference between transparent, translucent and opaque •Explain why lights need to be bright or dimmer according to need •Make a bulb go on and off •They say what happens to the electricity when more batteries are added •Explain why their shadow changes when the light source is moved closer or further from the object 			
Knowledge, Skills and Understanding breakdown for Living things, their Habitats and Animals, including humans				
Animals including humans		<ul style="list-style-type: none"> •Identify and name the basic parts of the 	<ul style="list-style-type: none"> •Describe the changes as humans develop to old 	<ul style="list-style-type: none"> •Identify and name the main parts of the human

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		<p>digestive system in humans</p> <ul style="list-style-type: none"> •Describe the simple functions of the basic parts of the digestive system in humans •Identify the simple function of different types of teeth in humans •Compare the teeth of herbivores and carnivores •Explain what a simple food chain shows •Construct and interpret a variety of food chains, identifying producers, predators and prey 	<p>age</p>	<p>circulatory system, and describe the functions of the heart, blood vessels and blood</p> <ul style="list-style-type: none"> •Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function •Describe the ways in which nutrients and water are transported within animals, including humans
<p>Challenging</p>		<ul style="list-style-type: none"> •Classify living things and non-living things by a number of characteristics that they have thought of •Explain how people, weather and the environment can affect living things •Can they explain how certain living things depend on one another to survive 	<ul style="list-style-type: none"> •Classify igneous and sedimentary rocks •Begin to relate the properties of rocks with their uses •Create a time line to indicate stages of growth in certain animals, such as frogs and butterflies •Describe the changes experienced in puberty •Draw a timeline to indicate stages in the growth and development of humans 	<ul style="list-style-type: none"> •Explore the work of medical pioneers ,for example, William Harvey and Galen and recognise how much we have learnt about our bodies •Compare the organ systems of humans to other animals •Make a diagram of the human body and explain how different parts work and depend on one another •Name the major organs in the human body •Locate the major human

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				<p>organs</p> <ul style="list-style-type: none"> •Make a diagram that outlines the main parts of a body
Living things and their habitats		<ul style="list-style-type: none"> •Recognise that living things can be grouped in a variety of ways •Explore and use a classification key to group, identify and name a variety of living things? (plants, vertebrates, invertebrates) •Compare the classification of common plants and animals to living things found in other places (under the sea, prehistoric) •Do they recognise that environments can change and this can sometimes pose a danger to living things? 	<ul style="list-style-type: none"> •Describe the differences in the life cycles of a mammal, an amphibians, an insects and a bird •Describe the life cycles of common plants •Explore the work of well know naturalists and animal behaviourists (David Attenboroughand Jane Goodall) 	<ul style="list-style-type: none"> •Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences including microorganisms, plants and animals •Give reasons for classifying plants and animals based on specific characteristics?
Challenging		<ul style="list-style-type: none"> •Give reasons for how they have classified animals and plants, using their characteristics and how they are suited to their environment •Explore the work of pioneers in classification 	<ul style="list-style-type: none"> •Observe their local environment and draw conclusions about life-cycles, e.g. plants in the vegetable garden or flower border •Compare the life cycles of plants and animals in 	<ul style="list-style-type: none"> •Explain why classification is important •Readily group animals into reptiles, fish, amphibians, birds and mammals •Sub divide their original groupings and explain

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		<p>(e.g. Carl Linnaeus)</p> <ul style="list-style-type: none"> •Name and group a variety of living things based on feeding patterns? (producer, consumer, predator, prey, herbivore, carnivore, omnivore) 	<p>their local environment with the life cycles of those around the world, e.g. rainforests</p>	<p>their divisions</p> <ul style="list-style-type: none"> •Group animals into vertebrates and invertebrates •Find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification
Knowledge, Skills and Understanding breakdown for States of Matter				
States of Matter		<ul style="list-style-type: none"> •Compare and group materials together, according to whether they are solids, liquids or gases •Explain what happens to materials when they are heated or cooled •Measure or research the temperature at which different materials change state in degrees Celsius <p>Use measurements to explain changes to the state of water</p> <ul style="list-style-type: none"> •Identify the part that evaporation and condensation has in the water cycle •Associate the rate of evaporation with temperature 		

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Challenging		<ul style="list-style-type: none"> •Group and classify a variety of materials according to the impact of temperature on them •Explain what happens over time to materials such as puddles on the playground or washing hanging on the line •Relate temperature to change of state of materials 		
Knowledge, Skills and Understanding breakdown for Sound and Electricity				
Sound		<ul style="list-style-type: none"> •Describe a range of sounds and explain how they are made •Associate some sounds with something vibrating •Compare sources of sound and explain how the sounds differ •Explain how to change a sound (louder/softer) •Recognise how vibrations from sound travel through a medium to a ear •Find patterns between 		

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		<p>the pitch of a sound and features of the object that produce it</p> <ul style="list-style-type: none"> •Find patterns between the volume of the sound and the strength of the vibrations that produced it •Recognise that sounds get fainter as the distance from the sound source increases •Explain how you could change the pitch of a sound •Investigate how different materials can affect the pitch and volume of sounds 		
Electricity		<ul style="list-style-type: none"> •Identify common appliances that run on electricity •Construct a simple series electric circuit •Identify and name the basic part in a series circuit, including cells, wires, bulbs, switches and buzzers •Identify 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 		<ul style="list-style-type: none"> •Identify and name the basic parts of a simple electric series circuit (cells, wires, bulbs, switches, buzzers) •Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers, the on/off position of switches •Use recognised symbols when representing a simple circuit in a

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		<p>with a battery</p> <ul style="list-style-type: none"> •Recognise that a switch opens and closes a circuit •Associate a switch opening with whether or not a lamp lights in a simple series circuit •Recognise some common conductors and insulators •Associate metals with being good conductors 		<p>diagram</p>
<p>Challenging</p>		<ul style="list-style-type: none"> •Explain why sound gets fainter or louder according to the distance •Explain how pitch and volume can be changed in a variety of ways •Work out which materials give the best insulation for sound •Explain how a bulb might get lighter <p>Recognise if all the materials are conductors of electricity</p> <ul style="list-style-type: none"> •Work out which metals can be used to connect a gap in a circuit •Explain why cautions are necessary for working safely with electricity 		<ul style="list-style-type: none"> •Make their own traffic light system or something similar •Explain the danger of short circuits •Explain what a fuse is •Explain how to make changes in a circuit •Explain the impact of changes in a circuit •Explain the effect of changing the voltage of a battery

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<p>Knowledge, Skills and Understanding breakdown for Properties and Changes to Materials</p>				
<p>Properties and Changes to material breakdown</p>			<ul style="list-style-type: none"> • Compare and group together everyday materials on the basis of their properties, including hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets • Explain how some materials dissolve in liquid to form a solution • Use their knowledge of solids, liquids and gases to decide how mixtures might be separated; including sieving, evaporating • Give reasons, based on evidence for comparative and fair tests for the particular uses of everyday materials, including metals, wood and plastics • Describe changes using scientific words (evaporation, condensation) <p>Demonstrate that dissolving, mixing and changes of state are</p>	

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			<p>reversible changes</p> <ul style="list-style-type: none"> • 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 • Use the terms reversible and irreversible 	
<p>Challenging</p>			<ul style="list-style-type: none"> • Describe methods for separating mixtures (filtering, distillation) • Work out which materials are most effective for keeping us warm or for keeping something cold • Use their knowledge of materials to suggest ways to classify (Solids, Liquids, gases) • Explore changes that are difficult to reverse, e.g. burning, rusting and reactions such as vinegar with bicarbonate of soda • Explore the work of chemists who created new materials, e.g. Spencer silver (glue on sticky notes) or Ruth Benerito (wrinkle free cotton) 	

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Knowledge, Skills and Understanding breakdown for Earth, Space and Forces				
Earth and Space			<ul style="list-style-type: none"> •Identify and explain the movement of the Earth and other planets relative to the sun in the solar system •Explain how seasons and the associated weather is created •Describe and explain the movement of the Moon relative to the Earth •Describe the sun, earth and moon as approximately spherical bodies •Use the idea of the earth's rotation to explain day and night and the apparent movement of the sun across the sky 	
Challenging			<ul style="list-style-type: none"> •Compare the time of day at different places on the earth •Create shadow clocks •Begin to understand how older civilizations used the sun to create astronomical clocks, e.g. Stonehenge •Explore the work of some 	

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			scientists (Ptolemy, Alhazen, Copernicus)	
Forces			<ul style="list-style-type: none"> • Explain that unsupported objects fall towards the earth because of the force of gravity acting between the earth and the falling object • Identify the effects of air resistance, water resistance and friction that act between moving surfaces • Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect 	
Challenging			<ul style="list-style-type: none"> • Describe and explain how motion is affected by forces (including gravitational attractions, magnetic attraction and friction) • Design very effective parachutes • Work out how water can cause resistance to floating objects • Explore how scientists, such as Galileo Galilei 	

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			and Isaac Newton helped to develop the theory of gravitation	
Evolution and Inheritance				<ul style="list-style-type: none"> •Recognise that living things have changed over time and that fossils provide information about living things that inhabited the earth millions of years ago •Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents •Give reasons why offspring are not identical to each other or to their parents •Explain the process of evolution and describe the evidence for this •Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution
Challenging				<ul style="list-style-type: none"> •Talk about the work of Charles Darwin, Mary Anning and Alfred

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				<p>Wallace</p> <ul style="list-style-type: none"> •Can they explain how some living things adapt to survive in extreme conditions •Analyse the advantages and disadvantages of specific adaptations, such as being on two rather than four feet •Begin to understand what is meant by DNA
Knowledge, Skills and Understanding breakdown for Light and Electrically				
Planning				
Electricity				
Light				<ul style="list-style-type: none"> •Recognise that light appears to travel in straight lines •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 •Explain that we see things because light travels from light sources to our eyes or from light

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				<p>sources to objects and then to our eyes</p> <ul style="list-style-type: none"> • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them
Challenging				<ul style="list-style-type: none"> • Explain how different colours of light can be created • Use and explain how simple optical instruments work (periscope, telescope, binoculars, mirror, magnifying glass, Newton's first reflecting telescope) • Explore a range of phenomena, including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters
Let's go round again topic – revision of KS2 science curriculum				Revision of the KS2 science curriculum