

Year 5 Programme of Study for Science

Super scientists			
Working Scientifically NC Statutory Learning Objectives	<ul style="list-style-type: none"> To plan different types of scientific enquires to answer questions, including recognising and controlling variables where necessary. To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. To use test results to make prediction to set up further comparative and fair tests. To 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. To identify scientific evidence that has been used to support or refute ideas or arguments. 		
Unit 6.How do scientists work?			
NC Statutory Learning Objectives	<ul style="list-style-type: none"> To describe what a scientist is and the different ways in which they work. To describe the discoveries of some famous scientists, 	Success criteria	<ul style="list-style-type: none"> I can describe five ways in which scientists work.. I can name five famous scientists and say what they are famous for. I can use search engines to find out information.
Scientific language		Scientist, timeline, analyse, pattern, survey, classified, fair test	
What is a scientist? page 86		Quick challenges	Ask the children to draw a scientist and discuss their ideas. Play the interactive game 'Who does what'.
Whole class learning Explain to the children that there are many different kinds of scientist who work in different ways and that they are going to research some of their methods.		<ol style="list-style-type: none"> 1. Children complete one of the investigations to find the answer to the question, considering the method they used. 2. Children research how different scientist work. 3. They chose a scientist to research and create a 'day in the life' storyboard. 	
Discoveries page 87		Quick challenges	Discuss what it means to discover something. Tell the children about the discovery of the drug penicillin and how the world would be without it.
Whole class learning Challenge the children to think about what is still left to discover. Make a big list.		<ol style="list-style-type: none"> 1. Children research some of the most famous scientists or discoveries and create a timeline about them. 	

Unit 6.2 Crime solvers

NC Statutory Learning Objectives	<ul style="list-style-type: none"> To carry out some forensic tests. To use forensic tests to solve crime. 	Success criteria	<ul style="list-style-type: none"> I can name five different forensic tests. I can explain how forensic tests help provide evidence to solve crime, I can explain why DNA analysis is such a good way of solving crime.
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Scientific language	Forensic, fingerprint, chromatography, microscope, DNA, evidence
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Forensic techniques page 90	Quick challenges	Challenge the children to say what they think a forensic scientist is and how they work.
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Whole class learning Show the children the YouTube clip, explaining how forensic scientist are trained in fingerprint work. Look at different fingerprint patterns and how these make every person's fingerprint unique.	<ol style="list-style-type: none"> 1. In pairs, children consider other evidence that might be collected and how this could be done. 2. Children learn some basic forensic science techniques. 3. Children use these skills to identify a member of staff.
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A crime in school page 91	Quick challenges	Play a game which helps children see how forensic scientist can collect and use evidence to solve a crime.
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Whole class learning Explain that a laptop computer has been stolen from class but the thief has left some clues behind, Set up a crime scene in school, putting pretend police tape around the doors and including a shoe print, fingerprint, clothes fibres, hand writing and teeth marks on a piece of cheese.	<ol style="list-style-type: none"> 1. In groups, children enter the room carefully and use evidence to identify the criminal. 2. Challenge children to make their own crime scenes to be solved. 3. Debate the use of DNA evidence.
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Unit 6.3 Spread the word

Learning Objectives	<ul style="list-style-type: none"> To identify and choose good ways of letting others know about science in the news. To plan and organise a science fair. 	Success criteria	<ul style="list-style-type: none"> I can seek out and write a high quality news story. I can publish a scientific blog. I can help plan and organise a science fair.
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Scientific language	Debate, blog, news, science fair
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Science in the news page 94	Quick challenges	Show children a variety of headlines from newspapers and sort them into
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		scientific and those that are not. Write a headline for a short piece of science news.
Whole class learning Pick an article off the web or local newspaper. Explain that they are going to write some pieces of science news for other pupils.	<ol style="list-style-type: none"> 1. Children write science news in a variety of ways, blog, newspaper, slideshow etc. 2. Children become reporters and report local science news. 	
Science for all page 95	Quick challenges	Watch YouTube clip 'United Evergreen Primary School holds a Science Fair' and 'Zak's first science fair project'
Whole class learning Explain to the children they are going to put on a science fair to spread the work of science. Discuss the various ways they might do this and what is involved. Make it into a competition with a prize for the best project.	<ol style="list-style-type: none"> 1. In groups, the children decide what they will include in their science event, research experiments and select resources needed, testing they work. They complete their science fair and discuss how it went. 	
End of topic assessment	Children to all complete the activity 'Super scientists' test to assess knowledge.	

Material world

Working Scientifically NC Statutory Learning Objectives	<ul style="list-style-type: none"> • To plan different types of scientific enquires to answer questions, including recognising and controlling variables where necessary. • To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. • To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • To use test results to make prediction to set up further comparative and fair tests. • To 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. • To identify scientific evidence that has been used to support or refute ideas or arguments. 		
Unit 2.1 Why materials matter			
NC Statutory Learning Objectives	<ul style="list-style-type: none"> • To compare and group together everyday materials on the basis of their properties, including their hardness, solubility, 	Success criteria	<ul style="list-style-type: none"> • I can compare the properties of a range of materials. • I can plan comparative and fair tests,

	<p>transparency, conductivity (electrical and thermal), and response to magnets.</p> <ul style="list-style-type: none"> To give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. 		<p>collecting accurate results.</p> <ul style="list-style-type: none"> I can draw on the results of my tests to explain why some materials are used.
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Scientific language	Hard, tough, strong, rigid, elastic, plastic, flexible, electrical conductor, thermal conductor		
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Why that material? page 22	Quick challenges	Carry out a survey around school to find where different materials have been used. Look at the materials of things to wash up.	
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<p>Whole class learning</p> <p>Present the children with a collection of materials and ask them to discuss their properties, including any similarities and differences. Ask them to think why that material has been used.</p>	<p>4. Children investigate materials to find out one of the following:</p> <p>Which is the bounciest ball? Which is the hardest material? Which is the best moppper-upper? Which is the best packaging material? Which is the best elastic band or stretchiest material?</p> <p>2. Children explore a new material for garden fence and a carrier bag. Thinking of tests they could do to test it was fit for purpose.</p>		
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Foamy fun page 24	Quick challenges	Put ivory soap in microwave for 2 minutes and see if children can explain why it has expanded. Demonstrate elephant soap.	
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<p>Whole class learning</p> <p>Talk about what foams are and what different ones have in common. Show the children some unusual foams where the bubbles of gas are in solid form. Demonstrate the insulation properties of foam.</p>	<p>2. Children explore a variety of foams.</p> <p>3. In groups, they explore the best foam to stop ice cream from melting..</p>		
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Unit 2.2 Solutions

<p>NC Statutory Learning Objectives</p>	<ul style="list-style-type: none"> To know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. To use knowledge of solids, liquids and gases to describe how to recover a substance from a solution. 	<p>Success criteria</p>	<ul style="list-style-type: none"> I can identify some factors that affect dissolving. I can describe different ways to separate mixtures. I can use scientific language and ideas to explain dissolving and separation.
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Scientific language		Solution, solute, solvent, dissolve, evaporate, mixture, soluble, insoluble, filter	
Going, going, gone! page 28		Quick challenges	Drop polystyrene 'peanuts' into water and watch them dissolve. Give the children a range of solids to mix with different liquids and record what happens.
Whole class learning Discuss with the children what has happened to the solid and whether it has disappeared.		<ol style="list-style-type: none"> 2. In groups, children quickly find out which factors affect dissolving. 3. They use their findings to find the fastest way to dissolve jelly. 4. Children prepare for growing crystals. 	
Mix it up page 30		Quick challenges	Show the children mixtures and ask them how we could separate the different bits. Show Tigtag video on filtration.
Whole class learning Explain that the holes in even fine sieves can be too big to separate some mixtures. Look at some filters so see if you can see tiny holes. Revise evaporation.		<ol style="list-style-type: none"> 4. In pairs, they filter chalky water and salt solution. 5. Children use knowledge gained and research to plan how to do one of the following: Extract some sugar out of sugar beet or starch from potatoes. Extract drinking water from dirty water. Try to make tea powder. 	
Unit 2.3 Making changes			
Learning Objectives	<ul style="list-style-type: none"> • To demonstrate that dissolving, mixing and changes of state are reversible changes. • To 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. 	Success criteria	<ul style="list-style-type: none"> • I can explore reversible and irreversible changes. • I can explain the difference between changes in materials. • I can decide the best way to present my findings and evidence.
Scientific language		Reversible/physical change, irreversible/chemical change, burning	
Signs of change page 34		Quick challenges	Show children the clip of mercury reacting with heat. Make pencil crayons.
Whole class learning Explain that some changes are not permanent and we can get back what we started with. Explain that they are going to carry out some experiments that will help them to know if a chemical change		<ol style="list-style-type: none"> 3. Children closely observe a solid dissolving. 4. In pairs they carry out experiments which show: Sometimes gas is produced Sometimes heat is given out A solid might be formed A colour change might happen 	

has happened.	<p>A smell may be produced They decide which way to present their findings.</p> <p>5. In groups, children sort processes into reversible/irreversible.</p>	
Goopy materials page 36	Quick challenges	Demonstrate adding lots of Mentos to a bottle of diet coke. Put water on nappy crystals then add salt observing what happens.
<p>Whole class learning Explain that Potty Putty was invented in the 1950s by accident. Explain that they are going to make a similar material and give them instructions.</p>	<p>2. Children create their own 'flubber' and discuss its properties. 3. They make a mystery material present their findings in a creative way.</p>	
End of topic assessment	Children to all complete the activity 'Material World' topic test to assess knowledge.	

Let's get moving

<p>Working Scientifically NC Statutory Learning Objectives</p>	<ul style="list-style-type: none"> • To plan different types of scientific enquires to answer questions, including recognising and controlling variables where necessary. • To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. • To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • To use test results to make prediction to set up further comparative and fair tests. • To 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. • To identify scientific evidence that has been used to support or refute ideas or arguments. 		
Unit 4.1 Forces of nature			
<p>NC Statutory Learning Objectives</p>	<ul style="list-style-type: none"> • To explain some of the effects of gravity. • To plan, carry out and explain fair tests. 	<p>Success criteria</p>	<ul style="list-style-type: none"> • I can explain what makes objects fall to the Earth. • I can plan a fair test to find out how well different objects fall. • I can extend my investigation and tests as a result of my observations.
Scientific language		Gravity, weight, newton, non-contact, Isaac Newton, Galileo	
Down we go page 58	Quick challenges	Show them three different balls of about the same size but of different weight and ask them what would happen if you dropped them from the same height. Demonstrate.	

Whole class learning Discuss in detail the ideas about gravity. Explain that something is pulling the balls down towards the centre of the Earth and this is a force called gravity. Tell the children all about Galileo's experiment at Pisa. Discuss how the force meter measures the force (weight) in units called newtons. Look at which way things are pulled to the Earth. Discuss the gravity on the Moon.		5. Children weigh a collection of objects using a force meter and record their results in a table. 6. Children complete 'How does gravity act?' 7. In pairs, the children research the contributions that Galileo and Isaac Newton made to the discovery of gravity and write newspaper articles about the scientists.	
Falling objects page 59		Quick challenges	Children run across the playground holding a large piece of card and explain what is happening. They then discuss what they know about friction.
Whole class learning Discuss the concept of air resistance as a force that slows down objects as they move through the air.		4. Children use drawings to explain the forces acting on kites or sails. 5. They investigate how different objects fall 6. They investigate different designs of parachute.	
Unit 4.2 It's a drag!			
NC Statutory Learning Objectives	<ul style="list-style-type: none"> To observe a variety of forces that slow things down. To set up, carry out and make sense of a variety of investigations. 	Success criteria	<ul style="list-style-type: none"> I can plan a fair test to investigate friction and water resistance. I can make some detailed observations and present them clearly. I can come up with a sensible conclusion.
Scientific language		Friction, air resistance, water resistance, force meter, reliable	
Rubbing together page 62		Quick challenges	Roll tins along the floor asking the children to guess what might happen. Discuss why they move at different speeds.
Whole class learning Bring your bike into school and discuss how it would slow down if there was friction between the tyres and the road or brakes and the wheel rims. Explain what causes friction and slows down moving objects.		5. In groups, children investigate one of the following: How non-stick a cooking pan is? Which surfaces objects slide most easily on? How much force is needed to pull a trainer across the floor? 2. Children investigate moving jelly cubes with chopsticks and compare when sunflower oil is added. 3. Play 'Forces in action' game.	

<u>Water resistance</u> page 63	Quick challenges	Watch the BBC clip the force of water and discuss the concept of water resistance.
Whole class learning Show the children a tall cylinder full of water. Ask them what they could do with this and a small piece of plasticine, to find out which shape moves most easily through water, Show them some photos of ships and submarines of different shapes and discuss the key features that have helped streamline them.	6. In groups, they investigate which shape travels through water the easiest using a fair test and recording data.	
Unit 4.3 Magnificent machines		
Learning Objectives	<ul style="list-style-type: none"> • To be able to explain how levers, pulleys, springs and gears transfer force and motion. • To design and make machines that use levers, pulleys, springs and gears. 	Success criteria <ul style="list-style-type: none"> • I can explain how levers, springs, pulleys and gears transmit force and motion. • I can make some simple machines. • I can design and make a Rube Goldberg machine containing at least four different simple machines.
Scientific language	Lever, spring, gear, pulley	
<u>Simple machines</u> page 66	Quick challenges	Watch the YouTube clip 'Simple Machines Song' and the TigTag video 'Cycling to school'. Discuss how gears work.
Whole class learning Show the children an example of a machine with a lever, pulley, spring or gear. Use talking partners to discuss how they work.	6. Children sort everyday objects into those that have a lever, pulley, spring or gear. 7. Children make a variety of these machines out of everyday items. 8. Use interactive resource 'Sorting machines'.	
<u>Make a machine</u> page 67	Quick challenges	Show the children the Honda Cog advert and ask them to spot as many simple machines as they can.
Whole class learning Give children a drawing of a Rube Goldberg machine and ask them to go through it step by step, explaining how it works and identifying the simple	4. In groups, the children make their own Rube Goldberg machine.	

machines it contains. Watch YouTube clips which show some Rube Goldberg machines built by primary schools.	
End of topic assessment	Children to all complete the activity 'Let's get moving topic' topic test to assess knowledge.

Cycle of life

<p>Working Scientifically NC Statutory Learning Objectives</p>	<ul style="list-style-type: none"> • To plan different types of scientific enquires to answer questions, including recognising and controlling variables where necessary. • To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. • To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • To use test results to make prediction to set up further comparative and fair tests. • To 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. • To identify scientific evidence that has been used to support or refute ideas or arguments.
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Unit 3.1 Make new plants

<p>NC Statutory Learning Objectives</p>	<ul style="list-style-type: none"> • Describe the life processes of reproduction in some plants. • Take measurements and present findings from enquiries. 	<p>Success criteria</p>	<ul style="list-style-type: none"> • I can explain how plants reproduce. • I can explain how new plants can be grown from cuttings and bulbs. • I can take measurements and present my findings.
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Scientific language	Bulb, pollination, fertilisation, sexual reproduction, asexual reproduction
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Making new plants page 42	Quick challenges	Watch the 'Life cycle of a dandelion video and read about how the Methuselah plant seed is able to survive so long.
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<p>Whole class learning Either take photos of plants changing over a year or watch youtube video - One year in 90 seconds showing the changes over time. Explain the role of pollen and eggs in the pollination process.</p>	<ol style="list-style-type: none"> 1. In groups, plant broad bean seeds and make regular observations over the next few months. Recording height, number/size of leaves and labelling drawings. 2. Make a video animation of the life cycle of a plant or draw it as a comic strip.
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Taking plant cuttings page 43	Quick challenges	Watch 'Bulbs' and discuss why are important to some plants. Set up and grow some carrot top plants.
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Whole class learning	7. Children plant the old potatoes, new spider plants and stems.
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<p>Show the children plants such as strawberry plants with runners or spider plants growing new plants. Look at old potatoes that have started sprouting and some bulbs. Explain that some plant stems can grow roots if they are planted. Ask the children what would happen if they planted all of these things.</p>	<p>8. Children plan their own vegetable patch/wildlife garden on paper or the computer.</p>
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Unit 3.2 Animal behaviour

<p>NC Statutory Learning Objectives</p>	<ul style="list-style-type: none"> • To explain the differences in the life cycles of a mammal, an amphibian, an insect and a bird. • To report and present findings from enquiries. 	<p>Success criteria</p>	<ul style="list-style-type: none"> • I can describe the differences in the life cycles of different animals. • I can explain the differences between the life cycles of different animals. • I can report and present my findings from enquiries.
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<p>Scientific language</p>	<p>Larva, Gestation, Metamorphosis</p>
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<p><u>Metamorphosis</u> page 46</p>	<p>Quick challenges</p>	<p>Watch the Tigtag video 'Fairy Wasp' and discuss the link between a caterpillar and a butterfly.</p>
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<p>Whole class learning Discuss the lifecycle of a butterfly. Watch the video about frogs and discuss this lifecycle. Act out the lifecycles of both, thinking about how differently they would move at each stage. If possible observe first hand.</p>	<p>6. In groups, children find out about the life cycle of butterflies and frogs. 7. They compare the life cycles using a Venn diagram to show differences and similarities.</p>
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<p><u>What came first?</u> page 47</p>	<p>Quick challenges</p>	<p>Show children a chicken egg and discuss where it came from and what it will turn into.</p>
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<p>Whole class learning Show the children images of the different stages of a chicken's life cycle. If possible hire an egg incubator and hatch eggs yourself or watch on bird nest webcams.</p>	<p>7. In pairs, discuss the life cycle of a familiar pet mammal and draw a diagram of its life cycle using images from the internet. 8. Compare the life cycle of a mammal to that of a bird, making a table of differences and similarities. 9. Find out about David Attenborough and produce a report about his life work.</p>
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Unit 3.3 Making babies

Learning Objectives	<ul style="list-style-type: none"> • To describe the life process of reproduction in some animals. • To report and present findings from enquiries. 	Success criteria	<ul style="list-style-type: none"> • I can describe the process of reproduction in some animals. • I can report and present my findings from enquiries.
Scientific language	Sperm, fertilisation, internal fertilisation, external fertilisation		
Finding a mate page 50	Quick challenges	Watch the video of the superb bird of paradise attracting a mate and discuss the courtship displays of other animals.	
Whole class learning Remind the children about pollen and eggs in plants. Explain that male animals make sperm, females make eggs. When sperm meets an egg, it fertilises it. In many animals this happens outside of the body. Watch the video of coral.	<ol style="list-style-type: none"> 9. Investigate why some animals release lots of sperm and eggs, modelling with bird seed and plastic cups. 10. In groups, children research different animals to find out whether fertilisation happens outside the body or inside and how many offspring they produce at a time. 11. As a class, discuss the advantages and disadvantages of having one baby or hundreds of babies. 		
Endangered animals page 51	Quick challenges	Show the photo slideshow of different animals and discuss, Discuss the meaning of the word extinct and list any extinct animals the children know.	
Whole class learning Create a spider diagram of some of the reasons why animals may become extinct. Discuss any reasons they hadn't thought of. Discuss why zoos are important for looking after endangered animals and ways they carry out breeding.	<ol style="list-style-type: none"> 5. In pairs, they research four different endangered animals such as Sumatran Rhinoceros, and complete the Endangered Animals information sheet.. 6. They choose an animal to produce campaign materials that give information about the animal and why we should save it. 7. In pairs, find out about Jane Goodall and produce a presentation about her life work. 		
End of topic assessment	Children to all complete the activity 'Cycle of life' topic test to assess knowledge.		

Out of this world

<p>Working Scientifically NC Statutory Learning Objectives</p>	<ul style="list-style-type: none"> To plan different types of scientific enquires to answer questions, including recognising and controlling variables where necessary. To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. To use test results to make prediction to set up further comparative and fair tests. To 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. To identify scientific evidence that has been used to support or refute ideas or arguments.
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Unit 1.1 The Solar System

<p>NC Statutory Learning Objectives</p>	<ul style="list-style-type: none"> To learn how the planets in our Solar System are organised. To describe the movement of the Earth, and other planets, relative to the Sun in the solar system. To use mathematics to model the dimensions of our Solar System. 	<p>Success criteria</p>	<ul style="list-style-type: none"> I can explain what the Solar System is. I can name the eight planets in the Solar System in order of their distance away from the Sun. I can use my maths accurately to make a model of our Solar System.
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Scientific language	Solar System, Sun, Star, Planet		
<u>What's in our Solar System?</u> page 8	Quick challenges	Show them the Solar System song and listen to 'The Planets Suite' by Hoist.	
Whole class learning Explain to the children that they live on a planet called Earth, which is one of the eight planets that surround the Sun (which is a star) and together these are called the Solar System. Tell the children they are going to learn some facts.	<ol style="list-style-type: none"> 8. Children find fact cards hidden and write questions for them. 9. Children make their own mnemonic to remember the planets in order. 10. Watch video The Solar System HD to understand the vastness and movement of the planets. 		
<u>Let's make a model Solar System</u> page 9	Quick challenges	Show children how others have produced model solar system.	
Whole class learning			

Tell the children they are going to make a simple model of the Solar System in the playground. Watch the BBC Stargazing video which shows them how to make it from fruit and toilet rolls.	9. Children use accurate measurements to make a model Solar System.
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Unit 1.2 Meet the scientists

NC Statutory Learning Objectives	<ul style="list-style-type: none"> To describe the movement of the Earth and Moon relative to the Sun in our Solar System. To identify scientific evidence that has been used to support theory. 	Success criteria	<ul style="list-style-type: none"> I can describe the difference between the geocentric and heliocentric models of the Solar System. I can explain how people's ideas of the Solar System have changed over time. I can use secondary sources to research scientific ideas.
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Scientific language	Centric, geocentric, heliocentric, timeline
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<u>What is at the centre of the Solar System?</u> page 12	Quick challenges	Show children pictures of the Sun and planets.
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Whole class learning Show the children the clip 'The Universe - Aristotle and Ptolemy' and introduce them to the geocentric model of the Solar System. Introduce the heliocentric model proposed by Nicolaus Copernicus.	8. In groups, children use drama to model the 2 different models. 9. Children produce posters for them both and discuss the differences. 10. They discuss today's Solar System.
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<u>Galileo, Galileo!</u> page 13	Quick challenges	Make a timeline which shows how ideas about the Solar System have changed.
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Whole class learning Introduce the children to Galileo using the YouTube clip and note down the main points. Show the children photos of Uranus and Neptune and discuss how their distance away makes them difficult to see. Discuss dates and facts.	10. In groups, they research how Galileo's evidence supported the heliocentric model but how this put him in conflict with the church. 11. Children make fact cards for Galileo, Uranus and Neptune to add to the timeline.
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Unit 1.3 Night and day

Learning Objectives	<ul style="list-style-type: none"> • To describe the Sun, Earth and Moon as approximately spherical bodies. • To describe the movement of the Moon relative to the Earth. • To use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. • To use simple models to explain scientific ideas. 	Success criteria	<ul style="list-style-type: none"> • I can explain how the Moon orbits the Earth to cause a month. • I can explain how the Earth's movement causes night and day. • I can use simple models to explain how a month, day and night are caused.
Scientific language	Night-time, daytime, orbit, time zone		
What makes a month? page 16	Quick challenges	Show children a globe and photos of the Earth, Sun and Moon taken from space and discuss whether they are flat or spherical.	
Whole class learning Look at evidence to support the Earth being spherical. Explain how the Moon moves around the Earth. Use secondary sources to illustrate that the appearance of the Moon changes in a regular manner.	12. Children model the Moon's orbit round the Earth. 13. They draw and describe the movement of the Moon.		
What is a time zone? page 17	Quick challenges	Show and discuss the Tigtag video 'Night and day' and discuss what it tells you.	
Whole class learning Ask a pupil to sit on a rotating chair and darken the room. Shine a torch on the pupil as you rotate the chair, asking the child what they see as they go around. Compare to night and day.	8. Children create their own model to explain day and night, drawing it and explaining how it works. 9. Children make a time card to explain time zones and explore the time in different countries,		
End of topic assessment	Children to all complete the activity 'Out of this world' topic test to assess knowledge.		

Growing up and growing old

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Unit 5.1 Human timeline

NC Statutory Learning Objectives	<ul style="list-style-type: none"> To describe some of the changes that happen as humans develop. To compare and analyse the gestation periods of different animals. 	Success criteria	<ul style="list-style-type: none"> I can describe some of the changes that happen as children grow up into adults. I can describe what happens during pregnancy. I can describe how different mammals have different gestation periods.
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Scientific language	Pregnant, gestation period		
<u>Cradle to grave</u> page 72	Quick challenges	Watch the Tigtag video 'What is a life cycle?' and read the 'Riddle of the Sphinx'.	
Whole class learning Ask the children to bring in copies of baby photos of themselves. Discuss the changes that have happened to them and what might happen to them as they get older.	11. Children draw a timeline to show how humans change from babies to old age.		
<u>Baby boom</u> page 73	Quick challenges	Discuss what being pregnant means and watch a video of a horse giving birth.	
Whole class learning Find images of baby scans and discuss how the baby changes as it develops inside the mother.	10. Children produce a timeline illustrating some of the major developments as a baby grows. 11. In groups, they investigate which nappy holds the most water before leaking.		

Unit 5.2 Growing pains

NC Statutory Learning Objectives	<ul style="list-style-type: none"> To look at the changes that happen as we get older, including puberty/adolescence. To collect and compare data on average heights as we grow up. 	Success criteria	<ul style="list-style-type: none"> I can describe some of the changes that happen at puberty.. I can describe how our height changes as we get older. I can present scientific data accurately in a variety of ways and identify a pattern in it.
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Scientific language	Adolescence, puberty, menstruation
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Growing up page 76	Quick challenges	Show children YouTube clip 'Birth to twelve years in 2 mins 45 seconds and discuss the changes.
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Whole class learning Hold up a DVD and a computer game with a 12 certificate and discuss why these are rated by age. Discuss other things which have age limits and produce a timeline to illustrate these milestones. Read poems about getting older.	<ol style="list-style-type: none"> In groups, children collect data about the heights of children from Y1 to Y6 and plot on a line graph, looking for trends. Children research the average weights of babies in their first year. Children write their own poem about getting older.
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Terrible teenagers page 77	Quick challenges	Use videos to start a discussion about puberty.
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Whole class learning Look at photos of child stars who have become adult celebs and discuss how they changed as they got older. Use BBC interactive resource about lifecycles and teenagers to make a list of changes that happen in boys and girls.	<ol style="list-style-type: none"> In groups, they create a Venn diagram of changes that happen in boys only, girls only and in both. Produce agony aunt replies to children who are worried about changes that are happening to them as they enter puberty.
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Unit 5.3 Getting old

Learning Objectives	<ul style="list-style-type: none"> To describe the changes that happen to us as we enter old age. To consider the impact of living longer. 	Success criteria	<ul style="list-style-type: none"> I can describe some of the changes that happen as we enter old age. I can discuss some of the problems that old people face.. I can explain some of the reasons why humans are living longer than ever.
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Scientific language	Arthritis, life expectancy
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<p>Act your age page 80</p>	<p>Quick challenges</p>	<p>Read the poem 'Warning' by Jenny Joseph and discuss. Try hearing test and see if you can find a frequency that the children can hear but the teachers can't.</p>
<p>Whole class learning As a class, carry out the 'Act your age' activity: Call out each stage from the timeline and come up an action for each one.</p>	<p>14. Children try out some different activities that demonstrate what it is like to be very old. 15. They design a new product which could make life easier for the elderly.</p>	
<p>Live forever page 81</p>	<p>Quick challenges</p>	<p>Find out about the oldest man and woman. Find out about some of the other 'oldest' world records.</p>
<p>Whole class learning Discuss whether people are living longer and why this might be. Think about how medicine has changed since the Victorian times.</p>	<p>10. In pairs, the children investigate the life expectancies of people living at different points in history. 11. They consider what it would be like to live past 100 and think about what problems this could cause. 12. Children write a story about what it would be like if we could live to be 150.</p>	
<p>End of topic assessment</p>	<p>Children to all complete the activity 'Growing up and getting old' topic test to assess knowledge.</p>	