PlanIt Science
Rationale and Progression Map Guidance

This pack contains three documents to help you plan, structure and map your science curriculum when using the PlanIt Science scheme of learning.

This PlanIt Science Rationale and Progression Map Guidance document contains:

- our scheme of learning rationale (including intent, implementation and impact);
- the suggested teaching order of the PlanIt Science units, with a rationale for this;
- relevant EYFS statements that feed into the KS1 and KS2 science curriculum;
- an overview of the working scientifically progression statements;
- a guide on how to use the progression statements and the editable spreadsheet.

The Progression Map Year 1–Year 6 spreadsheet contains:

- editable tabs for each year group with the national curriculum objectives and working scientifically progression statements mapped against each individual PlanIt Science lesson.

The Primary Science Vocabulary Progression document contains:

- an overview of the different topics within the national curriculum (e.g. Animals Including Humans or Light) and how they appear across the year groups;
- the progression of the national curriculum programme of study statements across the year groups, organised by topic;
- the progression of vocabulary for each topic of the curriculum, mapped across the year groups;
- the progression of working scientifically vocabulary across KS1, LKS2 and UKS2.

The following Ofsted resources have been used to inform this document and are reflected in our schemes of work. They include a detailed explanation of the terms ‘substantive knowledge’ and ‘disciplinary knowledge’ that are used in this document. They can be found at:

Research review series: science, April 2021
Finding the optimum: the science subject report, February 2023
Science Subject curriculum insights for primary and secondary teachers and leaders (video link)

Scheme of Work Rationale

Welcome to PlanIt Science! Our units help develop in children a lifelong curiosity, appreciation and understanding of the world around them, including the global challenges of sustainability. We achieve this through carefully curated, inclusive and diverse science resources. Our aim is for children to feel confident in their knowledge of science and their enquiry skills. Through the scheme, children develop curiosity to learn more and further their understanding of how the world works, leading to confidence in their place as global citizens. The PlanIt scheme of learning ensures that children have a high-quality, rich, varied, and engaging science curriculum that fully and coherently covers all the science aims in the national curriculum.

We have been busy updating our science units (look out for the 'updated content' banner on the website). The information below details several of the new features you'll see in our updated content.

Intent

Our units cover all the main topics (and associated aims) in the programme of study, as set out in the national curriculum.

In addition, we have units such as Scientists and Inventors that help celebrate the contributions of the global scientific community throughout history. Our sustainability-themed units link to the national curriculum while sensitively covering key issues such as biodiversity, ecosystems, climate change and global warming.

Our scheme of learning is built around disciplinary knowledge and substantive knowledge (see the Ofsted resources linked earlier in this document). These are not seen as distinct; they are woven together across lessons, units and different year groups. Lessons have an aim based on the national curriculum programme of study and a working scientifically (disciplinary knowledge) aim embedded within the context of the appropriate scientific (substantive) knowledge.

Consolidation and connection of knowledge is key within our schemes of learning. There are regular opportunities for children to remember what they have previously learnt, connect their knowledge together and add to it. Please refer to the suggested teaching order in this document to see the rationale for how the PlanIt Science units can be ordered to support progression and strengthen connections across learning.

When planning for the science curriculum, we intend for children to have the opportunity, wherever possible, to learn through varied scientific enquiries – equipping them with the skills needed to ask and answer scientific questions about the world around them. Considered scaffolding and ordering of lesson content allows children to build up a secure understanding of how to work scientifically and ensures they have the required substantive knowledge to carry out and draw appropriate conclusions from their enquiries.

Implementation

Our schemes of learning contain many features that allow the science national curriculum to be successfully delivered in a way that ignites children's excitement for science. Our scheme includes Science eBooks linked to each unit that help support the implementation of two sections of the Reading Framework: section 7 (Choosing and Organising Books) and section 9 (Reading Across the Curriculum). Our science specialists have written CPD Adult Guidance documents that detail the scientific knowledge teachers need to know, how to address common misconceptions and answer questions children may have.

Informative Lesson Presentation slides, often with embedded content from our new eBooks, help teach substantive and disciplinary content. RememberIt sections at the beginning of each lesson allow pupils to revisit learning from previous years or lessons in the unit. Further retrieval practice is provided through Retrieval Quiz Packs, linked Home Learning Tasks and interactive activities produced by Twinkl Go!.

Knowledge Organisers have been produced for every unit in each year group. These are used throughout a unit to support children as they develop a secure grounding in the required key scientific vocabulary and knowledge they will need in the unit. The progression of vocabulary has been carefully mapped out and is available as part of the Primary Science Vocabulary Progression document. Opportunities for children to use vocabulary in context are provided throughout our lessons. Reasoning Cards allow children to apply their knowledge to new situations or draw different parts of their knowledge together.

Children will have many opportunities to carry out different types of scientific enquiry and develop their enquiry skills, including observing over time, pattern seeking, identifying, grouping and classifying, researching using secondary sources and comparative testing (KS1) or comparative and fair testing (KS2). Purposeful practical activities are clearly linked to the aims of the lesson and the national curriculum, and additionally make use of children’s written, mathematical and oracy skills. Outdoor learning opportunities show children the range of places in which science can take place and allow children to observe the natural world.

Lesson activities are, in the majority of cases (when educationally appropriate), adapted three ways, with the main activity (2 stars) being provided with support/scaffolding (1 star) or extension/mastery (3 stars) options. This enables all learners to inclusively access the lesson activities and demonstrate their scientific understanding against the lesson aim and success criteria. This aims to provide an equitable approach to learning, giving children the best opportunity to achieve the main aims of the lessons.

Impact

A range of assessment opportunities are threaded throughout our scheme of learning in order to regularly review and evaluate children's understanding. Questioning opportunities to assess knowledge as it is taught are provided within lessons to help recap concepts as necessary. The green assessment questions provided on updated lesson plans link to the success criteria for the lesson and allow you to assess pupils and give feedback to facilitate a secure knowledge base.

Our retrieval resources and retrieval elements within lessons enable the practice of retrieving knowledge over time (the 'testing effect' – see the Ofsted documents on page 1 for further information).

Substantive ('scientific knowledge') and disciplinary knowledge ('working scientifically') assessment statements are provided on each updated lesson plan to help with ongoing assessment and checking that aims in both of these areas have been achieved.

All the assessment statements for a unit are provided on the Progression Map Year 1–Year 6 spreadsheet to help assess pupils at the end of the unit. Assessment tests with mark schemes are mapped to the national curriculum aims. These can be used as your summative assessment but also formatively to give feedback on any gaps in pupils' knowledge.

A range of display resources, such as key vocabulary and question cards, provided with each unit help increase the profile of science across the school and provide a consistent learning environment.

We hope you and your pupils enjoy using PlanIt Science. To see all our units, please click here.

Suggested Teaching Order

Provided here is an overview of the suggested order of teaching for the PlanIt Science units across years 1–6. The following pages provide the rationale for the given order for each year group.

The order of teaching has been based upon the aim to build substantive and disciplinary knowledge within the year and across year groups, and also to take advantage of the best time of year to observe the natural environment. However, there is flexibility to tailor the order of teaching to tie in with your curriculum planning in other subjects, trips and term dates. PlanIt units have been written with this flexibility in mind.

The Scientists and Inventors unit can be taught as a whole unit in the times shown below or lessons can be taught individually throughout the year, for example to secure knowledge during a unit, to study the works of scientists linked to a unit, to tie in with science events or to retrieve knowledge of a topic area.

We have also included the relevant statements from the EYFS Framework that feed into the science programme of study in order to aid the progression of learning between EYFS and KS1.

Level Expected at the End of EYFS

We have selected the most relevant statements from Development Matters age ranges for Three and Four-Year-Olds and Reception as well as highlighting the statements within the ELGs which feed into the programme of study for Science.

For more detail about linked subject progression within the EYFS Framework, please refer to these documents.

Science		
Three and Four-Year-Olds	Communication and Language	• Understand 'why' questions, like: "Why do you think the caterpillar got so fat?"
	Personal, Social and Emotional Development	• Make healthy choices about food, drink, activity and toothbrushing.
	Understanding the World	• Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Talk about what they see, using a wide vocabulary. • Begin to make sense of their own life-story and family's history. • Explore how things work. • Plant seeds and care for growing plants. • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things. • Explore and talk about different forces they can feel. • Talk about the differences between materials and changes they notice.

Reception	Communication and Language		• Learn new vocabulary. • Ask questions to find out more and to check what has been said to them. • Articulate their ideas and thoughts in well-formed sentences. • Describe events in some detail. • Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. • Use new vocabulary in different contexts.

	Personal, Social and Emotional Development		• Know and talk about the different factors that support their overall health and wellbeing:
			  ○ regular physical activity
			  ○ healthy eating
			  ○ toothbrushing
			  ○ sensible amounts of 'screen time'
			  ○ having a good sleep routine
			  ○ being a safe pedestrian

	Understanding the World		• Explore the natural world around them. • Describe what they see, hear and feel while they are outside. • Recognise some environments that are different to the one in which they live. • Understand the effect of changing seasons on the natural world around them.
ELG	Communication and Language	Listening, Attention and Understanding	• Make comments about what they have heard and ask questions to clarify their understanding.
	Personal, Social and Emotional Development	Managing Self	• Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.
	Understanding the World	The Natural World	• Explore the natural world around them, making observations and drawing pictures of animals and plants. • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	Animals Including Humans	Seasonal Changes (Autumn and Winter)	Everyday Materials	Seasonal Changes (Spring and Summer)	Plants	Scientists and Inventors
Year 2	Living Things and Their Habitats	Animals Including Humans	Uses of Everyday Materials	Plants	Biodiversity – Minibeasts	Scientists and Inventors
Year 3	Rocks	Animals Including Humans	Forces and Magnets	Plants	Light	Reduce, Reuse, Recycle (LKS2) Scientists and Inventors
Year 4	Living Things and Their Habitats	Animals Including Humans	Electricity	States of Matter	Sound	Reduce, Reuse, Recycle (LKS2) Scientists and Inventors
Year 5	Properties and Changes of Materials	Forces	Earth and Space	Animals Including Humans	Living Things and Their Habitats	Scientists and Inventors
Year 6	Living Things and Their Habitats	Animals Including Humans	Light	Electricity	Evolution and Inheritance	Scientists and Inventors

Order of Teaching Rationale Year 1

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Animals Including Humans	**Seasonal Changes (Autumn and Winter)**	**Everyday Materials**	**Seasonal Changes (Spring and Summer)**	**Plants**	**Scientists and Inventors**
This is a good starting unit for year 1, as children already have scientific experiences (including through EYFS) that feed into the curriculum content in this unit and can be built on (e.g. parts of the human body, animal identification). The unit ties in well with 'All About Me' topics that are often covered in the autumn term.	This unit fits well with the time of year so children can observe the features of both autumn and winter. We have split the Seasonal Changes unit into Autumn and Winter and Spring and Summer. This allows children to observe the seasons at the correct time of year.	This unit involves lots of new vocabulary so teaching it at this point in the year complements the children's expanding reading and writing skills. The unit contains lots of scientific enquiry work, building on the skills developed in the autumn term. Enquiries can be tailored to the weather found at this time of year, e.g. investigating the best material for an umbrella.	This is the correct time of year for observing spring and summer. It offers a good opportunity for retrieval practice, as children also recap their knowledge of autumn and winter. The final lesson in this unit brings all four seasons together.	This time of year is suited to outdoor learning and growing plants. As noted in the non-statutory guidance of the national curriculum for this unit, children should look at plants throughout the year in their local environment (which is woven into our Seasonal Changes content).	Please see the 'Suggested Teaching Order' overview on page 4 for information about Scientists and Inventors.

Order of Teaching Rationale Year 2

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Living Things and Their Habitats	**Animals Including Humans**	**Uses of Everyday Materials**	**Plants**	**Biodiversity – Minibeasts**	**Scientists and Inventors**
September and October are ideal times to get outdoors and study habitats in the local area. It is easy to observe plant and animal life (including minibeasts) at this time of year. This unit could also be taught in the summer term.	This unit could be taught at any time in the year. Early on in the year may be an appropriate time to teach the exercise, balanced diet and hygiene content, as children will be able to follow the advice given throughout the year. This unit can be taught at a time that suits the individual needs of your class and your PSHE curriculum.	This unit could be taught at other points in the year but, as much of year 2 requires the outdoor environment, placing the unit here suits the poorer weather conditions generally found in January and February.	Ideally, this unit should be taught after Animals Including Humans, as children will have looked at animal life cycles (a more familiar context) before moving on to plant life cycles here.	This is an ideal time of year for minibeasts. Children can retrieve and build on their knowledge from the Living Things and Their Habitats, Animals Including Humans and Plants topics during this unit and expand their understanding of sustainability themes. Like all PlanIt lessons, this unit has several opportunities to develop working scientifically skills.	Please see the 'Suggested Teaching Order' overview on page 4 for information about Scientists and Inventors.

Order of Teaching Rationale Year 3

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Rocks	**Animals Including Humans**	**Forces and Magnets**	**Plants**	**Light**	**Reduce, Reuse, Recycle (LKS2)** **Scientists and Inventors**
This unit can be taught at any time but is a suitable one to begin lower key stage 2 with, as children will have reference points for the content to be taught (materials, soil and fossils, such as those from dinosaurs). It also provides a range of working scientifically opportunities to start progressing these skills at a KS2 level. It is also a good unit to link to Stone Age study in history and provides many opportunities for beginning-of-the-year trips.	This unit can be taught at any point in the year. The nutrition content is ideal to be taught earlier in the year, as children will be able to follow the advice given throughout the year.	This is the first time children will have been formally taught about forces and magnets. Placing this unit later in the year allows for more developed reading, writing and working scientifically skills to enable children to access the more difficult substantive content in this unit.	Placing this unit at this point in the year allows access to the outdoor environment in improving weather and at a time that enables observations of plant life cycles and the various parts of the plant.	This time of year allows coverage of the 'dangers of light from the Sun' aim. Conditions at this time of year also enable practical work to investigate shadows outside (in addition to more controlled enquiries in the classroom).	Please see the 'Suggested Teaching Order' overview on page 4 for information about Scientists and Inventors. Reduce, Reuse, Recycle is a sustainability unit that can be used in year 3 and/or year 4. This unit allows retrieval of objectives from the programme of study for these year groups and has a focus on working scientifically objectives.

Order of Teaching Rationale Year 4

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Living Things and Their Habitats	**Animals Including Humans**	**Electricity**	**States of Matter**	**Sound**	**Reduce, Reuse, Recycle (LKS2)** **Scientists and Inventors**
This unit can make use of the outdoor environment at a suitable time of year and allows for study of the local environment throughout the rest of the year, as suggested in the non-statutory guidance of the programme of study.	This unit can be taught at any point in the year but the food chain curriculum objective fits in well after children have identified different living things and studied habitats in the Living Things and Their Habitats unit.	This is the first time children will have formally studied electricity. Placing the unit later in the year allows for more developed reading, writing and working scientifically skills to enable children to access the more difficult substantive content in this unit.	It is suggested this unit is taught before Sound so that children have an understanding of particles. The usually wet but warming weather conditions at this time of year can allow for easier observation of evaporation, e.g. puddles or washing drying.	This unit ideally follows the study of particles in States of Matter. As in the Electricity unit, there is a lot of new substantive knowledge in this unit that may be suited to later in the year. This unit can be placed to tie in with your music curriculum.	Please see the 'Suggested Teaching Order' overview on page 4 for information about Scientists and Inventors. Reduce, Reuse, Recycle is a sustainability unit that can be used in year 3 and/or year 4. This unit allows retrieval of objectives from the programme of study for these year groups and has a focus on working scientifically objectives.

Order of Teaching Rationale Year 5

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Properties and Changes of Materials	**Forces**	**Earth and Space**	**Animals Including Humans**	**Living Things and Their Habitats**	**Scientists and Inventors**
This unit leads on well from year 4 States of Matter. It is a good unit to begin UKS2 with, with plenty of working scientifically skills being developed.	It is recommended this unit is taught before Earth and Space so that children have an understanding of gravity before that unit is taught.	Shorter days at this point in the year allow for observation of the phases of the Moon and discussions about day and night.	The timing of this unit should be tailored to fit in with the individual class and their needs and your school's PSHE curriculum.	It may be more appropriate to teach this unit after Animals Including Humans, as children will have an understanding of the human life cycle before going on to study wider mammalian life cycles (and those from other groups) and reproduction in animals and plants.	Please see the 'Suggested Teaching Order' overview on page 4 for information about Scientists and Inventors.

Order of Teaching Rationale Year 6

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Living Things and Their Habitats	**Animals Including Humans**	**Light**	**Electricity**	**Evolution and Inheritance**	**Scientists and Inventors**
Children will have a good understanding of the substantive knowledge needed in this unit from their previous learning. This time of year lends itself to any classification work in the local environment.	The content on the impact of diet, exercise, drugs and lifestyle on the way bodies function may be an appropriate message to deliver earlier in the year, as children will be able to follow the advice given throughout the year. This unit can be taught at a time that suits the individual needs of your class and your PSHE curriculum.	The positioning of this unit within the year could be flexible; however, controlled light experiments (e.g. using light sources such as torches) may be easier at this point in the year due to darker conditions.	This unit can be taught at any point in the year but the use of bulbs could be used as an opportunity to retrieve prior knowledge from the Light unit.	It is suggested this unit is taught after the classification content of Living Things and Their Habitats. This is the first time children will have formally studied evolution and inheritance so may be better suited to later in year 6.	Please see the 'Suggested Teaching Order' overview on page 4 for information about Scientists and Inventors.

Working Scientifically

The national curriculum science programme of study explains how 'working scientifically' skills might be taught by embedding them within topics, with a focus on the key features of scientific enquiry. Through an enquiry-led approach, pupils learn to use a variety of different enquiry skills to answer relevant scientific questions. The national curriculum states that these scientific enquiry skills should include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources.

Over the next pages, the progression of working scientifically (disciplinary) skills for the PlanIt scheme of learning has been laid out. The included tables show the progression across KS1, LKS2 and UKS2 in different areas of working scientifically.

We have taken statements from the national curriculum and split them into further statements (covering the statutory statements and using the non-statutory national curriculum guidance in addition to this). The five scientific enquiry types listed above are reflected in our PlanIt progression statements. We have grouped our progression statements into 'plan', 'do', 'record' and 'review'. The enquiry wheels found here explain further what is involved in the 'plan, do, record and review' cycle.

These statements also appear on the Progression Map Year 1–Year 6 spreadsheet, where they are mapped to each PlanIt lesson. You will also see these statements reflected in the working scientifically assessment statements found on our updated lesson plans and assessment spreadsheets.

Further scientific enquiry resources can be found for KS1 here and KS2 here.

Scientific enquiry skills are now being identified throughout our content. Types of Scientific Enquiry Skills Coverage documents have been produced for each PlanIt unit and these skills are being highlighted in lessons – look out for these logos across our resources.

	KS1	LKS2	UKS2
NC	asking simple questions and recognising that they can be answered in different ways	asking relevant questions and using different types of scientific enquiries to answer them	planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
Plan 	ask some simple scientific questions about the world around them	use their scientific experiences to raise questions about the world around them	explore and talk about their ideas and scientific experiences to raise enquiry questions about scientific phenomena
	begin to recognise ways in which they might answer scientific questions	start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions, e.g. recognising when a fair test is necessary	make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions
		help decide what observations or measurements they might make, how long they will make them for and the equipment they might use	make their own decisions about what observations to make, the most appropriate equipment to use, what measurements to take and for how long, and whether to repeat them
			recognise variables in comparative and fair tests and plan how they will control them
		help decide how to record and analyse data	decide how to record data from a choice of familiar approaches

	KS1	LKS2	UKS2
NC	observing closely, using simple equipment performing simple tests identifying and classifying	setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
Do 	observe the natural and humanly-constructed world around them	make systematic and careful observations	make systematic, careful and detailed observations
	use simple measurements (e.g. using comparisons or non-standard units), sometimes using simple equipment	take accurate measurements using standard units	take measurements, using a range of scientific equipment, with increasing accuracy and precision
	make careful observations in enquiries, sometimes using simple equipment	use a range of equipment, including thermometers and data loggers	
			take repeat readings where appropriate and understand the importance of this
	carry out enquiries that involve **observing over time**	set up and carry out enquiries that involve **observing over time**	set up and carry out enquires that involve **observing over time**, including changes over different periods of time
	use simple secondary sources for **researching** answers	use secondary sources for **researching** answers to questions, recognising how this allows them to answer	use a wide range of secondary sources for **researching** answers to questions, deciding which sources will be

	to questions	questions that cannot be answered through practical investigations	most useful and reliable, and understanding the difference between fact and opinion.
	carry out simple **comparative tests**	set up and carry out simple **comparative and fair tests**	set up and carry out **comparative and fair tests**, including controlling variables
	carry out simple **pattern seeking** enquiries	set up and carry out **pattern seeking** enquiries	set up and carry out **pattern seeking** enquiries, choosing a reliable sample size
	identify some living and non-living things and their features (**identifying, grouping and classifying**)		
	use simple features to compare objects, materials and living things (**identifying, grouping and classifying**)	talk about criteria for **identifying, grouping and classifying**	**identify, group, classify** and describe a wide range of living things and materials, using their scientific knowledge to justify their choices
	decide how to sort and classify things into simple groups with some help (**identifying, grouping and classifying**)	**identify, group and classify** things, using simple keys when appropriate	use and develop keys and other information records of increasing complexity to **identify, classify, group** and describe living things and materials

	KS1	LKS2	UKS2
NC	gathering and recording data to help in answering questions	gathering, recording, classifying and presenting data in a variety of ways to help in answering questions recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
Record 	gather and record observations to help answer questions in a variety of ways, e.g. labelled diagrams or simple tables	gather, record and present observations in a variety of ways to help answer questions, e.g. written recordings using simple scientific language, drawings, labelled diagrams or tables	gather, record and present observations of increasing complexity, e.g. using scientific diagrams and labels
	gather and record measurements to help answer questions in a variety of ways, e.g. simple tables, pictograms, tally charts or block diagrams	gather, record and present measurements in a variety of ways to help answer questions, e.g. tables and bar charts	gather, record and present measurements in a variety of increasingly complex ways, e.g. using tables, scatter graphs, bar graphs or line graphs
	gather and record findings from their research (such as from secondary sources) in a variety of ways, e.g. fact files, answers to questions or giving explanations	gather, record and present findings from their research (such as from secondary sources) in a variety of ways, e.g. fact files, answers to questions or giving explanations	gather, record and present findings of increasing complexity from their research (such as from secondary sources) in a variety of ways, e.g. fact files, answers to questions or giving explanations
	record classification tasks using simple tables or sorting diagrams	record classification tasks in a variety of ways to help answer questions, e.g. simple keys, tables or Venn diagrams	record classification tasks in a variety of ways to help answer questions, e.g. classification keys
	use and apply mathematical skills at a level consistent with their increasing maths knowledge at key stage 1	use and apply mathematical skills at a level consistent with their increasing maths knowledge at lower key stage 2	use and apply mathematical skills at a level consistent with their increasing maths knowledge at upper key stage 2

	KS1	LKS2	UKS2
NC	using their observations and ideas to suggest answers to questions	reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions identifying differences, similarities or changes related to simple scientific ideas and processes using straightforward scientific evidence to answer questions or to support their findings	using test results to make predictions to set up further comparative and fair tests reporting and presenting 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 identifying scientific evidence that has been used to support or refute ideas or arguments
Review 	with support, begin to notice patterns and relationships	with support, identify changes, patterns and similarities and differences, (e.g. in their data, from observations or from research of scientific ideas) to help answer questions and draw conclusions	notice patterns in their results (including those found in the natural environment)
			analyse results to determine and then explain causal relationships
	begin to draw simple conclusions	use straightforward scientific evidence (from observations, measurements or secondary sources) to answer questions or support their conclusions	draw increasingly complex conclusions based on their data, observations and scientific knowledge, identifying if this refutes or supports their previous ideas
		make predictions for new values	use their test results to make predictions to set up further comparative and fair tests
		raise further questions which could be investigated	

		suggest improvements to investigations	discuss the degree of trust they can have in a set of results, e.g. by considering measurement precision and accuracy, how variables were controlled and enquiry limitations.
	use a range of scientific vocabulary accurately. Read and spell some of these words at a level consistent with their increasing word reading and spelling knowledge at key stage 1	use, read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge	read, spell and pronounce scientific vocabulary correctly
	communicate their findings to a variety of audiences in a variety of ways	report and present their results and conclusions to different audiences in written and oral forms with increasing confidence	report and present their results and conclusions to others in oral and written forms with confidence
			talk about how scientific ideas have developed over time, with reference to scientific evidence that has been used to support or refute ideas or arguments

Using the Progression Map

The editable Progression Map Year 1–Year 6 spreadsheet is separated into a tab for each year group. This first section maps the national curriculum programme of study aims (the substantive content):

Year 1 Progression Map

	Programme of Study National Curriculum Aims	Animals Including Humans						Seasonal Changes Autumn & Winter						Everyday Materials						Seasonal Changes Spring & Summer						Plants						Scientists and Inventors							
Programme of Study	**Plants National Curriculum:**																																				
	identify and name a variety of common wild and garden plants, including deciduous and evergreen trees	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7	8
	identify and describe the basic structure of a variety of common flowering plants, including trees	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7	8
	Animals Including Humans National Curriculum:																																				
	identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7	8
	identify and name a variety of common animals that are carnivores, herbivores and omnivores	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7	8
	describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7	8
	identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7	8
	Everyday Materials National Curriculum:																																				
	distinguish between an object and the material from which it is made	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7	8
	identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7	8
	describe the simple physical properties of a variety of everyday materials	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7	8
	compare and group together a variety of everyday materials on the basis of their simple physical properties	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7	8
	Seasonal Changes National Curriculum:																																				
	observe changes across the 4 seasons	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7	8
	observe and describe weather associated with the seasons and how day length varies	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7	8

National Curriculum Aims
The aims are taken directly from the national curriculum.

Lesson Numbers
When shaded, these numbers identify which lessons in the unit build upon the national curriculum aim.

PlanIt Units
Each unit title is hyperlinked to our range of PlanIt resources, which include everything you need to teach each unit and meet the national curriculum aims.

Using the Progression Map

This section of each year group's tab maps the working scientifically objectives, separated into our progression statements.

National Curriculum Aims

National curriculum statutory working scientifically aims are provided here for reference.

Working Scientifically	Animals Including Humans	Seasonal Changes Autumn & Winter	Everyday Materials	Seasonal Changes Spring & Summer	Plants	Scientists and Inventors
Plan						
National Curriculum: asking simple questions and recognising that they can be answered in different ways						
ask some simple scientific questions about the world around them	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6 7 8
begin to recognise ways in which they might answer scientific questions	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6 7 8
Do						
National Curriculum: observing closely, using simple equipmentperforming simple testsidentifying and classifying						
observe the natural and humanly-constructed world around them	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6 7 8
use simple measurements (e.g. using comparisons or non-standard units), sometimes using simple equipment	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6 7 8
make careful observations in enquiries, sometimes using simple equipment	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6 7 8
carry out enquiries that involve **observing over time**	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6 7 8
use simple secondary sources for **researching** answers to questions	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6 7 8
carry out simple **comparative tests**	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6 7 8
carry out simple **pattern seeking** enquiries	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6 7 8
identify some living and non-living things and their features (**identifying, grouping and classifying**)	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6 7 8
use simple features to compare objects, materials and living things (**identifying, grouping and classifying**)	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6 7 8
decide how to sort and classify things into simple groups with some help (**identifying, grouping and classifying**)	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6 7 8
Record						
National Curriculum: gathering and recording data to help in answering questions						
gather and record observations to help answer questions in a variety of ways, e.g. labelled diagrams or simple tables	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6 7 8
block diagrams	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6 7 8
gather and record findings from their research (such as from secondary sources) in a variety of ways, e.g. fact files, answers to questions or giving explanations	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6 7 8
record classification tasks using simple tables or sorting diagrams	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6 7 8
use and apply mathematical skills at a level consistent with their increasing maths knowledge at key stage 1	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6 7 8
Review						
National Curriculum: using their observations and ideas to suggest answers to questions						
with support, begin to notice patterns and relationships	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6 7 8
begin to draw simple conclusions	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6 7 8
use a range of scientific vocabulary accurately. Read and spell some of these words at a level consistent with their increasing word reading and spelling knowledge at key stage 1	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6 7 8
communicate their findings to a variety of audiences in a variety of ways	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6 7 8

Working Scientifically Statements

We have broken down the national curriculum into further statements to assess progress in working scientifically skills.

Lesson Numbers

When shaded, these numbers identify which lessons in the unit build upon the working scientifically progression statement.