Long Term Science Plan

		Year 1	Year 2	Year 3
	Title	**Seasonal Change**	**Uses of Everyday Materials**	**Movement and Nutrition**
Autumn 1	Unit Overview	Reflecting on their own experiences, children learn about the four seasons and the weather associated with each. Pupils explore how seasonal changes affect trees, daylight hours and our choices about outfits. They plan and carry out their own weather reports, considering the knowledge required for this job.	Building on their knowledge of everyday materials and their properties, pupils recognise that materials are suited to specific purposes and explore how actions such as stretching and bending affect the shape of solid objects. They compare the suitability of materials; gather and record data in tables and block graphs and use their results to answer questions. Children also learn about the harmful effects of plastic and explore eco-friendly alternatives.	Studying the human skeleton, children identify key bones and compare them to other animals explaining the role within the body. Pupils explore how changes in muscles result in movement and the implications these discoveries have in the scientific development of prosthetic limbs. They study how energy is used by the body, what constitutes a balanced diet in humans and how research contributes to nutritionist expertise.
	Working Scientifically	**Posing questions** • Exploring the world around them and raising their own simple questions. **Predicting** • Suggesting what might happen, often justifying with personal experience. **Observing (qualitative data)** • Using their senses to describe, in simple terms, what they notice or what has changed. **Researching** • Gathering specific information from one simplified, specified source. **Recording (tables)** • Using a prepared table to record tally frequency. **Graphing** • Representing data using pictograms. **Analysing and drawing conclusions** • Using their results to answer simple questions. **Science in action** • To know about a range of jobs and careers that use scientific knowledge and methods, e.g. weather reporter	**Posing questions** • Recognising there are different types of enquiry (ways to answer a question). **Measuring (quantitative)** • Using non-standard units to measure and compare. **Recording (tables)** • Using a prepared table to record results including numbers. **Grouping and classifying** • Grouping based on visible characteristics. **Graphing** • Representing data using pictograms and block graphs. **Analysing and drawing conclusions** • Using their results to answer simple questions.	**Measuring** • Using standard units to measure and compare. • Using measuring equipment with increasing accuracy. • Reading scales with unmarked intervals between numbers. **Recording** • Using a prepared table to record results including more detailed observations. **Analysing** • Writing a conclusion to summarise findings using simple scientific vocabulary. **Evaluating** • Beginning to identify new questions that would further the enquiry.

Autumn 2	Title	**Everyday Materials**	**Animals Including Humans – Life Cycles & Health**	**Forces & Magnets**
	Unit Overview	Identifying the difference between objects and materials, children explore their surroundings to find examples of each. They work scientifically by planning tests, making observations and recording data. Pupils use results to answer questions and sort and group materials based on their properties.	Studying the life cycles of various animals, children learn what animals need to survive and how they change over time. Pupils collect data that allows them to observe changes in their peers, while also developing their ability to take measurements and record data. They consider how scientific knowledge helps people to make healthy choices.	Investigating the movement of vehicles on different surfaces, children learn about the impact of friction and compare uses and drawbacks. They broaden their experience in writing scientific methods and recording data as they investigate contact and non-contact forces. Pupils explore the properties of different magnets and use this to understand their uses.
	Working Scientifically	**Posing questions** • Responding to suggestions on how to answer questions. **Planning** • Beginning to recognise whether a planned test is fair. • With support, deciding if suggested observations are suitable. **Predicting** • Suggesting what might happen, often justifying with personal experience. **Observing (qualitative data)** • Using their senses to describe, in simple terms, what they notice or what has changed. **Recording (tables)** • Using a prepared table to record results including simple observations. **Grouping and classifying** • Grouping based on visible characteristics. **Analysing and drawing conclusions** • Using their results to answer simple questions. • Beginning to recognise when results or observations do not match their predictions.	**Posing questions** • Recognising there are different types of enquiry (ways to answer a question). **Measuring (quantitative data)** • Beginning to use standard units and read simple scales to measure and compare. • Beginning to use simple measuring equipment to make approximate measurements. **Researching** • Gathering specific information from one simplified, specified source. **Recording (tables)** • Using a prepared table to record results including numbers. **Analysing and drawing conclusions** • Using their results to answer simple questions.	**Planning** • Beginning to select from options which variables will be changed, measured and controlled. • Suggesting what observations to make and how long to make them for. • Planning a simple method, verbally and in writing. **Researching** • Gathering specific information from a variety of sources. **Recording** • Beginning to draw more scientific diagrams by labelling with more scientific vocabulary and using arrows. • Representing data using bar charts. **Analysing** • Writing a conclusion to summarise findings using simple scientific vocabulary. • Beginning to suggest how one variable may have affected another. • Beginning to quote results as evidence of relationships. **Science in action** • Exploring the uses of friction and magnets in everyday life and industry.

	Title	Sensitive Bodies	Habitats	Making Connections
Spring 1	Unit Overview	Familiarising themselves with the basic parts of the human body, children investigate their senses through stimulating experiences that highlight how we interact with the world around us. They work scientifically, using their senses to make observations, spot patterns and use data to answer questions. They develop an understanding of how science can support those who have lost sensory function and consider how firefighters use their senses at work.	Considering the life processes that all living things have in common, pupils classify objects into alive, was once alive or has never been alive. Pupils explore global habitats, naming plants and animals that can be found there. They learn how a range of different living things depend on each other for food or shelter. Pupils explore this further by creating food chains to show the sequence that living things eat each other for energy to grow and stay healthy.	*Does hand span affect grip strength?* Experimenting, analysing data and drawing conclusions allows children to explore the relationship between hand span and grip strength. They test how different gloves improve grip strength and apply their newfound knowledge to design friction gloves, fostering scientific inquiry and problem-solving skills.
	Working Scientifically	**Posing questions** • Recognising there are different types of enquiry (ways to answer a question). **Observing (qualitative data)** • Using their senses to describe, in simple terms, what they notice or what has changed. **Measuring (quantitative data)** • Using non-standard units to measure and compare. **Recording (diagrams)** • Drawing and labelling simple diagrams. **Recording (tables)** • Using a prepared table to record results including numbers and simple observations. **Grouping and classifying** • Grouping based on visible characteristics. **Analysing and drawing conclusions** • Using their results to answer simple questions. **Science in action** To know: • A range of jobs and careers that use scientific knowledge and methods. • About the work of modern-day scientists. • There are spiritual, moral, social and cultural links with Science.	**Posing questions** • Exploring the world around them and raising their own simple questions. • Recognising there are different types of enquiry (ways to answer a question). **Researching** • Gathering specific information from one simplified, specified source. **Recording (tables)** • Using a prepared table to record results including simple observations. **Grouping and classifying** • Grouping based on visible characteristics.	This unit revisits the working scientifically skills covered previously, including: • Posing questions. • Planning. • Predicting. • Observing. • Measuring. • Recording. • Graphing. • Analysing and drawing conclusions. • Evaluating.

	Title	Comparing Animals	Micro-Habitats	Rocks and Soils
Spring 2	Unit Overview	Studying both local and global animals, children recognise common characteristics and physical features. They use this information to make comparisons and classify animals. Pupils consider the most effective way to collect data about class pets and record their findings in a block chart. They develop their understanding of classification by comparing the dietary habits of different animals and role play as Jane Goodall carrying out research into chimpanzees in the wild.	Developing their understanding of scientific enquiry, pupils learn that scientists use a range of skills to answer questions. They discover that microhabitats provide what minibeasts need to survive and carry out a survey to find out where different minibeasts live in the school grounds. They practise asking scientific questions and follow a method to investigate which conditions woodlice prefer. Pupils explore the job role of a botanist by identifying flowering plants.	Studying rocks and their properties, children learn how to classify rocks and identify how they were formed. They look at the work of palaeontologists to learn about fossil formation and use models to explore how fossils tell us about the past. Pupils investigate the physical properties of rocks and link these to their particular uses. Pupils also explore soil formation, separate soil using a sedimentation jar and test soil drainage.
	Working Scientifically	**Posing questions** • Recognising there are different types of enquiry (ways to answer a question). • Responding to suggestions on how to answer questions. **Planning** • With support, deciding if suggested observations are suitable. **Observing (qualitative data)** • Using their senses to describe, in simple terms, what they notice or what has changed. **Researching** • Gathering specific information from one simplified, specified source. **Recording (diagrams)** • Drawing and labelling simple diagrams. **Grouping and classifying** • Grouping based on visible characteristics. **Graphing** • Representing data using pictograms and block charts. **Analysing and drawing conclusions** • Using their results to answer simple questions. **Science in action** To know: • About famous scientists throughout history.	**Posing questions** • Exploring the world around them and raising their own simple questions. • Recognising that there are different types of enquiry (ways to answer a question). • Responding to suggestions on how to answer questions. **Planning** • With support, deciding if suggested observations are suitable. • Ordering a simple method. **Predicting** • Suggesting what might happen, often justifying with personal experience. **Observing (qualitative data)** • Using their senses to describe, in simple terms, what they notice or what has changed. **Researching** • Gathering specific information from one simplified, specified source. **Recording (tables)** • Recording results using simple observations and tally frequency. **Classification keys** • Organising questions to create a simple classification key. **Analysing and drawing conclusions** • Using results to answer simple questions. • Beginning to recognise when results or observations do not match their predictions.	**Observing** • Using their senses to describe, in more detail and with simple scientific vocabulary, what they notice or what has changed. **Researching** • Gathering specific information from a source. **Recording** Beginning to draw more scientific diagrams by: • Drawing in 2D to produce simple line diagrams. • Labelling with more scientific vocabulary. **Grouping and classifying** • Grouping based on visible characteristics and measurable properties. **Graphing** • Representing data using bar charts. **Analysing and drawing conclusions** • Beginning to suggest how one variable may have affected another. • Beginning to quote results as evidence of relationships. Beginning to use identified patterns to predict new values or trends.

	Title	Plants	Plants – Plant Growth	Plants – Plant Reproduction
Summer 1	Unit Overview	Venturing outside, children identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. They use magnifying glasses to observe and name plant parts and draw and label diagrams of flowers. Children closely observe leaves and sort them into groups based on their appearance. They use non-standard units to measure leaf length and record their observations in a table. Pupils investigate if beans need water for growth and identify edible plant parts.	Carrying out comparative tests, pupils identify the conditions required for seed germination and compare these to the survival needs of plants in later growth phases. Pupils use rulers to measure stem growth and record data in a table. They use their results to conclude that plants need water, light and a suitable temperature to grow and stay healthy. Children identify the stages in a plant's life cycle and discover how humans impact plants in the environment.	Building on their prior knowledge of plant structures, children describe the functions of named parts and use evidence to explain their significance in plant development. They investigate factors that may affect plant growth and how water is transported. They explore how seeds vary and create models to show seed dispersal methods.
	Working Scientifically	**Posing questions** • Exploring the world around them and raising their own simple questions. • Recognising there are different types of enquiry (ways to answer a question). • Responding to suggestions on how to answer questions. **Planning** • With support, deciding if suggested observations are suitable. • Ordering a simple method. **Predicting** • Suggesting what might happen, often justifying with personal experience. **Observing (qualitative data)** • Using their senses to describe, in simple terms, what they notice or what has changed. **Measuring (quantitative data)** • Using non-standard units to measure and compare. **Researching** • Gathering specific information from one simplified, specified source. **Recording (diagrams)** • Drawing and labelling simple diagrams. **Recording (tables)** • Using a prepared table to record results including: o numbers; o simple observations.	**Posing questions** • Exploring the world around them and raising their own simple questions. • Recognising there are different types of enquiry (ways to answer a question). • Responding to suggestions on how to answer questions. **Planning** • Beginning to recognise whether a planned test is fair. • With support, deciding if suggested observations are suitable. **Predicting** • Suggesting what might happen, often justifying it with personal experience. **Observing** • Using their senses to describe, in simple terms, what they notice or what has changed. **Measuring (quantitative data)** • Beginning to use standard units and read simple scales to measure and compare. • Beginning to use simple measuring equipment to make approximate measurements. **Recording (diagrams)** • Drawing and labelling simple diagrams. **Recording (tables)** • Using a prepared table to record results including: o numbers; o simple observations. **Analysing and drawing conclusions** • Using their results to answer simple questions.	**Posing questions** • Beginning to raise further questions during the enquiry process. • Considering what makes a testable question. • Beginning to recognise that there are different types of enquiry and that they are suitable for different questions. • Beginning to make suggestions about how different questions could be answered. **Planning** • Beginning to suggest what observations to make and how long to make them for. • Making predictions about what they think will happen by using scientific knowledge and/or personal experience to explain their prediction. **Observing** • Using their senses to describe, in more detail and with simple scientific vocabulary, what they notice or what has changed. **Measuring** • Using standard units to measure and compare. • Using measuring equipment with increasing accuracy. • Reading scales with unmarked intervals between numbers. **Recording** • Using a prepared table to record results including more detailed observations. • Using tables with more than two columns. • Identifying and adding headings to tables. • Beginning to design simple results tables. **Grouping and classifying** • Grouping based on visible characteristics and measurable properties.

		Grouping and classifying • Grouping based on visible characteristics. **Analysing and drawing conclusions** • Using their results to answer simple questions. • Beginning to recognise when results or observations do not match their predictions. **Science in action** To know: • About famous scientists throughout history. • About the work of modern-day scientists. • There are spiritual, moral, social and cultural links with Science.	• Beginning to recognise when results or observations do not match their predictions. **Science in action** To know: • A range of jobs and careers that use scientific knowledge and methods. There are spiritual, moral, social and cultural links with Science.	**Graphing** • Reading the value of bars with greater accuracy. **Analysing and drawing conclusions** • Writing a conclusion to summarise findings using simple scientific vocabulary. • Beginning to suggest how one variable may have affected another. • Beginning to quote results as evidence of relationships. • Identifying data that does not fit a pattern (anomalous data). • Recognising when results or observations do not match their predictions. • Beginning to use identified patterns to predict new values or trends. **Evaluating** • Beginning to identify steps in the method that need changing and suggest improvements. • Beginning to identify which variables were difficult to control and suggesting how to better control them.
Summer 2	Title	**Making Connections** Investigating science through stories	**Making Connections** Plant based materials	**Light & Shadows**
	Unit Overview	Using picture books and hands-on outdoor activities, children broaden their understanding of plants and animals. They gather and record data to find out if taller trees have larger trunks and recap the features of different animal groups. They identify animals by closely observing footprints and construct waterproof animal homes with natural materials. Pupils sort birds according to their diet and seek patterns in their physical characteristics.	Identifying ways to reduce, reuse and recycle, children draw on their knowledge of properties to invent creative uses for old objects. They discover some natural materials derived from plants and look at the processes involved in making paper. Using their observational skills, they conduct simple tests to choose the most suitable material for homemade plant pots, venturing outdoors to find natural materials to decorate them.	Identifying examples of light sources, children learn that light is needed to see and how its absence causes darkness. Children investigate reflection and shadow formation, including how different factors affect shadows. They explore how shadows can be used to entertain in the arts and create shadow puppets to recount how different people work or experiment with light.
	Working Scientifically	**Posing questions** • Exploring the world around them and raising their own simple questions. • Recognising there are different types of enquiry (ways to answer a question). • Responding to suggestions on how to answer questions. **Planning** • Beginning to recognise whether a planned test is fair.	**Posing questions** • Exploring the world around them and raising their own simple questions. • Recognising there are different types of enquiry (ways to answer a question). • Responding to suggestions on how to answer questions. **Planning** • Beginning to recognise whether a planned test is fair.	**Posing questions** • Beginning to raise further questions during the enquiry process. • Considering what makes a testable question. • Beginning to recognise that there are different types of enquiry and that they are suitable for different questions. • Beginning to make suggestions about how different questions could be answered. **Planning** • Making predictions about what they think will happen by using scientific knowledge and/or

		• With support, deciding if suggested observations are suitable. **Predicting** • Suggesting what might happen, often justifying with personal experience. **Observing (qualitative data)** • Using their senses to describe, in simple terms, what they notice or what has changed. **Measuring (quantitative data)** • Beginning to use standard units and read simple scales to measure and compare. • Beginning to use simple measuring equipment to make approximate measurements. **Researching** • Gathering specific information from one simplified, specified source. **Recording (tables)** • Using a prepared table to record results including: o numbers; o simple observations. **Grouping and classifying** • Grouping based on visible characteristics. **Analysing and drawing conclusions** • Using their results to answer simple questions. • Beginning to recognise when results or observations do not match their predictions. **Science in action** • To know about a range of jobs and careers that use scientific knowledge and methods.	• With support, deciding if suggested observations are suitable. **Predicting** • Suggesting what might happen, often justifying it with personal experience. **Observing (qualitative data)** • Using their senses to describe, in simple terms, what they notice or what has changed. **Researching** • Gathering specific information from one simplified, specified source. **Recording (tables)** • Using a prepared table to record results including: o numbers; o simple observations. **Grouping and classifying** • Grouping based on visible characteristics. **Analysing and drawing conclusions** • Using their results to answer simple questions. • Beginning to recognise when results or observations do not match their predictions. **Science in action** • To know about famous scientists throughout history. • To know about the work of modern-day scientists.	personal experience to explain their prediction. **Observing** • Using their senses to describe, in more detail and with simple scientific vocabulary, what they notice or what has changed. **Measuring** • Using standard units to measure and compare. • Using measuring equipment with increasing accuracy. • Reading scales with unmarked intervals between numbers. **Recording** • Using a prepared table to record results including more detailed observations. • Using tables with more than two columns. • Identifying and adding headings to tables. • Beginning to design simple results tables. **Grouping and classifying** • Grouping based on visible characteristics and measurable properties. **Graphing** • Reading the value of bars with greater accuracy. **Analysing and drawing conclusions** • Writing a conclusion to summarise findings using simple scientific vocabulary. • Beginning to suggest how one variable may have affected another. • Beginning to quote results as evidence of relationships. • Identifying data that does not fit a pattern (anomalous data). • Recognising when results or observations do not match their predictions. • Beginning to use identified patterns to predict new values or trends. **Evaluating** • Beginning to identify steps in the method that need changing and suggest improvements. • Beginning to identify which variables were difficult to control and suggesting how to better control them. Beginning to identify new questions that would further the enquiry.

Long Term Science Plan

		Year 4	Year 5	Year 6
	Title	**Sound & Vibrations**	**Materials – Mixtures & Separations**	**Classifying – Big and Small**
Autumn 1	Unit Overview	Exploring different ways of producing sounds, children learn about the relationship between vibrations and what they hear. They study dolphins and whales to develop their understanding of how sound travels between objects and investigate the role of insulation to protect our ears. Pupils explore how pitch and volume can be altered and make their own musical instruments to demonstrate these principles.	Pupils explore different types of mixtures and the different methods that can be used to separate them. They dissolve a range of substances, identify different solutions and investigate how temperature affects the time taken to dissolve. They design and create a water filter, sieve soil and evaporate solutions.	Children broaden their knowledge of how vertebrates, invertebrates, plants and micro-organisms are grouped using shared characteristics. They discover how Carl Linnaeus developed the Linnaean and binomial systems for classifying and naming living things. Pupils use and produce classification keys to sort and identify organisms.
	Working Scientifically	**Planning** • To suggest what observations to make and how long to make them for. **Observing** • To observe closely how different instruments create a sound. **Researching** • To research how cetaceans communicate underwater. **Recording** • To present results using a bar chart. • To design simple results tables. **Analysing and drawing conclusions** • To identify when results or observations do not match predictions.	**Researching** • Gathering answers to open-ended questions from a variety of sources. **Recording (diagrams)** • Labelling with a broader range of scientific vocabulary. • Annotating diagrams to explain concepts and convey opinions. **Posing questions** • Selecting the most appropriate enquiry method to answer questions and give justification. **Observing (qualitative data)** • Using their senses to describe, in detail and with a broader range of scientific vocabulary, what they notice or what has changed. **Planning** • Suggesting which variables will be changed, measured and controlled. • Making and explaining decisions about what observations to make and how long to make them for.	**Grouping and classifying** • Grouping in a broader range of contexts. • Organising the layout of number and branching keys. • Formulating appropriate questions for classification keys.

Autumn 2	Title	**Electricity & Circuits**	**Properties of Materials - Changes**	**Evolution & Inheritance**
	Unit Overview	Exploring appliances that use electricity in their setting, children learn how to work with electricity safely and build circuits. Pupils investigate electrical conductors and insulators and explore the relationship between the number of bulbs and bulb brightness. Real scenarios and historical discoveries inform children about scientific progression and home safety.	Broadening their experience of the properties of materials, children investigate hardness, transparency and conductivity and consider how these properties influence the uses of materials. They explore reversible changes, including dissolving and changes of state. Children compare these to irreversible changes, including rusting, burning and mixing vinegar and bicarbonate of soda.	Studying patterns in humans and other species, children learn about characteristics that are inherited from parents and those that are environmental. Through the eyes of Darwin and Wallace, they learn how observations lead to theories and explore natural selection. By modelling the variation and natural selection of Darwin's finches, they begin to explain how species evolve over time and the role of fossil evidence that supports this theory.
	Working Scientifically	**Posing questions** • Considering what makes a testable question. • Beginning to recognise that there are different types of enquiry and that they are suitable for different questions. • Beginning to make suggestions about how different questions could be answered. **Planning** • Planning a simple method, verbally and in writing. • Beginning to write a simple method in numbered steps. • Selecting and beginning to decide what simple equipment might be used to aid observations and measurements. **Predicting** • Making predictions about what they think will happen by predicting a trend by considering how the changing variable will affect the measured variable. **Observing** • Using their senses to describe, in more detail and with simple scientific vocabulary, what they notice or what has changed. **Recording** • Beginning to draw scientific diagrams that are in 2D and simple line diagrams.	**Planning** • Writing a method including detail about how to ensure control variables are kept the same. **Predicting** • Making increasingly scientific predictions by: o using previous scientific knowledge and evidence to inform their predictions; o using scientific language to describe a potential outcome or explain why they think something will happen; o making links between topics to evidence a prediction. **Measuring (quantitative data)** • Using standard units to measure and compare with increasing precision (decimals). **Recording (tables)** • Suggesting headings to tables, including units. • Designing results tables with increasing independence with consideration of variables where applicable. **Analysing and drawing conclusions** • Writing a conclusion to summarise findings using increasingly complex scientific vocabulary. **Evaluating** • Identifying which variables were difficult to control and suggesting how to better control them. • Commenting on the degree of trust by also reflecting on: o accuracy (human error with equipment); o reliability (repeating results).	**Posing questions** • Raising questions throughout the enquiry process. • Selecting the most appropriate enquiry method to answer questions and give justification. **Planning** • Suggesting which variables will be changed, measured and controlled. **Observing** • Using senses to describe, in detail and with a broader range of scientific vocabulary, what is noticed or what has changed. **Recording** • Using tables with columns that allow for repeat readings. • Calculating the mean average. **Grouping and classifying** • Grouping in a broader range of contexts. **Analysing and drawing conclusions** • Suggesting with increasing independence how one variable may have affected another. • Quoting relevant data as evidence of relationships. • Identifying anomalies in repeat data and excluding results where appropriate. • Comparing individual, class and/or model data to the prediction and recognising when they do not match. **Evaluating** • Identifying steps in the method that need changing and suggesting improvements.

		• Using a prepared table to record results including more detailed observations. • Using tables with more than two columns. • Identifying and adding headings to tables. • Beginning to design simple results tables. **Grouping and classifying** • Grouping based on visible characteristics and measurable properties. **Analysing and drawing conclusions** • Writing a conclusion to summarise findings using simple scientific vocabulary. • Beginning to suggest how one variable may have affected another. • Beginning to use identified patterns to predict new values or trends.		• Identifying which variables were difficult to control and suggesting how to control them better. • Commenting on the degree of trust by reflecting on accuracy (human error with equipment) and reliability (repeating results). • Posing new questions in response to the data that would extend the enquiry.

Spring 1	Title	**Classifications & Changing Habitats**	**Life Cycles & Reproduction**	**Circulation and Health**
	Unit Overview	Identifying different ways to group living things, children make classification keys to explore which grouping methods are most effective. Pupils study how habitats change over time and understand that humans can have both positive and negative effects on their surroundings. They play the role of conservationists and design conservation pamphlets.	Studying animal life cycles, children learn about the significance of reproduction for a species' survival. Pupils compare asexual and sexual reproduction in plants and grow cuttings to measure and plot root growth over time. Children compare the life cycles of mammals, birds, amphibians and insects identifying key differences. They analyse secondary data to investigate how the amphibian life cycle is affected by predators and climate change.	Studying the human circulatory system, children learn about the role of the heart, blood and blood vessels and use models to demonstrate their function. They explore how lifestyle choices affect our health and use secondary sources to help them play the role of healthcare professionals advising patients. Pupils devise their own investigation to look at the relationship between exercise and heart rate, applying their knowledge of variables and then analysing secondary data to understand fitness better.
	Working Scientifically	**Observing** • Using their senses to describe, in more detail and with simple scientific vocabulary, what they notice or what has changed. **Recording** • Recording data in Carroll and Venn diagrams. • Using a prepared table to record results, including more detailed observations. • Using tables with more than two columns. **Grouping and classifying** • Grouping based on visible characteristics and measurable properties. • Populating a pre-prepared branching and number key. • Choosing appropriate questions for classification keys. **Researching** • Gathering specific information from a variety of sources.	**Posing questions** • Raising questions throughout the enquiry process. • Identifying testable questions. **Planning** • Suggesting which variables will be changed, measured and controlled. • Making and explaining decisions about what observations to make and how long to make them for. **Observing** • Using their senses to describe, in detail and with a broader range of scientific vocabulary, what they notice or what has changed. **Measuring** • Using standard units to measure and compare with increasing precision (decimals). **Researching** • Gathering answers to open-ended questions from a variety of sources. **Recording** • Representing data by using line graphs and scatter graphs. • Plotting points with greater accuracy. • Reading the value of plotted points with greater accuracy. **Analysing and drawing conclusions** • Suggesting with increasing independence how one variable may have affected another. • Quoting relevant data as evidence of relationships.	**Planning** • Suggesting which variables will be changed, measured and controlled. • Making and explaining decisions about what observations to make and how long to make them for. • Writing a method including detail about how to ensure control variables are kept the same. • Writing a method that considers reliability by planning repeated readings. • Suggesting the most appropriate equipment to make observations and measurements and justifying their choices. **Predicting** • Making increasingly scientific predictions by using previous scientific knowledge and evidence to inform their predictions, using scientific language to describe a potential outcome or explain why they think something will happen and making links between topics to evidence a prediction. **Observing** • Using their senses to describe, in detail and with a broader range of scientific vocabulary, what they notice or what has changed. **Measuring** • Using standard units to measure and compare with increasing precision (decimals). • Reading a wider variety of scales with unmarked intervals between numbers. **Researching** • Gathering answers to questions from a variety of sources.

			• Using identified patterns to predict new values or trends.	**Recording (tables)** • Using tables with columns that allow for repeat readings. • Suggesting headings to tables, including units. • Designing results tables with increasing independence with consideration of variables where applicable. • Calculating the mean average. **Graphing** • Representing data by using line graphs and scatter graphs. • Plotting points with greater accuracy. • Reading the value of plotted points with greater accuracy. **Analysing and drawing conclusions** • Recognise the following across a broader range of contexts and in more complexity: naturally occurring patterns and relationships, changes over time and relevant secondary data. • Writing a conclusion to summarise findings using increasingly complex scientific vocabulary. • Suggesting with increasing independence how one variable may have affected another. • Quoting relevant data as evidence of relationships. • Identifying anomalies in repeat data and excluding results where appropriate. • Comparing individual, class and/or model data to the prediction and recognising when they do not match. • Using identified patterns to predict new values or trends. **Evaluating** • Commenting on the degree of trust by also reflecting on the reliability (repeating results) and sources of information (e.g. websites, books).

Spring 2	Title	**Digestion & Food**	**Unbalanced Forces**	**Circuits, Batteries & Switches**
	Unit Overview	Using models, children describe the function of key organs in the digestive system. Pupils identify the types of human teeth to create their own model and investigate factors that impact our dental health. They compare human teeth to other animals' and consider this in the light of prior knowledge about predators, prey and food chains. Children take on the role of a naturalist investigating animal faeces for clues about diet, digestion and dentition.	Building on their knowledge of forces, children explore gravity, air resistance and water resistance in more depth and consider the effect of these forces being unbalanced. They demonstrate key principles in the classroom and plan investigations to further their understanding of the effects of these forces. Pupils test their ideas using models and compete to build the most effective pulley system.	Using their prior knowledge of electrical circuits, children learn to draw conventional circuit diagrams and use models to explain current, resistance and voltage. They compare different batteries and consider the effect on bulb brightness. Pupils apply their knowledge of switches and electrical circuits to design and produce their own practical devices.
	Working Scientifically	**Planning** • Beginning to select from options which variables will be changed, measured and controlled. **Recording** • Beginning to design simple results tables. **Grouping and classifying** • Grouping based on visible characteristics and measurable properties. **Analysing and drawing conclusions** • Beginning to suggest how one variable may have affected another. • Beginning to use identified patterns to predict new values or trends. **Evaluating** • Beginning to identify steps in the method that need changing and suggest improvements. • Beginning to identify which variables were difficult to control and suggesting how to better control them. • Commenting on the degree of trust by reflecting on the quality of results (accurate measurements and maintaining control variables).	**Planning** • Suggesting which variables will be changed, measured and controlled. • Making and explaining decisions about what observations to make and how long to make them for. • Writing a method that includes details about how to ensure control variables are kept the same. • Writing a method that considers reliability by planning repeated readings. • Suggesting the most appropriate equipment to make observations and measurements and justifying their choices. **Measuring** • Using standard units to measure and compare with increasing precision (decimals). • Reading a wider variety of scales with unmarked intervals between numbers. **Recording** • Drawing scientific diagrams by: o using a wider range of standard symbols; o drawing with increasing accuracy; o labelling with a broader range of scientific vocabulary; o annotating diagrams to explain concepts and convey opinions. • Using tables with columns that allow for repeat readings. • Suggesting headings to tables, including units.	**Planning** • Suggesting which variables will be changed, measured and controlled. • Writing a method including details about ensuring control variables are kept the same. • Writing a method that considers reliability by planning repeated readings. • Suggesting the most appropriate equipment to make observations and measurements and justifying their choices. **Predicting** • Using previous scientific knowledge and evidence to inform their predictions. • Using scientific language to describe a potential outcome or explain why they think something will happen. **Observing and measuring** • Using their senses to describe, in detail and with a broader range of scientific vocabulary, what they notice or what has changed. • Using standard units to measure and compare with increasing precision (decimals). • Reading a wider variety of scales with unmarked intervals between numbers. **Recording** • Drawing scientific diagrams by using a wider range of standard symbols and drawing with increasing accuracy. • Using tables with columns that allow for repeat readings. • Suggesting headings to tables, including units.

			• Designing results tables with increasing independence with consideration of variables where applicable. • Calculating the mean average. **Graphing** • Representing data by using line graphs and scatter graphs. • Plotting points with greater accuracy. • Reading the value of plotted points with greater accuracy. **Analysing and drawing conclusions** • Writing a conclusion to summarise findings using increasingly complex scientific vocabulary. • Suggesting with increasing independence how one variable may have affected another. • Quoting relevant data as evidence of relationships. • Identifying anomalies in repeat data and excluding results where appropriate. • Comparing individual, class and/or model data to the prediction and recognising when they do not match. • Using identified patterns to predict new values or trends. **Evaluating** • Identifying steps in the method that need changing and suggesting improvements. • Identifying which variables were difficult to control and suggesting how to control them better. • Commenting on the degree of trust by also reflecting on: o accuracy (human error with equipment); o reliability (repeating results); o sources of information (e.g. websites, books). • Deciding what data to collect to test direct relationships further.	• Designing results tables with increasing independence with consideration of variables where applicable. • Calculating the mean average. **Analysing and drawing conclusions** • Writing a conclusion to summarise findings using increasingly complex scientific vocabulary. • Suggesting with increasing independence how one variable may have affected another. • Quoting relevant data as evidence of relationships. • Identifying anomalies in repeat data and excluding results where appropriate. • Comparing individual, class and/or model data to the prediction and recognising when they do not match. • Using identified patterns to predict new values or trends. **Evaluating** • Identifying steps in the method that need changing and suggesting improvements. • Identifying which variables were difficult to control and suggesting how to control them better.

Summer 1	Title	**States of Matter**	**Earth & Space**	**Light and Reflection**
	Unit Overview	Investigating the properties of solids, liquids and gases, children learn about the different states of matter. They explore changes of state using relatable examples and use this to explain changes to water through the water cycle. Pupils investigate the relationship between temperature and rate of evaporation while broadening their experience of working scientifically.	Exploring some of the key celestial bodies in our Solar System, children learn their names and compare their movements. Pupils discover the relationship between the Earth's rotation and daylight, making models to represent their knowledge. They make their own sundials and consider how and why humans' ideas about the universe have changed over time.	Proving that light travels in a straight line, children use this information to explain observations of reflection and shadows. They explore how our eyes allow us to see and how mirrors can be used in a variety of ways. Pupils investigate factors affecting the size of shadows and the laws of reflection. Children apply what they have learned about light by exploring real-life uses of mirrors.
	Working Scientifically	**Posing questions** • Considering what makes a testable question. **Measuring** • Using standard units to measure and compare. • Using measuring equipment with increasing accuracy. **Recording** • Drawing in 2D to produce simple line diagrams. • Labelling diagrams with more scientific vocabulary. **Researching** • Gathering specific information from a variety of sources. **Analysing and drawing conclusions** • Beginning to use identified patterns to predict new values or trends. Writing a conclusion to summarise findings using simple scientific vocabulary.	**Posing questions** • Raising questions throughout the enquiry process. • Identifying testable questions. • Selecting the most appropriate enquiry method to answer questions and give justification. **Recording** • Drawing scientific diagrams by: o Using a wider range of standard symbols. o Drawing with increasing accuracy. o Labelling with a broader range of scientific vocabulary. o Annotating diagrams to explain concepts and convey opinions. • Suggesting headings to tables, including units. • Designing results tables with increasing independence with consideration of variables where applicable. **Analysing and drawing conclusions** Using identified patterns to predict new values or trends.	**Posing questions** • Identifying testable questions. • Selecting the most appropriate enquiry method to answer questions and give justification. **Planning** • Suggesting which variables will be changed, measured and controlled. • Writing a method including detail about how to ensure control variables are kept the same. **Observing** • Using their senses to describe, in detail and with a broader range of scientific vocabulary, what they notice or what has changed. **Measuring** • Using standard units to measure and compare with increasing precision (decimals). • Reading a wider variety of scales with unmarked intervals between numbers. **Recording** • Drawing scientific diagrams with increasing accuracy, labelling with a broader range of scientific vocabulary and annotating diagrams to explain concepts and convey opinions. • Using tables with columns that allow for repeat readings. • Calculating the mean average. **Graphing** • Representing data by using line graphs and scatter graphs. • Plotting points with greater accuracy. • Reading the value of plotted points with greater accuracy. **Analysing and drawing conclusions**

					• Writing a conclusion to summarise findings using increasingly complex scientific vocabulary. • Suggesting with increasing independence how one variable may have affected another. • Identifying anomalies in repeat data and excluding results where appropriate. • Using identified patterns to predict new values or trends. **Evaluating** • Identifying steps in the method that need changing and suggesting improvements. • Identifying which variables were difficult to control and suggesting how to control them better. • Commenting on the degree of trust by reflecting on accuracy (human error with equipment) and reliability (repeating results).
Summer 2	Title	**Making Connections** How does the flow of liquids compare?	**Human Timeline**	**Making Connections** Does the size of an asteroid affect the size of its impact crater?	**Making Connections** Are some sunglasses safer than others?
	Unit Overview	Revising the states of matter, children consider methods for measuring how liquids flow differently from each other. They plan and execute an enquiry, considering different ways of representing data to support a conclusion. By revisiting the digestive system, the children explore how the flow of different liquids should be considered when producing different medicines.	Studying human development and changes, children identify key stages and consider what data may help determine if a child is growing normally. They describe how puberty affects girls and boys and produce graphs to compare how gestation periods vary across different mammals, including humans.	Experimenting, analysing data and drawing conclusions to explore the relationship between the size of model asteroids and the size of the impact crater they create. Children apply their understanding of gravity, air resistance and the Earth and space to make predictions and plan and carry out an enquiry.	Exploring sun safety and its impact on health, children investigate the efficacy of different sunglasses. They devise enquiries to test light and UV transmission of the lenses to form a conclusion about which sunglasses are best, applying their knowledge of electrical circuits to provide a light source in the experiment. The children summarise their findings through presentations and advertisements.
	Working Scientifically	This unit revisits the working scientifically skills covered previously, including: • Posing questions. • Planning. • Predicting. • Observing.	**Human Timeline** (3 weeks) **Graphing** • Representing data by using line graphs and scatter graphs. • Plotting points with greater accuracy.		This unit revisits the working scientifically skills covered in Year 6, including: • Posing questions. • Planning. • Predicting. • Observing.

		• Measuring. • Recording. • Graphing. • Analysing and drawing conclusions. Evaluating.	• Reading the value of plotted points with greater accuracy. **Analysing and drawing conclusions** • Writing a conclusion to summarise findings using increasingly complex scientific vocabulary. • Suggesting with increasing independence how one variable may have affected another. • Quoting relevant data as evidence of relationships. • Using identified patterns to predict new values or trends. **Evaluating** • Commenting on the degree of trust by also reflecting on the sources of information (e.g. websites, books). • Deciding what data to collect to further test direct relationships. **Making Connections** (3 weeks) This unit revisits the working scientifically skills covered in Year 5, including: • Posing questions. • Planning. • Predicting. • Observing. • Measuring. • Recording. • Graphing. • Analysing and drawing conclusions. • Evaluating.	• Measuring. • Recording. • Graphing. • Analysing and drawing conclusions. • Evaluating.