Beechwood JUNIOR SCHOOL
Together we can!

Science Curriculum

Led by: Neil Parker

Why do we teach science in our school?	How is Science sequenced within our school?	What will our children learn?
• We teach Science to enable children to become confident, excited and inquiry led Scientists • We want our children to understand how vital Science is for understanding the world in which they live. • To ask questions and develop their ideas through investigative learning • To allow children the opportunity to become creative and critical thinkers • To understand that Science is an everyday phenomenon that is always changing and adapting	• There are five knowledge enquiries that the children learn throughout the year: Identifying, classifying and grouping, research, observing over time, comparative and fair testing and pattern seeking • Children will have the opportunity to apply the knowledge through investigations • Each year group, throughout the year, will have ten working scientifically skills to focus on • Children will have between 4-5 knowledge domains to learn	• Children will be exposed to specific scientific vocabulary • Children will learn about different influential scientists in scientific studies • Children will learn how to effectively plan an investigation • Children will learn how to record results in a creative and critical way • Across the key stage, children will learn about animals, their habitats and human health • Children will learn how to conclude and evaluate an investigation

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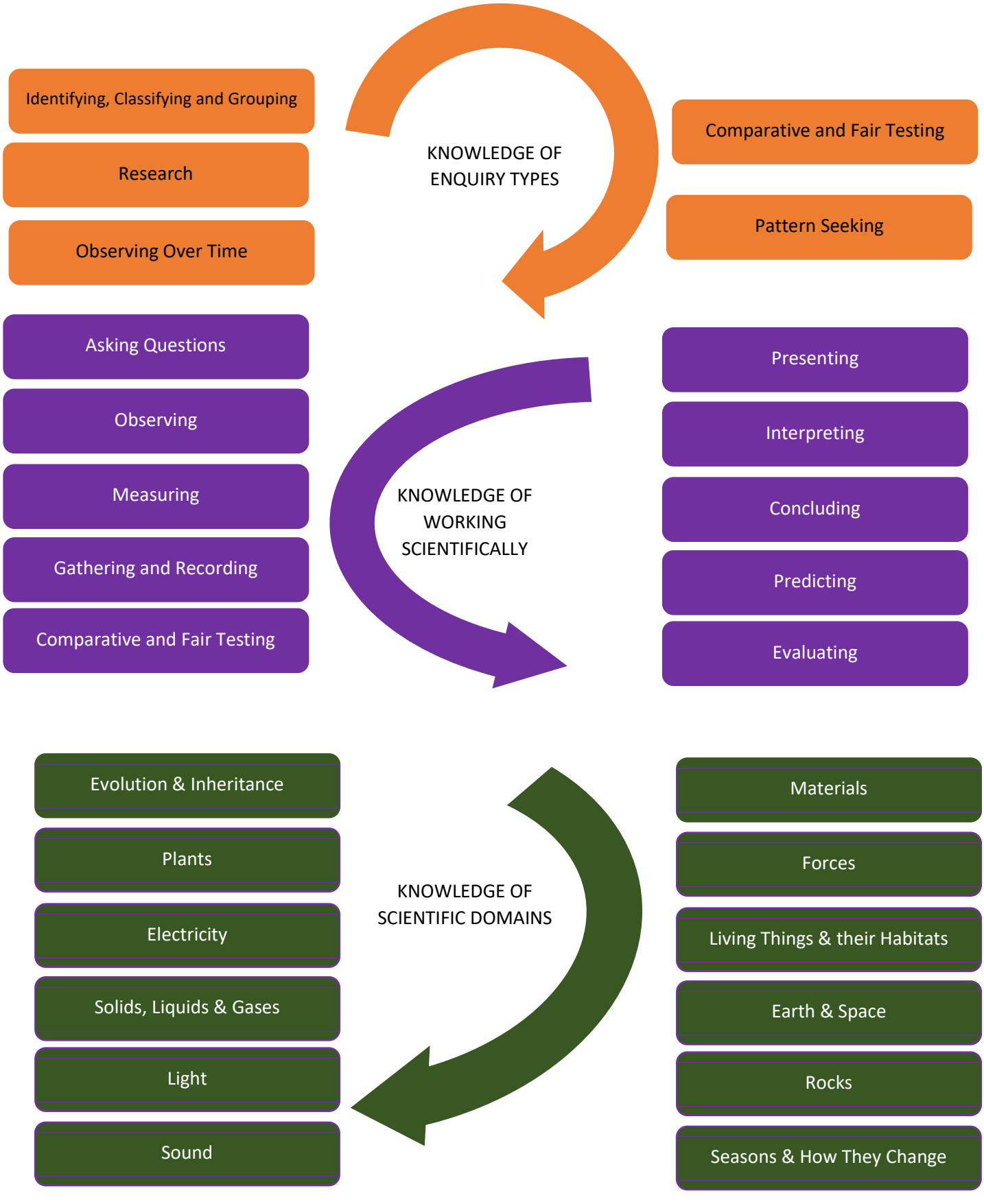
Concept Map for Science



Working scientifically skills- Year 3 & 4

Asking relevant questions and using different types of scientific enquiries to answer them

- The children consider their prior knowledge when asking questions. They independently use a range of question stems. Whereappropriate, they answer these questions.
- The children answer questions posed by the teacher.
- Given a range of resources, the children decide for themselves how to gather evidence to answer the question. They recognise when secondary sources can be used to answer questions that cannot be answered through practical work. They identify the type of enquirythat they have chosen to answer their question.

Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers

- The children make systematic and careful observations.
- They use a range of equipment for measuring length, time, temperature and capacity. They use standard units for their measurements.
-

Setting up simple practical enquiries, comparative and fair tests

- The children select from a range of practical resources to gather evidence to answer questions generated by themselves or the teacher.
- They follow their plan to carry out: observations and tests to classify; comparative and simple fair tests; observations over time; andpattern seeking.

Explanatory note

A comparative test is performed by changing a variable that is qualitative e.g. the type of material, shape of the parachute. This leads toa ranked outcome.

A fair test is performed by changing a variable that is quantitative e.g. the thickness of the material or the area of the canopy. This leadsto establishing a causative relationship.

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.

- The children sometimes decide how to record and present evidence. They record their observation e.g. using photographs, videos, pictures, labelled diagrams or writing. They record their measurements e.g. using tables, tally charts and bar charts (given templates, ifrequired, to which they can add headings). They record classifications e.g. using tables, Venn diagrams, Carroll diagrams.
- Children are supported to present the same data in different ways in order to help with answering the question.

Using straightforward scientific evidence to answer questions or to support their

findings
• Children answer their own and others' questions based on observations they have made, measurements they have taken or information they have gained from secondary sources. The answers are consistent with the evidence.
Identifying differences, similarities or changes related to simple scientific ideas and processes
• Children interpret their data to generate simple comparative statements based on their evidence. They begin to identify naturally occurringpatterns and causal relationships.
Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
• They draw conclusions based on their evidence and current subject knowledge. • They identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry. • Children use their evidence to suggest values for different items tested using the same method e.g. the distance travelled by a car on anadditional surface. • Following a scientific experience, the children ask further questions which can be answered by extending the same enquiry.
Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

- They communicate their findings to an audience both orally and in writing, using appropriate scientific vocabulary.

Working Scientifically – Years 5 and 6

Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary

- Children independently ask scientific questions. This may be stimulated by a scientific experience or involve asking further questions based on their developed understanding following an enquiry.
- Given a wide range of resources the children decide for themselves how to gather evidence to answer a scientific question. They choose a type of enquiry to carry out and justify their choice. They recognise how secondary sources can be used to answer questions that cannot be answered through practical work.
- The children select from a range of practical resources to gather evidence to answer their questions. They carry out fair tests, recognising and controlling variables. They decide what observations or measurements to make over time and for how long. They look for patterns and relationships using a suitable sample.

Taking measurements, using a range of scientific equipment, with increasing accuracy and precision taking repeat readings when appropriate

- The children select measuring equipment to give the most precise results e.g. ruler, tape measure or trundle wheel, force meter with a suitable scale.
- During an enquiry, they make decisions e.g. whether they need to: take repeat readings (fair testing); increase the sample size (pattern seeking); adjust the observation period and frequency (observing over time); or check further secondary sources (researching); in order to get accurate data (closer to the true value).

Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
• The children decide how to record and present evidence. They record observations e.g. using annotated photographs, videos, labelled diagrams, observational drawings, labelled scientific diagrams or writing. They record measurements e.g. using tables, tally charts, bar charts, line graphs and scatter graphs. They record classifications e.g. using tables, Venn diagrams, Carroll diagrams and classification keys. • Children present the same data in different ways in order to help with answering the question.
Identifying scientific evidence that has been used to support or refute ideas or arguments
• Children answer their own and others' questions based on observations they have made, measurements they have taken or information they have gained from secondary sources. When doing this, they discuss whether other evidence e.g. from other groups, secondary sources and their scientific understanding, supports or refutes their answer. • They talk about how their scientific ideas change due to new evidence that they have gathered. • They talk about how new discoveries change scientific understanding.
Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
• In their conclusions, children: identify causal relationships and patterns in the natural world from their evidence; identify results that do not fit the overall pattern; and explain their findings using their subject knowledge.

• They evaluate, for example, the choice of method used, the control of variables, the precision and accuracy of measurements and the credibility of secondary sources used. • They identify any limitations that reduce the trust they have in their data. • They communicate their findings to an audience using relevant scientific language and illustrations.
Using test results to make predictions to set up further comparative and fair tests
• Children use the scientific knowledge gained from enquiry work to make predictions they can investigate using comparative and fair tests.

Progression in knowledge

National Curriculum statements in red are from other linked topics.

Plants

Year 2	Observe and describe how seeds and bulbs grow into mature plants. Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. Identify and name a variety of plants and animals in their habitats, including microhabitats. (Y2 - Living things and their habitats)
Year 3	• Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. • Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. • Investigate the way in which water is transported within plants. • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.
Year 4	• Recognise that living things can be grouped in a variety of ways. (Y4 - Living things and their habitats) • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. (Y4 -Living things and their habitats) • Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats)
Year 5	• Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats)
Year 6	• Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. (Y6 - Living things and their habitats) • Give reasons for classifying plants and animals based on specific characteristics. (Y6 - Living things and their habitats)

Living things and their habitats

Year 2	Explore and compare the differences between things that are living, dead, and things that have never been alive. Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. Identify and name a variety of plants and animals in their habitats, including microhabitats. Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals including humans)
Year 3	• Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)

Year 4	• Recognise that living things can be grouped in a variety of ways. • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. • Recognise that environments can change and that this can sometimes pose dangers to living things. • Construct and interpret a variety of food chains, identifying producers, predators and prey. (Y4 - Animals, including humans)
Year 5	• Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. • Describe the life process of reproduction in some plants and animals.
Year 6	• Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. • Give reasons for classifying plants and animals based on specific characteristics. • Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. (Y6 - Evolution and inheritance) • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. (Y6 -Evolution and inheritance)

Animals, including humans

Year 2	• Notice that animals, including humans, have offspring which grow into adults. • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. (Y2 - Living things and their habitats)
Year 3	• Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. • Identify that humans and some other animals have skeletons and muscles for support, protection and movement.
Year 4	• Describe the simple functions of the basic parts of the digestive system in humans. • Identify the different types of teeth in humans and their simple functions. • Construct and interpret a variety of food chains, identifying producers, predators and prey.
Year 5	• Describe the changes as humans develop to old age. • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. (Y5 - Living things and their habitats) • Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats)
Year 6	• Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. • Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. • Describe the ways in which nutrients and water are transported within animals, including humans. • Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. (Y6 - Living things and their habitats) • Give reasons for classifying plants and animals based on specific characteristics. (Y6 - Living things and their habitats)

Evolution and inheritance

Year 3	• Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks) • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)
Year 4	• Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats)
Year 5	• Describe the life process of reproduction in some plants and animals. (Living things and their habitats - Y5)
Year 6	• Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. • Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

Seasonal changes

Year 2	
Year 3	• Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. (Y3 - Light)
Year 4	
Year 5	• Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky. (Y5 - Earth and space)
Year 6	

Materials

Year 3	• Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. (Y3 - Rocks) • Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks) • Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. (Y3 - Forces and magnets)
Year 4	• Compare and group materials together, according to whether they are solids, liquids or gases. • Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. • Recognise some common conductors and insulators, and associate metals with being good conductors. (Y4 - Electricity)

Year 5	• Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. • Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. • Demonstrate that dissolving, mixing and changes of state are reversible changes. • Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.
Year 6	

Rocks

Year 2	• Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2 - Uses of everyday materials)
Year 3	• Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. • Describe in simple terms how fossils are formed when things that have lived are trapped within rock. • Recognise that soils are made from rocks and organic matter.
Year 4	
Year 5	
Year 6	• Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. (Y6 - Evolution and inheritance)

Light

Year 2	
Year 3	• Recognise that they need light in order to see things and that dark is the absence of light. • Notice that light is reflected from surfaces. • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. • Recognise that shadows are formed when the light from a light source is blocked by an opaque object. • Find patterns in the way that the size of shadows change.
Year 4	
Year 5	• Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. (Y5 - Properties and changes of materials)
Year 6	• Recognise that light appears to travel in straight lines. • Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. • Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

Forces

Year 2	• Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials)
Year 3	• Compare how things move on different surfaces. • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Observe how magnets attract or repel each other and attract some materials and not others. • Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing.
Year 4	
Year 5	• Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. • Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. • Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.
Year 6	

Sound

Year 2	
Year 3	
Year 4	• Identify how sounds are made, associating some of them with something vibrating. • Recognise that vibrations from sounds travel through a medium to the ear. • Find patterns between the pitch of a sound and features of the object that produced it. • Find patterns between the volume of a sound and the strength of the vibrations that produced it. • Recognise that sounds get fainter as the distance from the sound source increases.
Year 5	
Year 6	

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Electricity

Year 2	
Year 3	
Year 4	• Identify common appliances that run on electricity. • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. • Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. • Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. • Recognise some common conductors and insulators, and associate metals with being good conductors.
Year 5	
Year 6	• Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. • Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. • Use recognised symbols when representing a simple circuit in a diagram.

Earth and space

Year 2	
Year 3	
Year 4	
Year 5	• Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. • Describe the movement of the Moon relative to the Earth. • Describe the Sun, Earth and Moon as approximately spherical bodies. • Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.
Year 6	

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What are the big concepts and when are they taught?	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 3	Forces & magnets	Rocks	Animals (Nutrition & Skeleton/Muscles)	Light	Plants	Plants
Enquiry Skills	Identifying, Classifying and Grouping, Research, Observing Over Time, Comparative and Fair Testing, Pattern Seeking					
Working Scientifically Skill	Asking Questions, Observing, Measuring, Gathering and Recording, Comparative and Fair Testing, Presenting, Interpreting, Concluding, Predicting, Evaluating					
Year 4	Electricity	States of Matter	Living Things (Classifying Living Things & Habitats)	Sound	Animals (Digestion & Teeth)	Animals (Digestion & Teeth)
Enquiry Skills	Identifying, Classifying and Grouping, Research, Observing Over Time, Comparative and Fair Testing, Pattern Seeking					
Working Scientifically Skill	Asking Questions, Observing, Measuring, Gathering and Recording, Comparative and Fair Testing, Presenting, Interpreting, Concluding, Predicting, Evaluating					
Year 5	Properties & changes of material	Forces	Living Things (Life Cycles)	Animals (Growing Up & Puberty)	Space	Space
Enquiry Skills	Identifying, Classifying and Grouping, Research, Observing Over Time, Comparative and Fair Testing, Pattern Seeking					
Working Scientifically Skill	Asking Questions, Observing, Measuring, Gathering and Recording, Comparative and Fair Testing, Presenting, Interpreting, Concluding, Predicting, Evaluating					
Year 6	Livings Things (Classifying Living Things)	Light	Evolution & Inheritance	Evolution & Inheritance	Electricity	Animals (Circulation & Impacts on the Human Body)
Enquiry Skills	Identifying, Classifying and Grouping, Research, Observing Over Time, Comparative and Fair Testing, Pattern Seeking					
Working Scientifically Skill	Asking Questions, Observing, Measuring, Gathering and Recording, Comparative and Fair Testing, Presenting, Interpreting, Concluding, Predicting, Evaluating					

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Year 3	
Autumn 1	Autumn 2
• I can describe how objects move on different surfaces • I can understand how a simple pulley works and use to lift an object • I can understand how forces require contact and some do not, giving examples • I can explain how magnets attract and repel. • I can understand that magnets have two poles • I can compare how things move on difference surfaces. • I can make observations of magnets attracting and repelling each other • I can compare and group a variety of everyday materials based on whether they are attracted to a magnet • I can predict whether two magnets will attract or repel each other, depending on which way the poles are facing	• I can compare and group together different kinds of rocks on the basis of their appearance and simple physical properties • I can describe in simple terms how fossils are formed when things that have lived are trapped within rock • I can rcognise that soils are made from rocks and organic matter • I can gather and record information to compare different rocks based on their appearance • I can ask questions about the way soils are formed • I can research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed • I can observe rocks, including those used in buildings and gravestones • I can notice patterns between soils
Spring 1	Spring 2
• I can identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat • I can identify that humans and some other animals have skeletons and muscles for support, protection and movement • I can identify and group animals with and without skeletons and observe and compare their movement • I can explore ideas about what would happen if humans did not have skeletons	• I can recognise that I need light in order to see things and that dark is the absence of light • I can notice that light is reflected from surfaces • I can recognise that light from the sun can be dangerous and that there are ways to protect my eyes • I can recognise that shadows are formed when the light from a source is blocked by an opaque object • I can notice patterns in the way that size of shadows change • I can gather and record information to compare and measure shadows

• I can compare and contrast the diets of different animals • I can research different food groups and how they keep us healthy	• I can ask questions about what happens when light reflects off a mirror or other reflective surfaces
Summer 1 & Summer 2	
• I can identify and describe the functions of different parts of a flowering plant • I can explore the requirements of plants for life and growth and how they vary from plant to plant • I can investigate the way in which water is transported within plants • I can explore the part that flowers play in the life cycle of flowering plants • I understand the process of pollination, seed formation and seed dispersal • I can explore questions that focus on the role of the roots and stem in nutrition and support • I can begin to understand that plants can make their own food • I can compare the effect of different factors on plant growth • I can discover how seeds are formed by observing the different stages of plant life cycles • I can look for patterns in the structure of fruits that relate to how the seeds are dispersed • I can observe how water is transported in plants	

Year 4	
Autumn 1	Autumn 2
• I can understand the function of a switch • I can understand the difference between a conductor and an insulator, giving examples of each • I can identify and name appliances that require electricity to function • I can understand the names and components in a series circuit (including cells, wires, bulbs, switches, and buzzers) • I can construct a simple series electrical circuit • I can observe patterns in electrical circuits • I can report my findings and link it to my knowledge of electricity	• I can understand the different states of matter: solid, liquid and gas. • I can understand how some materials can change state • I can understand temperature at which some materials change state. • I can understand evaporation and condensation in the water cycle. • I can understand the process of the water cycle I can observe and record what I see in during experiments in notes and tables. • I can use a thermometer to measure temperature.

<table>
<tr><td>I can predict and test whether a lamp will light within a circuit
I can use research to find out which materials make effective conductors and insulators of electricity</td><td>I can report of my findings to link it to my knowledge about states of matter.</td></tr>
<tr><td>Spring 1</td><td>Spring 2</td></tr>
<tr><td>I can recognise that living things can be grouped in a variety of ways
I can explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
I can recognise that environments can change and that this can sometimes pose dangers to living things
I can explore possible ways of grouping a wide selection of living things that include animals, flowering plants, and non-flowering plants
I can research examples of human impact (both positive and negative) on environments
I can make and answer questions based upon my observations of animals.</td><td>I can identify how sounds are made, associating some of them with something vibrating
I can recognise that vibrations from sounds travel through a medium to the ear
I can find patterns between the pitch of a sound and features of the object that produced it
I can find patterns between the volume of a sound and the strength of the vibrations that produced it
I can recognise that sounds get fainter as the distance from the sound source increases
I can explore and identify the way sound is made in a range of musical instruments from around the work
I can find patterns in the sounds that are made by different objects
I can investigate materials the provides the best insulation against sound</td></tr>
<tr><td colspan="2">Summer 1 & Summer 2</td></tr>
<tr><td colspan="2">I can describe the simple functions of the basic parts of the digestive system in humans
I can identify the different types of teeth in humans and their simple functions
I can construct and interpret a variety of food chains, identify producers, predators and prey
I can identify the main body parts associated with the digestive system
I can explore questions that help me to understand the functions of the body parts in the digestive system
I can compare the teeth of carnivores and herbivores and suggest reasons for differences
I can find out what damages teeth and how to look after them
I can discuss my ideas about the digestive system and compare them with models or images</td></tr>
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Year 5	
Autumn 1	Autumn 2
• I can understand how to compare and group different materials by their properties. • I can understand the process of dissolving. • I can use my knowledge of the states of matter to help me separate mixtures. • I can understand everyday uses for particular materials due to their properties. • I can understand how to demonstrate reversible changes and explain irreversible changes. • I can plan enquiries to investigate the properties of materials and mixtures. • I can record data in tables and bar charts. • I can report my findings orally and written. • I can create closed questions to use in a classification key. • I can record information about living things in a classification key. • I can identify animals that don't fit the typical classification characteristics/groups. I can report my findings about the classification of different living things.	• I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • I can identify the effects of air resistance, water resistance and friction, that act between moving surfaces • I can recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect • I can research how scientists (Galileo Galilei and Isaac Newton) helped to develop the theory of gravitation • I can ask questions about the effects of air resistance • I can observe the effects of friction and forces that make things begin to move, get faster or slow down • I can gather and record data from my experiment
Spring 1	Spring 2
• I can understand the life cycle of different living things including mammals, amphibians and insects. • I can understand the similarities and differences between these life cycles. • I can understand the process of reproduction in animals. • I can understand the process of reproduction in plants. • I can research animal behaviourists and naturalists • I can understand the difference between sexual and asexual reproduction in plants	• I can describe the changes as humans develop to old age • I can draw a timeline to indicate stages in the growth and development in humans • I can understand the changes experienced in puberty • I can research the gestation periods of other animals • I can compare the gestation periods of other animals and humans • I can research and record the length and mass of a baby as it grows

• I can understand the term sexual reproduction in animals • 'I can observe and compare the life cycle of plants and animals • I can record information using scientific diagrams and labels • I can sort scientific evidence that has been used to support or refute ideas.	
Summer 1 & Summer 2	
• I can describe the movement of the Earth, and other planets, relative to the Sun in the solar system • I can describe the movement of the Moon relative to the Earth • I can describe the Sun, Earth and Moon as approximately spherical bodies • I can use the idea of the Earth's rotation to explain night and day and the apparent movement of the sun across the sky • I can understand that the Sun is a star at the centre of our solar system • I can name each of the eight planets • I can understand that a moon is a celestial body that orbits a planet (Earth has one moon; Jupiter has four large moons and numerous smaller ones)	

Year 6	
Autumn 1	Autumn 2
• I can understand how living things are classified by similar characteristics. • I can explain why living things are classified. • I can explain different characteristics of plants for classification. • I can identify different microorganisms and what they do.	• I can recognise that light appears to travel in straight lines • I can use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye • I can explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes • I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them • I can ask scientific questions independently • I can select a range of practical resources to gather evidence to answer my questions • I can select measuring equipment to give the most precise results

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- I can decide how to record and present evidence

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<tr><td colspan="2">Spring 1 & Spring 2</td></tr>
<tr><td colspan="2">

- I can recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago
- I can recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents
- I can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution
- I understand how Charles Darwin and Alfred Wallace developed their ideas on evolution
- I understand how living things on earth have changed over time.
- I can recognise that characteristics are passed from parents to their offspring
- I can observe and raise questions about local animals and how they have adapted to their environment
- I can compare how some living things have adapted to survive in extreme conditions
- I can analyse advantages and disadvantages of specific adaptations

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<tr><td>Summer 1</td><td>Summer 2</td></tr>
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- I can associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in a circuit
- I can compare and give reasons for variations in how components functions
- I can recognise symbols when representing a simple circuit in a diagram
- I can construct a simple series circuit
- I can answer questions about what happens when I try different components
- I can understand what a parallel circuit it
- I can understand what precautions to take when working safely with electricity
- I can systematically identify the effect of changing one component at a time in a circuit

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- I can identify and name the main parts of the human circulatory system
- I can describe the functions of the heart, blood vessels and blood
- I can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function
- I can describe the ways in which nutrients and water are transported within animals including humans
- I can understand how the circulatory system enables the body to function
- I can understand how bodies might be damaged – including how some drugs and other substances can be harmful to the human body
- I can explore the scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health

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