



Use real life learning experiences



Encourage a love of learning



Enriching memorable moments

## Whole School Curriculum Aims

### Intent

We want children to:

- See themselves as scientists, encourage them to be curious about the world around them, being observant, asking questions and testing out ideas in a logical way.
- Develop a broad and balanced understanding of the big ideas of science.
- Remember key content and connect it to current knowledge.
- Have hands on opportunities to test out ideas through regular practical investigations, data collection, observations and research.
- Learn about a diverse range of scientists to exemplify how they changed our understanding of the world around us.

By the time our children leave us they will:

- Have a good understanding of the big ideas of science
- Be able to explain how the big ideas connect and build on each other.
- Be able to explain their understanding, they will ask questions that lead to testing a hypothesis and evaluate what they have learnt.
- Be ready for the next stage in their education.

### Implementation

- Science is taught each half term.
- The curriculum is clearly set out in this scheme of work to ensure children progressively develop age-appropriate understanding.
- Teachers will assess what children know at the start of a unit so that they know which content needs revision and recapping, teachers should work flexibly to ensure they adapt planning to meet the needs of the children.
- An emphasis is put on children learning and applying their understanding through regular hands on investigations.
- Cross-curricular links with other subjects, particularly maths & geography are encouraged and developed through our whole school long-term plan.
- The school provides quality resources to help teachers plan their science lessons. Teachers use Tig Tag (KS2) & Tig Tag Jr (KS1) for resources, ideas for investigations, effective questions, video clips to exemplify key content and an emphasis in developing children's vocabulary.
- All children must be included in science lessons through sensitive and careful adaptation of lessons.
- Children's understanding is assessed through regular monitoring of books, observations of practical investigations (at least one per unit) and a final evaluation of their understanding through an independent investigation.
- Teachers are given regular CPD in science to ensure the overall quality of teaching is good across the school.

### Impact

- Children will be able to ask questions and explain what they have learnt from investigations and observations.
- Children can talk about what they have learnt in their lessons, often making connections between content in different year groups.
- Children use scientific language in the correct context.
- The science curriculum will preparing them for an ever-changing world, e.g., they will understand their impact on the environment, habitats and how these can be protected.
- Children will report that they enjoy science lessons, find them interesting and engaging. This will include children with special educational needs.

### Big Ideas of Science

Science is a way to understand our world by carefully thinking about it and testing our guesses with observations and experiments.

The Big Ideas of Science are recurring themes that appear throughout the curriculum in all series.

Each Learning Point that is taught will link to a Big Idea.

The 'Big Ideas' focus on the 4 main components of scientific knowledge:

| Physics   | Chemistry  | Biology  | Earth Science  |
|---|--|--|--|
| <p>P1: The universe follows unbreakable rules that are all about forces, matter and energy.</p> <p>P2: Forces are different kinds of pushes and pulls that act on all the matter that is in the universe. Matter is all the stuff, or mass, in the universe.</p> <p>P3: Energy, which cannot be created or destroyed, comes in many different forms and tends to move away from objects that have lots of it.</p> | <p>C1: All matter (stuff) in the universe is made up of tiny building blocks.</p> <p>C2: The arrangement, movement and type of the building blocks of matter and the forces that hold them together or push them apart explain all the properties of matter (e.g. hot/cold, soft/hard, light/heavy, etc.).</p> <p>C3: Matter can change if the arrangement of these building blocks changes.</p> | <p>B1: Living things are special collections of matter that make copies of themselves, use energy and grow.</p> <p>B2: Living things on Earth come in a huge variety of different forms that are <u>all related</u> because they all came from the same starting point 4.5 billion years ago.</p> <p>B3: The different kinds of life, animals, plants and microorganisms, have evolved over millions of generations into different forms in order to survive in the environments in which they live.</p> | <p>E1: The Earth is one of eight planets that orbit the sun.</p> <p>E2: The Earth is tilted and spins on its axis leading to day and night, the seasons and the climate.</p> <p>E3: The Earth is made up of several layers, including a relatively thin rocky surface which is divided into tectonic plates, and the movement of these plates leads to many geologic events (such as earthquakes and volcanoes) and geographical features (such as mountains.)</p> |

Using the curriculum document:

- Where new learning is based on previous learning, the block starts with a revision session from previous block(s)'s learning.
- Each overview includes learning points/objectives that need to be covered.
- The lesson-by-lesson knowledge may be taught and learned more flexibly than is exactly specified in the curriculum document to ensure responsive teaching.
- New vocabulary to be taught is given, along with previously taught vocabulary.
- Key concept vocabulary is in bold.
- Practical sessions are explained, though alternative enquiries that ensure the same breadth of coverage across a year are equally acceptable.
- A minimum of one enquiry is undertaken per block, though more can be undertaken if a teacher sees it as necessary to respond to the needs of their class.
- Completion of the enquiries should be undertaken in reference to the linked 'working scientifically' learning points/objectives.
- Regular assessment & feedback should be given to ensure misconceptions are addressed

### Overview of Subject Content

|               | Autumn 1                   | Autumn 2                            | Spring 1                         | Spring 2                            | Summer 1                            | Summer 2                            |
|---------------|----------------------------|-------------------------------------|----------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| <b>Year 1</b> | Seasonal Changes           | Everyday Materials                  | Everyday Materials               | Plants                              | Animals Including humans            | Animals Including humans            |
| <b>Year 2</b> | Uses of Everyday Materials | Plants and Animals including humans | Uses of Everyday Materials       | Living Things and Their Life Cycles | Living Things and Their Life Cycles | Plants and Animals including humans |
| <b>Year 3</b> | Rocks & Fossils            | Forces & Magnets                    | Light                            | Light                               | Plants and Animals                  | Plants and Animals                  |
| <b>Year 4</b> | Animals, including humans  | Plants & Animals                    | Sound                            | Solids, Liquids & Gases             | Electricity                         | Plants & Animals                    |
| <b>Year 5</b> | Plants & Animals           | Earth & Space                       | Forces                           | Properties and Changes of Materials | Properties & Changes of Materials   | Properties & Changes of Materials   |
| <b>Year 6</b> | Light                      | Electricity                         | Living things and their habitats | Evolution & Adaption                | Animals, including Humans           | Animals, including Humans           |

Progression of Big Ideas & Working Scientifically Skills

| Rec                             |   |   |  |  |   |  |
|---------------------------------|---|---|--|--|---|--|
| Key Stage 1 National Curriculum | <p>The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos.</p> <p>‘Working scientifically’ is described separately in the programme of study, but must always be taught through and clearly related to the teaching of substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.</p> <p>Pupils should read and spell scientific vocabulary at a level consistent with their increasing word-reading and spelling knowledge at key stage 1.</p> |   |  |  |   |  |
|                                 |   | Working Scientifically Skills   | Physics Knowledge  | Chemistry Knowledge  | Biology Knowledge   | Earth Science Knowledge  |
| Year 1                          | <p><b>Biology:</b> Animals including Humans<br/> <b>Chemistry:</b> Everyday Materials<br/> <b>Earth Science:</b> Seasonal Changes<br/> <b>Biology:</b> Plants</p>   | <p>Know that we can ask questions about the world and that when we observe the world to answer these questions, this is science<br/>                     Know that we can use magnifying glasses to observe objects closely<br/>                     Know that we can test our questions to see if they are true<br/>                     Know that objects can be identified or sorted into groups based on their observable properties<br/>                     Know that we can write down numbers and words or draw pictures to record what we find</p> | <p>P1: The universe follows unbreakable rules that are all about forces, matter and energy.<br/>                     P2: Forces are different kinds of pushes and pulls that act on all the matter that is in the universe.<br/>                     Matter is all the stuff, or mass, in the universe.<br/>                     P3: Energy, which cannot be created or destroyed, comes in many different forms and tends to move away from objects that have lots of it.</p> | <p>C1: All matter (stuff) in the universe is made up of tiny building blocks.<br/>                     C2: The arrangement, movement and type of the building blocks of matter and the forces that hold them together or push them apart explain all the properties of matter (e.g. hot/cold, soft/hard, light/heavy, etc.).<br/>                     C3: Matter can change if the arrangement of these building blocks changes.</p> | <p>B1: Living things are special collections of matter that make copies of themselves, use energy and grow.<br/>                     B2: Living things on Earth come in a huge variety of different forms that are all related because they all came from the same starting point 4.5 billion years ago.<br/>                     B3: The different kinds of life, animals, plants and microorganisms, have evolved over millions of generations into different forms in order to survive in the environments in which they live.</p> | <p>E1: The Earth is one of eight planets that orbit the sun.<br/>                     E2: The Earth is tilted and spins on its axis leading to day and night, the seasons and the climate.<br/>                     E3: The Earth is made up of several layers, including a relatively thin rocky surface which is divided into tectonic plates, and the movement of these plates leads to many geologic events (such as earthquakes and volcanoes) and geographical features (such as mountains.)</p> |
| Year 2                          | <p><b>Chemistry:</b> Uses of Everyday Materials<br/> <b>Biology:</b> Living Things and Life Cycles<br/> <b>Biology:</b> Plants and Animals Including Humans</p>   | <p>Know that we can ask questions about the world and that when we observe the world to answer these questions, this is science<br/>                     Know that we can use magnifying glasses to observe objects closely<br/>                     Know that we can test our questions to see if they are true<br/>                     Know that objects can be identified or sorted into groups based on their observable properties<br/>                     Know that we can write down numbers and words or draw pictures to record what we find</p> | <p>P1: The universe follows unbreakable rules that are all about forces, matter and energy.<br/>                     P2: Forces are different kinds of pushes and pulls that act on all the matter that is in the universe.<br/>                     Matter is all the stuff, or mass, in the universe.<br/>                     P3: Energy, which cannot be created or destroyed, comes in many different forms and tends to move away from objects that have lots of it.</p> | <p>C1: All matter (stuff) in the universe is made up of tiny building blocks.<br/>                     C2: The arrangement, movement and type of the building blocks of matter and the forces that hold them together or push them apart explain all the properties of matter (e.g. hot/cold, soft/hard, light/heavy, etc.).<br/>                     C3: Matter can change if the arrangement of these building blocks changes.</p> | <p>B1: Living things are special collections of matter that make copies of themselves, use energy and grow.<br/>                     B2: Living things on Earth come in a huge variety of different forms that are all related because they all came from the same starting point 4.5 billion years ago.<br/>                     B3: The different kinds of life, animals, plants and microorganisms, have evolved over millions of generations into different forms in order to survive in the environments in which they live.</p> | <p>E1: The Earth is one of eight planets that orbit the sun.<br/>                     E2: The Earth is tilted and spins on its axis leading to day and night, the seasons and the climate.<br/>                     E3: The Earth is made up of several layers, including a relatively thin rocky surface which is divided into tectonic plates, and the movement of these plates leads to many geologic events (such as earthquakes and volcanoes) and geographical features (such as mountains.)</p> |

| Key Stage 2 National Curriculum  |   |  |  |   |  |   |
|--|---|--|--|---|--|---|
| Lower key stage 2  |   |  |  |   |  |   |
| The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.<br>'Working scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word-reading and spelling knowledge.  |   |  |  |   |  |   |
| Upper key stage 2  |   |  |  |   |  |   |
| The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.<br>'Working and thinking scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read, spell and pronounce scientific vocabulary correctly. |   |  |  |   |  |   |
|  |   | Working Scientifically Skills  | Physics Knowledge  | Chemistry Knowledge   | Biology Knowledge  | Earth Science Knowledge   |
| Year 3   | <b>Physics:</b> Light<br><b>Chemistry and Earth Science:</b> Rocks and Fossils<br><b>Physics:</b> Forces and Magnets<br><b>Biology:</b> Plants and Animals  | <b>New learning and vocabulary</b><br>prediction, measurement, enquiry, dependent variable, independent variable, fair test, similar, theory, hypothesis<br>Know that we can ask questions and answer them by setting up scientific enquiries<br>Know how to make relevant predictions that will be tested in a scientific enquiry<br>Know how to use a range of equipment to measure accurately, including thermometers, data loggers, rulers and stopwatches<br>Know how to draw bar charts; how to label a diagram using lines to connect information to the diagram.<br>Know – with structured guidance - how to write a simple scientific enquiry write-up including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion<br>Know how to precis a scientific enquiry write-up into a brief oral discussion of what was found in a scientific enquiry<br>Know that scientific enquiries can suggest relationships, but that they do not prove whether a prediction is true<br>Know that scientific enquiries are limited by the accuracy of the measurements (and measuring equipment) and by the extent to which conditions can vary even, and that repeating enquiries, measurements and taking measures to keep conditions as consistent as possible can improve an enquiry<br>Know that the conclusions of scientific enquiries can lead to further questions, where results can be clarified or extended to different contexts (e.g. effect of changing sunlight on a plant – does this work with other plants / different types of light / etc)<br>Know that they can draw conclusions from the findings of other scientists<br>Know that a theory is an explanation of observations that has been tested to some extent and that a hypothesis is an explanation that has not yet been tested, but that can be tested through a scientific enquiry | P1: The universe follows unbreakable rules that are all about forces, matter and energy.<br>P2: Forces are different kinds of pushes and pulls that act on all the matter that is in the universe. Matter is all the stuff, or mass, in the universe.<br>P3: Energy, which cannot be created or destroyed, comes in many different forms and tends to move away from objects that have lots of it. | C1: All matter (stuff) in the universe is made up of tiny building blocks.<br>C2: The arrangement, movement and type of the building blocks of matter and the forces that hold them together or push them apart explain all the properties of matter (e.g. hot/cold, soft/hard, light/heavy, etc).<br>C3: Matter can change if the arrangement of these building blocks changes.  | B1: Living things are special collections of matter that make copies of themselves, use energy and grow.<br>B2: Living things on Earth come in a huge variety of different forms that are all related because they all came from the same starting point 4.5 billion years ago.<br>B3: The different kinds of life, animals, plants and microorganisms, have evolved over millions of generations into different forms in order to survive in the environments in which they live. | E1: The Earth is one of eight planets that orbit the sun.<br>E2: The Earth is tilted and spins on its axis leading to day and night, the seasons and the climate.<br>E3: The Earth is made up of several layers, including a relatively thin rocky surface which is divided into tectonic plates, and the movement of these plates leads to many geologic events (such as earthquakes and volcanoes) and geographical features (such as mountains.) |
| Year 4   | <b>Biology:</b> Animals Including Humans<br><b>Physics:</b> Sound<br><b>Physics:</b> Electricity<br><b>Chemistry:</b> Solids, Liquids and Gases<br><b>Biology:</b> Living Things and Their Habitats | <b>New learning and vocabulary</b><br>prediction, measurement, enquiry, dependent variable, independent variable, fair test, similar, theory, hypothesis<br>Know that we can ask questions and answer them by setting up scientific enquiries<br>Know how to make relevant predictions that will be tested in a scientific enquiry<br>Know that in a fair test one thing is altered (independent variable) and one thing that may change as a result is measured (dependent variable) while all other conditions are kept the same<br>Know how to use a range of equipment to measure accurately, including thermometers, data loggers, rulers and stopwatches<br>Know how to draw bar charts; how to label a diagram using lines to connect information to the diagram; how to use a coloured key how to draw a neat table; how to draw a classification key; how to show the relationship between an independent variable in a two-way table; and how to label specific results in a two-way table   | P1: The universe follows unbreakable rules that are all about forces, matter and energy.<br>P2: Forces are different kinds of pushes and pulls that act on all the matter that is in the universe. Matter is all the stuff, or mass, in the universe.<br>P3: Energy, which cannot be created or destroyed, comes in many different forms and tends to move away from objects that have lots of it. | C1: All matter (stuff) in the universe is made up of tiny building blocks.<br>C2: The arrangement, movement and type of the building blocks of matter and the forces that hold them together or push them apart explain all the properties of matter (e.g. hot/cold, soft/hard, light/heavy, etc.).<br>C3: Matter can change if the arrangement of these building blocks changes. | B1: Living things are special collections of matter that make copies of themselves, use energy and grow.<br>B2: Living things on Earth come in a huge variety of different forms that are all related because they all came from the same starting point 4.5 billion years ago.<br>B3: The different kinds of life, animals, plants and microorganisms, have evolved over millions of generations into different forms in order to   | E1: The Earth is one of eight planets that orbit the sun.<br>E2: The Earth is tilted and spins on its axis leading to day and night, the seasons and the climate.<br>E3: The Earth is made up of several layers, including a relatively thin rocky surface which is divided into tectonic plates, and the movement of these plates leads to many geologic events (such as earthquakes and volcanoes) and geographical features (such as mountains.) |



|        |  |   |   |  |   |  |
|--------|--|---|---|--|---|--|
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| Year 5 | <p><b>Earth Science and Physics:</b><br/>Earth and Space<br/><b>Physics:</b> Forces<br/><b>Chemistry:</b> Properties and Changes of Materials<br/><b>Biology:</b> Living Things and Their Habitats</p>   | <p><b>New learning and vocabulary</b><br/>line graph, relationship, outlier</p> <p>Know how to choose appropriate variables to test a hypothesis (e.g. plant height as a dependent variable when measuring effect of light on plant growth)</p> <p>Know how to identify conditions that were imperfectly controlled and can explain how these might affect results</p> <p>Know how to accurately use further measuring devices, including digital and analogue scales, measuring cylinders and beakers, recognizing the relative accuracy of each device</p> <p>Know how and when to repeat measurements, how to find an average of a set of measurements and how to recognize and remove outliers from a set of data, justifying the removal as a potential mis-measurement</p> <p>Know how to independently write a simple scientific enquiry write-up including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion</p> <p>Know how to present brief oral findings from an enquiry, speaking clearly and with confidence and using notes where necessary</p> <p>Know examples of instances where scientific evidence has been used to support or refute ideas or arguments (e.g. fossil records as evidence of natural selection)</p>   | <p>P1: The universe follows unbreakable rules that are all about forces, matter and energy.</p> <p>P2: Forces are different kinds of pushes and pulls that act on all the matter that is in the universe. Matter is all the stuff, or mass, in the universe.</p> <p>P3: Energy, which cannot be created or destroyed, comes in many different forms and tends to move away from objects that have lots of it.</p> | <p>C1: All matter (stuff) in the universe is made up of tiny building blocks.</p> <p>C2: The arrangement, movement and type of the building blocks of matter and the forces that hold them together or push them apart explain all the properties of matter (e.g. hot/cold, soft/hard, light/heavy, etc.).</p> <p>C3: Matter can change if the arrangement of these building blocks changes.</p> | <p>B1: Living things are special collections of matter that make copies of themselves, use energy and grow.</p> <p>B2: Living things on Earth come in a huge variety of different forms that are all related because they all came from the same starting point 4.5 billion years ago.</p> <p>B3: The different kinds of life, animals, plants and microorganisms, have evolved over millions of generations into different forms in order to survive in the environments in which they live.</p> | <p>E1: The Earth is one of eight planets that orbit the sun.</p> <p>E2: The Earth is tilted and spins on its axis leading to day and night, the seasons and the climate.</p> <p>E3: The Earth is made up of several layers, including a relatively thin rocky surface which is divided into tectonic plates, and the movement of these plates leads to many geologic events (such as earthquakes and volcanoes) and geographical features (such as mountains.)</p> |
| Year 6 | <p><b>Physics:</b> Light<br/><b>Physics:</b> Electricity<br/><b>Biology:</b> Living Things and Their Habitats<br/><b>Biology:</b> Evolution and Adaptation<br/><b>Biology:</b> Animals Including Humans<br/><b>Biology:</b> Animals Including Humans</p> | <p>New learning and vocabulary<br/>line graph, relationship, outlier</p> <p>Know how to choose appropriate variables to test a hypothesis (e.g. plant height as a dependent variable when measuring effect of light on plant growth)</p> <p>Know how to identify conditions that were imperfectly controlled and can explain how these might affect results</p> <p>Know how to accurately use further measuring devices, including digital and analogue scales, measuring cylinders and beakers, recognizing the relative accuracy of each device</p> <p>Know how and when to repeat measurements, how to find an average of a set of measurements and how to recognize and remove outliers from a set of data, justifying the removal as a potential mis-measurement</p> <p>Know how to independently write a simple scientific enquiry write-up including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion</p> <p>Know how to present brief oral findings from an enquiry, speaking clearly and with confidence and using notes where necessary</p> <p>Know examples of instances where scientific evidence has been used to support or refute ideas or arguments (e.g. fossil records as evidence of natural selection)</p>  | <p>P1: The universe follows unbreakable rules that are all about forces, matter and energy.</p> <p>P2: Forces are different kinds of pushes and pulls that act on all the matter that is in the universe. Matter is all the stuff, or mass, in the universe.</p> <p>P3: Energy, which cannot be created or destroyed, comes in many different forms and tends to move away from objects that have lots of it</p>  | <p>C1: All matter (stuff) in the universe is made up of tiny building blocks.</p> <p>C2: The arrangement, movement and type of the building blocks of matter and the forces that hold them together or push them apart explain all the properties of matter (e.g. hot/cold, soft/hard, light/heavy, etc.).</p> <p>C3: Matter can change if the arrangement of these building blocks changes.</p> | <p>B1: Living things are special collections of matter that make copies of themselves, use energy and grow.</p> <p>B2: Living things on Earth come in a huge variety of different forms that are all related because they all came from the same starting point 4.5 billion years ago.</p> <p>B3: The different kinds of life, animals, plants and microorganisms, have evolved over millions of generations into different forms in order to survive in the environments in which they live.</p> | <p>E1: The Earth is one of eight planets that orbit the sun.</p> <p>E2: The Earth is tilted and spins on its axis leading to day and night, the seasons and the climate.</p> <p>E3: The Earth is made up of several layers, including a relatively thin rocky surface which is divided into tectonic plates, and the movement of these plates leads to many geologic events (such as earthquakes and volcanoes) and geographical features (such as mountains.)</p> |

Year 1 End Points

|                        | Animals Including Humans 1  | Animals Including Humans 2  | Everyday Materials 1   | Everyday Materials 2  | Earth Science- Seasonal Changes   | Biology- Plants   |
|------------------------|---|---|--|---|---|---|
| Objectives             | Match animals to their group (amphibians, reptiles, birds and mammals).<br>Describe a feature of an amphibian, fish, bird, mammal and reptile.<br>Explain what a carnivore, herbivore and an omnivore is.<br>Draw scientific diagrams of different animals and label their features, e.g. scaly skin and gills on a fish. | Draw scientific diagrams of birds, mammals and reptiles. They can identify their key features.<br>Label parts of the human body.<br>Explain each of their senses.<br>Explain why we remember Ibn Sina.      | Identify different materials<br>Children can find objects that are made out of specific materials, e.g. metal, plastic or wood.<br>Children can say which material they would make a chair, jumper or a window out of.<br>Children can sort materials by their properties. | Describe each material and its properties (after investigation).<br>Draw their favourite toy and describe the materials and properties.<br>Children can identify if a material is absorbent or not. | How do the days change through the year?<br>What are the four seasons? Can you describe what we wear in each season and why?<br>Can you describe the weather in winter?<br>What order to the seasons go in?<br>What will happen to puddles on a very cold day? Why? | Identify some common garden plants and know what a weed is.<br>Name and draw some common trees.<br>Draw and label the parts of a plant.<br>Know why we remember David Attenborough. |
| New Vocab              | Energy, growth, habitat, fish, amphibian, reptile, bird, mammal, offspring, carnivore, herbivore, omnivore, vertebrate, skeleton, organ   | New vocab: energy, growth, habitat, fish, amphibian, reptile, bird, mammal, offspring, carnivore, herbivore, omnivore, vertebrate, skeleton, organ  | New vocab: absorption, matter, property, wood, plastic, glass, metal, water, rock  | New vocab: absorption, matter, property, wood, plastic, glass, metal, water, rock   | New vocab: energy, freezing, melting, orbit, reflection, Sun, clouds, wind, snow, ice, spring, summer, autumn, winter<br>(NB: the Sun and the Earth are capitalized when being discussed in an astronomical context.)   | Retrieval vocab: energy, habitat<br><br>New vocab: component, energy, growth, deciduous, evergreen, flower, plant, tree, structure, roots, stem, leaf, trunk, flower                |
| Big Ideas              | All living things are related.  | Living things are special collections of matter that make copies of themselves, use energy and grow.  | All matter (stuff) in the universe is made up of tiny building blocks. (This determines why some materials are soft or hard, etc.)   |   | The Earth is tilted and spins on its axis leading to the seasons.   | Living things on Earth come in a huge variety of different forms.   |
| Working Scientifically | Are we all the same or are we all different?<br>Chdn discover what is the same and what is different about their bodies?  | Using pictures of animals, chdn find out if they can find anything that is the same for all of the animals, thinking about what they do and how they look. Show smaller and larger versions of each animal. | Are all materials the same?<br>Chn undertake actions to test whether each material has the property (e.g. touching, weighing, etc.)  |   | Is the weather the same every day?<br>Chn keep a weather diary across a period of time and compare this to a pre-made one for a different period of the year, drawing conclusions.  | What parts is a plant made of?<br>Chn use pages from a science encyclopaedia to draw and label different plants, spotting similarities and differences.                             |

**Year 2 End Points**

|                              | <b>Uses of Everyday Materials 1</b>  | <b>Uses of Everyday Materials 2</b>  | <b>Living Things and Their Life Cycles 1</b>   | <b>Living Things and Their Life Cycles 2</b>   | <b>Plants and Animals Including Humans 1</b>  | <b>Plants and Animals Including Humans</b>   |
|------------------------------|--|--|--|--|---|--|
| <b>Objectives</b>            | Children can identify what an object is made from and link this to its properties.<br>Children can explain what material would be suitable for a towel and/ spoon/ shoes.<br>Children can sort materials based on their properties.<br>Children can name materials that are stretchy/hard/ strong. | Understand how plants use the sun to make food.<br>Explain and order a simple food chain.<br>Understand how different animals are suited to their environments.<br>Explain what a 'microhabitat' is. | Understand how plants use the sun to make food.<br>Explain and order a simple food chain.<br>Understand how different animals are suited to their environments.<br>Explain what a 'microhabitat' is.   | Understand how plants use the sun to make food.<br>Explain and order a simple food chain.<br>Understand how different animals are suited to their environments.<br>Explain what a 'microhabitat' is.   | Explain what plants need to grow.<br>Explain how plants make their own food.<br>Understand what seeds are and how they help a plant.<br>Explain who George Washington Carver is and how he helped farmers in America. | Explain the basic needs of all humans and animals.<br>Children can name the basic food groups and know how they help our bodies.<br>Name things we can do to stay healthy.<br>Explain how to keep our teeth healthy. |
| <b>New Vocab</b>             | Retrieval vocab: absorption, matter, property<br>New vocab: conductor, brick, paper, cardboard, friction, movement, suitability, surface, stretch, twist, waterproof, deformation, flexible, rigid   | Retrieval vocab: absorption, matter, property<br>New vocab: conductor, brick, paper, cardboard, friction, movement, suitability, surface, stretch, twist, waterproof, deformation, flexible, rigid   | Retrieval vocab: habitat, growth, absorption, deciduous, evergreen, flower, plant, tree, structure, roots, stem, leaf, trunk, flower, herbivore, carnivore, omnivore<br>New vocab: birth, decay, energy, reproduction, microhabitat, dead, life cycle, food chain, source, nutrients, consumption, environment | Retrieval vocab: habitat, growth, absorption, deciduous, evergreen, flower, plant, tree, structure, roots, stem, leaf, trunk, flower, herbivore, carnivore, omnivore<br>New vocab: birth, decay, energy, reproduction, microhabitat, dead, life cycle, food chain, source, nutrients, consumption, environment | Retrieval vocab: growth, habitat, reproduction, nutrients, consumption<br><br>New vocab: offspring, adult, bulb, seed, survival, temperature, hygiene, exercise   | Retrieval vocab: growth, habitat, reproduction, nutrients, consumption<br><br>New vocab: offspring, adult, bulb, seed, survival, temperature, hygiene, exercise  |
| <b>Big Ideas</b>             | All matter (stuff) in the universe is made up of tiny building blocks. The arrangement, movement and type of the building blocks of matter and the forces that hold them together or push them apart explain all the properties of matter (e.g. hot/cold, soft/hard, light/heavy, etc).            | All matter (stuff) in the universe is made up of tiny building blocks. The arrangement of these building blocks determines the properties of materials.  | Living things are special collections of matter that make copies of themselves, use energy and grow.   | Living things are special collections of matter that grow.   | Living things are special collections of matter that use energy and grow.   | Living things are special collections of matter that use energy and grow.  |
| <b>Working Scientificall</b> | What materials could be used to make a good raincoat?<br>Chn test whether different materials are waterproof, flexible and light.  | What materials could be used to make a good bike shed<br>Chn test whether different materials are strong, hard and waterproof  | Is everything on Earth alive?<br>Chn sort pictures and specimens into alive, dead, and never alive. (Include misconceptions like the sun and the sea.)   | Do plants grow the same amount every day?<br>Chn measure the height of a growing plant over a period of days and weeks   | Is all food good for us?<br>Chn look at a variety of food labels (looking at the traffic light nutrition), comparing which are healthy and why.   | Do all animals start off small?<br>Chn pair up pictures of a variety of animals with their very young and juvenile forms.  |

Year 3 End Points

|                        | Light 1   | Light 2  | Rocks and Fossils   | Forces and Magnets   | Plants and Animals 1   | Plants and Animals 2  |
|------------------------|---|--|---|--|--|---|
| Objectives             | Sort light sources/ reflectors<br>Explain 'what is dark'<br>Show in a diagram the correct path of a ray of light for an observer to see an object   | Explain what a shadow is.<br>Explain what opaque and transparent mean.<br>Explain why you don't look at the sun.<br>Can explain how a shadow is made and how you make a shadow bigger.   | Name three types of natural rocks.<br>Describe how igneous, metamorphic and sedimentary rocks are made.<br>Explain what they know about Zhang Heng.<br>Explain the process of how a fossil is made.<br>Explain what soil is made up from. | Explain what can happen to an object when force is applied to it.<br>Identify when a force is a push or a pull.<br>Describe a surface that would cause the most friction as an object moved over it.<br>Draw a diagram to show magnets attracting to each other and repelling. | Explain which part of the plant absorbs light to make food for the plant.<br>Explain what the function of a flower on a flowering plant.<br>Explain the function of different part of a plant.<br>Draw a diagram showing the life cycle of a plant.  | Know which animal does not have a skeleton out of a human, cat, earthworm and frog.<br>Explain that muscles in the human are arranged in pairs.<br>Explain what our bones do.<br>Explain how a healthy diet keeps our bodies healthy.   |
| New Vocab              | <b>Retrieval vocab:</b> absorption, energy, property, reflection<br><b>New vocab:</b> wave, mirror, incident ray, image, beam, photons, solid, opaque, transparent, object, source, data logger (NB: the Sun and the Moon are capitalized when being discussed in an astronomical context.) | Retrieval vocab: absorption, energy, property, reflection<br>New vocab: wave, mirror, incident ray, image, beam, photons, solid, opaque, transparent, object, source, data logger  | Retrieval vocab: decay, matter, melting, material,<br>New vocab: extinction, particle, igneous, metamorphic, sedimentary, palaeontologist, weathering, molten rock, crust, tectonic plates, scavengers, fossil                            | Retrieval vocab: energy, matter, property, wave, metal, material, surface, friction, force, stretch, squash, rough, smooth<br>New vocab: magnetic, non-magnetic, pole, north, south, sliding friction, static friction, elastic, resist, attraction, repulsion                 | Retrieval vocab: component, energy, growth, habitat, reproduction, decay, offspring, adult, bulb, seed, survival, temperature nutrients, consumption, deciduous, evergreen, flower, plant, tree, structure, roots, stem, leaf, trunk, flower, vertebrate, skeleton<br>New vocab: extinction, fruit, nectar, anther, ovary, ovule, petal, pollen, stigma, style, stamen, function, exchange, dispersal, fertilization, vitamin, balanced diet, cartilage, invertebrate, contract, loosen, ribcage, insect | Retrieval vocab: component, energy, growth, habitat, reproduction, decay, offspring, adult, bulb, seed, survival, temperature nutrients, consumption, deciduous, evergreen, flower, plant, tree, structure, roots, stem, leaf, trunk, flower, vertebrate, skeleton<br>New vocab: extinction, fruit, nectar, anther, ovary, ovule, petal, pollen, stigma, style, stamen, function, exchange, dispersal, fertilization, vitamin, balanced diet, cartilage, invertebrate, contract, loosen, rib cage, insect |
| Big Ideas              | P3. Energy, which cannot be created or destroyed, comes in many different forms and tends to move away from objects that have lots of it. (In this case, the rule is that light energy travels in straight lines and doesn't pass through some objects.)                                    | E2: The Earth spins on its axis.<br>P3: Energy, which cannot be created or destroyed, comes in many different forms and tends to move away from objects that have lots of it. (In this case, the rule is that light energy travels in straight lines and doesn't pass through some objects.) | C1, C2: All matter (stuff) in the universe is made up of tiny building blocks. Matter can change if the arrangement of these building blocks changes.   | P2. Forces are different kinds of pushes and pulls that act on all the matter that is in the universe. (Magnets can exert a force.)  | B3: The different kinds of life, animals, plants and microorganisms, have evolved over millions of generations into different forms in order to survive in the environments in which they live.  | B3: The different kinds of life, animals, plants and microorganisms, have evolved over millions of generations into different forms in order to survive in the environments in which they live  |
| Working Scientifically | Does the amount of light we experience only change a lot at night?<br>Using 'Lux' ipad app, chn gather data on light levels over the period of an hour and over the period of 24 hours.<br>Chn interpret the gathered data.   | Why do shadows change during the day?<br>On a sunny day, using a metre stick, chn note the changing length of a shadow thrown by a metre stick or other object.  | Are all rocks made in the same way?<br>Using criteria, chn sort rock samples (and pictures) into the three types.   | Are all metals attracted to magnets?<br>Chn sort materials into magnetic and non-magnetic materials using a magnet and find other materials around the room  | Do all plants need exactly the same things?<br>Chn give both a parsley plant and a small cactus minimal water over a two-week period and observe the changes (perhaps drawing the result)  | How does our body move and stand up?<br>Chn use information from science encyclopaedias / textbooks to label a human skeleton and answer simple questions about it.   |



Year 4 End Points

|                               | Animals Including Humans  | Sound  | Electricity   | Solids, Liquids and Gases  | Plants and Animals 1   | Plants and Animals 2   |
|-------------------------------|---|--|---|--|--|--|
| <b>Objectives</b>             | Label the parts of the body central to digesting food.<br>Put in order the processes involved in digesting food.<br>Describe a simple food chain /order a simple food chain and label the primary consumer, secondary consumer and tertiary consumer.<br>Explain the function of different types of teeth.  | Children can identify different sources of sound.<br>Children can explain what sound is.<br>Children can explain how sounds are made.<br>Children can explain why different musical instruments make different sounds.                     | Name some electrical conductors and insulators.<br>Explain why the human body is a good conductor of electricity. Explain why this makes electricity very dangerous.<br>Draw and label a series circuit.<br>Draw and label a parallel circuit.<br>In a group, be able to build a circuit where each of the bulbs can be switched on/ off independently.<br>Be able to explain why the circuit worked. | I can name the three states of matter.<br>I can describe the qualities of different solids, liquids and gases.<br>I can describe how solids, liquids and gases behave.<br>I can explain the process of melting and freezing.<br>I can identify condensation and evaporation in the water cycle.  | Can you remember the names of the five kingdoms of life forms?<br>Which kingdom can be divided into vertebrates and invertebrates?<br>Which kingdom can be divided into flowering and non-flowering species?<br>How do non-flowering plants reproduce without flowers/seeds?                   | <b>Explain why we use classification keys.</b><br><b>Explain how classification keys are constructed.</b><br><b>Use a classification key to identify plants and animals.</b><br><b>Create a classification key to identify plants and animals.</b>   |
| <b>New Vocab</b>              | Retrieval vocab: absorption, component, dissolving, energy, nutrients, consumption, hygiene, herbivore, carnivore, organ<br>New vocab: digestion, excretion, peristalsis, anus, duodenum, small intestine, large intestine, stomach, rectum, oesophagus, tongue, saliva, acid, bile, enzymes, incisors, canines, molars, predator, prey, producer, consumer, primary, secondary, tertiary | Retrieval vocab: absorption, conductor, energy, insulator, particle, wave<br>New vocab: vibration, percussion instrument, wind instrument, string instrument, frequency, volume, pitch, transverse wave, longitudinal wave, medium, vacuum | Retrieval vocab: absorption, conductor, energy, insulator, wave<br>New vocab: particle, vibration, percussion instrument, wind instrument, string instrument, frequency, volume, pitch, transverse wave, longitudinal wave, medium, vacuum  | Retrieval vocab: absorption, dissolving, energy, evaporation, freezing, matter, melting, particle, temperature, ice, water, solid<br>New vocab: bond, condensation, evaporation, reversible, boiling point, melting point, liquid, gas, thermometer, water cycle, continuous precipitation, transpiration, surface runoff process, sublimation | Retrieval vocab: decay, energy, habitat, freezing plant, structure, herbivore, carnivore, omnivore, microhabitat, environment, reproduction, vertebrate<br>New vocab: kingdom, classification key, species, fungi, bacteria, climate change, characteristics, offspring, extinction, pollution | Retrieval vocab: decay, energy, habitat, freezing plant, structure, herbivore, carnivore, omnivore, microhabitat, environment, reproduction, vertebrate<br>New vocab: kingdom, classification key, species, fungi, bacteria, climate change, characteristics, offspring, extinction, pollution |
| <b>Big Ideas</b>              | B3: The different kinds of life, animals, plants and microorganisms, have evolved over millions of generations into different forms in order to survive in the environments in which they live. (e.g. the right teeth for their food.)  | P3: Energy, which cannot be created or destroyed, comes in many different forms and tends to move away from objects that have lots of it. (Sound is one form of energy.)   | P3: Energy, which cannot be created or destroyed, comes in many different forms and tends to move away from objects that have lots of it. (Sound is one form of energy.)  | C3: Matter can change if the arrangement of the building blocks, of which it is made, changes.   | B2: Living things on Earth come in a huge variety of different forms that are all related because they all came from the same starting point 4.5 billion years ago.  | B2: Living things on Earth come in a huge variety of different forms that are all related because they all came from the same starting point 4.5 billion years ago.  |
| <b>Working Scientifically</b> | How can we know things about a dinosaur when they have been extinct for 65 million years?<br>Following learning about human teeth, children use information and pictures of different teeth from dinosaurs to try to work out what they might have eaten, justifying their answers. (Use language of carnivore, omnivore and herbivore.)  | How do instruments make different sounds?<br>Children to make a basic guitar or flute with different notes possible to show how different vibrations make notes of different pitch.  | Does electricity flow easily through all objects?<br>Children to create a small circuit to test whether objects are conductors or insulators (e.g. circuit with bulb which lights when a gap in the circuit is bridged.)  | Does water always melt at the same speed?<br>Children to observe and record as ice melts in different conditions (e.g. outside vs radiator, wrapped in insulation vs not)  | Are some animals more alike than others?<br>Children to use pictures to put animals into groups in different ways (e.g. where they live, what they eat, how they move, how many legs, etc) moving on to using keys to differentiate between closely related animals.                           | Are some animals more alike than others?<br>Children to use descriptions to put animals into groups in different ways (e.g. where they live, what they eat, how they move, how many legs, etc) moving on to using keys to differentiate between closely related animals.                       |

**Year 5 End Points**

|                   | <b>Earth and Space</b>  | <b>Forces</b>   | <b>Properties and Changes of Materials<br/>1</b>   | <b>Properties and Changes of Materials<br/>2</b>   | <b>Properties and Changes of Materials<br/>3</b>   | <b>Plants and Animals</b>   |
|-------------------|---|---|--|--|--|---|
| <b>Objectives</b> | Order and label the planets.<br>Explain why the moon is not a light source.<br>Explain why the sun looks like it is moving across the sky during the day.<br>Explain what a satellite is.<br>Know how long it takes for the Earth to spin once on its axis, the moon to go around the Earth and the Earth to go around the sun.<br>Explain who Katherine Johnson was.                       | Measure a force using a force meter.<br>Understand how gravity pulls unsupported objects towards the Earth.<br>Explain how air resistance affects a falling object.<br>Explain how water resistance affects how an object moves through water.<br>Draw a force diagram.   | Explain the difference between solids, liquids and gases.<br>Explain how solids can change state due to a temperature change.<br>Describe what happens in the process of condensing and freezing.<br>Investigate soluble and insoluble materials.<br>Identify different solutes.   | Explain what a saturated liquid is.<br>Know how to separate solvents through evaporation.<br>Name some reversible and irreversible changes of state.<br>Explain how filtering allows solids and liquids to be separated.   | Plan an investigation to separate sand, salt and small stones.<br>Understand the properties of materials (magnetic, thermally conductive, electrically conductive)<br>Understand how the properties of materials make them suitable or unsuitable for a purpose.   | Draw & write the life cycle of a bird, reptile, mammal or amphibian independently and in detail.<br>Name creatures that undergo a complete metamorphosis.   |
| <b>New Vocab</b>  | Retrieval vocab: absorption, energy, freezing, melting, orbit, reflection, wave, Sun, spring, summer, autumn, winter<br>(NB: the Sun and the Earth are capitalized when being discussed in an astronomical context.)<br>New vocab: planet, satellite, sphere, solar system, eclipse, star, universe, constellation, axis, celestial body, Moon, rotating, lunar, solar, telescope, rotation | Retrieval vocab: energy, matter, particle, surface, friction, force, stretch, squash, rotation, rough, smooth, sliding friction, static friction<br>New vocab: acceleration, air resistance, buoyancy, effort, force meter, fulcrum, gravity, load, mass, mesh, Newton, pivot, rigid, streamlined, terminal velocity, unsupported, water resistance, weight | Retrieval vocab: absorption, bond, condensation, conductor, evaporation, matter, melting, particle, property, reversible, freezing, wood, plastic, glass, metal, water, rock, suitability, surface, waterproof, flexible, rigid, boiling point, melting point, solid, liquid, gas, sublimation, magnetic<br>New vocab: irreversible, dissolve, soluble, insoluble, solvent, solute, solution, filter, sieve, saturation, crystallization, thermal, chemistry | Retrieval vocab: absorption, bond, condensation, conductor, evaporation, matter, melting, particle, property, reversible, freezing, wood, plastic, glass, metal, water, rock, suitability, surface, waterproof, flexible, rigid, boiling point, melting point, solid, liquid, gas, sublimation, magnetic<br>New vocab: irreversible, dissolve, soluble, insoluble, solvent, solute, solution, filter, sieve, saturation, crystallization, thermal, chemistry | Retrieval vocab: absorption, bond, condensation, conductor, evaporation, matter, melting, particle, property, reversible, freezing, wood, plastic, glass, metal, water, rock, suitability, surface, waterproof, flexible, rigid, boiling point, melting point, solid, liquid, gas, sublimation, magnetic<br>New vocab: irreversible, dissolve, soluble, insoluble, solvent, solute, solution, filter, sieve, saturation, crystallization, thermal, chemistry | Retrieval vocab: decay, plant, structure, reproduction, nutrients, reproduction, fish, bird, amphibian, reptile, mammal, fruit, nectar, anther, ovary, ovule, petal, pollen, stigma, style, stamen, function, exchange, dispersal, fertilization, insect, vertebrates<br>New vocab: life cycle, life span, embryo, womb, weaned, adolescence, metamorphosis, pupa, larva, chrysalis, caterpillar, tadpole, hatchling, fledgling, insect |
| <b>Big Ideas</b>  | E1: The Earth is one of eight planets that orbit the sun. It has one large natural satellite called the Moon that orbits the Earth.   | P2: Forces are different kinds of pushes and pulls that act on all the matter that is in the universe.  | C3: Matter can change if the arrangement of these building blocks changes.   | C3: Matter can change if the arrangement of these building blocks changes.   | C2: Matter can change if the arrangement of these building blocks changes. (In this case, dissolving, breaks the bonds between building blocks.)   | B1: Living things are special collections of matter that make copies of themselves, use energy and grow.  |
| <b>Working</b>    | What shape is the moon and does it change?<br>Chn keep a moon diary over the period of a month (focusing on moon shape) and a moon diary for one clear evening (focusing on position in the sky) and analyse their results.   | How do parachutes work?<br>Chn to create parachutes, changing a variable to try to isolate what is needed for an effective parachute (e.g. changing parachute material, size, shape, etc.)  | What happens to salt in water?<br>Chn to stir a small amount of salt, sugar, small stones and sand into water and to observe what happens with each and to determine which is soluble in water and which is insoluble in water   | Can I make a gas using a solid and a liquid?<br>Chn add vinegar (ethanoic acid) to bicarbonate of soda and observe the reaction, specifically the bubbles of carbon dioxide given off  | Is it possible to separate even very small things like sand, salt and stones?<br>Chn use filtering and evaporation to separate a mixture of sand, salt and stones.   | If life has existed for billions of years, why are there still people alive today?<br>Chn use a variety given information and online resources to research and describe the life cycles of different animals, looking for the similarities between each.  |

Year 6 End Points

|                        | Light  | Electricity  | Living Things and Their Habitats  | Evolution and Adaptation  | Animals Including Humans 1  | Animals Including Humans 2   |
|------------------------|--|--|---|---|---|--|
| Objectives             | <p>Identify light sources</p> <p>Explain how light travels.</p> <p>Explain how we can see objects</p> <p>Draw on a diagram the correct path of the ray of light for a person to see an object</p> <p>Describe how the size of a shadow changes as an opaque object is moved closer or further away from a light source.</p> <p>Explain what happens when white light is</p> <p>Draw lines on a diagram to explain how a person sees an object through a periscope.</p> | <p>Conductors have free electrons and when electrical current flows through a conductor, the electrons move like people in a queue.</p> <p>A chemical reaction inside a cell produces the charged particles that can flow around a circuit.</p> <p>That an electrical current can only flow if there is complete circuit.</p> <p>The symbols for the components in an electrical circuit.</p> <p>Children can:</p> <p>Draw and build simple circuits.</p> <p>Fix broken circuits so that a bulb will light up.</p> | <p>Name helpful and harmful microorganisms.</p> <p>Classify insects found in our woodland.</p> <p>Know how to use measuring devices and know how to choose appropriate variables to test a hypothesis.</p>  | <p>Explain why living things have specific adaptations that help them survive in their habitats.</p> <p>Explain the process of evolution.</p> <p>Explain the difference between inherited and acquired characteristics.</p> <p>Explain how fossils are created.</p> <p>Explain what has been discovered through studying fossils.</p> | <p>Name the different bones in our bodies.</p> <p>Know what animals without backbones are called.</p> <p>Name the key organs of the digestive system.</p> <p>Know how to present scientific explanations.</p>   | <p>Name the major parts of the circulatory system.</p> <p>Conduct scientific investigations over a longer period of time, gathering data, finding averages and making predictions.</p> <p>Present findings of the scientific investigations in charts and graphs.</p>  |
| New Vocab              | <p>Retrieval vocab: absorption, energy, particle, property, reflection, wave, mirror, incident ray, image, beam, photons, solid, opaque, transparent, object, source, vibration, percussion instrument, wind instrument, string instrument, frequency, volume, pitch, transverse wave, longitudinal wave, medium, vacuum</p> <p>New vocab: angle of incidence, angle of reflection, refraction, spectrum, translucent, medium, periscope</p>                           | <p>Retrieval vocab: circuit, component, conductor, energy, insulator, particle, property, material, appliance, charge, electron, battery, cell, bulb, buzzer, switch, wire, current electricity, static electricity, negative terminal, positive terminal, voltage, chemical reaction, emit</p> <p>New vocab: series circuit, parallel circuit, resistance, voltage</p>  | <p>Retrieval vocab: component, habitat, plant, structure, fish, bird, amphibian, reptile, mammal, kingdom, classification key, species, fungi, bacteria, characteristics, offspring, vertebrate, invertebrate, insect</p> <p>New vocab: micro-organism, virus, thorax, arthropod, abdomen, arachnid, antenna, jointed limbs</p> | <p>Retrieval vocab: birth, decay, energy, habitat, irreversible, extinction, microhabitat, dead, life cycle, food chain, source, nutrients, reproduction, consumption, environment, extinction, species, characteristic, adaptation</p> <p>New vocab: evolution, natural selection, variation, advantageous</p>                       | <p>Retrieval vocab: component, energy, growth, survival, nutrients, consumption, skeleton, ribcage, protein, carbohydrate, fat, digestion, skeleton, organ, digestion, excretion, peristalsis, anus, duodenum, small intestine, large intestine, stomach, rectum, oesophagus, tongue, saliva, acid, bile, enzymes, incisors, canines, molars</p> <p>New vocab: artery, aorta, atrium, blood vessels capillary, circulatory system, vein, pulse, ventricle, replenished, resting heart rate, body, cranium, mandible, sternum, vertebrae, femur, tibia, fibula, patella, humerus, radius, ulna</p> | <p>Retrieval vocab: component, energy, growth, survival, nutrients, consumption, skeleton, ribcage, protein, carbohydrate, fat, digestion, skeleton, organ, digestion, excretion, peristalsis, anus, duodenum, small intestine, large intestine, stomach, rectum, oesophagus, tongue, saliva, acid, bile, enzymes, incisors, canines, molars</p> <p>New vocab: artery, aorta, atrium, blood vessels capillary, circulatory system, vein, pulse, ventricle, replenished, resting heart rate, body</p> |
| Big Ideas              | <p>P3: Energy, which cannot be created or destroyed, comes in many different forms and tends to move away from objects that have lots of it.</p>   | <p>P3: Energy, which cannot be created or destroyed, comes in many different forms and tends to move away from objects that have lots of it.</p>   | <p>B3: The different kinds of life, animals, plants and microorganisms, have evolved over millions of generations into different forms in order to survive in the environments in which they live.</p>  | <p>B3: The different kinds of life, animals, plants and microorganisms, have evolved over millions of generations into different forms in order to survive in the environments in which they live.</p>  | <p>B1: Living things are special collections of matter that make copies of themselves, use energy and grow. (The faster heartbeat is to get oxygen round the body so that energy can be used in the muscles.)</p>   | <p>B1: Living things are special collections of matter that make copies of themselves, use energy and grow.</p>  |
| Working Scientifically | <p>Why can I hear round corners but not see round corners?</p> <p>Chn to use mirrors and torches to investigate how light travels in straight lines and reflects off mirrors.</p>  | <p>Is it possible to change how bright a bulb is or how loud a buzzer is?</p> <p>Chn create circuits to investigate the effect of different voltages on different components.</p>  | <p>What make bread rise?</p> <p>Chn are shown how yeast, sugar and warm water causes a reaction; they then investigate what happens to this reaction when they change particular variables of their choice (sugar/no sugar, water temperature, adding chemicals, etc.)</p>  | <p>Why do different species of animals look different?</p> <p>Chn sort various species of animals into the environments in which they are adapted based on their physical attributes and listed behaviours</p>  | <p>Is our heart rate always the same?</p> <p>Chn to investigate the effect of exercise on heart rate and how long it takes for their pulse to return to the resting rate after exercising for a minute.</p>   | <p>How long does it take to get fitter?</p> <p>Over the course of a month, chn investigate whether some volunteers (who do consistent exercise at break time) can lower their resting heart rate.</p>  |