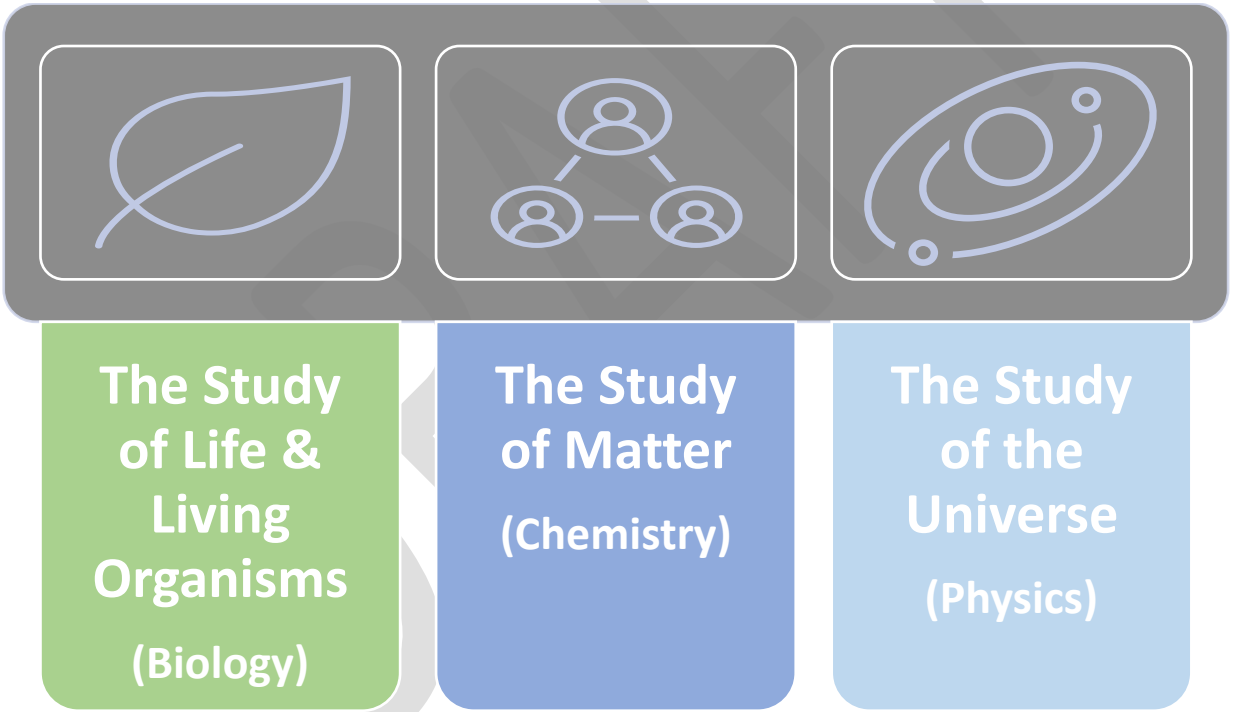
St Stephen's
CE Primary School

Science Curriculum Overview

"Learning, loving and growing; together as God's children."

Our Approach

Our **cyclical** curriculum weaves **working scientifically** through the 3 branches of Natural Sciences below and our pupils revisit these aspects throughout their time in our school. The elements of **working scientifically** are: **observing over time, pattern seeking, identifying, classifying/grouping, comparative/fair testing and researching using secondary sources.** Within each unit we have identified the working scientifically element that is the main focus. Each time they revisit an aspect, it is with **increasing complexity** to build on their **prior knowledge**. In each year group starting in Y1, children learn about the work of **3 prominent scientists** to build up an overview of different people and the impact of their work on society. Science is **taught weekly for 1 hour** from Y1-Y6. Within each half termly topic they complete an investigation to put into practice and apply their working scientifically skills in the context of the topic. In EYFS children start to build the foundations of science knowledge and working scientifically elements, alongside the continuous provision.



EYFS Overview

Year Group	Autumn		Spring		Summer	
N	**Why do we have senses?** • Explain what the 5 senses are. • Explore the natural world around them through sight, smell and touch to talk about the features of autumn • Describe what they see, hear and feel.	**Where is space?** • Explore where space is through reading stories, watching clips and looking at pictures • Explore the idea of light/dark and night/day.	**What is spring?** • Explore the natural world around them to talk about the features of spring with a focus on new life-buds/growth. • Describe what they see, hear and feel. • Observe changes to trees and plants.	**Where do flowers come from?** • Identify where different plants can be found in the school grounds. • Describe what they see, hear and feel. • Explain what a seed is. • Observe changes from seeds by planting own seed.	**Where do animals live?** • Name a range of different everyday animals including pets. • Explore habitats through reading stories, watching clips and looking at pictures. • Explore manmade and natural habitats	**How do I know it is summer?** • Explore the natural world around them to talk about the features of summer. • Describe what they see, hear and feel.
WS	**comparative/fair testing**	**using secondary sources**	**observing over time**	**observing over time**	**Identifying/classifying & using secondary sources**	**Identifying/classifying**

Continuous Provision

- Children will use their senses to explore the natural world around them, describing and understanding the effect of changing seasons. They will also be encouraged to be curious, question and to give explanations as they explore the different provision areas to think about "why" something behaves or works in a certain way.

Year Group	Autumn	Spring	Summer
R	Exploring habitats where animals big and small live—from spiders to sloths and farms to forests—pupils use their observations to sort animals based on their similarities and differences. They observe and compare the homes and behaviours of various animals, understanding how different environments meet their needs. Through outdoor activities, songs and creative tasks, pupils develop a deeper connection to the natural world.	Exploring processes and changes in the natural world, children build important foundations for working scientifically. They are introduced to the first step in scientific enquiry - asking questions. Through hands-on activities, pupils discover that objects move when pushed or pulled and some float while others sink. They guess what might happen to ice in different conditions and investigate ways to melt chocolate.	Exploring the outdoor environment, pupils use their senses to identify and describe natural objects, including flowering plants. Through role-play, they learn about plant parts by creating pretend medicine for unwell toys. By planting seeds, pupils discover that water and sunlight are essential for growth. They also learn the importance of caring for the planet, considering practical actions they can take to protect it.
	Across the Year: Observing how the natural world transforms through the year, children discover how these changes affect plants, animals and daily life. In autumn, they create a class weather chart and collect the treasures that the season brings. They learn how some animals prepare for winter. In spring, they explore new life and the life cycle of a butterfly through dance. During summer, they experiment with sand and water to find the perfect mixture for building sandcastles.		

Continuous Provision

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Year	Autumn		Spring		Summer	
1	**Materials: Everyday materials** • Name objects and identify the materials they are made from. • Recognise that objects are made from materials that suit their purpose. • Recall that a property is how a material can be described.	**Animals: Comparing animals** • Name and describe the physical features of a range of animals. • Sort animals into groups based on their similarities and differences. • Identify characteristics specific to mammals, birds, reptiles, amphibians and fish. • Recall the diets of carnivores, herbivores and omnivores. **Carl Linnaeus**	**Animals: Sensitive bodies** • Name and label main parts of the human body. • Understand how they are linked to different senses. • Understand the way that senses help us.	**Forces and space: Seasonal changes** • Name the four seasons in order and describe the typical weather and activities in each. • Describe the appearance of a tree's leaves in each season. • Recall that summer has the most daylight hours and winter has the least daylight hours. • Record data about the temperature across the four seasons. • Label a map of the UK with capital cities and seasonal weather symbols. **Alfred Wegener**	**Plants: Introduction to plants** • Identify plants and their features. • Recall some of the roles that flowering plant parts have. • Name some trees and their parts. • Identify similarities and differences between deciduous and evergreen leaves. • Recall that seeds and bulbs come from plants. • Recognise that seeds need water for growth. **Alexander Von Humboldt**	**Making connections: Investigating science through stories** • Identify the typical weather associated with each season. • Describe animal features and recognise similarities and differences between animals in the same animal group. • Build an animal home with natural materials. • Explain the difference between carnivores, herbivores and omnivores
WS	• *Sort objects based on the materials they are made from.* • *Group objects based on their properties.* • *Suggest ways to test materials for their properties.* • *Make predictions and recognise whether they were accurate.* • *Use their observations to answer questions.* • *Begin to recognise if a test is fair.*	• *Use a non-fiction text to find out about specific animals' diets.* • *Recognise that there are different ways to gather data.* • *Record data in a block graph and use this to answer questions.* • *Recognise what the scientist Jane Goodall was known for.* • *Recall some of Jane Goodall's key findings.*	• *Compare and group body parts.* • *Begin to recognise patterns in data and use these to answer questions.* • *Record data in a table.* • *Measure using non-standard units.*	• *Complete a pictogram and use it to answer simple questions.* • *Record data about the temperature across the four seasons.*	• *Draw and label a diagram of a flowering plant.* • *Use an identification chart to name flowering plant and sort into groups based on specific criteria.* • *Use non-standard units to measure leaf length.* • *Recognise similarities and differences in seeds and bulbs.* • *Identify which plant parts can be eaten.*	• *Carry out online research to find answers to questions.* • *Measure length in centimetres.* • *Suggest how to carry out a waterproof test.* • *Begin to recognise if a test is fair.* • *Use data to answer questions.* • *Recognise patterns in data.* • *Group birds according to their diet.*
End Point	**Children will be able to understand the basic structure of a flowering plant and name some common plants including deciduous and evergreen trees. They will be able to name parts of animals, group and classify a variety of animals and describe what they eat. They will be able to identify which body part is associated with each sense. Children will be able to identify key materials and some of their properties and know how to group these based on their physical properties. They will understand how the weather for each season changes and how the length of day varies.**					

Year	Autumn		Spring		Summer	
2	**Living Things - Habitats** • Recall some life processes. • Match different plants and animals to their habitats. • Give examples of how animals use their habitat for food and shelter. • Name living things that are producers and place a producer at the beginning of a food chain. • Use arrows to show the order in a food chain. **Al Jahiz**	**Living Things – Micro-habitats** • Identify and name a variety of plants and animals. • Recall that minibeasts live in microhabitats. • Describe microhabitats and their conditions. • Describe how microhabitats provide for the basic needs of animals and plants. • Describe the job role of a botanist. **Maria Sibylla Merian**	**Materials: Uses of everyday materials** • Name objects with the same use that are made from different materials. • Name materials that are used to make objects with different uses. • Recognise that stretching, twisting, bending and squashing can cause some solid objects to change shape. • Name properties that make materials suitable for their use.	**Animals including humans - Life-cycles and health** • Identify stages in the life cycles of different animals, including humans. • Describe the basic survival needs of animals. • Explain how to take care of personal hygiene. • Describe some positive effects of exercise. • Identify foods in different food groups. **Jane Goodall**	**Plants – plants growth** • Recall that seeds have all the necessary parts inside for plants to grow. • Recall that seeds need water and warmth to germinate. • Recognise that light is required for healthy plant growth. • Sequence the stages of a plant's life cycle. • Recognise the importance of healthy plant growth. • Describe the influences humans have on plants in the environment.	**Making connections -** • Explain the terms reduce, reuse and recycle. • Describe how paper is made. • Select suitable materials for a plant pot. • Describe good growth conditions for seeds. • Make a plant pot from eco-friendly materials. • Identify non-living materials to decorate a plant pot.
WS	• *Classify objects into alive, never been alive and was once alive, giving reasons for their choices.* • *Carry out research to find answers to questions.*	• *Group minibeasts and create simple classification keys.* • *Gather and record data and use it to answer questions.* • *Plan what observations to make in an experiment.* • *Order the steps of a method.* • *Describe the appearance of flowering plants.* • *Use an identification chart to name flowering plant*	• *Measure using non-standard units.* • *Recording results in a table.* • *Use data to answer a simple question.* • *Record results in a block graph.*	• *Measure using simple equipment.* • *Record results in a table.* • *Use data to answer a simple question.* • *Research using secondary sources.*	• *Set up comparative tests.* • *Plan observations and measurements.* • *Use rulers to measure and record stem height.* • *Record plant growth data in a table.* • *Compare plant growth in different test conditions.* • *Use a magnifying glass to observe and compare plants.* • *Draw diagrams to represent stages of a plant's life cycle.*	• *Use an online source to find answers to questions.* • *Identify and classify different types of material, including natural and human-made materials.* • *Carry out tests to assess the properties of different materials.* • *Use observations to answer questions.* • *Draw conclusions about the suitability of materials.*
End Point	**Children will understand the difference between living and non-living things. They will be able to describe the importance of habitats and identify what lives where and why. They will be able to explain how a simple food chain works. They will recognise what plants need to grow and how they grow from seeds and bulbs to mature plants. Children will know that animals and humans have offspring and the importance of the basic needs for survival. They will be able to explain the importance of hygiene, exercise and eating healthily. They will be able to describe the suitability of materials for particular uses and how some materials can be manipulated.**					

Year	Autumn		Spring		Summer	
3	**Materials: Rocks and soil** • Define the term rock. • Describe the appearance of different rocks, identifying both crystals and grains. • Group rocks by their absorbency, hardness and reaction to acid rain (vinegar). • Describe fossil formation and identify fossils in rocks. • Describe the work of a palaeontologist. • Name, describe and compare some different categories of soil. • List some of the benefits of earthworms to the soil. **James Hutton**	**Forces and space: Forces and magnets** • Define a force, including describing, naming and classifying contact and non-contact forces. • Describe the relationship between friction and the roughness of a surface. • Identify examples of friction being useful or not. • Predict attraction and repulsion between like and opposite poles. • Identify examples of magnetic and non-magnetic materials. . • Describe some examples of the uses of magnets. **James Clark Maxwell**	**Energy: Light and shadows** • Recall examples of light sources, objects that do not give out light and that darkness is the absence of light. • Describe ways to protect eyes from harm. • Describe what happens when light reflects, give examples of reflective surfaces or materials and describe factors that may affect the quality of a reflected image. • Describe how shadows form and identify patterns between groups of materials and the shadows produced. • Describe the pattern of changing shadows throughout the day. • Describe how the light source's distance affects the shadow's size.	**Animals: Movement and nutrition** • Recall the three key functions of the skeleton (movement, support and protection). • Describe a vertebrate, invertebrate, endoskeleton and exoskeleton. • Recall that muscles cause movements in the body. • Recall that animals, including humans, need to eat food to survive. • Describe some examples of how energy is used by the body and make comparisons about the energy demands between people. • List some of the seven nutrient groups • Compare two different meals.	**Plants – Plant reproduction** • Identify what plants need to grow healthily. • Describe the structure and function of the parts of flowering plants. • Investigate how plants transport water. • Describe the life cycle of a flowering plant. • Explain seed dispersal methods. **Agnes Arber**	**Making connections: Does hand span affect grip strength?** • Recall key knowledge from previous units. • Apply knowledge in new contexts
WS	• *Use a magnifying glass correctly to observe the appearance of a rock in detail.* • *Use results to choose the appropriate rock type for a specific use..* • *Research and present information on fossil formation using a single source.* • *Draw and label the bars on a bar chart.* • *Accurately draw and label the layers of sediment in a sedimentation jar.*	• *Use arrows and scientific vocabulary to show the direction of a contact force.* • *Use evidence to support conclusions.* • *Identify the variables to change, measure and control.* • *Write a method to explain how to use a magnet to sort and classify materials as magnetic or non-magnetic.* • *Label the axes of a bar chart.* • *Draw bars on a chart accurately.*	• *Record information in the correct columns.* • *Identify if a question is testable, explain why and plan ways to answer a testable question.* • *Identify and explain why something is an advantage or disadvantage of a method and suggest an improvement to the experiment.* • *I can describe patterns in data and quote values as evidence of patterns in data.* • *I can identify odd results that do not fit the pattern.* • *I can use patterns to make predictions for missing data.*	• *Use information about skeletons to group animals.* • *Record measurements of different bones and use the data to sort them into size order.* • *Describe some ways scientific research has improved the field of bionics/prosthetics, such as the choice of materials or linking their movement to muscles in the arm.* • *Find relevant data on food packaging and make numerical comparisons.*	• *Pose relevant questions.* • *Design and record in results tables.* • *Plan a simple enquiry.* • *Complete, read and interpret data in a bar chart.* • *Identify and suggest changes to an enquiry.* • *Use results to draw conclusions.*	• *Carry out a full scientific enquiry.*
End Point	**Children will identify the key parts of plants and their function, what plants need to survive and how this can vary from plant to plant. The will explain the importance of flowers in the life cycle. They will know the importance of nutrition and the part that skeletons and muscles play in human and animal bodies. They will group and compare different types of rocks and understand how fossils and soils are formed and made. Children will understand that dark is the absence of light, that light reflects off surfaces and how shadows are created and changed. They will be able to explain what a force is and how things move on different surfaces. They will observe and predict if magnets will attract or repel each other and identify and group everyday magnetic materials.**					

Year	Autumn		Spring		Summer	
4	**Animals including humans: Digestion and food** • Label key organs found in the digestive system and describe each of their functions. • Describe the functions of the four different types of adult human teeth and the importance of dental care. • Define a producer, predator and prey and identify examples in food chains. • Describe digestion, teeth and diets when talking about the observed poo clues. **Pierre Fauchard**	**Living things: Classification and changing habitats** • Group animals in various ways, including vertebrates (mammals, birds, reptiles, amphibians, fish) and invertebrates. • Group plants in various ways, including flowering and non-flowering plants. • Recognise and describe different habitats and their inhabitants. • Recognise the impact humans can have on habitats. • Recognise the impact of natural disasters on habitats.	**Energy: Sound and vibrations** • Describe how sounds are made. • Describe how sounds are heard through different mediums. • Explain the relationship between vibration strength and volume. • Describe the relationship between volume and distance. • Describe pitch and how to change it. • Explain how insulating materials can be used to muffle sound. **Ernst Chladni**	**Energy: Electricity and circuits** • Recall a range of electrical appliances, classify them as mains or battery-powered and explain why. • Explain how to test if a circuit works. • Identify symbols for open and closed switches. • Describe which materials are good electrical conductors and which materials are electrical insulators • Describe precautions for working safely with electricity.	**Materials: States of matter** • Identify solids, liquids and gases using their properties. • Describe melting, freezing, condensing and evaporating. • Describe the different stages of the water cycle. • Describe how temperature affects the rate of evaporation and, therefore, the water cycle. **Albert Einstein**	**Making connections: How does the flow of liquids compare?** • Recall key knowledge from previous units. • Apply knowledge in new contexts.
WS	• *Evaluate a strength or weakness of the digestive system model.* • *Describe an example of evidence that can be used to study teeth.* • *Evaluate a method by considering its limitations.* • *Recall that scientific research needs repeated results before being used in society.* • *Identify trends in predators and prey.* • *Draw a results table that has space for observations about different poo samples.*	• *Record data in different ways.* • *Apply and create classification keys.* • *Make careful observations.* • *Make and use classification keys.* • *Present information in different ways.* • *Research using an information sheet.*	• *To observe closely how different instruments create a sound.* • *Research how whales and dolphins communicate underwater.* • *Present results using a bar chart.* • *Suggest which variables to measure and for how long.* • *Design simple results tables.* • *Identify when results or observations do not match predictions.*	• *Draw a results table and record a range of appliances under the correct headings 'Mains' or 'Batteries'.* • • *Identify and draw simplified electric circuit symbols and use these to draw a simplified circuit diagram.* • *Write a method for the investigation that considers appropriate equipment, orders clearly written steps and considers safety.* • *Pose questions relating to bulbs in an electrical circuit.* • *Explain why a selected question is testable.*	• *Ask relevant questions.* • *Use results to draw simple conclusions.* • *Use thermometers to take accurate measurements.* • *Make predictions for new values.* • *Record findings using labelled diagrams.* • *Research using more than one source.*	• *Carry out a full scientific enquiry.*
End Point	**Children will understand how living things can be grouped in a variety of way and identify some of these in their local and wider environment. They will be able to explain how environments can change and how this can affect habitats. They will know the simple function of the digestive system and the function of teeth in the human body. They will identify the producers, predators and prey in a variety of food chains. Children will compare and group solids, liquids and gases and how materials can change state when the temperature is altered. They will understand how sound is made and how it travels to the ear. They will identify common appliances that use electricity and understand what needs electricity. They will show how circuits and switches work.**					

Year	Autumn		Spring		Summer	
5	**Forces & Space: Earth & Space** • Describe the geocentric and heliocentric models. • Describe the orbits of celestial bodies in the Solar System and name the force that keeps them in their orbits. • Describe the orbit of the Moon around the Earth and its phases. • Explain how day and night occur. • Explain how the seasons occur. • Explain how a sundial works. **Stephen Hawking**	**Living Things: Life Cycles and Reproduction** • Describe the life cycle of a plant, including the reproductive stage. • Describe the life cycle of a mammal. • Describe the life cycle of a bird and compare it with that of a mammal. • Describe the life cycle of an amphibian. • Describe the life cycle of an insect and compare it with that of an amphibian. • Describe asexual reproduction in plants. **Rachel Carson**	**Forces and Space: Unbalanced Forces** • Describe gravity and its effects. • Describe the relationship between mass and gravity. • Describe air resistance and its effects. • Describe friction and its effects. • Describe water resistance and its effects. • Describe the relationship between surface area and air and water resistance. • Explain how to make an object aerodynamic or streamlined. • Describe the effects of levers, pulleys and simple machines on movement. **Isaac Newton**	**Materials: Properties and changes** • Determine the hardness of different materials and link this to their uses. • Determine the transparency of different materials and link this to their uses. • Determine the thermal and electrical conductivity of different materials and link this to their uses. • Demonstrate, identify and describe reversible and irreversible changes.	**Animals: Human Timeline** • Order the stages in growth and development from birth to old age. • Describe physical and developmental changes from a baby through to old age. • Describe changes that occur in males and females during puberty. • Suggest ways to manage the changes that occur during puberty. • Recall what is meant by a gestation period. • Describe how gestation varies across animals and compare this to humans. **Ernest Haeckel**	**Making connections: Does the size of an asteroid affect the diameter of its impact crater?** • Recall key knowledge from previous units. • Apply knowledge in new contexts.
WS	• *Pose and identify testable questions about the movement of the celestial bodies in our Solar System.* • *Use a model to represent the Solar System.* • *Design and draw a table to record data on moons.* • *Accurately draw day and night and seasons diagrams.* • *Calibrate a sundial using a compass and torch and use it to measure time.*	• *Observe and compare equivalent parts in different flowers.* • *Research the life cycles of different mammals.* • *Pose questions to compare the life cycles of different birds.* • *Suggest how one temperature may affect egg hatching.* • *Use data to describe a relationship and make predictions.* • *Represent root growth over time on a line graph.*	• *Analyse predictions, data and anomalies to write a conclusion.* • *Plan a fair test to investigate air resistance.* • *Write a method.* • *Evaluate a method and judge the degree of trust.* • *Design a results table.* • *Calculate the mean average from repeat data.* • *Draw and annotate a diagram.* • *To draw an accurate line graph.*	• *Determine the hardness of different materials and link this to their uses.* • *Determine the transparency of different materials and link this to their uses.* • *Determine the thermal and electrical conductivity of different materials and link this to their uses.* • *Demonstrate, identify and describe reversible and irreversible changes.*	• *Order the stages in growth and development from birth to old age.* • *Describe physical and developmental changes from a baby through to old age.* • *Describe changes that occur in males and females during puberty.* • *Suggest ways to manage the changes that occur during puberty.* • *Recall what is meant by a gestation period.* • *Describe how gestation varies across animals and compare this to humans.*	• *Carry out a full scientific enquiry.*
End Point	**Children will describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird and explain the reproduction process of some animals and plants. They will be able to explain the changes as humans grow and age. Children will be able to group everyday materials based on properties such as hardness, solubility, transparency, conductivity and their response to magnets. They will explore how states of matter can be separated through filtering, sieving and evaporating and how some of these processes can be reversed. They will understand that the sun, Earth and moon are spherical bodies and how the Earth's rotation is linked to day and night. They will expand their understanding of forces and identify the effects of forces between moving surfaces.**					

Year	Autumn		Spring		Summer	
6	**Animals, including humans: Circulation and health** • Identify factors that affect health positively or negatively and suggest ways to improve it. • Explain how blood circulates through the body via the heart and vessels, passing through the heart twice per circuit. • Describe blood's role in transporting oxygen, water, and nutrients around the body. • Identify the link between animal size and heart rate using evidence, and explain how exercise affects heart rate and why it changes.	**Energy: Circuits, batteries and switches** • Describe key electrical components and predict if a circuit will work. • Explain how bulb brightness depends on bulb number, resistance, and battery voltage. • Use the relationship between voltage and bulbs to predict what will happen with buzzers and motors. • Build a circuit with a switch, explain how it works to solve problems, and give examples of such problems. **Thomas Edison**	**Living things: Classifying big and small** • Define the term 'organism' and name the seven life processes of all living things. • Describe the work of Carl Linnaeus. • Define the terms 'vertebrate' and 'invertebrate' and name the vertebrate groups. • Describe the characteristics of fish, amphibians, reptiles, birds and mammals. • Name the plant groups. • Describe the characteristics of flowering plants, ferns, mosses and conifers. • Define the term 'micro-organism' and name some examples.	**Energy: Light and reflection** • Compare sources of light and explain how the eye is protected from light. • Describe how light travels and how we see luminous and non-luminous objects. • Recall factors that affect the size of a shadow. • Use mirrors to make a working periscope and explain how a periscope works using ray diagrams. • Recall uses of mirrors, describe how they reflect light in different situations. **Ibn al-Haytham**	**Living things: Evolution and inheritance** • Define and identify variation in organisms. • Recall that living things produce offspring of the same kind but are not normally identical to their parents. • Describe patterns of inheritance from parent to offspring in a given example or family tree. • Describe what an adaptation is; it cannot be chosen and is usually inherited. **Barbara McClintock**	**Making connections: Are some sunglasses safer than others?** • Recall key knowledge from previous units. • Apply knowledge in new contexts.
WS	• *Evaluate the trustworthiness of secondary sources that provide health advice.* • *Evaluate the model blood by considering a strength and a weakness when representing blood and suggesting improvements.* • *Compare class values and recognise when they do not match.* • *Use identified patterns to predict new values.*	• *Draw circuit diagrams with straight lines and using standard circuit symbols.* • *Design a results table with an appropriate number of columns and headings with units.* • *Identify the changed, measured and control variables in an enquiry to plan a method.*	• *Use a classification key to group and identify organisms.* • *Make a simple classification key.*	• *Make observations about the properties of light.* • *Use my observations as evidence to support conclusions about light.* • *Draw ray diagrams.* • *Pose testable questions in response to observations.* • *Record my measurements as a line graph.* • *Use my line graph to extrapolate data and make predictions.*	• *Sort variation as environmental, inherited or a mixture of both.* • *Evaluate a method by recalling variables that were effectively kept the same and those that were harder to control.* • *Comment on the reliability of the results and the degree of trust.* • *Consider how evidence is used to form theories and the degree of trust the evidence offers.*	• *Carry out a full scientific enquiry.*
End Point	**Children will be able to reason and classify different living objects based on specific characteristics. They will be able to identify and name the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood. They will understand how nutrients are transported within animal and human bodies and how diet, exercise, drugs and lifestyle impact on the way their bodies function. Children will also explain that living things and habitats can change over time and how this can lead to evolution. They will know that light appears to travel in straight lines and how this allows the eye to see light. They will understand and give reasons for variations in how components function, using bulbs, buzzers and switches.**					