THE HARMONY TRUST
BELIEVE • ACHIEVE • SUCCEED

Cavendish Close Junior Academy

Science Intent and Implementation

At Cavendish Close Junior Academy, we aim to deliver a curriculum that helps children to **Aspire, Collaborate and Experience** a variety of opportunities.

Intent

1	Develop scientific knowledge and conceptual understanding.
2	Be curious about how the world works.
3	Be able to work scientifically with confidence.
4	Be resilient and reflective when asking questions.
5	Confidently use scientific vocabulary.
6	Develop a knowledge of significant scientists.

Intent explanation

1	It is our intention that our children develop **scientific knowledge and conceptual understanding** through the specific disciplines of **biology, chemistry and physics**.
2	It is our intention to **ignite curiosity** in children about our universe which promotes respect for the living and non-living.
3	It is our intention that children are equipped with **a range of skills to work scientifically.**
4	It is our intention that our children learn to be **resilient and reflective** when asking questions about their own and others work.
5	It is our intention that children develop a **progressive scientific vocabulary** that enables them to confidently communicate and justify scientific ideas.
6	It is our intention that our children are **knowledgeable about a range of significant scientists** both from history and modern day.

THE HARMONY TRUST
BELIEVE • ACHIEVE • SUCCEED

Cavendish Close Junior Academy

ACE Curriculum Statement

***"The important thing is to never stop questioning"* – Albert Einstein.**

At Cavendish Close, we instil curiosity and enable children to question Science. We increase pupils' knowledge and their understanding of our world by developing scientific enquiry skills alongside providing opportunities for critical evaluation of evidence.

Science helps children to aspire by developing their awareness of scientific roles and providing them with opportunities to learn about a range of scientists and their contributions. Each year group studies different scientists and explores their significance within the world of science. Science helps children to collaborate with their peers and develop their curiosity and questioning through scientific enquiry and high quality STEM activities.

Children are encouraged to develop their vocabulary through participating in a variety of investigations. In addition to working as a team, children are also encouraged to respectfully challenge each other's views and evidence their findings using scientific research. They experience a wide range of practical activities which enables them to challenge, view and question theories and results – often leading to their own scientific questions for future experiments. All children take part in National Science week - allowing them to further question ideas with high aspirations and exciting experiences.

At Cavendish Close Junior Academy, our Science teaching offers opportunities for children to develop scientific knowledge and conceptual understanding through the specific disciplines of Biology, Chemistry and Physics. Scientific enquiry skills are embedded in each topic – which are revisited and developed throughout their time at school. Children are able to build upon their prior knowledge whilst embedding this procedural knowledge into the long-term memory through a range of retrieval tasks. All children are encouraged to develop and use a range of skills including: observations, planning and investigations, alongside deepening their scientific knowledge through questioning the world around them and becoming independent learners.

Through all of these, our children are able become ACE Scientists.

THE HARMONY TRUST
BELIEVE • ACHIEVE • SUCCEED

Cavendish Close Junior Academy

Implementation

Long term curriculum coverage

Year Group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
3	Rocks and Fossils	Plants	Light	Forces	Magnets	Animals including Humans
4	Sound	States of Matter	Electricity	Living things and their Habitats	Living things and their Habitats	Animals including Humans (Digestive system)
5	Forces	Living things and their Habitats (Life Cycles)	Earth and Space	Properties of Materials	Changing Materials	Animals including Humans (changes)
6	Light	Inheritance and Evolution	Electricity	Forces	Animals including Humans (Circulatory System)	Living things and their Habitats (Classification)

Key Concepts

Working scientifically
Living things and their habitats (biology)
Animals including humans (biology)
Materials and their properties (chemistry)
Forces and Magnets (physics)
Light and Sound (physics)
Earth and Space (physics)
Evolution and Inheritance (biology)

THE HARMONY TRUST
BELIEVE • ACHIEVE • SUCCEED

Cavendish Close Junior Academy

Skills progression

Skill	Year 3	Year 4	Year 5	Year 6
Questioning and Predicting	Ask simple questions based on observations (e.g., "What happens if I put this object in water?"). Predict the outcome of basic experiments (e.g., "What will happen to a balloon when heated?").	Use prior knowledge to make predictions based on previous experiences (e.g., "The ice will melt faster in warm water than cold water"). Begin to make reasonable predictions about experiments and explain why (e.g., predicting how sound travels in different materials).	Make predictions based on scientific knowledge and reasoning (e.g., "The greater the force, the greater the effect on the object's movement"). Link predictions to real-world scientific knowledge (e.g., using the understanding of gravity to predict how objects will fall).	Form more complex scientific questions and justify predictions using evidence (e.g., "What effect will the absence of sunlight have on plant growth?"). Use scientific reasoning to predict results in unfamiliar situations (e.g., using knowledge of evolution to predict animal adaptations).
Planning and conducting investigations	Plan and carry out basic investigations (e.g., testing which materials are magnetic). Begin to identify and control variables (e.g., testing the effect of light on plant growth while controlling the amount of water).	Design simple fair tests, choosing appropriate equipment. Identify different variables in investigations (e.g., time, temperature, and material type in melting ice experiments). Test hypotheses using comparative or simple cause-effect investigations.	Plan investigations with more precision (e.g., setting up a fair test to compare materials that conduct electricity). Identify independent, dependent, and controlled variables in experiments. Consider safety and how to record results accurately.	Design more complex and systematic investigations, taking into account fairness and accuracy. Plan investigations where variables are controlled and tested independently (e.g., testing how different materials affect the speed of sound). Develop strategies for collecting reliable data and ensuring accurate results.
Observing and measuring	Make simple observations using senses (e.g., describing how a material feels, smells, or looks). Use basic measuring tools (e.g., rulers to measure length,	Use measuring instruments accurately (e.g., scales for mass, measuring jugs for volume). Observe changes over time and record results (e.g.,	Measure with greater precision and accuracy (e.g., using stopwatches for time, accurate thermometers for temperature).	Use a wide range of tools for measurements (e.g., voltmeters) and understand the limitations of each tool. Record results systematically and analyse them for consistency.

	thermometers to measure temperature).	observing plant growth and measuring its height).	Take repeated measurements and understand why they may vary.	Make observations in a controlled and fair manner, understanding factors that may affect reliability.
Recording and presenting data	Record data in simple tables or charts (e.g., recording the height of plants each week). Present data using basic bar charts and pictograms.	Use bar charts and line graphs to represent data accurately. Draw simple labelled diagrams (e.g., of the water cycle, a food chain).	Create and interpret more complex data presentations (e.g., using line graphs for changes over time). Use tables to organise data for comparison. Draw detailed scientific diagrams with correct labels and scale.	Use a range of data presentation methods, including complex bar and line graphs, tables, and scientific models. Draw accurate diagrams with detailed labels (e.g., the human circulatory system, electrical circuits).
Analysing and interpreting results	Identify simple patterns in data (e.g., "The bigger the balloon, the longer it floats"). Compare results to predictions and discuss any differences.	Compare results from different experiments to identify trends (e.g., comparing how materials affect sound travel). Discuss simple scientific explanations for results (e.g., "The thicker material will block more sound because it absorbs vibrations").	Explain patterns and trends in data with scientific reasoning (e.g., explaining why some materials dissolve faster than others). Discuss how results compare to predictions and what they mean.	Analyse more complex results (e.g., understanding the relationship between variables in a force or motion experiment). Use scientific knowledge to explain trends and provide evidence-based conclusions.
Evaluating and Improving investigations	Reflect on the investigation and suggest improvements (e.g., "Next time, we could test more surfaces"). Discuss any errors in measurement or data collection.	Identify ways to improve the accuracy and reliability of investigations (e.g., repeating measurements, using different methods to test results). Evaluate the success of the investigation in answering the question posed.	Consider how to control variables more effectively to improve fairness in an experiment. Discuss any anomalies in results and suggest how to improve future investigations.	Critically evaluate the methods and conclusions of investigations. Suggest improvements to experimental designs and refine the investigation process.

Communicating Scientific ideas	Use simple scientific vocabulary to describe observations (e.g., "It looks shiny" or "The material feels rough"). Present findings in basic reports or oral presentations.	Explain results using appropriate scientific terms (e.g., "The water turned to steam because it was heated"). Use diagrams and tables to present findings clearly.	Use technical language accurately in written and verbal explanations. Write detailed reports and explain findings logically.	Use formal scientific language to justify conclusions (e.g., "The results show a clear correlation between temperature and the rate of reaction"). Present findings through structured reports, discussions, and presentations.
Summary of Progression	Basic investigations, simple observations, and measuring. Use of basic vocabulary and recording methods.	Introduction to fair testing, use of charts and diagrams, simple analysis of results.	Greater focus on accuracy, precision, and more complex experiments. Data presentation and scientific explanations develop.	Independent investigations, critical analysis of data, and formal communication of scientific reasoning and findings.

THE HARMONY TRUST
BELIEVE • ACHIEVE • SUCCEED

Cavendish Close Junior Academy

Key Lesson Outcomes

Autumn term 1

Year Group	Year 3	Year 4	Year 5	Year 6
Unit Title and description	Rocks and Fossils	Sound	Forces	Light
Crucial Curriculum Content	Observe and compare different types of rocks. Understand rock formation and soil. Discovering fossils and their historical significance.	Understand sound and vibrations. Explore sound properties. Investigate sound in the environment.	Understand forces and investigate their effects. Explore how levers, pulleys and gears work to magnify force. Use scientific enquiry skills to plan and carry out fair tests.	Investigate the properties and behaviour of light. Explore refraction and colour mixing. Plan and carry out structured investigations to answer enquiry questions related to light.
Key Concepts	Materials and their properties Working Scientifically	Light and Sound Working Scientifically	Forces and Magnets Working Scientifically	Light and Sound Working Scientifically
Scientific Domain	Chemistry	Physics	Physics	Physics
Lesson outcomes	1. To make scientific observations of different types of rock. 2. To investigate the properties of rocks. 3. To understand how different rocks are formed. 4. To know what soil is made from. 5. To explain how fossils are formed. 6. To know the significance of **Mary Anning.**	1. To identify how sounds are made and show that some of them are linked to vibrations. 2. To recognise that vibrations from sounds travel through a medium to the ear. 3. To show that sound gets fainter as the distance from the source increases. 4. To begin to understand that sounds can vary by pitch and volume and to explore how to change the sounds that an instrument can produce.	1. To know what gravity and resistance are and identify balanced and unbalanced forces. 2. To identify the effects of air resistance. 3. To investigate how levers and pulleys work and understand that a smaller force can have a greater effect. 4. To understand how gears work and recognise that gear mechanisms allow a smaller force to have a greater effect.	1. To plan and carry out investigations to enquiry questions. 2. To recognise that light travels in straight lines. 3. To understand how a periscope works and why they are used. 4. To investigate the size of a shadow in relation to a light source. 5. To investigate the effects of refraction.

		5. To find patterns between the pitch of a sound. 6. To learn about the life and significance of **Alexander Graham Bell.**	5. To investigate the effect ground friction has on movement and identify the effects of friction that acts between moving surfaces. 6. To understand the significance of **Galileo Galilei**.	6. To investigate what happens when coloured light is mixed.
Key Vocabulary	Sedimentary Fossil Metamorphic Palaeontologist Igneous Permeable Impermeable Organic matter	Eardrum Source Medium Vibrations Volume Pitch Decibel Frequency	Gravity Friction Galileo Galilei Mechanisms Resistance Gears Levers Pulleys	Reflect Opaque Direction Periscope Shadow Straight Prism Absorb
ACE (Aspire, Collaborate, Experience) links	**Aspire:** Explore scientific careers such as geologists and palaeologists. **Collaborate:** Work in teams to sort, observe and test rock properties. **Experience:** Children engage in hands-on investigations with real rock samples, soil, and fossil replicas, making learning tangible and memorable.	**Aspire:** Explore the science behind sound. **Collaborate:** Investigate sound properties. **Experience:** Children engage in hands-on experiments with sound waves, vibrations, and materials, making abstract concepts concrete.	**Aspire**: Inspire curiosity through real world applications of forces. **Collaborate:** Peer discussions, teamwork and problem solving. **Experience:** Tangible and outdoor learning through experiments.	**Aspire:** Creative thinking about how light works in the world around them. **Collaborate:** Group experiences, peer feedback and joint presentations of findings to develop confidence and collaborative skills. **Experience:** Hands on investigations and use real world contexts to make learning meaningful.

THE HARMONY TRUST
BELIEVE • ACHIEVE • SUCCEED

Cavendish Close Junior Academy

Autumn term 2

Year Group	Year 3	Year 4	Year 5	Year 6
Unit Title and description	Plants	States of Matter	Living things and their Habitats (plant reproduction and life cycles)	Evolution and Inheritance
Crucial Curriculum Content	Identify the main parts of a plant (roots, stem, leaves, flowers) and learn their roles in growth, support, and reproduction. Investigate what plants need to survive—light, water, nutrients, and space—and understand how water travels through the plant via the stem. Develop enquiry skills by asking questions, conducting investigations, and using evidence to support findings. They also explore the contributions of Sir Joseph Banks to botany and science.	Identify and group materials as solids, liquids, or gases based on their observable properties and behaviours. Explore how materials change state through heating and cooling, with a focus on water's transitions (melting, freezing, evaporation, condensation) and how these relate to the water cycle and temperature. Conduct investigations, record observations, and present findings through written and oral explanations, displays, or presentations, developing their skills in scientific enquiry and communication.	Identify and label the main parts of a flowering plant, including male and female reproductive structures (stamen, carpel, ovary, anther, etc.). Describe and compare the life cycles of different animal groups — amphibians, insects, birds, and mammals — noting key stages such as birth, growth, metamorphosis, and reproduction. Learn about the life and contributions of Sir David Attenborough, his role in wildlife research and conservation, and how his work helps people understand and protect living things.	Understand that characteristics are passed from parents to offspring in both animals and plants. Explore how living things have evolved over time and recognise that evolution and adaptation are ongoing processes. Use evidence and observation to explain scientific ideas and draw conclusions about how species change over time.
Key Concepts	Living things and their Habitats Working Scientifically	Materials and their Properties Working Scientifically	Living things and their Habitats Working Scientifically	Evolution and Inheritance Working Scientifically
Scientific Domain	Biology	Chemistry	Biology	Biology

THE HARMONY TRUST
BELIEVE • ACHIEVE • SUCCEED

Cavendish Close Junior Academy

Lesson outcomes	1. To identify different parts of a plant and their functions. 2. To explore the requirements of plants for life and growth. 3. To understand how water is transported in plants. 4. To research the life and work of **Sir Joseph Banks.** 5. To ask questions and use different types of scientific enquiries to answer them. 6. To use straightforward scientific evidence to answer questions and support my findings.	1. To identify different solids, liquids and gases. 2. To group materials based on observations. 3. To understand that materials can change state when heated or cooled. 4. To identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. 5. To understand how water changes state. 6. To report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	1. To label the parts of a flowering plant, including male and female structures. 2. To explore sexual and asexual reproduction in plants. 3. To describe the life cycle of an amphibian and an insect. 4. To describe the life cycle of a mammal. 5. To describe the life cycle of a bird. 6. To learn about the life and significance of **Sir David Attenborough.**	1. To explain the scientific concept of inheritance. 2. To examine the evidence demonstrating how plants have evolved. 3. To begin to understand the scientific theories of natural selection, evolution and adaptation. 4. To learn about the life and significance of **Charles Darwin**. 5. To plan an investigation to find out which tool is best at picking up seeds. 6. To understand that animals and plants are constantly changing and adapting to their environment.
Key Vocabulary	Roots Transported Stem Nutrients Flower Xylem Leaves Light	Solid Liquid Gas Temperature Evaporation Condensation Material Water Cycle	Gamete Carpel Stamen Pistil Stigma Botanical Sexual reproduction Asexual reproduction	Evolution Inheritance Adaptation Genes Charles Darwin Characteristics Natural Selection Suitable
ACE (Aspire, Collaborate, Experience) links	**Aspire:** By exploring how plants grow and survive, children develop a deeper appreciation for the natural	**Aspire:** Children explore everyday materials and phenomena—like melting chocolate or watching steam	**Aspire:** Introduces real scientists and conservationists, such as Sir David Attenborough, showing how	**Aspire:** Inspires curiosity and scientific thinking by exploring big ideas such as evolution, inheritance, and adaptation.

	world. This can spark curiosity about ecosystems, gardening, and environmental care. Learning about Sir Joseph Banks helps children see how science can lead to discovery and adventure, inspiring them to think of themselves as future scientists or explorers. **Collaborate:** Pupils work together to observe plant growth, share ideas, and record results, building teamwork and communication skills. **Experience:** Activities like planting seeds, observing water transport in celery and testing light and water conditions give children direct experience with scientific enquiry.	rise—which makes science feel relevant and exciting. This sparks curiosity and encourages them to ask questions and seek answers together. **Collaborate:** Through hands-on experiments (e.g. observing ice melting or tracking evaporation), pupils work in pairs or groups to observe, record, and discuss findings. This builds teamwork, communication, and shared responsibility for learning. **Experience:** Pupils present their results through posters, presentations, or group discussions, allowing them to express their understanding creatively and collaboratively. This boosts confidence and helps them learn from each other's perspectives.	one person's passion for nature can make a global impact — encouraging pupils to see themselves as future scientists, explorers, and protectors of the planet. **Collaborate:** Group investigations into plant reproduction which encourages shared discovery and teamwork alongside collaborative research projects on different animal life cycles, allowing pupils to become "experts" and teach one another. **Experience:** Hands-on experiences to research and learn about the parts of a flowering plant.	**Collaborate:** Group investigations, peer discussions and debates to develop listening, reasoning and disagreement skills. **Experience:** Hands-on enquiry through experiments, model-making and outdoor observations of local plants and animals.

THE HARMONY TRUST
BELIEVE • ACHIEVE • SUCCEED

Cavendish Close Junior Academy

Spring term 1

Year Group	Year 3	Year 4	Year 5	Year 6
Unit Title and description	Light	Electricity	Earth and Space	Electricity
Crucial Curriculum Content	Light is necessary to see things because it travels from a source and is reflected off surfaces into our eyes. Explore how shadows are formed when light is blocked by an object and investigate how the size and shape of shadows change depending on the position of the light source and object. Recognise that light from the Sun can be harmful to their eyes and learn ways to protect themselves. They also learn about Thomas Edison's life and significance, understanding how his inventions have impacted the way we use light today.	Recognise common household appliances powered by electricity and understand the importance of electricity in daily life. Learn basic circuit symbols (battery, bulb, wire, switch) and know what makes a complete circuit and that a switch opens/closes it. Build a simple series circuit, naming its parts, test materials as conductors or insulators and identify electrical hazards and safe practices at home.	Pupils learn about the movement of planets around the Sun within the solar system, the movement of the Moon around the Earth, and understand the causes of different lunar phases. Pupils describe how the Earth's rotation on its axis causes the apparent movement of the Sun across the sky, explaining day and night. Pupils explore historical ideas including the geocentric and heliocentric models, learn about Nicolaus Copernicus's contribution to astronomy, and create scaled models of the solar system using spherical representations to deepen understanding of relative sizes and distances.	Learn about major discoveries in electricity, including the lives and contributions of Alessandro Volta and Nikola Tesla, and accurately draw scientific circuit symbols. Understand and compare series and parallel circuits, and explain how voltage affects components such as bulb brightness through practical investigations. Plan and carry out scientific enquiries by controlling variables, constructing circuits, and recording results to develop explanations based on evidence.
Key Concepts	Light and Sound Working Scientifically	Forces and Magnets Working Scientifically	Earth and Space Working Scientifically	Forces and Magnets Working Scientifically
Scientific Domain	Physics	Physics	Physics	Physics

THE HARMONY TRUST
BELIEVE • ACHIEVE • SUCCEED

Cavendish Close Junior Academy

Lesson outcomes	1. To explain that light is needed to see things. 2. To understand that light is reflected from surfaces. 3. To explore how shadows are formed. 4. To investigate how shadows change. 5. To recognise that light from the sun can be dangerous and that there are ways to protect their eyes. 6. To understand the life and significance of **Thomas Edison.**	1. To identify common appliances that run on electricity. 2. To know the circuit symbols for basic electrical components and know what is needed for a complete circuit. 3. To construct a simple series electrical circuit, identifying and naming its basic parts. 4. To investigate electrical conductors and insulators. 5. To identify the dangers associated with electricity in the home. 6. To know that a switch opens and closes a circuit.	1. To describe the movement of planets relative to the Sun in the solar system. 2. To describe the movement of the Moon and understand different lunar phases. 3. To describe the Earth's rotation and the apparent movement of the sun across the sky. 4. To understand the difference between geocentric and heliocentric. 5. To create a scaled solar system using spherical representations. 6. To learn about the works of **Nicolaus Copernicus.**	1. To explain the importance of major discoveries in electricity and learn about the lives of **Alessandro Volta and Nikola Tesla.** 2. To recognise and draw scientific circuit symbols. 3. To observe and explain the effects of differing voltages in a circuit. 4. To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. 5. To investigate the brightness of a bulb in a circuit. 6. To know the difference between series and parallel circuits.
Key Vocabulary	Beam Rotation Sunlight Reflection Shadow Optical Vision Light Source	Switch Circuit Conductor Insulator Wire Open Closed Cell	Geocentric Heliocentric Eclipse Axis Lunar cycle Celestial body Copernicus Spherical	Voltage Current Resistance Series Switches Symbol Component Parallel
ACE (Aspire, Collaborate, Experience) links	**Aspire:** Developing curiosity about the natural world, encouraging pupils to ask	**Aspire:** Showing how scientific ideas lead to important inventions, such as electric	**Aspire: I**nspires curiosity about the universe by connecting pupils with big scientific ideas	**Aspire:** Showing how groundbreaking discoveries in electricity shaped the modern

	questions about how light helps us to see and how shadows are formed. **Collaborate:** Providing opportunities for pupils to work in pairs or small groups to explore light sources and investigate shadows. **Experience:** Hands on investigations which allow pupils to experiment and discover.	lighting, helping them to see how scientists and inventors use curiosity, creativity and perseverance to change the world and encouraging pupils to view science as a possible future pathway. **Collaborate:** Pupils work together to build and test simple electrical circuits, share ideas, solve problems and discuss outcomes, developing teamwork, communication and respect for others' thinking. **Experience:** Practical, hands-on experiences through constructing circuits, investigating materials and exploring real-life electrical safety, making learning memorable, engaging and rooted in everyday life.	and historical figures like Nicolaus Copernicus, encouraging them to see themselves as future explorers and thinkers who can uncover the mysteries of space. **Collaborate:** Pupils work together to build scaled solar system models and discuss astronomical concepts, fostering teamwork, communication, and shared problem-solving. **Experience:** Hands-on activities like creating physical models of planets and observing lunar phases provide immersive, tangible learning that makes abstract space concepts accessible and exciting.	world and encouraging them to see themselves as future innovators. **Collaborate:** Group investigations and discussions, where pupils share ideas, plan enquiries together, and solve problems as a team. **Experience:** Hands-on experiences by constructing circuits, experimenting with voltage, and exploring real-life applications of electricity in practical contexts.

THE HARMONY TRUST
BELIEVE • ACHIEVE • SUCCEED

Cavendish Close Junior Academy

Spring term 2

Year Group	Year 3	Year 4	Year 5	Year 6
Unit Title and description	Forces	Living things and their Habitats	Properties of Materials	Forces (link to Titanic unit)
Crucial Curriculum Content	Understand that a force is a push or a pull, identify examples in everyday life, and explore how forces affect the motion and shape of objects. Recognise that objects need a force to start moving, stop moving, or change direction, and compare how objects move on different surfaces, introducing friction through practical investigations. Learn about the life and significance of Sir Isaac Newton and how his discoveries shaped our understanding of forces.	Pupils will understand the seven life processes (MRS GREN) and use them to identify living things, distinguishing them from non-living things. They will recognise that living things can be grouped in different ways based on their characteristics, including identifying vertebrates and invertebrates by observing similarities and differences, and using classification keys to sort and name organisms accurately. During Science Week, pupils will apply these skills through practical investigations and collaborative activities to deepen their understanding of living things and their habitats.	Compare and group everyday materials based on properties such as hardness, transparency, conductivity, and response to magnets, and explore their thermal insulating qualities. Investigate the suitability of materials for specific purposes, including food packaging, and test fabric absorbency, strength, and durability. Examine electrical conductivity in different materials and apply enquiry skills during Science Week through practical experiments and problem-solving activities.	Explain buoyancy and classify objects based on their ability to float, understanding the concept of displacement in liquids. Investigate how de-icers work and explore the science behind reducing ice formation. Understand the key principles of rocket propulsion and how forces interact to enable movement in space.
Key Concepts	Forces and Magnets Working Scientifically	Living things and their Habitats Working Scientifically	Materials and their Properties Working Scientifically	Forces and Magnets Working Scientifically
Scientific Domain	Physics	Biology	Chemistry	Physics

THE HARMONY TRUST
BELIEVE • ACHIEVE • SUCCEED

Cavendish Close Junior Academy

Lesson outcomes	1. To understand that a force is a push or a pull and identify examples in every day life. 2. To explore how forces affect the motion and shape of objects. 3. To understand that objects need a force to start moving, stop moving, or change direction. 4. To compare how objects move on different surfaces and explain why (introducing friction). 5. To understand the life and significance of Sir **Isaac Newton.** 6.SCIENCE WEEK	1. To understand the seven life processes (MRS GREN) and use them to identify living things. 2. To recognise that living things can be grouped in a variety of ways based on their characteristics. 3. To identify vertebrates and invertebrates by observing similarities and differences. 4. To use classification keys to identify and group a variety of living things accurately. 5 SCIENCE WEEK	1. To compare and group together everyday materials on the basis of their properties. 2. To explore thermal insulating properties of everyday materials. 3. To investigate possible food packaging materials. 4. To investigate fabric absorbency, strength and durability. 5. To investigate the electrical conductivity of materials 6. SCIENCE WEEK	1. To explain buoyancy and understand that objects can be categorised by their ability to float. 2. To understand what displacement is. 3. To investigate how de-icers work. 4. To understand the key principles behind how a rocket works. 5. SHAKE A TREE 6. SCIENCE WEEK
Key Vocabulary	Gravity Friction Pull Push Non-magnetic Attract Poles Repel	Classification Vertebrates Invertebrates Habitat Environment Mammals Reptiles Amphibians	Thermal Durability Insulator Absorbent Conductor Permeable Comparative Properties	Displacement Buoyancy Thrust Gravity Newton Force De-icer Density
ACE (Aspire, Collaborate, Experience) links	**Aspire:** Inspires children by introducing the discoveries of Sir Isaac Newton and showing how understanding forces	**Aspire:** Helping children discover the diversity of living things and understand how all	**Aspire:** Inspires children by showing how material properties influence design and technology in everyday	**Aspire:** Connecting scientific principles like buoyancy and rocket propulsion to real-world innovations, encouraging them

	explains everyday phenomena, encouraging curiosity about science and invention. **Collaborate:** It promotes collaboration through group investigations and discussions, where pupils work together to test how surfaces affect movement and share ideas about forces in action. **Experience:** Children gain hands-on experiences by experimenting with pushes, pulls, and friction, observing how forces change motion, and applying their learning in practical challenges.	organisms are connected within their habitats. **Collaborate:** It will encourage collaboration through group investigations, discussions, and shared problem-solving when using classification keys and exploring habitats. **Experience:** Children will gain hands-on experiences by observing real specimens, conducting outdoor fieldwork, and engaging in practical activities during Science Week.	life, encouraging them to think like scientists and engineers. **Collaborate:** It promotes collaboration through group investigations and discussions, where pupils share ideas and work together to test and compare materials for different purposes. **Experience:** Children gain hands-on experiences by conducting practical experiments on insulation, absorbency, strength, durability, and electrical conductivity, including creative challenges during Science Week.	to imagine future possibilities in science and engineering. **Collaborate:** It fosters collaboration through group experiments and problem-solving tasks, where pupils share ideas and work together to investigate forces in action. **Experience:** Children gain hands-on experiences by testing objects for buoyancy, exploring displacement, experimenting with de-icers, and building simple models to understand rocket principles.

THE HARMONY TRUST
BELIEVE • ACHIEVE • SUCCEED

Cavendish Close Junior Academy

Summer term 1

Year Group	Year 3	Year 4	Year 5	Year 6
Unit Title and description	Magnets	Living things and their Habitats	Changing Materials	Animals including Humans – Staying Alive
Crucial Curriculum Content	Identify magnetic and non-magnetic materials and understand that magnets have poles which attract and repel each other. Investigate the strength of different magnets, explore how distance affects magnetic force, and understand that magnetic force can act at a distance and through some materials. Apply knowledge of magnets by designing and creating a simple magnetic game or device, using classification and prediction skills.	Pupils will explore and compare living things in different habitats, understanding how they are suited to their environments and how these adaptations help them survive. They will learn that environments can change naturally and through human actions, investigating the effects of deforestation and other impacts on habitats, and studying the life cycle of a bee in comparison to other living things. Children will begin to learn about Carl Linnaeus and his role in shaping classification systems, applying this knowledge by creating and testing simple classification keys for living things.	Plan and carry out investigations into solubility and methods for separating mixtures, such as filtering, sieving, and evaporating. Identify reversible and irreversible changes, explain that some changes create new materials, and understand processes such as burning and oxidation. Explore the conditions needed for combustion, investigate the new materials formed by burning, and apply scientific enquiry skills to practical experiments.	Identify the components of blood and describe their functions, and explore the structure and role of the human heart in the circulatory system. Understand how water and nutrients are transported within the body, investigate how heart size and rate relate to age, fitness, and activity, and learn how these can be improved. Recognise the impact of drugs on body function and understand the significance of Edward Jenner's work in advancing medical science.
Key Concepts	Forces and Magnets Working Scientifically	Living things and their Habitats Working Scientifically	Materials and their Properties Working Scientifically	Animals including Humans Working Scientifically
Scientific Domain	Physics	Biology	Chemistry	Biology

THE HARMONY TRUST
BELIEVE • ACHIEVE • SUCCEED

Cavendish Close Junior Academy

Lesson outcomes	1. To identify magnetic and non-magnetic materials. 2. To understand that magnets have poles and explore how they attract and repel. 3. To investigate the strength of different magnets and how distance affects magnetic force. 4. To investigate the strength of different magnets and how distance affects magnetic force. 5. To understand that magnetic force can act at a distance and through some materials. 6. To apply knowledge of magnets by designing and creating a simple magnetic game or device.	1. To explore and compare living things in different habitats and understand how they are suited to their environment. 2. To recognise that environments can change naturally and through human actions, and understand how this can pose dangers to living things. 3. To investigate the effects of deforestation and other human impacts on habitats. 4. To understand the life cycle of a bee and compare it to other living things. 5. To begin to learn about the life and significance of **Carl Linnaeus** and how his work shaped classification systems. 6. To apply knowledge of classification by creating and testing simple classification keys for living things.	1. To plan and carry out an investigation into soluble materials. 2. To investigate how to separate mixed materials. 3. To identify if a change is reversible or irreversible and know that some changes for new materials that are not usually reversible. 4. To investigate the materials needed for something to burn and the new materials formed by burning. 5. To explain that some changes result in new materials. 6. To know what oxidation is.	1. To identify the components of blood and describe their functions. 2. To explore the structure and function of the human heart. 3. To investigate and understand that heart size and speed relates to age, fitness & activity and can be improved. 4. To identify how drugs impact on the way the human body functions. 5. To understand how water and nutrients are transported within the body. 6. To understand the significance of **Edward Jenner**.
Key Vocabulary	Magnetic Poles Repel Contact Force Non contact Force Magnetic field	Environment Deforestation Impact Pollution Urbanisation Rainforest	Dissolve Substance Solution Separation Solubility Filtration	Heart Vena Cava Aorta Capillaries Circulatory Nutrients

	Friction Attract	Classification Natural	Oxidation Solvent	Oxygen Carbon Dioxide
ACE (Aspire, Collaborate, Experience) links	**Aspire:** Showing how magnets are used in everyday life and technology, encouraging them to think creatively about how science solves real-world problems. **Collaborate:** It promotes collaboration through group investigations and design challenges, where pupils work together to test magnetic properties and create magnetic games or devices. **Experience:** Children will gain hands-on experiences by exploring magnets in practical investigations, designing magnetic games, and observing real-life applications such as compasses and everyday magnetic objects.	**Aspire:** This unit will inspire children by showing the incredible variety of life and helping them understand how living things adapt and survive in changing environments. **Collaborate:** It will encourage collaboration through group investigations, discussions, and teamwork when creating and testing classification keys and exploring human impacts on habitats. **Experience:** Children will gain meaningful experiences by observing real organisms, conducting outdoor habitat studies, and engaging in hands-on activities such as investigating life cycles and participating in Science Week projects.	**Aspire:** Showing how understanding material properties and changes underpins real-world applications in science, cooking, and engineering, encouraging them to think like problem-solvers. **Collaborate:** It enables effective collaboration through group investigations where pupils plan, test, and discuss methods for separating mixtures and identifying reversible and irreversible changes. **Experience:** Children gain hands-on experiences by experimenting with solubility, separation techniques, combustion, and oxidation, applying scientific enquiry skills to practical, engaging activities.	**Aspire:** Inspires children by showing how understanding the circulatory system connects to health, fitness, and medical breakthroughs, encouraging them to value science in improving lives. **Collaborate:** It promotes collaboration through group investigations and discussions, where pupils work together to measure heart rates, analyse data, and share findings. **Experience:** Children gain hands-on experiences by exploring heart structure, testing the effects of exercise on pulse rate, and engaging in practical activities that link science to real-world health and well-being.

THE HARMONY TRUST
BELIEVE • ACHIEVE • SUCCEED

Cavendish Close Junior Academy

Summer term 2

Year Group	Year 3	Year 4	Year 5	Year 6
Unit Title and description	Animals including Humans	Animals including Humans	Animals including Humans	Living things and their Habitats – Classification
Crucial Curriculum Content	Understand how animals can be grouped based on their diet and learn why a balanced diet is important for health. Identify different types of skeletons and explain their functions, including how muscles work in pairs to enable movement. Describe how humans breathe and explain why the body needs air to stay alive, linking this to the role of the skeleton and muscles in supporting life processes.	Pupils will identify and name the basic parts of the human digestive system and describe the simple functions of each part. They will learn about the different types of human teeth, explain their functions, and investigate how tooth decay occurs and how it can be prevented. Children will construct and interpret food chains, identifying producers, predators, and prey, and explain the role of each part and how energy is transferred through the chain.	Describe the changes humans undergo from birth to late adulthood, including key stages of foetal development and major milestones in baby and child growth. Identify and explain the physical and emotional changes during puberty and recognise how these changes prepare the body for adulthood. Explore the physical and mental changes that occur from adulthood to old age, understanding how development continues throughout life.	Understand the significance of Carl Linnaeus and explore how classification systems organise living things based on shared characteristics. Identify similarities and differences between organisms, use and develop classification keys to sort living things, and evaluate potential flaws in these keys. Describe the key characteristics of unusual species, and design, name, and classify a new creature within the animalia taxonomy to apply understanding creatively.
Key Concepts	Animals including Humans Working Scientifically	Animals including Humans Working Scientifically	Animals including Humans Working Scientifically	Living things and their Habitats Working Scientifically
Scientific Domain	Biology	Biology	Biology	Biology
Lesson outcomes	1. To understand how animals can be grouped based on their diet. 2. To understand the need for a balanced diet.	1. To identify and name the basic parts of the human digestive system.	1. To describe the changes as humans develop to old age. 2. To explore the key stages of human fetal development.	1. To understand the significance of Carl Linnaeus and explore classification systems.

	3. To identify different kinds of skeletons. 4. To understand the function of skeletons. 5. To understand that muscles work in pairs. 6. To describe how we breathe and explain why our body needs air to stay alive.	2. To describe the simple functions of the main parts of the digestive system. 3. To identify the different types of human teeth and explain their simple functions. 4. To investigate how tooth decay occurs and how to prevent it. 5. To construct and interpret food chains, identifying producers, predators, and prey. 6. To explain the role of each part of a food chain and how energy is transferred.	3. To recognise and explore key milestones in baby and child development. 4. To identify the changes in the adolescent human body during puberty. 5. To identify physical and mental changes from adulthood to old age. 6. To describe and identify the physical changes that happen from birth to late adulthood.	2. To identify similarities and differences between living things in order to determine their classification and use classification keys to sort living things according to observable characteristics. 3. To develop and test classification keys – identifying potential flaws. 4. To describe the key characteristics of unusual living things from around the world. 5. To describe, design and name a new creature that characteristically sits within the animalia classification and sort new creatures within the animalia taxonomy.
Key Vocabulary	Exoskeleton Cartilage Muscles Joints Skeleton Endoskeleton Protect Support	Digestive System Saliva Intestine Molar Incisor Canine Stomach Oesophagus	Gestation Adolescence Foetus Puberty Uterus Reproduction Centile Development	Classification Linnaeus Organisms Micro-organisms Phylum Taxonomy Species Genus
ACE (Aspire, Collaborate, Experience) links	**Aspire:** Helping children to understand how diet, skeletons, muscles, and breathing keep animals and	**Aspire:** Helping children to understand the amazing processes inside their own bodies and how living things	**Aspire:** Helping children to understand the incredible journey of human development and how science	**Aspire: I**nspires children by showing how scientists like Carl Linnaeus shaped our understanding of biodiversity,

	humans alive, encouraging curiosity about health and biology. **Collaborate:** It promotes collaboration through group activities and investigations where pupils work together to classify diets, compare skeleton types, and discuss how muscles and breathing function. **Experience:** Children gain hands-on experiences by exploring real-life examples of skeletons, testing muscle movements, and observing breathing patterns to link science to everyday life.	are connected through food chains. **Collaborate:** It will encourage collaboration through group investigations, shared experiments on tooth decay, and teamwork when constructing and interpreting food chains. **Experience:** Children will gain hands-on experiences by observing real teeth, exploring models of the digestive system, and creating food chains to show energy transfer in ecosystems.	explains changes throughout life, encouraging curiosity about health and biology. **Collaborate:** It enables collaboration through group discussions and timeline activities where pupils share ideas and work together to explore stages of growth and development. **Experience:** Children gain meaningful experiences by creating life-stage models, comparing developmental milestones, and investigating how physical and emotional changes impact daily life.	encouraging pupils to think critically and creatively about the natural world. **Collaborate:** It promotes collaboration through group activities where pupils develop and test classification keys, share ideas, and solve problems together. **Experience:** Children gain hands-on experiences by using real-life examples to classify organisms, exploring unusual species, and designing and naming their own creature within the animalia taxonomy.

How each intention is met across units of work

Intention 1: Develop scientific knowledge and conceptual understanding.			
Year 3	**Year 4**	**Year 5**	**Year 6**
Children will explore the world around them through direct, hands-on experiences. They engage with simple phenomena such as light, shadows, forces, and the basic properties of materials. They observe and describe what they see. Activities are designed to help them classify objects and phenomena—for example, grouping items based on their textures or exploring what happens when objects are pushed or pulled. This early engagement lays the foundation for scientific vocabulary and sparks curiosity, enabling pupils to develop an initial, concrete understanding of the natural world.	Children start to explore the states of matter, learning to identify solids, liquids, and gases, and they begin to understand the processes of melting, freezing, and evaporation through structured experiments. They are encouraged to make predictions and conduct simple fair tests, which involve controlling variables and recording observations more systematically.	Children delve deeper into topics such as forces—including gravity, friction, and air resistance—and begin to explore aspects of the solar system and life cycles. They are introduced to investigations that require planning, measurement, and data analysis, prompting them to draw connections between their observations and broader scientific theories. The emphasis on designing experiments and interpreting data helps pupils develop critical thinking skills, and the use of increasingly precise scientific language.	Children are expected to consolidate and refine the scientific knowledge they have built over previous years. The curriculum now emphasizes more sophisticated investigations that require critical evaluation of evidence, reflection on findings, and the communication of complex ideas. Topics such as evolution, advanced principles of electricity and light, and the human circulatory system are explored, encouraging pupils to integrate their knowledge across various areas of science. At this stage, the use of scientific vocabulary is both confident and precise.

Intention 2: Be curious about how the world works.			
Year 3	**Year 4**	**Year 5**	**Year 6**
Children will investigate the importance of the human skeleton, exploring its function and structure, and will learn to explain how shadows form through light interactions. They'll also examine how different colors reflect light, determine the magnetic properties	Children will apply their knowledge of the water cycle to understand weather and climate change, investigate factors that speed up evaporation, and set up practical enquiries to determine which drinks are harmful to teeth, while also exploring the digestive system using	Children will learn about the lifecycle and reproduction of amphibians and insects, examine patterns in animal gestation periods, and identify the effects of air resistance, while also describing the moon's movement relative to the Earth and matching lunar phases to	Children will be able to explain how a periscope works, investigate light colour mixing, give reasons for variations in how components function, and examine the effect of water temperature on an iceberg.

of everyday materials, and closely observe rocks to discover their diverse qualities and features.	everyday objects, examining the relationship between sound pitch and its source, and constructing simple series electrical circuits.	the positions of the Moon, Sun, and Earth. Additionally, they will explore thermal insulating properties and demonstrate that dissolving, mixing, and changes of state are reversible processes.	

Intention 3: Be able to work scientifically with confidence.			
Year 3	**Year 4**	**Year 5**	**Year 6**
Children will ask relevant scientific questions, set up simple practical enquiries and fair tests, and make careful observations, taking accurate measurements using standard units and a range of equipment, including thermometers. They will gather, record, and present data to help answer questions, using simple scientific language, drawings, and labelled diagrams. Children will report on their findings through oral and written explanations, draw simple conclusions from the results, and make predictions for new values, identifying differences, similarities, or changes related to scientific ideas and processes, using straightforward scientific evidence to answer questions.	Children will ask relevant questions and use different types of scientific enquiries to answer them, setting up simple practical enquiries, comparative, and fair tests. They will make systematic and careful observations, taking accurate measurements using standard units and equipment such as thermometers and data loggers. Data will be gathered, recorded, classified, and presented in various ways, including simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables, to help answer questions. Findings will be reported through oral and written explanations, displays, or presentations, with conclusions and suggestions. Using results, they will draw simple conclusions, make predictions, suggest improvements, raise further	Children will plan various types of scientific enquiries to answer questions, taking measurements with increasing accuracy and precision using a range of equipment and repeat readings when needed. They will record data and results of increasing complexity using scientific diagrams, labels, classification keys, tables, scatter graphs, and both bar and line graphs, and then use these test results to make predictions and set up further fair tests. They will also report and present their findings through oral and written forms such as displays and other presentations, and begin to identify scientific evidence that supports or refutes ideas or arguments.	Children will plan different types of scientific enquiries, recognising and controlling variables where necessary, and take precise measurements using a range of scientific equipment, including repeat readings when appropriate. They will record complex data using scientific diagrams, labels, classification keys, tables, scatter graphs, bar, and line graphs, using test results to make predictions and set up further comparative and fair tests. Findings are reported and presented in oral and written forms, including conclusions, causal relationships, and explanations with a degree of trust in results. Additionally, students identify scientific evidence used to support or refute ideas or arguments.

	questions, and identify differences, similarities, or changes related to scientific ideas, supported by straightforward scientific evidence.		

Intention 4: Be resilient and reflective when asking questions.			
Year 3	**Year 4**	**Year 5**	**Year 6**
Children will ask relevant questions and use different types of scientific enquiries to explore everyday phenomena, relationships between living things, and their environments. They will begin to develop ideas about functions, interactions, and relationships while raising their own questions about the world around them. Additionally, they will start making decisions about the best types of enquiry to answer questions, including observing changes over time, noticing patterns, grouping and classifying, conducting simple comparative and fair tests, and using secondary sources for research.	Children will ask relevant questions and use different types of scientific enquiries to explore everyday phenomena, the relationships between living things, and their environments. They will develop ideas about functions, relationships, and interactions while raising their own questions about the world around them. Additionally, they will make decisions about the best types of enquiry to use, including observing changes over time, noticing patterns, grouping and classifying, conducting simple comparative and fair tests, and using secondary sources for research.	Children will begin to plan different types of scientific enquiries, recognizing and controlling variables where necessary, while exploring ideas, asking their own questions, and analysing functions, relationships, and interactions more systematically. They start to engage with more abstract concepts, understanding how these ideas help explain the world around them, and recognise that scientific knowledge evolves over time. Additionally, they will begin to select the most appropriate methods to answer scientific questions, using various types of enquiry such as observing changes over time, noticing patterns, grouping and classifying, conducting comparative and fair tests, and researching through a range of secondary sources.	Children will plan different types of scientific enquiries, recognising and controlling variables where necessary, while exploring and discussing ideas, asking their own questions, and systematically analyzing functions, relationships, and interactions. They will begin to engage with more abstract concepts, understanding how these ideas explain the world around them, and recognize that scientific knowledge evolves over time. Additionally, they will be able to select the most appropriate methods to answer scientific questions, using various types of enquiry such as observing changes over time, noticing patterns, grouping and classifying, conducting comparative and fair tests, and researching through a wide range of secondary sources.

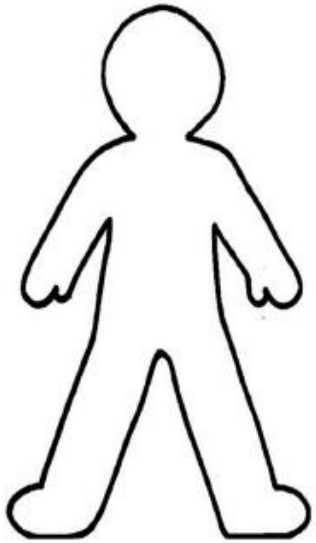
Intention 5: Confidently use scientific vocabulary.			
Year 3	**Year 4**	**Year 5**	**Year 6**
Children will begin to use relevant scientific language to discuss their findings, incorporating comparative and superlative terms to describe observations and results accurately.	Children will use relevant scientific language to talk and write about their findings, incorporating comparative and superlative terms to describe observations and results effectively.	Children will begin to read, spell, and pronounce scientific vocabulary correctly while using relevant terminology and illustrations to discuss, communicate, and justify scientific ideas. They will develop confidence in using a range of scientific vocabulary and conventions such as trend, rogue result, support prediction, and -er word generalisation. Additionally, they will start to incorporate scientific ideas when describing simple processes and using precise scientific language in their explanations.	Children will read, spell, and pronounce scientific vocabulary correctly, using relevant language and illustrations to discuss, communicate, and justify scientific ideas. They will confidently be able to apply a range of scientific vocabulary and conventions such as trend, rogue result, support prediction, and -er word generalisation to enhance their explanations and understanding.

Intention 6: Develop a knowledge of significant scientists.			
Year 3	**Year 4**	**Year 5**	**Year 6**
Children are introduced to early scientific pioneers such as **Mary Anning**, **Joseph Banks**, **Thomas Edison**, and **Isaac Newton**, focusing on their discoveries in fossils, plants, electricity, and forces. At this stage, learning emphasises curiosity, observation, and the idea that science helps us understand the world.	Pupils learn about **Alexander Graham Bell** and **Carl Linnaeus**, exploring how scientific ideas lead to inventions (telephone) and systems for classification. This builds on Year 3 by showing how science is applied to solve problems and organise knowledge.	Children study **Galileo Galilei**, **Nicolaus Copernicus**, and **David Attenborough**, deepening their understanding of scientific evidence, observation, and communication. They begin to see how science challenges ideas and influences conservation and sustainability.	Pupils learn about influential figures such as **Charles Darwin**, **Alessandro Volta**, **Nikola Tesla**, **Edward Jenner**, and revisit **Carl Linnaeus**, focusing on evolution, electricity, medicine, and classification. This stage emphasises how scientific theories develop over time and their impact on modern life.

THE HARMONY TRUST
BELIEVE • ACHIEVE • SUCCEED

Cavendish Close Junior Academy

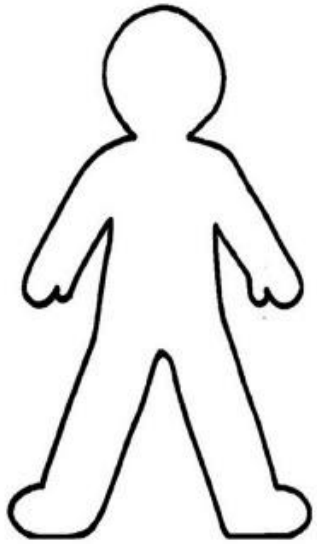
End Points/Impact

Scientific Knowledge A great Year 3 scientist will understand what plants need to survive, identify key parts of a flower, and explain their functions. They will recognise different types of forces, identify some magnetic materials, and understand that light is needed to see and reflects off shiny surfaces. Additionally, they will distinguish between sedimentary, metamorphic, and igneous rocks.	**A great scientist in Year 3** 	Asking Questions A Year 3 scientist asks questions about how plants grow and thrive, investigates whether people who do sports have stronger muscles, explores how magnets behave, and uses knowledge of rock properties to understand why certain rocks are chosen for specific tasks.
Curiosity A great Year 3 scientist is curious and actively investigates how skeletons support animals, how shadows are formed, and how different colours reflect light. They explore everyday materials to see if they are attracted to magnets and observe rocks closely to discover their unique qualities and features.		Scientific Vocabulary Develop and improve their scientific vocabulary to enable them to explain their findings.
Working Scientifically A Year 3 scientist works scientifically by classifying food plants, understanding their nutritional properties, and presenting data using bar charts. They compare and group different types of rocks and materials, investigate how shadow size changes, and use a rock identification key to classify rock samples.		Significant Individuals A Year 3 scientist will know about **Mary Anning, Joseph Banks, Thomas Edison, and Isaac Newton**, understanding their key discoveries in fossils, plants, electricity, and forces. They will recognise that scientists observe, experiment, and invent to explain the world around us.

THE HARMONY TRUST
BELIEVE • ACHIEVE • SUCCEED

Cavendish Close Junior Academy

A great scientist in Year 4



Scientific Knowledge

A Year 4 scientist understands the functions of the digestive system, identifies different types of teeth, and knows how sounds are made, recognising that vibrations travel through a medium. They can identify common appliances that run on electricity, understand that materials can be classified into different states, and know that water moves in a cycle due to temperature changes.

Curiosity

A Year 4 scientist is curious and sets up practical enquiries to investigate which drinks are bad for teeth, uses everyday objects to explore the digestive system, and examines patterns between sound pitch and the features of the objects that produce it. They construct simple electrical circuits, apply their knowledge of the water cycle to understand weather and climate change, and investigate factors that speed up evaporation.

Working Scientifically

A Year 4 scientist works scientifically by comparing the teeth of herbivores and omnivores, explaining their differences, and setting up practical enquiries to investigate the teeth and digestive system. They plan and conduct investigations to explore sound-proofing materials and the function of a switch in a circuit, understand how materials change shape when heated or cooled, and use data loggers to record temperature, making careful observations over time.

Asking Questions

A Year 4 scientist asks questions about why certain drinks are bad for teeth, explores the function of the digestive system, and begins to understand how the human ear works. They identify the dangers associated with electricity and ask questions about evaporation, setting up practical enquiries to investigate and answer them.

Scientific Vocabulary

A Year 4 scientist defines key terms such as predator, prey, producer, herbivore, carnivore, and omnivore, while developing and improving their scientific vocabulary to effectively explain their findings.

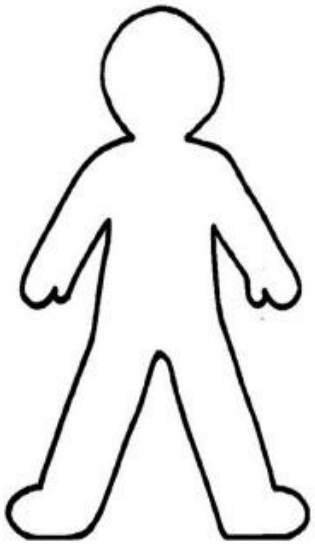
Significant Individuals

A Year 4 scientist will learn about **Alexander Graham Bell** and **Carl Linnaeus**, understanding how scientific ideas lead to inventions and systems for classifying living things. They will begin to see how science solves problems and organises knowledge.

THE HARMONY TRUST
BELIEVE • ACHIEVE • SUCCEED

Cavendish Close Junior Academy

A great scientist in Year 5



Scientific Knowledge

A Year 5 scientist understands the life process of reproduction in some plants and animals and can describe the changes humans undergo as they develop to old age. They can define gravity and resistance, identify balanced and unbalanced forces, and describe the movement of the Earth and other planets relative to the Sun in the solar system. Additionally, they can compare and group everyday materials based on their properties and understand that some materials dissolve in liquid to form solutions.

Curiosity

A Year 5 scientist is curious and explores the lifecycle and reproduction of amphibians and insects, looking for patterns in animal gestation periods. They investigate the effects of air resistance, describe the movement of the moon relative to the Earth, and match lunar phases to the positions of the Moon, Sun, and Earth. They explore thermal insulating properties and demonstrate that dissolving, mixing, and changes of state are reversible changes.

Working Scientifically

A Year 5 scientist works scientifically by recording cycles through annotated scientific illustrations and creating Venn diagrams to show changes during puberty. They plan investigations to test the effectiveness of various parachutes and investigate how ground friction affects movement. They carry out shadow investigations to support the idea that the Earth moves on its axis, explore which materials make the best thermal insulators, and investigate methods like filtration, evaporation, and sieving to separate materials.

Asking Questions

A Year 5 scientist asks questions to explore artificial asexual reproduction in flowering plants and the key stages of foetal development. They investigate the effects of friction, recognize mechanisms that allow a smaller force to have a greater effect, and explain day and night. They explore the electrical conductivity of materials, explain that some changes result in the formation of new materials, and define and explain oxidation.

Scientific Vocabulary

A Year 5 scientist defines sexual and asexual reproduction and continually develops and improves their scientific vocabulary to effectively explain their findings.

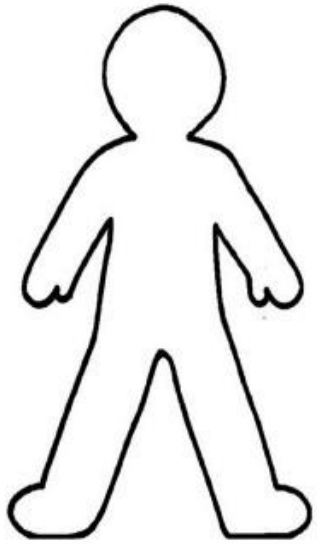
Significant Individuals

A Year 5 scientist will know about **Galileo Galilei, Nicolaus Copernicus, and David Attenborough**, understanding how evidence and observation challenge ideas and influence conservation. They will appreciate that science changes thinking and impacts the wider world.

THE HARMONY TRUST
BELIEVE • ACHIEVE • SUCCEED

Cavendish Close Junior Academy

A great scientist in Year 6



Scientific Knowledge

A Year 6 scientist understands that variation occurs within offspring and across species, and recognises that plants and animals consistently change and adapt to their environment. They can identify the main parts of the human circulatory system, describe how living things are classified, and understand that light travels in straight lines and can be split into seven rainbow colours. They use recognised symbols when representing simple circuit diagrams and understand that objects can be categorised by their ability to float.

Curiosity

A Year 6 scientist is curious and examines evidence showing how plants have evolved and recognises the role fossils play in the development of evolutionary theory. They explore the structure and function of the human heart, test and evaluate classification keys, and investigate how a periscope works. They explore light colour mixing, give reasons for variations in how components function, and investigate the effect of water temperature on an iceberg.

Working Scientifically

A Year 6 scientist can plan investigations while recognising and controlling variables, such as investigating how the size and shape of a bird's beak affect its chances of survival. They explore the relationship between heart size, speed, age, fitness, and activity, understanding that heart fitness can improve. They investigate the size of a shadow in relation to the light source and use data loggers to measure light reflection in a periscope. Additionally, they explore the effects of voltage on electrical components.

Asking Questions

A Year 6 scientist asks questions about how plants and animals are adapted to extreme environments and designs an animal that would thrive in the rainforest. They recognise the impact of diet, exercise, drugs, and lifestyle on the body's functioning and explore why shadows have the same shape as the objects casting them. They also associate the brightness of a lamp with the number of voltage cells used in a circuit.

Scientific Vocabulary

A Year 6 scientist understands key concepts such as displacement and continually develops and refines their scientific vocabulary to effectively explain their findings.

Significant Individuals

A Year 6 scientist will learn about **Charles Darwin, Alessandro Volta, Nikola Tesla, Edward Jenner**, and revisit **Carl Linnaeus**, understanding their contributions to evolution, electricity, medicine, and classification. They will understand how scientific theories develop over time and shape modern life.

THE HARMONY TRUST
BELIEVE • ACHIEVE • SUCCEED

Cavendish Close Junior Academy

National Curriculum for KS2

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. '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. '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.

National Curriculum for KS1

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. '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. Pupils should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

THE HARMONY TRUST
BELIEVE • ACHIEVE • SUCCEED

Cavendish Close Junior Academy

What Science looks like at Cavendish Close

- Science lessons are taught weekly for 1 hour 40 minutes
- Front cover at start of every topic, including: lesson outcomes, key vocabulary and whether the Science unit is biology, chemistry or physics.
- Pre-learning and post learning task sheet following front cover. Children self-assess using smiley, neutral and sad faces (first lesson and final lesson)
- Date and learning objective (underlined) in all lessons
- At least 2 Quadrant grids per unit. These should include: previous year groups; previous units; previous weeks and previous lesson
- At least two examples of low stakes quizzing per unit, to recap main knowledge skills and concepts with long term memory retention in mind. (Mini quizzes, kahoot quiz etc…).
- At least two 'Thinkers' keys per unit with a written response from children
- Clear, labelled diagrams (where applicable)
- Examples of working scientifically (minimum of one per unit). The write up can vary (group proforma etc); however there must be a focus on either the prediction or the conclusion in detail rather than the whole investigation write up
- Where applicable, opportunities to present results in a range of ways – including graphs and charts.
- Use of Explorify where applicable (odd one out, zoom in, big questions)
- Reach out reporter (used as either part of the lesson or any point in the day)
- Concept cartoons used at least one per unit to challenge children's questioning.
- Photographic evidence of investigations and activities carried out in the lessons.
- At least one single/double page spread per unit (Y5 & Y6 expectation is double).
- Use a range of meta-cognitive strategies to support learning (learn to learn, graphic organisers, use of technology)
- Post learning task to be completed and self-assessed in final lesson on the other half of the original sheet.
- Remember to utilise the iPads as a tool for learning

Displays will include the following:

- Key vocabulary
- Key concepts (see concepts document on website under curriculum tab)
- Questions based on the unit of work that children will answer throughout the unit
- Examples of children's work

Proformas to be provided: Pre/post learning, Quadrant grids, Thinkers' keys, Post it planner on a3 for group investigations.