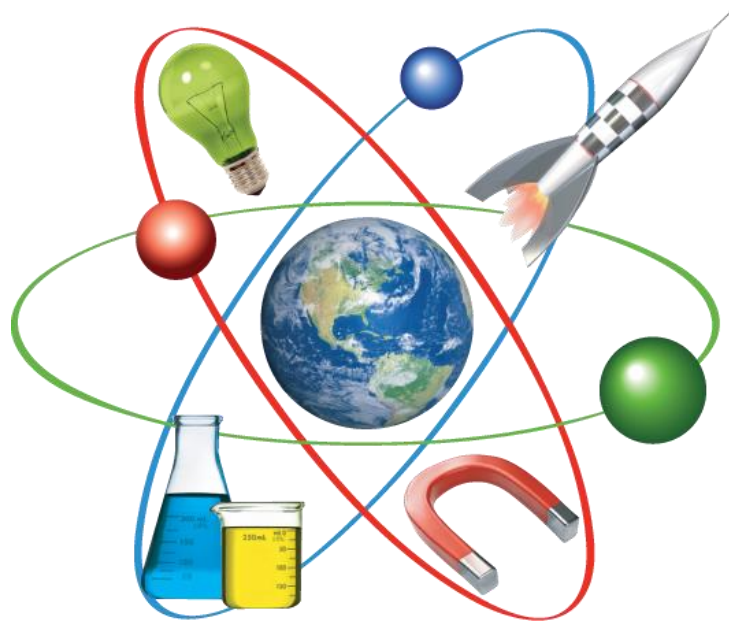




Moss Valley's Science Curriculum



Vision Statement:

“At Moss Valley Primary academy all of our children have a passion for science, a love for exploration and a thirst for knowledge that they carry with them out into the wider world.”

Curriculum End Points By the time our Scientists leave us in year 6 we want them to have:

- The ability to think independently and raise questions about working scientifically and the knowledge and skills that it brings.
- Confidence and competence in the full range of practical skills, taking the initiative in, for example, planning and carrying out scientific investigations.
- Excellent scientific knowledge and understanding which is demonstrated in written and verbal explanations, solving challenging problems and reporting scientific findings.
- High levels of originality, imagination and innovation in the application of skills.
- The ability to undertake practical work in a variety of contexts, including fieldwork.
- A passion for science and its application in past, present and future technologies.

Intent:

What are we trying to achieve for our children in Science?

We want our children to be investigative scientists (able to observe, describe, illustrate, hypothesise, evaluate and interpret data) growing more independent in their learning, making them able to pose scientific questions to be investigated and make decisions on appropriate variables and methods to carry out their investigations. We aim to foster an environment which encourages children to be inquisitive and passionate about science.

Children will have the opportunity to revisit and build on their scientific knowledge, as well as have a better conceptual understanding of science’s application in the real world (especially with regards to global issues) by interleaving the lessons to allow for more frequent retrieval opportunities. Procedural fluency when working scientifically and semantic knowledge will be at the heart of our curriculum supported by a variety of appropriate experiences. Knowledge will be linked, both within science and the wider curriculum to strengthen and deepen children’s understanding of the sciences. We aim to embed reading and vocabulary into our delivery of science allowing children frequent opportunities for speaking and listening.

The foundation of vocabulary will aid children with their critical thinking vocabulary and reasoning, as well as questioning, clarifying and justifying ideas, to develop their communication skills. In EYFS, the Early Learning Goal 'Understanding of the World' forms a foundation for later Science learning.

Implementation:

How is the curriculum delivered?



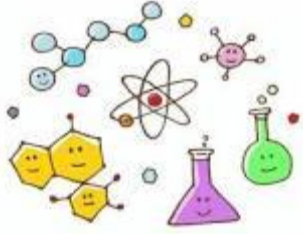
- Through steps of progression across year groups.
- Whole class adaptive teaching through questioning and method of recording.
- Procedural fluency in working scientifically (achieved through repetition and practice) will be underpinned by semantic knowledge through the use of appropriate trips, visits and accessing the local library service.
- Content is grouped by scientific subject (Biology, Chemistry, Physics) to help build knowledge links between similar points.
- 1 hour per week delivered in all year groups.
- Teaching input is reflective of the pupils' stage of development; high expectations and motivation are always held.
- Content is revisited to enable the children to revisit their past learning
- During each unit of study, the children are given quizzes to enable on going assessment, allowing interventions to take place where needed for those not making the expected progress.

Impact:











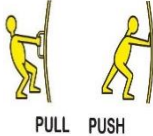
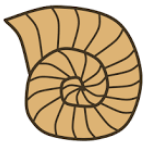







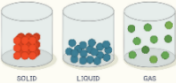








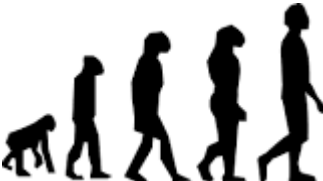


What difference is the curriculum making?

- Subject content is transferred to long term memory *Memory; memory equates to knowledge.
- Clarity of endpoints of each milestone.
- Knowledge is connected through threshold concepts and scientific areas, making strong, semantically rich schemas for learners.
- Greater knowledge will encourage deeper thinking across all areas of the curriculum.
- Learners will have a foundation of knowledge to support their next steps in education.
- Impact will be monitored by the science subject lead through children's work and progress as well as quality of teaching.
- End of unit quizzes highlight the progress and attainment of learners.
- Summative judgements are made at the end of each term to inform future teaching.
- Final summative judgements are made at the end of the summer term.

Key Concepts:

<u>Concept:</u>		
Physics	Biology	Chemistry
 <p>An illustration for physics featuring a colorful ball-and-stick molecular model, a beaker with a green liquid and a wooden stirrer, and an open book with a pink page showing the chemical formula H_2O.</p> <ul style="list-style-type: none">• Seasonal changes• Light• Forces• Sound• Electricity• Earth and space	 <p>An illustration for biology showing a blue microscope, a yellow butterfly, a stack of books with 'BIOLOGY' on the spine, and several test tubes in a rack.</p> <ul style="list-style-type: none">• Plants• Living things and their habitats• Animals including humans• Evolution and inheritance	 <p>An illustration for chemistry depicting various chemical symbols and structures, including a ball-and-stick model, a Bohr-style atomic model, and two flasks (one purple, one green) with smiling faces.</p> <ul style="list-style-type: none">• Materials• Rocks

Curriculum Overview:

		Autumn Term:		Spring Term:		Summer Term:		
		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	
KS1	Year 1	Everyday Materials 	Seasonal Change 	Animals Including Humans 	Seasonal Change 	Plants 	Seasonal Change 	
	Year 2	Animals Including Humans 	Living things in their habitats 	Plants 	Uses of Everyday Materials 	Forces  PULL PUSH		
Lower KS2	Year 3	Rocks and fossils 	Forces and magnets 	Animals including humans 	Light 	Plants 		
	Year 4	Animals Including Humans 	Electricity 	Sound 	State of matter 	Living things and their habitats 		
Upper KS2	Year 5	Forces 	Properties and changing materials 	Earth and space 	Animals Including Humans 	Living things and their habitats 		
	Year 6	Living things and their habitats 	Electricity 	Evolution and inheritance 	Light 	Animals Including Humans 		







Progression of Key Skills:

<u>EYFS</u>	<u>Key Stage 1</u>	<u>Lower Key Stage 2</u>	<u>Upper Key Stage Two</u>
Show curiosity about objects, events and people. Question why things happen and how things work	Explore the world around them and raise their own simple questions.	Raise their own relevant questions about the world around them.	Use their scientific experiences to explore ideas and raise different kinds of questions.
Engage in open-ended activities	Experience different types of science enquiries, including practical activities.	Should be given a range of scientific experiences including different types of science enquiries to answer.	Talk about how science ideas have developed over time.
Take risks, engage in new experiences and learn by trial and error.	Begin to recognise different ways in which they might answer scientific questions.	Start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions.	Select and plan the most appropriate type of scientific enquiry to use to answer scientific questions
Find ways to solve problems/find new ways to do things/test out ideas.	Carry out simple tests.	Set up simple practical enquiries, comparative and fair tests.	Recognise when and how to set up comparative and fair tests and explain why variables need to be controlled and why.
Develop ideas about grouping, sequences, cause and effect.	Use simple features to compare objects, materials and living things and, with help decide how to sort and group them (identify and classify).	Recognise when a simple fair test is necessary and help others to decide how to set it up	
Know about similarities and differences in relation to places, objects and materials and living things.		Talk about criteria for grouping, sorting and classifying; and use simple keys.	Use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment.
Comment and ask questions about aspects of their familiar world such as the place they live or the natural world.	Ask people questions and use simple secondary sources to find answers.	Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations.	Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact.
Closely observes what animals, people and vehicles do. Uses senses to explore the world around them.	Observe closely using simple equipment. With help, observe changes over time.	Make systematic and careful observations. Help to make decisions about what observations to make, how	Make their own decisions about what observations to make, what measurements to use and how long to make them for.






		long to make them for and the type of simple equipment that might be used	
Makes links and notices patterns in their experience.	With guidance, they should begin to notice patterns and relationships.	Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them.	Look at different causal relationships in their data and identify evidence that refutes or supports ideas.
Chooses the resources they need for their chosen activities. Handle equipment and tools effectively.	Use simple measurements and equipment (hand lenses, egg timers) to gather data.	Take accurate measurements using standard units. Learn how to use a range of (new) equipment, such as data loggers, thermometers appropriately.	Choose the most appropriate equipment to make measurements with increasing precision and explain how to use it accurately. Take repeat measurements where appropriate.
Create simple representations of events, people and objects.	Record simple data	Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard units, drawings, labelled diagrams, keys and help to make decisions about how to analyse this data.	Decide how to record data and results of increasing complexity from a choice of familiar approaches: scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
Answer how and why questions about their experiences.	Use their observations and ideas to suggest answers to questions.	With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions.	Identify scientific evidence that has been used to support or refute ideas or arguments.
Make observations of animals and plants and explain why some things occur, and talk about changes.	Talk about what they have found out and how they found it out.	Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences, including oral and written explanations, displays or presentations of results and conclusions.	Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas. Use oral and written forms such as displays and other presentations to report conclusions, causal relationships and explanations of degree of trust in results.
Develop their own narratives and explanations by connecting ideas and events.	With help, they should record and communicate their findings in a range of ways and begin to use simple scientific language.	With support, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected and finding ways of improving what they have already done.	Use their results to make predictions and identify when further observations, comparative and fair tests might be needed.

Build up vocabulary that reflects the breadth of their experiences.			
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EYFS Overview:

	Autumn Term		Spring Term		Summer Term	
Overview	Autumn/ Winter 		Spring 		Summer 	
						
Content coverage	<p>Nursery Talk about what they see, using a wide vocabulary. Use all their senses in hands-on exploration of natural materials. Explore how things work. To observe and talk about weather changes throughout Autumn. To name and identify body parts i.e. head, shoulders, knees, toes, arms, legs, feet. Learn about events that happen during Autumn / Winter i.e. Christmas, Bonfire night, Halloween. To show a willingness to explore the world around them.</p> <p>Reception To explore the natural world around them. To describe what they see, hear and feel in Autumn/Winter. To recognise some environments that are different to the one on which they live. To understand the effect of changing seasons on the natural world around them.</p>		<p>Nursery Plant seeds and care for growing plants. Begin to understand the need to respect and care for the natural environment and all living things. Continue to use all their senses in hands-on exploration of natural materials. To observe and talk about their immediate environment. To name and identify a range of animals. To name a range of fruits and vegetables. To observe and talk about some changes that occur in Spring. To understand that we have to wear appropriate clothing in the Spring.</p> <p>Reception To begin to understand the need to care and respect for the natural world and living things. To describe what they see, hear and feel in Spring and begin to make comparisons. To recognise some environments that are different to the one on which they live. Understand the key features of the life cycle or a plant or an animal- chicks/bean/seed.</p>		<p>Nursery Explore collections of materials with similar and/or different properties. Continue to use all their senses in hands-on exploration of natural materials and talk about it. To know that things in nature change with time. To begin to name a range of habitats i.e. sea, fields, woods, ice, trees. To observe and talk about some changes that occur in Summer and understand that we have to wear appropriate clothing in the Summer. To talk about a range of mini beasts and observe the different environments that they live in. Explore and talk about different forces they can feel.</p> <p>Reception Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. Explore the natural world around them, making observations and drawing pictures of animals and plants.</p>	
Vocabulary	Autumn Winter Seasons Change Weather Rain Snow Wind Storm Umbrella	Body Senses Touch Smell Look Hear Taste Head Shoulders Knees Toes Eyes Ears Mouth Nose Eyebrows Eyelashes	Spring Season Weather Change Chicks Easter	Plants Grow Life cycle Changing Flowers Petals Grow Stem Seed/bean	Summer Season Sun cream Sun glasses Sun hat	Minibeasts Polar Ocean Farm Woodland







Scientific Enquiry:

<p>Observing over time</p> 	<p>What happens to our area in autumn? How has it changed in winter?</p>	<p>How have we changed since we were babies?</p>	<p>What happens to the plants during spring?</p>	<p>How does my bean plant change each week?</p>	<p>What happens to our area in Summer?</p>	
<p>Pattern Seeking</p> 					<p>Do animals all like the same environment?</p>	<p>Is there are pattern to which objects float or sink?</p>
<p>Research</p> 			<p>How does a plant grow?</p>		<p>What animals live on a farm?</p>	<p>What animals live in the ocean?</p>
<p>Identify and classify</p> 	<p>Develop sorting skills by touching/looking/smelling/tasting/hearing.</p>				<p>Identify and classify animals that live on a farm</p>	
<p>Comparative tests</p> 				<p>What happens to the bean plants that are in different environments?</p>		






Remembering our core key skills/knowledge in EYFS:

	Autumn 1	Spring 2	Summer 2
Nursery	<p>I can name two body parts. I can name a common type of weather during the Autumn/Winter months.</p>	<p>I can name and identify some animals. I can name some fruits and vegetables. I can talk about what I can see during Spring.</p>	<p>I can talk about the animals found in two different environments. I can name two minibeasts. I can talk about what I see during Summer.</p>
Reception	<p>When water gets very cold it freezes. I can name two common types of weather during the Autumn/Winter months.</p>	<p>We can wear sun cream to stay safe in the sun. Plants need water and sunlight to grow. A caterpillar becomes a butterfly/egg becomes a chicken.</p>	<p>I know that the sun can melt ice into liquid. I can talk about and describe a range of animals.</p>

Year 1:

	<u>Autumn Term:</u>		<u>Spring Term:</u>		<u>Spring Term:</u>	
	<u>Autumn 1</u>	<u>Autumn 2</u>	<u>Spring 1</u>	<u>Spring 2</u>	<u>Summer 1</u>	<u>Summer 2</u>
Overview	Everyday Materials 	Seasonal Change 	Animals Including Humans 	Seasonal Change 	Plants 	Seasonal Change 
Suggested content	<p>Name and identify a variety of everyday materials including plastic, wood, metal, glass and rock.</p> <p>Distinguish between an object and the material/s it's made from.</p> <p>Describe the simple physical properties of a variety of materials.</p> <p>Grouping materials according to their properties.</p> <p>To choose and investigate a good material for a purpose.</p>	<p>Know the names of the seasons and the months within each season.</p> <p>Observe changes in autumn and winter.</p> <p>Observe and describe weather associated with autumn and winter and how day length varies.</p>	<p>Identify, name, draw and label the basic parts of the human body.</p> <p>Recognise which part of the body is associated with each sense.</p> <p>Name and identify common animals including fish, amphibians, reptiles, birds, mammals and insects.</p> <p>Classify animals as carnivores, herbivores and omnivores and identify what different animals eat.</p> <p>To group animals by their body type. (animals with skeletons on the inside, animals with feathers etc).</p>	<p>Know the names of the seasons and the months within each season.</p> <p>Observe changes in spring.</p> <p>Observe and describe weather associated with spring and how day length varies.</p>	<p>Identify and name some common wild (dandelion, daisy, nettle, dock, thistle, buttercup, bramble, fern). and garden plants (daffodil, rose, lavender, ivy, tulip, poppy, bluebell, sunflower).</p> <p>Identify and name a variety of fruit and vegetable plants.</p> <p>Label the parts of a flowering plant and a tree and understand what they do.</p> <p>Identify deciduous (oak, birch, hazel, sycamore, sweet chestnut) and evergreen trees (fir, pine, holly, Eucalyptus) and understand the difference between them.</p> <p>Collect a variety of leaves and decide which trees they have come from.</p>	<p>Know the names of the seasons and the months within each season.</p> <p>Observe changes in summer.</p> <p>Observe and describe weather associated with summer and how day length varies</p>
Vocabulary	Object Material Hard Soft Stretchy Bendy Stiff Rough Smooth Dull Waterproof Absorbent Recycle	Season Weather Temperature Autumn Winter Rainfall Daylight	Sight Smell Taste Hear Healthy Carnivore Herbivore Omnivore Predator Amphibians Reptiles Mammals Birds and Fish salmon goldfish frog newt snake tortoise rabbit hedgehog ladybird butterfly magpie chick	Season Weather Temperature Spring Rainfall Daylight	Evergreen Deciduous Bud Leaf Branch Trunk Root Stem Flower Seed Petal Fruit	Season Weather Temperature Summer Rainfall Daylight

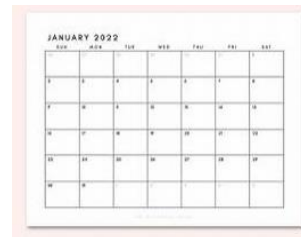
Scientific Enquiry:

Observing over time 	What happens to materials over time when wet?	How does the weather change over time?	How does my height change over the year? * This is done over the year.	How does the weather change over time?	How does my sunflower change each week? Plant a sunflower as a class and observe it grow over the half term.	How does the weather change over time?
Pattern Seeking 		Does day length change in different seasons?	Do bigger animals only eat meat?	Does day length change in different seasons?	Is there a pattern as to where most weeds are on the school grounds?	Does day length change in different seasons?
Research 	How is glass made?					
Identify and classify 	How can I group materials based on different properties?		How can you group these zoo animals?		How can we sort the leaves that we collected on our walk?	
Comparative tests 	What is the best material for an umbrella?	In which season does it rain the most?	Is our sense of smell better when we can't see?	In which season does it rain the most?		In which season does it rain the most?





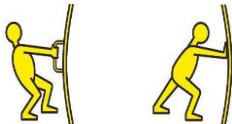
Remembering our core key skills/knowledge in Year 1:

	Everyday Materials	Seasonal change (autumn to winter)	Animals including humans	Seasonal change (winter to spring)	Plants	Seasonal change
	Windows are made of glass Bottles are made from plastic Cans are made from metal	It is coldest in winter It gets darker earlier in winter Leaves fall of some trees in autumn	I can name 4 different parts of the body A frog is an amphibian Sight is one of my senses	Plants begin to grow in spring It gets warmer in spring It is lighter at night in spring	Plants grow from seeds The stem supports a plant A daisy is a wild flower	We have the most sunshine during summer Summer is the hottest season Days are longer during the summer






Content for Seasons Units:	Practical Ideas:
<p>Naming the seasons- identifying the associated months, objects displayed in the classroom associated with each season (acorns, suncream, woolly hats etc),</p> <p>Observing the seasons- select a view from your classroom that includes a tree and take photos of it each lesson (add to a PP to show changes throughout the year), go out onto the school grounds and observe the temperature, weather, animals they can see, plants and trees, clothing they are wearing etc.</p> <p>Exploring and observing the weather over the seasons- identify the types of weather and create a class weather board using symbols to record the weather each day. Each seasonal changes lesson, look at the weather record over the half term, what patterns can they see? Add this to logbook.</p> <p>Making simple observations and describing the weather associated with each season and how day length varies- As a class measure temperature, length of daylight hours, clocks going forward and back, how many days it rains each month. Add this to logbook/ display. Average hours of daylight in Britain throughout the year. (projectbritain.com)</p> <p>Observing plants over the seasons- To observe the changes to a tree over the year, create a class tree display and add to it each season, discussing when most plants grow, and which plants grow in which season. Discussing that fruit and vegetables are seasonal, tasting some.</p> <p>Observing animals over the seasons- Discussing how animals are affected by seasons: hibernation, food storage, migration, warmer coats, spring births.</p> <p>Observing other links over the seasons- Discussing festivals/ holidays associated with each season, changes in clothing and any other objects associated (umbrellas, hot drinks, ice lollies etc).</p>	<p>Children to create an individual/ class seasons logbook to record their findings each lesson.</p> <p>A class seasons display dived into 4 quarters, one for each season. Content should be added to this each lesson.</p> <p>Weather tree.</p> <p>A calendar on the class display to tick weather it has rained and record the temperature.</p> <p>Grow some of the plants from seed and watch them grow.</p>



Year 2:

	<u>Autumn Term:</u>		<u>Spring Term:</u>		<u>Summer Term:</u>	
	Autumn		Spring 1	Spring 2	Summer 1	Summer 2
Overview	Animals Including Humans 		Living things in their habitats 	Plants 	Use of everyday materials 	Forces  PULL PUSH
Suggested content	<p>Sort types of food into different groups.</p> <p>Analyse and describe the healthiness of different meals and design a healthy meal.</p> <p>To understand the importance of exercise and the effect it has on the body.</p> <p>To make predictions and test the effects of exercise on the human body.</p> <p>Understand hygiene and its importance.</p> <p>Investigate how germs spread and how to prevent it.</p>	<p>To name and sort animals.</p> <p>To match young animals to their adults.</p> <p>To identify similarities and differences between the animal groups.</p> <p>To find out how animals change as they grow into adults. (Re-visit animals from Y1)</p> <p>To compare the stages of a human life cycle.</p> <p>To know what animals including humans need to survive.</p>	<p>To explore the difference between things that are living, dead or have never lived.</p> <p>To explore British habitats and the animals that live there.</p> <p>To explore microhabitats and identify the minibeasts that live there.</p> <p>To explore the different conditions of world habitats and identify the animals that live there.</p> <p>To understand how animals are suited to their habitat.</p> <p>To explore food chains within different habitats to understand how animals get their food.</p>	<p>Recap the parts of a plant and their functions.</p> <p>Design and set up a fair test to investigate what plants need to stay healthy.</p> <p>Observe how a plant grows from seeds/bulb to a plant.</p> <p>Explore germination and the life cycle of a sunflower.</p> <p>To identify trees in the local area and investigate how old they are.</p> <p>Understand what plants need to survive and evaluate test results.</p>	<p>Identify different materials that objects are made from.</p> <p>Investigate and compare the properties of different materials.</p> <p>Explain how materials are useful in different situations.</p> <p>To suggest appropriate materials for new situations.</p> <p>Investigate which solid objects can change shape.</p> <p>To explain how inventors have made new materials (John Dunlop, John McAdam, and Charles Macintosh).</p>	<p>To explore the effects of pushes and pulls and how they speed up/ stop the movement of an object.</p> <p>To develop their ideas about why some objects, float and why some objects sink.</p> <p>What is friction and how does it impact us?</p>
Vocabulary	Exercise Hygiene Energy Portion Balanced Diet Nutrition Germs Heart Rate Proteins Carbohydrates Dairy	Offspring Adult Develop Life Cycle Reproduce Live Young Survival	Living Dead Never Alive Habitat Micro-habitat Suitable Adaptation Suitable Food chain Producer Consumer Predator Prey	Life cycle Germinate Moist Condition Seed Bulb Healthy Water Sunlight Suitable Temperature Photosynthesis Oxygen Carbon Dioxide	Absorbent Reflective Durable Man-made Properties Transparent Opaque Suitable Natural Man-Made	Move Force Direction Distance Push Pull Float Sink Buoyancy Friction

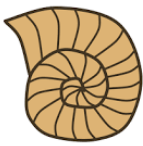




Scientific Enquiry:

Observing over time 		How does a tadpole change over time?	What conditions do woodlice prefer to live in?	What happens to my seed after I've planted it?	What happens to the paper boat when left in water?	
Pattern Seeking 	How often do people wash their hands for in different year groups?		Where can we find the most worms?			
Research 			How does the arctic habitat compare to a rainforest?	How can we find out how old a tree is?	How are plastics made?	How many different ways do objects move?
Identify and classify 		Which offspring belongs to which animal?	How can you group these things into living, dead and never alive?		How can you group these materials according to different properties?	
Comparative tests 	Do bananas make us run faster?			Do cress seeds grow quicker outdoors or indoors?	Which material would make the best roof for the little pig's house?	On which surface do objects roll the best on? Why is this?

Remembering our core key skills/knowledge in Year 2:

Animals including humans	Living things in the habitat	Plants	Uses of everyday materials	Forces
We wash our hands to wash away germs Animals need water, food and air to survive A baby sheep is a lamb	I can name two different types of habitats I understand that some animals eat other animals I can describe an object which has never been alive	A seed grows into a mature plant Plants need water and light to grow and stay healthy Seeds grow roots and shoots	I can explain why a window is made of glass I understand why a boat could never be made from paper Charles Macintosh invented the waterproof raincoat	I know that pushing speeds movement up and pulling slows movement down. I know that some objects float and some objects sink. Friction is a force that affects how objects move.

Year 3:

	<u>Autumn Term:</u>		<u>Spring Term:</u>		<u>Summer Term:</u>	
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Overview	Rocks and fossils 	Forces and magnets 	Animals including humans 	Light 	Plants 	
Suggested content	<p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</p> <p>Explore the formation and properties of igneous, sedimentary and metamorphic rocks and identify these rocks.</p> <p>Explore how and why rocks might have changed over time looking at the weathering of rocks.</p> <p>Understand how fossils are formed.</p> <p>Recognise that soils are made from rocks and organic matter and explore different types of soil.</p> <p>Investigate which soil absorbs the most water.</p> <p>Understand the life and legacy of Mary Anning.</p>	<p>Explore and compare how things move on different surfaces.</p> <p>Describe magnets as having two poles and predict whether two magnets will attract or repel each other, depending on which poles are facing.</p> <p>Observe how magnets attract and repel each other and investigate how magnets attract some materials and not others.</p> <p>Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet and identify some magnetic materials.</p> <p>Explore contact and noncontact forces and understand that magnetic forces can act at a distance.</p> <p>Explore different types of magnets and the everyday uses of magnets.</p>	<p>Learn about the nutrition in the food animals and humans eat and explore the 5 key food groups.</p> <p>Recognise that animals and humans cannot make their own food and create a food web.</p> <p>Learn about the different types of skeletons.</p> <p>Learn about the human skeleton and the function of a skeleton (skull, jaw, spine, rib cage, pelvis, humerus, radius, ulna, femur, tibia, and fibula).</p> <p>Explore the role of muscles.</p> <p>Learn about animals skeletons and how animals can be recognised by their skeletons. (salmon, frog, snake, rabbit, butterfly, magpie).</p>	<p>Recognise different sources of light and recognise that we need light in order to see things and that dark is the absence of light.</p> <p>Explore what happens when light reflects off a mirror or other reflective surfaces.</p> <p>Understand the dangers of light and how to protect yourself and your eyes.</p> <p>Discover how shadows are formed.</p> <p>Investigate how shadows change throughout the day Investigate how you can change the size of a shadow.</p>	<p>Identify and describe the functions of different parts of a flowering plant (roots, tuber, stem, bulb, trunk, branch, leaf, flower, and fruit) and discuss which parts we eat.</p> <p>Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant.</p> <p>Investigate the way in which water is transported within plants and investigate if the length of the stem affects how long it takes coloured water to dye the petals.</p> <p>Learn about the life cycle of flowering plants and explore the part that flowers play (germination, growth, flowering, and fertilisation/seed production).</p> <p>Explain different methods of pollination in flowering plants.</p> <p>Explain different methods of seed dispersal in flowering plants.</p>	
Vocabulary	Fossil Sedimentary Metamorphic Igneous Amber Magma Preserved Decay Permeable Erosion	Friction Iron Attract Repel Lodestone Maglev train Pendulum Magnetise Force Poles Pulley	X-ray Tendon Cartilage Ligament Joint Fracture Support Protection Movement	Proximity Defined Ultraviolet Concave Convex Emit Reflect Shadow Transparent Translucent Opaque	Xylem Spore Sucrose Starch Fertilisation Transpiration Respiration Seed Dispersal Nutrients Pollination Stigma	




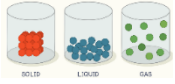

Scientific Enquiry:







Observing over time 		If we magnetise a pin, how long will it stay magnetised for?		How do shadows change throughout the day?	
Pattern Seeking 		Does the size and shape of a magnet affect how strong it is?	Are male human skulls bigger than female ones?	Do certain materials reflect more light?	
Research 	Who was Mary Anning?			How fast does light travel from the sun?	What are the different ways that seeds disperse?
Identify and classify 	Compare and group together different kinds of rocks based on their appearance and simple physical properties.	Which materials are magnetic? Can you group magnetic and non-magnetic materials?	How do skeletons of different animals compare?		
Comparative tests 	Which soil absorbs the most water?	Which magnet is the strongest?			What conditions help seeds germinate the fastest?
Fair tests 		Compare materials on the amount of friction they generate.	How does the skull circumference of a girl, compare with that of a boy?	How does the distance between a puppet and the screen affect the size of a shadow?	Does the length of the stem affect how long it takes coloured water to dye the petals?

Remembering our core key skills/knowledge in Year 3:

Rocks and fossils	Forces and magnets	Animals including Humans	Light	Plants
A fossil is a trace of animal or plant from a long time ago. Soil is made from rock. Mary Anning is an important person in Science. She discovered dinosaur fossils.	A magnet can attract and repel other objects. Only certain types of metal are magnetic. A magnet has two poles.	A skeleton supports the body of an animal/humans. All animals have different skeleton. Animals/humans need food to stay healthy.	A shadow is made when objects block a light source. Sunlight can be dangerous. The dangers of too much sunlight are sun burn and skin cancer. The sun is a light source.	The function of the roots of a plant is to take up water and nutrients from the soil. Seeds are dispersed in different ways by animals, water and wind. Germination is the process where a plant grows from a seed.

Year 4:






	Autumn Term:		Spring Term:		Summer Term:	
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Overview	Animals Including Humans 	Electricity 	Sound 	State of matter 	Living things and their habitats 	
Suggested content	<p>Identify and describe the functions of different types of human teeth.</p> <p>Compare teeth between carnivores and herbivores.</p> <p>Investigate tooth decay and how we can look after our teeth.</p> <p>Understand the purpose of the digestive system.</p> <p>Describe the functions of the parts of the digestive system (mouth, oesophagus, stomach, small intestine, and large intestine).</p> <p>Construct and interpret a variety of food chains, identifying producers, predators and prey.</p> <p>Create a food web and explain what it shows.</p>	<p>Identify and group appliances that run on electricity.</p> <p>Identify electrical components and their symbols (bulb, switch, cell, battery, switch, buzzer and bell).</p> <p>Construct simple circuit using and naming common electrical parts.</p> <p>Identify whether a lamp will light in a circuit.</p> <p>Examine different switches and their uses.</p> <p>Recognise materials that are conductors or insulators.</p> <p>Investigate the thickness of a conductor on the brightness of a bulb.</p> <p>Identify situations where electricity can be dangerous.</p>	<p>Explore how sounds are made by vibrations.</p> <p>Investigate how sounds change with distance from the source.</p> <p>Find patterns between the volume of a sound and the strength of the vibrations it produces.</p> <p>Explore how the pitch of an object can be changed.</p> <p>Investigate the effective materials for soundproofing.</p>	<p>Classify materials by solid, liquid or gas.</p> <p>Understand the properties of solids, liquids and gases, focusing on particle distribution.</p> <p>Investigate the melting and boiling points of different materials.</p> <p>Identify the part played by evaporation and condensation in the water cycle.</p> <p>Explore some reversible and irreversible changes.</p> <p>Investigate how temperature effects the pace of evaporation.</p>	<p>Recognise different ways animals can be grouped.</p> <p>Use a classification key to identify familiar organisms.</p> <p>Create a classification key for a group of organisms from the local environment.</p> <p>Examine how a light changes the behaviour of woodlice.</p> <p>Create an environment suitable for minibeasts.</p> <p>Research environmental dangers to habitats.</p>	
Vocabulary	Decay Digestion Enamel Plaque Stomach Intestine Predator Prey Omnivore Oesophagus	Electricity Electron Cell Battery Motor Bulb Circuit Switch Insulator Conductor National grid	Eardrum Sound waves Decibel Frequency Distorted Muffle Vibration Insulation Vocal chords Pitch Soundproofing	Solid Liquid Gas Particles Melting Freezing Evaporation Condensation Precipitation Water Cycle Reversible Irreversible	Classification Characteristics Vertebrate Invertebrate Habitat Ecology Bacteria Emission Pesticide Woodland Ecosystem	
Scientific Enquiry:						

Observing over time 		How long does a cell light a torch for?	Find patterns between a pitch of a sound and features of an object that produced it.	How does the level of water change when left on a windowsill?	Observe how a habitat changes throughout the year- measure the temperature, daylight and weather.
Pattern Seeking 				Is there a pattern for how long it takes different sized ice lollies to melt?	Where in the school grounds will we find the most dangers to living things?
Research 	How do dentists fix teeth?				Can we research the effect of climate change on animals around the world?
Identify and classify 	Can we group plants and animals into producers, consumers and predators?	How would you group these electrical devices based on where electricity comes from.		Can you sort these changed into reversible and irreversible?	Can we use the classification keys to identify all of the animals that we can see on our minibeast hunt/pond dipping?
Comparative tests 	Which liquid has the fastest impact on tooth decay?	Which material is the best conductor of electricity?	Which material is best to use for muffling sound in ear defenders?	Do all liquids freeze at the same temperature?	
Fair tests 		How does the thickness of a conducting material affect how bright a lamp is?	How does the length of a guitar string/ tuning fork affect the pitch of the sound?	How does the temperature of water affect how long it takes to evaporate?	Does the amount of light affect how many woodlice move around?

Remembering our core key skills/knowledge in Year 4:







Animals Including Humans	Electricity	Sound	State of matter	Living things and their habitats
<p>Acid is produced in the stomach which breaks down food.</p> <p>Molars grind and break down food, so it is safe to swallow.</p> <p>A producer makes or produces their own food.</p>	<p>A conductor allows electricity to flow through it.</p> <p>An insulator does not let electricity flow through it.</p> <p>A switch can open and close an electrical circuit.</p>	<p>Sound travels in waves.</p> <p>Sound is created when something vibrates and sends waves to our ears.</p> <p>Pitch describes how high or low a sound is.</p>	<p>There are three states of matter: solid, liquid and gas.</p> <p>Evaporation is when a liquid turns into a gas.</p> <p>Condensation is the process where water vapour becomes a liquid.</p>	<p>I can describe what a habitat is and why an animal may live in a certain habitat.</p> <p>Classification means to group something based on their characteristics.</p> <p>Climate change is an environmental danger.</p>

Year 5:

	Autumn Term:		Spring Term:	Summer Term:	
	Autumn 1	Autumn 2	Spring 1 and 2	Summer 1	Summer 2
Overview	Forces 	Properties and changing materials 	Earth and space 	Animals Including Humans 	Living things and their habitats 
Suggested content	<p>Understand what a force is and how it can affect an object.</p> <p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>Explore the work of Isaac Newton.</p> <p>Identify the effects of air resistance, water resistance and friction that act between moving surfaces.</p> <p>Investigate whether the mass of an object affects how quickly it falls to the ground.</p> <p>Explain how simple levers work and recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>	<p>Consolidate our knowledge of state of matter and how they change.</p> <p>Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.</p> <p>Investigate which solutions will dissolve in liquid to form a solution and describe how to recover a substance from a solution.</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</p> <p>Demonstrate that dissolving, mixing, and changes of state are reversible changes.</p> <p>Understand that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning, and the action of acid on bicarbonate of soda.</p>	<p>Know that the sun is a star at the centre of our solar system and that it has 8 planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. Order the solar system.</p> <p>Research planet/s and compare key features.</p> <p>Describe the movements of the Earth and other planets relative to the sun in the solar system.</p> <p>Describe the moon's movement around the Earth.</p> <p>Describe the sun, Earth and moon as approximately spherical bodies.</p> <p>Describe how our knowledge of the solar system has changed over time-find out about the way that ideas have developed (geocentric model/ heliocentric model considering the work of Ptolemy, Alhazen or Copernicus.</p> <p>Explain why day and night occur.</p>	<p>Identify all stages in the human life cycle and draw a timeline to indicate stages in the growth and development of humans.</p> <p>Understand changes which happen during puberty.</p> <p>Compare growth by both age and gender.</p> <p>Describe changes that happen as humans develop to old age.</p> <p>Investigate how age affects a human's reaction time.</p> <p>Research the gestation periods of different mammals (re-visit rabbit and hedgehog, with other mammals)</p>	<p>Research about a David Attenborough or another famous naturalist.</p> <p>Order the life cycle of a house fly.</p> <p>Describe the lifecycle of a mammal, amphibian, insect and bird.</p> <p>Seek patterns in these life cycles.</p> <p>Describe the process of reproduction in some plants and animals.</p> <p>Compare how different animals reproduce and grow.</p>
Vocabulary	Air resistance Water resistance Up thrust Friction Newton	Chemical change Physical change Particle Solution Substance	Universe Orbit Solar system Axis Spherical	Gestation Puberty Reproduce Adolescence Hormone	Mammal Amphibian Insect Bird Life cycle

	Mass Lever Fulcrum Pulley Equilibrium	Sieve Filter Evaporate Polymers Reversible/irreversible	Revolve Rotate Gravitational pull Solar eclipse Lunar eclipse	Memory Dormant Fertilisation Chromosome Degeneration	Naturalist Asexual Sexual reproduction Environment Tuber
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Scientific Enquiry:






Observing over time 		How does a container of saltwater change over time? How does a nail in saltwater change over time?			How does a bean change as it germinates?
Pattern Seeking 	Do all objects fall through water in the same way?		Is there a pattern between the size of a planet and the time it takes to travel around the sun?	Are the oldest children in our school the tallest?	Are there any patterns you can find in different life cycles?
Research 	Explain the work of Isaac Newton and his discovery.		What is the importance of the discovery of Ptolemy, Alhazen or Copernicus?	Gestation periods of mammals.	Can you explain the work of David Attenborough?
Identify and classify 	Can you label and name all of the forces acting on the objects in each of these situations?	Can you group materials as either soluble or insoluble?	Can you observe and identify all the phases in the cycle of the moon?	Can you identify all the stages in the human life cycle?	What are the differences between the life cycle of an insect and a mammal?
Comparative tests 		Which type of sugar dissolves the fastest?		Who grows the fastest, girls or boys?	
Fair tests 	How does the mass of an object affect how quickly it falls?	How does the temperature of tea/water affect how long it takes for a sugar cube to dissolve?		How does age affect a human's reaction time?	

Remembering our core key skills/knowledge in Year 5:

Forces	Properties and changing materials	Earth and space	Animals Including Humans	Living things and their habitats
<p>Friction is the resistance one objects encounters when moving over a surface.</p> <p>Air resistance is a force that slows an object down when it is moving through the air.</p> <p>Water resistance is a force that slows and object down when it is moving through water</p>	<p>The particles of solids, liquids and gases are all different.</p> <p>I can describe what a chemical and physical change is.</p> <p>Evaporation is one method to separate a solution.</p>	<p>The earth is round, but this topic has been debated over centuries.</p> <p>I know that there are eight planets.</p> <p>There are 24 hours in a day and 365 days in a year.</p> <p>Day and night occur because the earth rotates on an axis.</p> <p>There are eight different phases of the moon.</p>	<p>The human life cycle has six main stages: embryo, foetus, baby, child, adolescent, adult and elderly.</p> <p>I know that as you get older, in different parts of your life, your body changes.</p> <p>Different animals have different gestation periods.</p>	<p>A naturalist is someone who studies the changes in our natural world.</p> <p>The life cycle of animals can be different to the life cycle of a human.</p> <p>I know that a plant has both male and female organs</p>

Year 6:











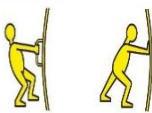
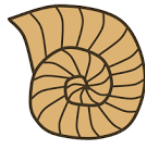







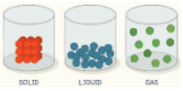






	<u>Autumn Term:</u>		<u>Spring Term:</u>	<u>Summer Term:</u>	
	<u>Autumn 1</u>	<u>Autumn 2</u>	<u>Spring 1 and 2</u>	<u>Summer 1</u>	<u>Summer 2</u>
Overview	Living things and their habitats 	Electricity 	Evolution and inheritance 	Light 	Animals Including Humans 
Suggested content	Further classification of living things based on observable characteristics and similarities and differences. (eg. Vertebrate and invertebrate, animal kingdoms). Make a dichotomous key and use it to classify organisms. Describe how living things are classified using the Linnaean System of classification. I can identify the characteristics of different types of living things including arachnids and crustaceans. Understand how microorganisms can be helpful and non-helpful. Biography of Carl Linnaeus and his work.	Use recognised symbols when representing a simple circuit in a diagram. Associate the performance of a component with the number and voltage of cells used in a circuit. Compare and give reasons for the variations in how components function according to their position in a circuit. Investigate the creation of static electricity. Understand how the understanding of electricity developed over time. Create an electromagnet.	Understand the meaning of offspring, variation and inheritance. Understand how animals and plants are adapted to their environment. Understand how adaptations can result in both advantages and disadvantages. Understand the evidence for evolution. Identify evidence for evolution from fossil records. Create a biography about Charles Darwin and his discoveries.	Understand that light travels in straight lines. Predict light direction using mirrors. Understand how we see things by objects giving out light or reflecting of them. Investigate the reflectiveness of materials. Investigate shadow length and understand how shadow size can be altered. Experiment with light refraction.	Identify and name the main parts of the human circulatory system. Understand the functions of the heart, vessels and blood. Understand the transportation of nutrients and water through blood. Understand the impact of diet, and lifestyle and on the body's functions. Understand the impact of smoking and drugs on the body's functions. Investigate if exercise increases temperature and heartbeats.
Vocabulary	Classify Linnaean Phylum Domain Kingdom Genus Species Vertebrate Invertebrate	Static electricity Charge Electron Short circuit Fuse Electromagnet Amber Amplitude Voltage	Variation Offspring Ancestor Natural selection Fossilisation Decompose Sediment Dissolve Inherit Offspring	Haze Distort Primary colour Secondary colour Obstruct Alter Refraction Fluorescent Opaque	Respiration Displace Trachea Cilia Circulation Blood vessels Pulse BPM
<u>Scientific Enquiry:</u>					
Observing over time 	What happens to a piece of bread if you leave it different areas for two weeks?				How does my heart rate change over the day?
Pattern Seeking			Is there a pattern between the size and shape of a bird's beak and the food it will eat?	Is there a pattern to how bright it is in school over the	



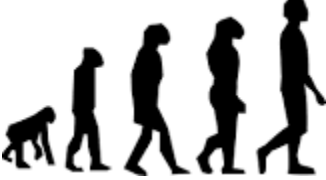


				day? Is it the same in every classroom?	
Research 	What do different microorganisms do?	How has our understanding of electricity changed over time?	What happened when Charles Darwin visited the Galapagos islands?		
Identify and classify 			Compare the skeletons of apes, humans and Neanderthals.	Can you identify all the colours of light that make white light when mixed together?	Which organs of the body make up the circulatory system?
Comparative tests 		What type/make of battery lasts the longest?		Which material is the most reflective?	Which types of exercise has the greatest effect on our heart rate?
Fair tests 		How does the number of batteries in a circuit affect the volume of a buzzer?		How does the angle that light hits a mirror affect the angle that it reflects off the surface?	Can exercising regularly affect your lung capacity?

Remembering our core key skills/knowledge in Year 6:

Living things and their habitats	Electricity	Evolution and Inheritance	Light	Animals including humans
<p>I know that Carl Linnaeus developed a system to help classify animals.</p> <p>I can name an animal group from a different classification group.</p> <p>I know the difference between a vertebrate and an invertebrate.</p>	<p>I can draw and label a simple circuit using the different symbols I have learnt.</p> <p>I can describe some of the key dangers of electricity within my home and the local environment.</p> <p>I can describe what an electromagnet is.</p>	<p>I understand that some physical features have been inherited from my parents.</p> <p>I can describe why Charles Darwin is a famous naturalist and explain some of his findings.</p> <p>I understand that some animals adapted to their environment in order to survive.</p> <p>I understand that a fossil can provide evidence of evolution.</p>	<p>Light travels in straight lines.</p> <p>The length of our shadow changes at different points throughout the day.</p> <p>Light travels from light sources to our eyes or from light sources to objects and then to our eyes.</p>	<p>During exercise, our heartbeat increases.</p> <p>The heart is a muscle that pumps blood around your body as your heart beats.</p> <p>Arteries carry blood away from the heart and veins carry blood to the heart.</p>

Our Influential People:

		Autumn Term:		Spring Term:		Summer Term:	
		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
KS1	Year 1	Everyday Materials Charles Macintosh 	Seasonal Change Anders Celsius 	Animals Including Humans Florence Nightingale 	Seasonal Change Anders Celsius 	Plants Carl Linnaeus 	Seasonal Change Anders Celsius 
	Year 2	Animals Including Humans Florence Nightingale 	Living things in their habitats David Attenborough 	Plants Carl Linnaeus 	Uses of Everyday Materials Charles Macintosh 	Forces Isaac Newton  PULL PUSH	
Lower KS2	Year 3	Rocks and fossils Mary Anning 	Forces and magnets Isaac Newton 	Animals including humans Florence Nightingale 	Light James Clerk Maxwell 	Plants Carl Linnaeus 	
	Year 4	Animals Including Humans Florence Nightingale 	Electricity Benjamin Franklin 	Sound Galileo Galilei 	State of matter Anders Celsius 	Living things and their habitats David Attenborough 	
Upper KS2	Year 5	Forces Isaac Newton 	Properties and changing materials Anders Celsius 	Earth and space Neil Armstrong 		Animals Including Humans Florence Nightingale 	Living things and their habitats David Attenborough 

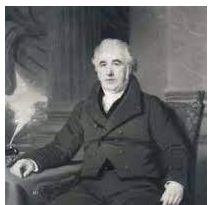
<p>Year 6</p>	<p>Living things and their habitats David Attenborough</p> 	<p>Electricity Benjamin Franklin</p> 	<p>Evolution and inheritance Charles Darwin</p> 	<p>Light James Clerk Maxwell</p> 	<p>Animals Including Humans Florence Nightingale</p> 
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Why do we learn about people who have influenced science?

At Moss Valley we aim for our children to leave in Year 6 with a developing knowledge of a range of influential people and how they have contributed to the world of science. This allows children to relate science to the real world and helps them to build a curiosity and awe of the natural world.

How does this fit into our curriculum?

An influential person has been selected for each unit of study. Each time the children re visit this topic, they will consolidate their understanding of this person’s contribution to the scientific world whilst learning new facts about them. At the start of each science lesson in years 1-6, the children will discuss their influential person and learn a new fact each week. Teachers will assess prior knowledge each year to ensure new facts are being taught. Children will be assessed on their knowledge of these scientists through pupil voice and end of unit quizzes.



Charles Macintosh



Anders Celsius



Florence Nightingale



Carl Linnaeus



David Attenborough



Isaac Newton



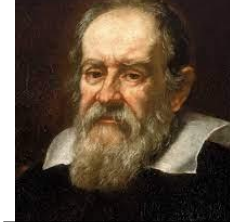
Mary Anning



James Clerk Maxwell



Benjamin Franklin



Galileo Galilei



Neil Armstrong