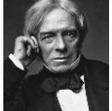


Units	Light	Forces and Magnets	Rocks	Animals Including Humans	Plants	Scientific Enquiry	Science Fair
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National Curriculum:	<ul style="list-style-type: none"> Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. Investigate the way in which water is transported within plants. Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. Identify that humans and some other animals have skeletons and muscles for support, protection and movement. Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. Describe in simple terms how fossils are formed when things that have lived are trapped within rock. Recognise that soils are made from rocks and organic matter. Recognise that they need light in order to see things and that dark is the absence of light. Notice that light is reflected from surfaces. Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. Recognise that shadows are formed when the light from a light source is blocked by an opaque object. Find patterns in the way that the size of shadows change. Compare how things move on different surfaces. Notice that some forces need contact between two objects, but magnetic forces can act at a distance. Observe how magnets attract or repel each other and attract some materials and not others. Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. Describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing.
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Working scientifically
<p>Statutory requirements</p> <p>During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> asking relevant questions and using different types of scientific enquiries to answer them setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers gathering, recording, classifying and presenting data in a variety of ways to help in answering questions recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions identifying differences, similarities or changes related to simple scientific ideas and processes using straightforward scientific evidence to answer questions or to support their findings.

Unit Link	Light 	Forces and Magnets 	Rocks 	Animals Including Humans: 	Plants 	Scientific Enquiry 	Science Fair Entry Enquiry Focus
Scientist	Thomas Edison 	Michael Faraday 	Mary Anning 	Nina Tandon 	George W. Carver 	Dr. Vivien Thomas 	
Area Focus	Physics	Physics	Chemistry	Biology	Biology	Disciplinary Skills	
Enquiry Approach	 Identifying, Grouping and Classifying  Comparative/Fair Testing  Pattern Seeking  Observations Over Time	 Comparative/Fair Testing  Identifying, Grouping and Classifying	 Research  Comparative/Fair Testing	 Identifying, Grouping and Classifying  Research  Problem Solving	 Comparative/Fair Testing  Research  Observations Over Time  Pattern Seeking	 Comparative/Fair Testing  Observations Over Time	
Resources	UV Beads Suncream Black paper Plates Tinfoil Paper Wood Plastic Metal Torches Opaque objects Ice lolly sticks	PE equipment Toy boats or wooden blocks (an object that slides, not rolls) Thick books Stopwatches Wooden ramp Bubble wrap Cling film Paper Felt Sandpaper 5 types of magnets: Bar magnets	Chocolate chips Coconut oil Ice cubes Microwave/hob Caster sugar Golden syrup Bicarb soda Wooden spoon Food containers Selection of rocks Sandpaper Nails Small wooden spoons Pipettes	Selection of food Nutritional labels Split pins	Small flowering plants Pots Jars Soil Fertiliser Onions Plasticine Lillies Craft materials	Shoebox Black card Foil Thermometer Straws Cling film Fabric Foil Paper Black bin bag Chocolate Plates PH testing kit Small trays Measuring cylinders	

		<p>Horseshoe magnets Stick magnets Circular magnets Large/small magnets Magnetic/non magnetic objects Paperclips Thread Rulers</p>	<p>Magnifying glasses Scales Timers Salt Flour Coffee grounds Mixing bowls Imprint objects Soil samples: Peat Clay Sandy Silt Loam Chalky Beakers Filter paper Funnels Teaspoons</p>			<p>Dirty coins Vinegar Oil Ketchup Citric fruit juice Fizzy drinks Toothpaste Soap Butter Caster sugar Self-raising flour Eggs Vanilla Milk Mixing bowls Whisk Wooden spoons Measuring jugs Scales Oven 20cm cake tins</p>	
Key Concepts	<p>There is a relationship between structure and function</p> <p>Energy makes things happen and can be seen by its effects; it can be transferred (but is not used up)</p> <p>The movement of the Earth affects the seasons and times of day</p>	<p>Living and non-living things can be grouped in a variety of ways</p> <p>Changing the movement of an object requires a net force (push or pull) to be acting on it</p>	<p>Living and non-living things can be grouped in a variety of ways</p> <p>The diversity of organisms, living and extinct, is the result of evolution</p>	<p>Humans move through different stages of growth and development</p> <p>Living things have characteristics and requirements for life, growth and health</p>	<p>Living and non-living things can be grouped in a variety of ways</p> <p>There is a relationship between structure and function</p>	N/A	
Knowledge	<p>Lesson 1: Identify the difference between light sources and non light sources I can recognise that they need light in order to see things and that dark is the absence of light</p>	<p>Lesson 1: Explore contact and non-contact forces I can notice that some forces need contact between 2 objects, but magnetic forces can act at a distance.</p>	<p>Lesson 1: Explore the formation and properties of igneous rocks I can compare and group together igneous rock on the basis of their appearance and</p>	<p>Lesson 1: Explore the 5 key food groups I can identify that animals, including humans, need the right types of nutrition, and that they cannot make their own food; they</p>	<p>Lesson 1: Compare the effect of different factors on plant growth I can 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>Lesson 1: How can a solar oven be made more effective: asking questions and writing predictions I can ask relevant questions and use different types of scientific enquiries to answer them.</p>	

	<p>Lesson 2: Explore the light that comes from the sun and how to stay safe I can recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</p> <p>Lesson 3: Explore materials which are reflective I can notice that light is reflected from surfaces.</p> <p>Lesson 4: Discover how shadows are formed I can recognise that shadows are formed when the light from a light source is blocked by an opaque object.</p> <p>Lesson 5: Investigate how shadows change throughout the day I can find patterns in the way that the size of shadows change over time.</p> <p>Lesson 6: Investigate how you can change the size of a shadow I can find patterns in the way that the size of shadows change.</p>	<p>Lesson 2: Compare how things move on different surfaces I can compare how things move on different surfaces.</p> <p>Lesson 3: Explore different types of magnets I can describe magnets as having 2 poles and predict whether 2 magnets will attract or repel each other, depending on which poles are facing.</p> <p>Lesson 4: Explore the properties of magnets and everyday objects that are magnetic I can 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>Lesson 5: Explore the everyday uses of magnets I can notice that magnetic forces can act at a distance.</p>	<p>simple physical properties.</p> <p>Lesson 2: Explore the formation and properties of sedimentary and metamorphic rocks I can compare and group together sedimentary and metamorphic rocks on the basis of their appearance and simple physical properties.</p> <p>Lesson 3: Explore how water contributes to the weathering of rocks I can compare and group together different kinds of rocks on the basis of their appearance and simple physical properties from water weathering.</p> <p>Lesson 4: Understand how fossils are formed I can describe in how fossils are formed when things that have lived are trapped within rock</p> <p>Lesson 5: Explore different types of soil I can recognise that soils are made from rocks and organic matter.</p>	<p>get nutrition from what they eat.</p> <p>Lesson 2: Learn about the nutrition in the food we eat I can identify that animals, including humans, need the right amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.</p> <p>Lesson 3: Learn about the human skeleton I can identify that humans have skeletons for support, protection and movement.</p> <p>Lesson 4: Learn about animals and their skeletons I can identify that animals have skeletons and muscles for support, protection and movement.</p> <p>Lesson 5: Explore the role of muscles I can identify that humans and some other animals have muscles for support, protection and movement.</p>	<p>Lesson 2: Describe the functions of different parts of a flowering plant I can identify and describe the functions of different parts of a flowering plant.</p> <p>Lesson 3: Investigate the way in which water is transported within plants I can investigate the way in which water is transported within plants.</p> <p>Lesson 4: Explore the part that flowers play in the life cycle of flowering plants I can explore the part that flowers play in the life cycle of flowering plants.</p> <p>Lesson 5: Understand the pollination process and the ways in which seeds are dispersed I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p> <p>Lesson 6: Compare the effect of different factors on plant growth I can explain 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>Lesson 2: How can a solar oven be made more effective: recording and presenting results I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.</p> <p>Lesson 3: Cleaning coins: writing a method and carrying out a practical test I can set up simple practical enquiries, comparative and fair tests.</p> <p>Lesson 4: Cleaning coins: writing a conclusion I can report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>Lesson 5: Making a cake: fair testing, controls and variables I can identify an independent variable to investigate.</p> <p>Lesson 6: Making a cake: scientific enquiry I can use results to ask a new question that further extends the investigation and evaluate the results and suggest improvements to the method.</p>	
Skills	Lesson 1: 	Lesson 1: 	Lesson 1: 	Lesson 1: 	Lesson 1: 	Lesson 1: 	

	<p>Recording data, results and findings</p> <p>Lesson 2:  Making Predictions.</p> <p>Lesson 3:  Recording data, results and findings</p> <p>Lesson 4:  Observing and Measuring</p> <p>Lesson 5:  Recording data, results and findings</p> <p>Lesson 6:  Observing and Measuring</p>	<p>Observing and Measuring</p> <p>Lesson 2:  Setting up tests</p> <p>Lesson 3:  Making Predictions.</p> <p>Lesson 4:  Recording data, results and findings</p> <p>Lesson 5:  Setting up tests</p>	<p>Interpreting and Communicating Results</p> <p>Lesson 2:  Observing and Measuring</p> <p>Lesson 3:  Setting up tests</p> <p>Lesson 4:  Observing and Measuring</p> <p>Lesson 5:  Observing and Measuring</p>	<p>Recording data, results and findings</p> <p>Lesson 2:  Interpreting and Communicating Results</p> <p>Lesson 3:  Observing and Measuring</p> <p>Lesson 4:  Interpreting and Communicating Results</p> <p>Lesson 5:  Interpreting and Communicating Results</p>	<p>Asking Questions</p> <p>Lesson 2:  Interpreting and Communicating Results</p> <p>Lesson 3:  Making Predictions.</p> <p>Lesson 4:  Recording data, results and findings</p> <p>Lesson 5:  Interpreting and Communicating Results</p> <p>Lesson 6:  Interpreting and Communicating Results</p>	<p>Asking Questions</p> <p>Lesson 2:  Recording data, results and findings</p> <p>Lesson 3:  Setting up tests</p> <p>Lesson 4:  Interpreting and Communicating Results</p> <p>Lesson 5:  Setting up tests</p> <p>Lesson 6:  Interpreting and Communicating Results</p>	
Vocabulary	<p>natural artificial source light reflect vitamin D sunburn exposure ultraviolet rays</p>	<p>contact force force air resistance friction non-contact forces surface texture motion resistance</p>	<p>igneous rocks metamorphic rocks sedimentary rocks crystals magma marble sandstone limestone erosion</p>	<p>mineral nutrition vitamin protein carbohydrate energy diet nutrition label balanced</p>	<p>nutrients investigation prediction fertiliser thrive carbon dioxide function oxygen energy</p>	<p>solar scientific investigation results prediction effective record bar chart data</p>	

	protection surface materials high visibility reflective fluorescent shadow ray sundial block opaque position direction length cast opposite shape closer puppet further size	fill attract horseshoe magnet bar magnet repel magnet magnetic steel magnetic field iron magnetism recycle non-contact forces non-magnetic materials magnetism attract	receding texture submerged appearance amber sediment embedded fossil extinct decompose fragments clay soil chalky soil sandy soil	portion invertebrate endoskeleton hydrostatic skeleton exoskeleton vertebrate radius fibular ulna humerus tibia rib cage skull spine biceps hamstrings contract diaphragm muscle	photosynthesis absorb transpiration root hairs tube anchor stamen stigma ovary anther reproduce pollination pollinator nectar seed dispersal pollen diagram observe vary conclusion comparison	table diagram experiment substance method equipment conclusion explanation evidence acidic compare reaction variable control experiment measurement fair test	
Career Links	Optometrist	Radiographer	Geologist/Miner	Orthopaedic surgeon	Beekeeper	Research scientist	