
















## Science MTP - Plants - Year 3

National Curriculum Objectives		Sticky Knowledge		Key Scientists	
<ul style="list-style-type: none"> <li>Identify and describe the functions of different parts of the flowering plant: roots, stem/trunk/leaves and flowers.</li> <li>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.</li> <li>Investigate the way in which water is transported within plants.</li> <li>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</li> </ul>		<ul style="list-style-type: none"> <li>Plants are producers, they make their own food.</li> <li>Their leaves absorb sunlight and carbon dioxide.</li> <li>Plants have roots, which provide support and draw water from the soil.</li> <li>Flowering plants have specific adaptations which help it to carry out pollination, fertilisation and seed production.</li> <li>Seed dispersal improves a plant's chances of successful reproduction.</li> <li>Seeds/bulbs require the right conditions to germinate and grow.</li> <li>Seeds contain enough food for the plant's initial growth.</li> </ul>		Stephen Hales <i>(Botanist)</i>  Anna Atkins <i>(Botanist &amp; Photographer)</i>	
		Vocabulary			
		air, anchor, fertiliser, flowering plants, flowers, functions, growth, leaves, life, life cycle, light, nutrients, nutrition, plants, pollination, reproduction, requirements, room to grow			
Prior Learning		Future Learning		Key Questions	
<b>In Year 2 Children should:</b> <ul style="list-style-type: none"> <li>Observe and describe how seeds and bulbs grow into mature plants.</li> <li>Find out and describe how plants need water, light and warmth to grow and stay healthy.</li> </ul>		<b>In UKS2 Children will:</b> <ul style="list-style-type: none"> <li>Describe the life process of reproduction in some plants and animals.</li> <li>Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals.</li> <li>Give reasons for classifying plants and animals based on specific characteristics.</li> <li>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</li> </ul>		<ul style="list-style-type: none"> <li>How do plants reproduce?</li> <li>How do insects know which flowers to pollinate?</li> <li>Why do flowers smell?</li> <li>What do seeds do?</li> <li>Can a plant live without its leaves?</li> <li>What conditions are perfect for a seed to grow?</li> <li>Where do weeds come from?</li> <li>How does the space between seeds affect how well they grow?</li> <li>Do plants take in water through their roots?</li> <li>How does water move through the plant?</li> </ul>	
					<b>BIG Question</b> (assessment opportunity)
How does the length of the carnation stem affect how long it takes for the food colouring to dye the petals?  Does the amount of fertiliser affect how a plant grows?	How many different ways can you group our seed collection?  Can you identify all the parts of a flowering plant?	What happens to celery when it is left in a glass of coloured water?  How do flowers in a vase change over time?	What colour flowers do pollinating insects prefer?	What are all the different ways that seeds disperse?  How is a cactus the same/different to a birch tree?	Why do plants have flowers?   @MrsF_primary

## Science MTP - Animals, including humans - Year 3






National Curriculum Objectives		Sticky Knowledge		Key Scientists	
<ul style="list-style-type: none"> <li>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.</li> <li>Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</li> </ul>		<ul style="list-style-type: none"> <li>Different animals are adapted to eat different foods.</li> <li>To stay healthy, humans need to exercise, eat a healthy diet and be hygienic.</li> <li>Many animals have skeletons to protect vital organs inside the body, allow movement and support the body and stop it from falling on the floor.</li> <li>Muscles are connected to bones and move them when they contract.</li> <li>Movable joints connect bones.</li> </ul>		Wilhelm Rontgen <i>(Mechanical Engineer &amp; Physicist)</i>  Ibn Sina "Avicenna" <i>(Physician)</i>	
		Vocabulary			
		amount, animals, body parts, carbohydrates, diet, eat, endoskeleton, exoskeleton, fats, fibre, food, food groups, functions, healthy, humans, invertebrates, joints, meals, minerals, movement, muscles, nutrition, protection, protein, skeletons, support, types, vertebrates, vitamins			
Prior Learning		Future Learning		Key Questions	
<b>In Year 2 children should:</b> <ul style="list-style-type: none"> <li>Know that animals, including humans, have offspring which grow into adults.</li> <li>Know the basic stages in a life cycle for animals, including humans.</li> <li>Find out and describe the basic needs of animals, including humans, for survival (water, food and air).</li> <li>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</li> </ul>		<b>In Year 4 children will:</b> <ul style="list-style-type: none"> <li>Describe the simple functions of the basic parts of the digestive system in humans.</li> <li>Identify the different types of teeth in humans and their simple functions.</li> <li>Construct and interpret a variety of food chains, identifying producers, predators and prey.</li> </ul>		<ul style="list-style-type: none"> <li>Why do we need a skeleton?</li> <li>What types of skeletons are there?</li> <li>Are all skeletons the same?</li> <li>Can something survive without a skeleton?</li> <li>What happens if we break a bone?</li> <li>How do we move?</li> <li>Are bones that are bigger, stronger?</li> <li>Why do we need joints?</li> <li>Why do muscles get tired?</li> <li>Can we 'break' muscles?</li> </ul>	
 <p>How does the angle that your elbow/knee is bent affect the circumference of your upper arm/thigh?</p> <p>How does the skull circumference of a girl compare with that of a boy?</p>	 <p>How do the skeletons of different animals compare?</p> <p>Can bones be grouped? How?</p>	 <p>How does our skeleton change over time (from birth to death)?</p>	 <p>Do all animals have a [name of bone] e.g. tibia?</p>	 <p>Why do different types of vitamins keep us healthy and which foods can we find them in?</p>	<p style="text-align: center;"><b>BIG Question</b> (assessment opportunity)</p> <p>Why do animals have skeletons?</p> <p>What is a healthy diet and why is it important?</p> <p style="text-align: right; color: green;">@MrsF_primary</p>

## Science MTP - Rocks - Year 3






National Curriculum Objectives		Sticky Knowledge		Key Scientists	
<ul style="list-style-type: none"> <li>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</li> <li>Describe in simple terms how fossils are formed when things that have lived are trapped within rock.</li> <li>Recognise that soils are made from rocks and organic matter.</li> </ul>		<ul style="list-style-type: none"> <li>Some rocks are natural and some are human-made. There are 3 types of naturally occurring rock.</li> <li>Soil is the uppermost layer of the earth and is made up of different things.</li> <li>Different plants grow in different soils.</li> <li>Fossils tell us what has happened before (they give us evidence) and show that living things have changed over time.</li> <li>Fossils are most commonly found in sedimentary rock.</li> <li>Paleontologists use Fossils to find out about the past.</li> </ul>		Mary Anning <i>(Paleontologist)</i>  Florence Bascom <i>(Geologist)</i>	
		Vocabulary			
		appearance, buildings, crystals, formed, fossils, grains, gravestones, organic matter, physical properties, rocks, sedimentary rock, soils, trapped			
Prior Learning		Future Learning		Key Questions	
<b>In Year 2 Children should:</b> <ul style="list-style-type: none"> <li>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.</li> <li>Find out how shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</li> </ul> <i>NB: Children may have a basic understanding of soil, fossils and rocks from EYFS.</i>		<b>In Year 4 children will:</b> <ul style="list-style-type: none"> <li>Compare and group materials together, according to whether they are solids, liquids or gases.</li> <li>Observe that some materials change state when heated or cooled, and measure and research the temperature at which this happens in degrees Celsius.</li> <li>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</li> </ul> <b>In Year 6 children will:</b> <ul style="list-style-type: none"> <li>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</li> </ul>		<ul style="list-style-type: none"> <li>How are the soils different?</li> <li>Which do you think has the best drainage?</li> <li>Which is more likely to lead to flooding?</li> <li>How many soil types have we found?</li> <li>How might the soil be different in different countries?</li> <li>What rock is best for a kitchen chopping board?</li> <li>What types of rocks are there?</li> <li>How do rocks change?</li> <li>What would grow best in your soil?</li> <li>Why do you think worms are important to the creation of soil?</li> <li>How can we use composting to make our own soil?</li> <li>How are fossils created?</li> <li>Why do fossils help us find out about historical events?</li> </ul>	
					<b>BIG Question</b> (assessment opportunity)
How does adding different amounts of sand to soil affect how quickly water drains through it? Which soil absorbs the most water?	Can you use the identification key to find out the name of each of the rocks in your collection?	How does tumbling change a rock over time?  What happens when water keeps dripping on a sandcastle?	Is there a pattern in where we find volcanoes on planet Earth?	Who was Mary Anning and what did she discover?	What are rocks and soils like?

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## Science MTP - Light - Year 3

National Curriculum Objectives		Sticky Knowledge		Key Scientists	
<ul style="list-style-type: none"> <li>Recognise that they need light in order to see things and that dark is the absence of light.</li> <li>Notice that light is reflected from surfaces.</li> <li>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</li> <li>Recognise that shadows are formed when the light from a light source is blocked by an opaque object.</li> <li>Find patterns in the way that the size of shadows change.</li> </ul>		<ul style="list-style-type: none"> <li>There must be light for us to see; without light it is dark.</li> <li>We need light to see things, even shiny things.</li> <li>Transparent materials let light through them and opaque materials don't let light through.</li> <li>Beams of light bounce off some materials (reflection).</li> <li>Smooth, shiny materials reflect light beams better than bumpy, non-shiny materials.</li> <li>Light comes from a source.</li> <li>Reflective materials can be very useful e.g. cat's eyes, hi-vis jacket.</li> </ul>		Ibn al-Haytham "Alhazen" <i>(Inventor)</i>  Lewis Latimer <i>(Inventor)</i>	
		<b>Vocabulary</b>			
		absence, beam, blocked, danger, dark, distance, glare, light, light source, mirror, opaque, patterns, protect, ray, reflect, shadows, Sun, surfaces			
Prior Learning		Future Learning		Key Questions	
<b>In Year 1 children should:</b> <ul style="list-style-type: none"> <li>Observe changes across the four seasons.</li> <li>Observe and describe weather associated with the seasons and how day length varies.</li> </ul>		<b>In Year 6 children will:</b> <ul style="list-style-type: none"> <li>Recognise that light appears to travel in straight lines.</li> <li>Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye.</li> <li>Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.</li> <li>Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</li> </ul>		<ul style="list-style-type: none"> <li>A coin is lost, what would be the best way to find it? (Turn the lights out and see it shine? Use a torch to see it reflect?)</li> <li>What colour would be the best to make a safety jacket?</li> <li>How does the colour of a material affect how reflective it is?</li> <li>How does the thickness of a material affect how much light can pass through it?</li> <li>How many pieces of tracing paper are as translucent as a single piece of white paper?</li> <li>How does the shape of a mirror affect how the light reflects?</li> <li>How can we change the darkness, size and shape of a shadow?</li> </ul>	
					<b>BIG Question</b> (assessment opportunity)
How does the distance between the shadow puppet and the screen affect the size of the shadow? Which pair of sunglasses will be best at protecting our eyes?	How would you organise these light sources into natural and artificial sources?	Is the Sun the same brightness all day?  How does my shadow change over a day/month/year?	Do all dark fabrics block out a light source?	How does the Sun make light?	What is a shadow?  <span style="color: green;">@MrsF_primary</span>

## Science MTP - Forces and Magnets - Year 3

National Curriculum Objectives		Sticky Knowledge		Key Scientists	
<ul style="list-style-type: none"> <li>Compare how things move on different surfaces.</li> <li>Notice that some forces need contact between two objects, but magnetic forces can act at a distance.</li> <li>Observe how magnets attract or repel each other and attract some materials and not others.</li> <li>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.</li> <li>Describe magnets as having two poles.</li> <li>Predict whether two magnets will attract or repel each other, depending on which poles are facing.</li> </ul>		<ul style="list-style-type: none"> <li>Forces can be pushes or pulls.</li> <li>Friction is a force that acts between two surfaces or objects that are moving (or trying to move) across each other.</li> <li>Magnets exert attractive and repulsive forces on each other.</li> <li>Magnets exert non-contact forces, which work through some materials.</li> <li>Magnets exert attractive forces on some materials which are affected by magnet strength, object mass, distance from object and object material.</li> </ul>		<p>John McAdam <i>(Civil Engineer &amp; Road Builder)</i></p> <p>Isaac Newton <i>(Physicist)</i></p>	
		Vocabulary			
		attract, compass, contact, distance, forces, magnetic, materials, move, objects, poles, properties, pull, push, repel, strength, surface, uses			
Prior Learning		Future Learning		Key Questions	
<p>In EYFS/KS1 children should:</p> <ul style="list-style-type: none"> <li>Have an awareness of starting and stopping the movement of objects with pushes and pulls.</li> <li>Know that some objects float and some sink.</li> <li>Describe the physical properties of materials, including metal.</li> </ul> <p><i>NB: This is a new topic of science study not introduced in KS1.</i></p>		<p>In Year 5 children will:</p> <ul style="list-style-type: none"> <li>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object and the impact of gravity on our lives.</li> <li>Identify the effects of air resistance, water resistance and friction, which act between moving surfaces.</li> <li>Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</li> <li>Describe the movement of the Earth, and other planets, relative to the Sun in the solar system and the movement of the Moon relative to the Earth.</li> <li>Describe the Sun, Earth and Moon as approximately spherical bodies</li> <li>Describe the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> </ul>		<ul style="list-style-type: none"> <li>What are magnetic materials? How can we find out?</li> <li>Can I make a magnetic material non-magnetic?</li> <li>How far away does a magnet have to be before it attracts a magnetic material?</li> <li>How far away can the magnetic attraction between two magnets be experienced?</li> <li>Is the repulsive force the same size?</li> <li>How is the magnetic attraction of repulsion force affected by putting materials between the magnets?</li> <li>Are bigger magnets stronger?</li> </ul>	
					<p><b>BIG Question</b> (assessment opportunity)</p>
How does the mass of an object affect how much force is needed to make it move?	Which materials are magnetic?	If we magnetise a pin, how long does it stay magnetised for?	Does the size and shape of a magnet affect how strong it is? Are all shiny materials magnetic?	How have our ideas about forces changed over time? How does a compass work?	How can we move magnets?
Which magnet is strongest?					@MrsF_primary