

EYFS- Understanding the World			
Unit of work	All about Me	Materials Plants	Diverse World
Essential Knowledge	<p>All About Me. Children will be able to talk about themselves and make observations of what they look like. They will be able to label body parts.</p> <p>Yr 5 buddies CLL support: An investigation into what material they should use to make a boat for the Gingerbread Man to cross the river.</p> <p>Oral Hygiene. Show X-Rays of teeth to the children and introduce a famous scientist Marie Curie. (PSED link)</p>	<p>Changing states of matter- Melting Chocolate in baking activity.</p> <p>Where is the best place for a plant to grow? (investigation)</p> <p>Label parts of the plants</p> <p>Using magnifiers to explore plants and seeds</p> <p>Plant seeds (vegetables – cress)</p> <p>Look after seeds – plant beans</p> <p>Cameras to record growth</p> <p>Plant sunflower seeds, beans and bulbs</p>	<p>Growing and Life cycles</p> <p>Animal Classification – Matching adult animals to their baby animal</p> <p>Girls and boys – similarities and differences.</p>
Scientific enquiry	<p>WS</p> <p>Show curiosity and ask questions</p> <p>Record their observations by drawing, taking photographs, using sorting rings or boxes and, simple tick sheets e.g. for the Gingerbread Man boat.</p> <p>Using mirrors the children will make observations of themselves.</p> <p>They will label name and begin to label parts of their body.</p> <p>CLL – Retrieval and Blooms used in the outdoor area as the children explore the world around them.</p>	<p>WS</p> <p>Talk about what they have done and found out</p> <p>WS</p> <p>Make observations using their senses and simple equipment.</p> <p>Melting Chocolate – tin foil boat in hot water with a square of chocolate so the children can see what happens when it heats up.</p> <p>Planting in nature area, bulbs/seed/beans and bulbs. (Plant one in the dark/light/water/no water)</p> <p>Children to plant cress/beans and record the growth over time by taking a daily photo.</p> <p>Look at planting results from dark/no water in Spring 1.</p> <p>CLL – What have we found out?</p> <p>CLL Children to talk about the weather and make comparisons between previous seasons e.g. what will we need to wear today? . . . but yesterday it was sunny.</p>	<p>WS</p> <p>Make direct comparisons</p> <p>Identify, sort and group</p> <p>Make direct comparisons</p> <p>Identify, sort and group.</p> <p>Matching animals to the young.</p> <p>Answering questions and concluding</p> <p>Use their observations to help them to answer their questions</p> <p>Keeping healthy- focus on food, exercise and sleep.</p> <p>Eat well Plate- Children to sort foods and drinks to make a healthy lunchbox.</p> <p>Lifecycle of a Butterfly</p>

Vocabulary	<p>Summer, day, Spring, dark, Autumn, light, Winter, night, Season, Moon, Sun.</p> <p>Face, hair, leg, human, knee animal, arm, elbow, back head, toes, ear, hands, eye, fingers, mouth and nose.</p> <p>Material, metal, wood, rock, plastic, hard, glass, soft, paper, fabric, material, smooth, shiny, rough.</p>	<p>Tree, petals, trunk, fruit, branch, roots, leaves, bulb, flowers, seed, stem.</p> <p>Hot, cold, solid, liquid</p>	<p>Cow, calf, sheep, lamb dog, puppy, cat, kitten, human, baby, young, old. Lifecycle, frog, tadpole, froglet, butterfly, caterpillar, cocoon, chrysalis. Bulb, seed, soil, water, light, sunshine, warm, food. Healthy and unhealthy. Food, energy, exercise and sleep.</p>
Quick Quiz	<p>How many seasons are there?</p> <p>What are the names of the seasons?</p> <p>What season is it now?</p> <p>What is the difference between Winter and Summer?</p> <p>Can you tell me parts of your body?</p> <p>What is this made from?</p> <p>How do you know?</p> <p>Could I make a duvet out of glass?</p> <p>What do we use to see inside our bodies?</p> <p>What scientist helped create X-rays?</p>	<p>What does a plant need to grow?</p> <p>Where would be a good place to store chocolate?</p>	<p>What is a baby cow called?</p> <p>Can you tell me the lifecycle of a caterpillar?</p> <p>What do we need to stay healthy?</p> <p>What does healthy mean?</p> <p>Is living in Chester the same as living in . . . .? (Specific to children in class.)</p> <p>What is the same about a girl and boy?</p> <p>What is the difference between a girl and boy?</p>
Kahoot			<p>Which of these are parts of the lifecycle of a caterpillar?</p> <p>What do we need to stay healthy?</p> <p>What is the same about a girl and boy?</p> <p>How many seasons are there?</p> <p>What are the names of the seasons?</p> <p>Could I make a duvet out of glass?</p> <p>What do we use to see inside our bodies?</p> <p>What scientist helped create X-rays?</p> <p>What does a plant need to grow?</p> <p>Where would be a good place to store chocolate?</p>
Significant individual	Marie Curie.		
Ongoing	<p>Explore the natural world around them.</p> <p>Describe what they see hear and feel outside.</p> <p>Daily the children will talk about what the weather is like.</p> <p>Understand the effect of changing seasons on the natural world around them.</p>		

Year 1

Unit of work	Animals and humans	Properties of materials	Animals	Seasonal changes	Plants
Prior learning	Face, hair, leg, human, knee animal, arm, elbow, back head, toes, ear, hands, eye, fingers, mouth and nose.	Material, metal, wood, rock, plastic, hard, glass, soft, paper, fabric, material, smooth, shiny, rough.	Cow, calf, sheep, lamb dog, puppy, cat, kitten, human, baby, young, old. Lifecycle, frog, tadpole, froglet, butterfly, caterpillar, cocoon, chrysalis. Bulb, seed, soil, water, light, sunshine, warm, food.	Summer, day, Spring, dark, Autumn, light, Winter, night, Season, Moon, Sun.	Tree, petals, trunk, fruit, branch, roots, leaves, bulb, flowers, seed, stem, seed, soil, water, light, sunshine, warm, food.
Essential Knowledge	<ol style="list-style-type: none"> <li>1. Know that humans have key parts in common, but these vary from person to person.</li> <li>2. Know that all humans have similarities and differences</li> <li>3. Know that humans (and other animals) find out about the world using their senses.</li> <li>4. Know that humans have five senses – sight, touch, taste, hearing and smelling. These senses are linked to particular parts of the body.</li> <li>5. Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</li> </ol>	<ol style="list-style-type: none"> <li>1. Know that all objects are made of one or more materials.</li> <li>2. Know that some objects can be made from different materials e.g. plastic, metal or wooden spoons.</li> <li>3. Know that materials can be described by their properties e.g. shiny, stretchy, rough etc.</li> <li>4. Know that some materials e.g. plastic can be in different forms with very different properties.</li> <li>5. Know that we can compare and group everyday materials on the basis of their simple physical properties.</li> </ol>	<ol style="list-style-type: none"> <li>1. I know that animals vary in many ways having different structures e.g. wings, tails, ears etc.</li> <li>2. I know that they also have different skin coverings e.g. scales, feathers, hair.</li> <li>3. I know that these key features can be used to identify them. Animals eat certain things - some eat other animals, some eat plants, some eat both plants and animals.</li> <li>4. I know that animals are grouped accordingly to their features including fish, amphibians, reptiles, birds and mammals.</li> </ol>	<ol style="list-style-type: none"> <li>1. I know that seasons are the different times in the year when there are changes in the weather</li> <li>2. I know that there are four seasons – Autumn, Winter, Spring and Summer</li> <li>3. I know that the weather is typically different in each season</li> <li>4. I know that in the Spring and Summer the days are longer than in Autumn and Winter</li> <li>5. I know that different things happen in different seasons</li> </ol>	<ol style="list-style-type: none"> <li>1. I know that a plant has roots, a stem, leaves, a flower</li> <li>2. I know the function of each part of the plant</li> <li>3. I know that a tree has roots, a trunk, branches and leaves</li> <li>4. I know that there are different types of plants and trees and can name some common plants and trees</li> <li>5. I know that some trees keep their leaves all year while other trees drop their leaves during autumn and grow them again during spring.</li> </ol>

Scientific enquiry	<p>Human Body Assessment Focus</p> <p><i>Can the children label basic parts of the human body?</i></p> <p>WS: Review: Use observations and ideas to suggest answers to questions</p> <p><u>Body Parts Assessment Focus</u> What are the different senses? Which part of the body is particularly associated with each of these?</p>	<p>Properties of Materials Assessment Focus</p> <p>Can the children name a variety of objects and identify what material they are made of? Can the children group objects according to the materials they are made of?</p> <p>Mr Silly's house game, e.g. would you make a duvet out of glass?</p> <p>WS: Do: Review: Identify and classify</p>	<p>Animal Classification Assessment Focus</p> <p>Can the children name a variety of animals including fish/amphibians / reptiles/ birds/ mammals? Can the children classify animals according to different animal groups and/or what they eat?</p> <p>Lifecycle of a chicken</p> <p>Mammal/Reptile/Insects/Birds</p> <p>Nocturnal animals Feature of an insect and non-insect</p> <p>WS: Do: Review: Identify and classify</p>	<p>Seasonal Change Assessment Focus</p> <p>I can name the seasons</p> <p>Can children observe and record changes across the seasons? Can children observe and describe the weather associated with each season and how the day length varies.</p> <p>WS: Do and Record: Observe over time and record data to help in answering questions</p>	<p>Plant Structure Assessment Focus</p> <p>Can children make careful observations of similarities and differences between plants? Can children label the basic parts of a plant?</p> <p>Seed Diary – Observations over time</p> <p>Trees in winter – deciduous and evergreen.</p> <p>WS: Do: Observe closely using simple equipment</p> <p>Activity Migrate/hibernate/adapt/store.</p>
Vocabulary	<p>Ears, Nose, Mouth, Eyes, Skin/Hands</p> <p>See, hear, touch, smell, taste</p> <p>Head face ears eyes nose chin neck arms hands fingers shoulders elbows chest legs feet toes ankles</p>	<p>Names of material: wood, metal, plastic, glass, stone/rock, paper, rubber and fabric. Vocabulary of properties: soft, hard, rough, smooth, bendy, dull, shiny, transparent, opaque.</p>	<p>Fish: goldfish shark clownfish Reptile: snake crocodile tortoise Amphibian: frog, toad Birds: robin blackbird chicken ostrich Mammals: dog cat cow horse monkey elephant rabbit badger squirrel sheep human Herbivore, carnivore, omnivore</p>	<p>Seasons: Autumn Spring Summer Winter Weather: Cold hot wet rainy foggy sunny windy snowy storm lightning thunder light dark (length of day) night day evening afternoon morning Root, root hairs, stem, leaves, flower, petal trunk branch</p>	<p>Deciduous, evergreen, grow, plant, seed, shoot, seedling, seeds, fruit, bulb. Names of some common plants, flowers and trees – buttercup, daisy, tulip, snowdrop, daffodil, ivy, nettle, oak, ash, silver birch. Root - root hairs, stem, leaves, flower, petal trunk branch</p>
Quick Quiz	<ol style="list-style-type: none"> <li>What are the 5 senses?</li> <li>Which sense do we use when we eat something?</li> <li>Which sense does our ears use?</li> <li>Label a diagram with parts of the body.</li> <li>Why do we have eyes? Ears? What purpose do they have?</li> </ol>	<p><b>1. What material is usually hard and shiny?</b></p> <ol style="list-style-type: none"> <li>Wood</li> <li>Metal</li> <li>Paper</li> <li>Fabric</li> </ol> <p><b>2. Which of these materials is soft and can be easily bent?</b></p> <ol style="list-style-type: none"> <li>Rubber</li> <li>Glass</li> <li>Stone</li> <li>Paper</li> </ol>	<p>What is a herbivore? Can you name one? What is a carnivore? Can you name one? Which of these animals is a mammal? Which of these is a type of fish? What do we call animals that eat both plants and meat? Which of these animals is an amphibian?</p>	<ol style="list-style-type: none"> <li>What is the weather like in autumn?</li> <li>What season are we in?</li> <li>What is the weather usually like in winter</li> <li>What is the weather like in summer?</li> <li>Which season do we see plants start to grow in?</li> </ol>	<ol style="list-style-type: none"> <li>Name the parts of the plant. (root, stem, leaves, flower)</li> <li>Can you name this flower (rose, buttercup, daisy, and sunflower)?</li> <li>Which of these trees is evergreen?</li> <li>Name the parts of the tree (leaf, fruit, branch, trunk)</li> </ol>

		<p><b>3. What do we call a material that you can see through?</b>  a) Opaque  b) Soft  c) Transparent  d) Rough</p> <p><b>4. Which of the following materials is usually smooth?</b>  a) Stone  b) Metal  c) Paper  d) Rubber</p> <p><b>5. What property describes a material that feels bumpy?</b>  a) Shiny  b) Rough  c) Smooth  d) Soft</p> <p><b>6. Which material is often dull and can be used to make toys?</b>  a) Wood  b) Glass  c) Metal  d) Plastic</p> <p><b>7. What would you call a smooth, see-through material?</b>  a) Rough  b) Opaque  c) Shiny  d) Transparent</p> <p><b>8. Which material feels soft and is usually used for clothing?</b>  a) Plastic  b) Stone</p>	<p>Which of the following is a bird?  Can you name an animal that is a herbivore?  Which of these is a reptile?  What is a mammal? Can you name one?</p>	<p>6. Which season do we see more Minibeasts in?</p> <p>7. Which one of these is not a season?</p> <p>8. How many seasons are there?</p>	<p>5. What part of the plant is a bee attracted to?</p> <p>6. What do roots help a plant do?</p> <p>7. What does a stem do?</p> <p>8. What do petals do?</p>
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		<p>c) Fabric d) Metal</p> <p><b>9. What material is both hard and rough?</b></p> <p>a) Glass b) Fabric c) Stone d) Paper</p> <p><b>10. Which of these materials is usually shiny and used to make cutlery?</b></p> <p>a) Wood b) Paper c) Metal d) Rubber</p>			
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Year 2

Unit of work	Habitats	Animals and Humans	Materials	Plants
Prior learning	Children have learned parts of animals, but have not yet explored habitats. They will have talked about it briefly in their work on seasons and hibernating.	Year 1 identifying and naming a variety of common animals including fish, amphibians, reptiles, birds and mammals and identifying and naming a variety of common animals that are carnivores, herbivores and omnivores.	Year 1 distinguishing an object and the material from which it is made. They compared materials according to simple physical properties. They began to look at some everyday uses for common materials.	Year 1 identifying and naming a variety of common plants and observing changed in nature over the 4 seasons
Essential Knowledge	<ol style="list-style-type: none"> <li>1. Know that all objects are either living, dead or have never been alive. Living things are plants (including seeds) and animals. Dead things include dead animals and plants and parts of plants and animals that are no longer attached e.g. leaves and twigs, shells, fur, hair and feathers</li> <li>2. Know that an object made of wood is classed as dead. Objects made of rock, metal and plastic have never been alive</li> <li>3. Know that animals and plants live in a habitat to which they are suited, which means that animals have suitable features that help them move and find food and plants have suitable features that help them to grow well. The habitat provides the basic needs of the animals and plants – shelter, food and water.</li> <li>4. Know that within a habitat there are different micro-habitats e.g. in a woodland – in the leaf litter, on the bark of trees, on the leaves. These micro-habitats have different conditions e.g. light or dark, damp or dry. These conditions affect which plants and animals live there.</li> </ol> <ol style="list-style-type: none"> <li>1. Know that the plants and animals in a habitat depend on each other for food and shelter etc. The way that animals obtain their food from plants and other animals can be shown in a food chain.</li> </ol>	<ol style="list-style-type: none"> <li>1. I know about similarities and differences in relation to living things.</li> <li>2. I can make observations of animals and plants and explain why some things occur and talk about changes</li> <li>3. I know that animals, including humans, have offspring which grow into adults</li> <li>4. I can find out about and describe the basic needs of animals, including humans, for survival (water, food, air)</li> </ol> <ol style="list-style-type: none"> <li>2. I can describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</li> </ol>	<ol style="list-style-type: none"> <li>1. Know that all objects are made of one or more materials that are chosen specifically because they have suitable properties for the task. For example, a water bottle is made of plastic because it is transparent allowing you to see the drink inside and waterproof so that it holds the water.</li> <li>2. Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for certain uses.</li> <li>3. Know that when choosing what to make an object from, the properties needed are compared with the properties of the possible materials, identified through simple tests and classifying activities.</li> <li>4. Know that a material can be suitable for different purposes and an object can be made of different materials.</li> <li>5. Know that objects made of some materials can be changed in shape by bending, stretching, squashing and twisting. For example, clay can be shaped by squashing, stretching, rolling, pressing etc. This can be a property of the material or depend on how the material has been processed e.g. thickness</li> </ol>	<ol style="list-style-type: none"> <li>1. I know that plants may grow from either seeds or bulbs.</li> <li>2. I know that seeds germinate and grow into seedlings which then continue to grow into mature plants.</li> <li>3. I know that mature plants may have flowers which then develop into seeds, berries, fruits etc.</li> <li>4. I know that seeds and bulbs need to be planted outside at particular times of year and they will germinate and grow at different rates.</li> <li>5. I know that some plants are better suited to growing in full sun and some grow better in partial or full shade. Plants need different amounts of water and space to grow well and stay healthy.</li> </ol>

Scientific enquiry	<p>Habitat Assessment Focus</p> <p>Can children identify where plants and animals live?</p> <p>Can children make a record of where plants and animals live?</p> <p>Can children discuss why they might live in chosen habitat?</p> <p>How would you group these plants and animals based on the habitat you find them in?</p> <p>Record: Gather and record data to help in answering questions.</p> <p>WS: Do : Identifying and classifying</p>	<p>Living things Assessment focus</p> <p>How does the habitat of the Arctic compare with the habitat of the rainforest?</p> <p>What conditions do woodlice prefer to live in?</p> <p>WS Do: Classification</p>	<p>Waterproof materials Assessment Focus</p> <p>Can children discuss/use different ways to test how waterproof materials are?</p> <p>Can children compare materials on the basis of waterproofness?</p> <p>WS: Plan: Ask simple questions and recognising that they can be answered in different ways</p>	<p>Comparing Plant Growth Assessment Focus</p> <p>Can children observe closely, noticing differences and similarities?</p> <p>Can children measure and compare the height of plants?</p> <p>WS: Do: Observe closely, using simple equipment</p> <p>Lifecycle of a frog</p>
Vocabulary	<p>Living / dead                      Habitat</p> <p>Classify                              Adapt</p> <p>Micro-habitat                      Shelter</p> <p>Conditions</p>	<p>Fish: goldfish shark clownfish Reptile: snake crocodile tortoise Amphibian: frog, toad Birds: robin blackbird chicken ostrich Mammals: dog cat cow horse monkey elephant rabbit badger squirrel sheep human, baby, toddler, child, teenager, adult. Herbivore, carnivore, omnivore Arctic/Rainforest Offspring, reproduction, growth, exercise, breathing, hygiene, germs, disease</p>	<p>Material                      Purpose</p> <p>Metal                          Plastic</p> <p>Glass                          Wood</p> <p>Cardboard                      Brick</p> <p>Paper                          Rock</p> <p>Properties                      Bend / stretch</p> <p>Flexibility</p>	<p>Bulbs germinate tuber corms root, stem, petal, leaves vegetable, herbs, flowers, fruit seed and seedling annual seasonal</p>
Quick Quiz	<p>1. Why would an animal want to blend in with its surrounding?</p> <p>2. What is it called when an animal blends in with its surroundings?</p> <p>3. Each of these pictures shows something that is either alive, used to be alive or something that has never lived. Draw lines to join them to the correct box</p> <p>4. Each of these sentences describes something that is either alive or not alive. Write either alive or not alive next to each statement: • It does not need food. • It can have babies (reproduce). • It can grow and move.</p> <p>5. Match each animal to the most suitable habitat (pictures)</p> <p>6. Complete this simple food chain</p> <p>7. Match the minibeasts to their microhabitat</p>	<p>1. What is the lifecycle of a human?</p> <p>2. Where do woodlice prefer to live?</p> <p>3. Why is it important to exercise and eat healthily?</p> <p>4. What things does a human need to survive?</p> <p>5. Can you name sort things in the nature area into dead or alive?</p> <p>7. Who is Dr Ernest Madu?</p> <p>8. Can you complete the lifecycle of a human?</p> <p>9. Can you complete the lifecycle of a chicken?</p>	<p>1. What material would be suitable for a blanket?</p> <p>2. What 3 materials could you make a bottle with?</p> <p>3. Which of these objects are man-made?</p> <p>4. Which of these objects are natural?</p> <p>5. Which of these items can be stretched?</p> <p>6. Why is leather a good material for making shoes?</p> <p>7. Name the material that you could squash?</p> <p>8. Name the material that would not bend?</p> <p>9. Why would wood be a good material for a spoon?</p>	<p>1. What does a plant need to grow?</p> <p>2. If I plant a seed and it doesn't grow, why might this be?</p> <p>3. Why do plants produce seeds?</p> <p>4. Jack put some soil in a small pot. He planted the seeds and put the pot somewhere warm. The seeds did not grow. Why not?</p> <p>5. Why are most seeds hard on the outside?</p> <p>6. Which of the following are parts of the life cycle of a bean?</p>



				<p>7. What differences did you notice about the plants outside in summer and winter?</p> <p>8. What happened to the trees in autumn?</p>
Significant individual		Dr Ernest Madu	Julie Brusaw	David Douglas

Year 3					
Unit of work	Animals and humans	Forces	Rocks and Soils	Plants	Light
Prior learning	Year 1 - identifying animals in all classifications and identified carnivores, herbivores and omnivores. Year 2 - noticing that animals have offspring which grow into adults find out about basic needs for survival.	Basic push and pull language and experiments during properties of materials work throughout KS1.	New learning	Year 1 identifying/ naming common plants Year 2 observing and describing how seeds and bulbs grow into mature plants	New learning
Essential Knowledge	<ol style="list-style-type: none"> <li>1. Know that animals, unlike plants which can make their own food, need to eat in order to get the nutrients they need.</li> <li>2. Identify that animal's, 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>3. Know that food contains a range of different nutrients – carbohydrates (including sugars), protein, vitamins, minerals, fats, sugars, water – and fibre that are needed by the body to stay healthy.</li> <li>4. Know that a piece of food will often provide a range of nutrients.</li> <li>5. Know that humans, and some other animals, have skeletons and muscles</li> </ol>	<ol style="list-style-type: none"> <li>1. Know that a force is a push or a pull. When an object moves on a surface, the texture of the surface and the object affect how it moves. It may help the object to move better or it may hinder its movement e.g. ice skater compared to walking on ice in normal shoes.</li> <li>2. Know that a magnet attracts magnetic material. Iron and nickel and other materials containing these, e.g. stainless steel, are magnetic.</li> <li>3. Know that the strongest parts of a magnet are the poles.</li> <li>4. Know that magnets have two poles – a north pole and a south pole. If two like poles, e.g. two north poles, are brought together they</li> </ol>	<ol style="list-style-type: none"> <li>1. I can name and classify common rocks</li> <li>2. I can compare and group together different kinds of rocks on the basis of their simple physical properties</li> <li>3. I know that soils are made from rocks and organic matter</li> <li>4. I know in simple terms how rocks are formed</li> <li>5. Describe in simple terms how fossils are formed when things that have lived are trapped within rock</li> <li>6. Compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, transparency</li> </ol>	<ol style="list-style-type: none"> <li>1. I know that many plants, but not all, have roots, stems/trunks, leaves and flowers/blossom. I can identify and describe the different parts of plant.</li> <li>2. I know that the roots absorb water and nutrients from the soil and anchor the plant in place.</li> <li>3. I know that the stem transports water and nutrients/minerals around the plant and holds the leaves and flowers up in the air to enhance photosynthesis, pollination and seed dispersal.</li> <li>4. I know that the leaves use sunlight and water to produce the plant's food. Some plants produce flowers which enable the plant to reproduce.</li> </ol>	<ol style="list-style-type: none"> <li>1. I know that we see objects because our eyes can sense light. Dark is the absence of light. We cannot see anything in complete darkness.</li> <li>2. I know that some objects, for example, the sun, light bulbs and candles are sources of light.</li> <li>3. I know that objects are easier to see if there is more light. Some surfaces reflect light.</li> <li>4. I know that objects are easier to see when there is less light if they are reflective.</li> <li>5. I know that shadows are formed on a surface when an opaque or translucent object is between a light source and the surface and blocks some of the light. The size of the shadow</li> </ol>

	which help them move and provide protection and support.	will push away from each other – repel. If two unlike poles, e.g. a north and south, are brought together they will pull together – attract.  5. Know that for some forces to act, there must be contact e.g. a hand opening a door, the wind pushing the trees. Some forces can act at a distance e.g. magnetism. The magnet does not need to touch the object that it attracts.		5. I know that pollen, which is produced by the male part of the flower, is transferred to the female part of other flowers (pollination) and this forms seeds, sometimes contained in berries or fruits which are then dispersed in different ways. Different plants require different conditions for germination and growth.	depends on the position of the source, object and surface.
Scientific enquiry	Investigating the Human Skeleton Assessment Focus Can children ask questions about the diversity of human skeletons? Can children turn questions into a form that can be investigated? Can children use their findings to make further predictions?  WS: Plan: Ask relevant questions and use different types of scientific enquiries to answer them	Strongest Magnet Assessment Focus  Can children decide on an approach to compare magnet strength? Can children recognise and control variables where necessary?  WS: Plan: Set up simple practical enquiries, comparative and fair tests	Reporting on Rocks Assessment Focus Can children group rocks based on properties? Can children talk about / draw a diagram / write about their findings? Can children draw conclusions about the least / most wearing rock?  WS: review: reporting finding from enquiries	What do plants need to grow? Assessment Focus Can children use simple apparatus to measure plants' growth and health? Can children record their measurements?  WS: Do: Making systematic and careful observations and measurements using standard units  Function of a Plant Stem Assessment Focus Can children make careful observations? Can children use observations to suggest how water is transported?  WS: Review: Use straightforward scientific evidence to answer questions and draw simple conclusions	How does a shadow change during the day? Assessment Focus Can children make a series of careful observations? Can children record their observations in a systematic way that relates to the question?  WS: Do/Record: Gather and record data to answer questions.
Vocabulary	Skeleton Muscles Organs Carbohydrates Sugars Dairy Fruit and vegetable Fats Protein Exercise	force magnetic and non-magnetic contact and non-contact attract and repel pole compass direction magnetic field	permeable/ impermeable ore rock mineral crystal igneous magma sediment/sedimentary humus	Photosynthesis, wind, pollen, fertilisers, root, species, stem, flower, leaves growth nutrients survival germination pollination seed dispersal seed formation	dull shiny reflect light source kaleidoscope beam recap: opaque, translucent, shadow, transparent, mirror
Quick Quiz	1. Name one reason why animals and humans need food	1. What two poles do bar magnets have?	1. Name the 3 types of rock?	1. Look at the diagram, label the parts of the plant.	1. Name which one of these things that are a light source.

	<p>2. There are five main food groups. Name as many of them as you can.</p> <p>3. Which food group does meat belong to?</p> <p>4. Which food group does bread belong to?</p> <p>5. What are the two types of fat and which is unhealthy if you eat too much?</p> <p>6. About how much water does a person need each day?</p> <p>7. Give the scientific name for the a) thigh bone b) collarbone c) upper arm bone</p> <p>8. Name two functions of the skeleton</p> <p>9. Your muscles and do voluntary and involuntary movements. Are the following voluntary or involuntary? Heart pumping? Kicking a ball? The muscles in your digestive system?</p> <p>10. There are different types of joints in the body. What type is the elbow?</p>	<p>2. What does it mean if two things attract?</p> <p>3. What does it mean if two things repel?</p> <p>4. Write attract or repel on the bar magnets below</p> <p>5. Name three metals that are magnetic</p> <p>6. A compass uses magnetism, which way does a compass always point?</p> <p>7. If we do an investigation on different magnets to see how far away they were before they picked up a paper clip, what would we find out about the magnets?</p> <p>8. Circle the correct words: (e.g.) A force is a sound / push or a smell / pull acting on an object / air. Forces can make objects start / grow or slow / stop or go quicker / quieter or slower / quieter</p>	<p>2. Select one type of rock and give a description of how it is made.</p> <p>3. Brick is not a natural rock, what type of rock is it?</p> <p>4. Sandstone, marble and granite are 3 examples of natural rocks. What type does each rock match up to?</p> <p>5. What are pulhamite and coade stone examples of?</p> <p>6. Look at the images in the table below, what properties of some rocks do the pictures show?</p> <p>7. Mary Anning was an expert fossil hunter, what is the correct word for her job studying fossils?</p> <p>8. What is the only type of rock where you can find fossils?</p> <p>9. What are the 3 different types of fossils?</p> <p>10. Soil is made of 4 different things. Can you name at least 2 of these?</p> <p>11. Can you describe the process of how soil is formed?</p>	<p>2. What job do the petals do?</p> <p>3. What is the function of the stem?</p> <p>4. Do you think a plant could survive if its roots were damaged? Can you explain why?</p> <p>5. Where are the food and nutrients made in this plant?</p> <p>6. What is process of making food in a green plant called?</p> <p>7. Mrs Gren helps us remember what all living things do, name at least three of these things?</p> <p>8. Name two ways that seeds can be dispersed.</p> <p>9. What is germination?</p> <p>10. Name two things that a plant needs to grow.</p>	<p>2. Is the moon a light source?</p> <p>3. What types of line does light travel in?</p> <p>4. Light travels from a light source to what?</p> <p>5. What happens to the pupil in your eye if a room gets darker?</p> <p>6. What happens if you shine a torch on a shiny surface?</p> <p>7. Why do you think road signs are made out of reflective material?</p> <p>8. Name two dangers of light from the sun.</p> <p>9. Why should you never look directly at the sun or a bright light?</p> <p>10. Explain how a shadow is made.</p>
Significant individual	Wilhelm Rontgen	Michael Faraday	Mary Anning	Prof Monique Simmonds George Washington Carver	Justin von Liebig

Year 4

Unit of work	Animals and humans	States of Matter	Electricity	Sound	Habitats
Prior learning	Year 1 - basic body parts Year 3 - the human skeleton Year 2 – food chains	Year 1 and Year 2 - properties of materials	New learning – although children may have explored toys that use electricity in Year 1	New learning – although children may have some knowledge from music	Year 2 basic differences between animals and have named and studied a variety of habitats. Year 1 learning about the impact of the weather and seasons on wildlife
Essential Knowledge	<ol style="list-style-type: none"> <li>1. Know that food enters the body through the mouth. Digestion starts when the teeth start to break the food down. Saliva is added and the tongue rolls the food into a ball.</li> <li>2. Know that the food is swallowed and passes down the oesophagus to the stomach. Here the food is broken down further by being churned around and other chemicals are added. The food passes into the small intestine. Here nutrients are removed from the food and leave the digestive system to be used elsewhere in the body.</li> <li>3. Know that the rest of the food then passes into the large intestine. Here the water is removed for use elsewhere in the body.</li> <li>4. Know that what is left is then stored in the rectum until it leaves the body through the anus when you go to the toilet.</li> <li>5. Know that humans have four types of teeth: incisors for cutting; canines for tearing; and molars and premolars for grinding (chewing).</li> </ol>	<ol style="list-style-type: none"> <li>1. Compare and group materials together, according to whether they are solids, liquids or gases.</li> <li>2. Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)</li> <li>3. Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</li> <li>4. Know that evaporation is the same state change as boiling (liquid to gas), but it happens slowly at lower temperatures and only at the surface of the liquid. Evaporation happens more quickly if the temperature is higher, the liquid is spread out or it is windy.</li> <li>5. Know that condensation is the change back from a gas to a liquid caused by cooling.</li> </ol>	<ol style="list-style-type: none"> <li>1. I can name common appliances that run on electricity</li> <li>2. I know precautions for working safely with electricity</li> <li>3. I know how to construct a simple series electrical circuit identifying and naming the basic parts of a simple electrical circuit, including cells, wires, bulbs, switches and buzzers</li> <li>4. I can identify whether a lamp will light in a simple series circuit based on whether the lamp is part of a complete loop with a battery</li> <li>5. I can recognise that a switch opens and closes a circuit and associate this with whether a lamp lights in a simple series circuit</li> <li>6. I can recognise some common conductors and insulators, and associate metals with being good conductor</li> </ol>	<ol style="list-style-type: none"> <li>1. I know that a sound produces vibrations which travel through a medium from the source to our ears. Different mediums such as solids, liquids and gases can carry sound, but sound cannot travel through a vacuum (an area empty of matter).</li> <li>2. I know that the vibrations cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound.</li> <li>3. I know the loudness (volume) of the sound depends on the strength (size) of vibrations which decreases as they travel through the medium. Therefore, sounds decrease in volume as you move away from the source.</li> <li>4. I know that a sound insulator is a material which blocks sound effectively.</li> <li>5. I know that pitch is the highness or lowness of a sound and is affected by features of objects producing the sounds. For example, smaller objects usually produce higher pitched sounds.</li> </ol>	<ol style="list-style-type: none"> <li>1. I know that living things can be grouped (classified) in different ways according to their features.</li> <li>2. I know that classification keys can be used to identify and name living things.</li> <li>3. I know that these environments may change naturally e.g. through flooding, fire, earthquakes etc. Humans also cause the environment to change.</li> <li>4. I know that this can be in a good way (i.e. positive human impact, such as setting up nature reserves) or in a bad way (i.e. negative human impact, such as littering).</li> <li>5. I know that these environments also change with the seasons; different living things can be found in a habitat at different times of the year.</li> </ol>

	6. Owl pellet investigation. Know that living things can be classified as producers, predators and prey according to their place in the food chain.				
Scientific enquiry	<p>Teeth (eggs) in liquid Assessment Focus</p> <p>Can children use results to draw conclusions? Can children suggest explanations for their findings?</p> <p>WS: Review: Use results to draw simple conclusions, suggest improvements and raise further questions.</p> <p>Create a digestive system. Dissect owl pellets.</p>	<p>Measuring Temperatures Assessment Focus</p> <p>Can children use a thermometer to measure temperature accurately? Pattern Seeking – is there a pattern in how long it takes different iced lollies to melt?</p> <p>WS: Do: Take accurate measurements using standard units, using a range of equipment including thermometers and data loggers</p>	<p>Does it conduct? Assessment Focus</p> <p>Can children explain results and their conclusions? Can children recognise common conductors and insulators, and associate metals with being good conductors?</p> <p>WS: Review: Report on findings from enquires, including oral and written explanations, displays or presentations of results and conclusions.</p>	<p>Investigating Pitch Assessment Focus</p> <p>Can children suggest how to alter the pitch? Can children carry out simple tests of these ideas?</p> <p>WS: Plan: Ask relevant questions and use different types of scientific enquiries to answer them</p> <p>String Telephones Assessment Focus</p> <p>Can the children explain how to make the best possible string telephone and suggest reasons for the improvements?</p> <p>WS: Review: Identify differences, similarities or changes related to simple scientific ideas and processes</p>	<p>Local environment survey Assessment Focus</p> <p>Can children group living things in different ways?</p> <p>WS: Do: Gather, record and classify data</p>
Vocabulary	Molar canine premolar incisor enamel glands enzymes digestion large and small intestine stomach oesophagus recap: digestion, decay, nutrients, herbivore, omnivore, carnivore	Solid liquid gas matter Evaporation condensing melting point/freezing point recap: melting, freezing, temperature, thermometer	Rechargeable circuit components terminal conductor insulator circuit components including: cell, battery, wire, bulb, ammeter, motor, buzzer, switch	vibration volume pitch variable wave	classify organism invertebrate vertebrate reptile amphibian recap: insect, habitat, key, mammal, fish, bird
Quick Quiz	<p>Look at the diagram of the human body. Select at least 6 parts of the digestive system to label.</p> <p>2. What is the job the oesophagus?</p> <p>3. What is the job of the large intestine?</p> <p>4. In the stomach, along with other parts of the body, you will</p>	<p>1. Sort these items into solids, liquids or gases.</p> <p>2. Draw what particles in a solid look like and write a sentence to explain.</p> <p>3. Draw what particles in a gas look like and write a sentence to explain.</p>	<p>1. What does it mean to 'conduct' electricity?</p> <p>2. What is the name for a material that does not conduct electricity?</p> <p>3. What is the name for a material that does conduct electricity? Can you give an example?</p> <p>4. Name a way that we see electricity occurring naturally.</p>	<p>1. How is sound made by a guitar string?</p> <p>2. Which travels faster? Sound or light?</p> <p>3. Why can't sound travel in space?</p> <p>4. What is the difference between volume and pitch?</p> <p>5. Name two ways a string can be made to make a higher sound?</p>	<p>1. What are the life processes? Use MRS GREN to help you.</p> <p>2. What is a vertebrate?</p> <p>3. Give an example of each type of vertebrate</p> <p>4. What is the difference between a vertebrate and an invertebrate?</p> <p>5. Name a characteristic of an amphibian</p>

	<p>find glands and enzymes. What do glands do? What do enzymes do?</p> <p>5. What do the arrows in the food chain represent?</p> <p>6. What is the first item in a food chain called?</p> <p>7. What do the words a. herbivore b. omnivore c. carnivore mean?</p> <p>8. Look at the food chain, who is the tertiary consumer?</p> <p>9. How many incisor do humans have and what is their function?</p> <p>10. What is the function of the different teeth types?</p> <p>11. What is the name of the white outside part of the tooth?</p>	<p>4. Draw what particles in a liquid look like and write a sentence to explain.</p> <p>5. Joseph Priestley invented fizzy drinks by using a gas he called 'heavy air'. What is the name for this gas now?</p> <p>6. What is the scientific name for rain/snow/sleet/water that falls from clouds?</p>	<p>5. Tick whether or not the bulb will light up in each of these images.</p> <p>6. Name two household items that are powered by mains electricity</p> <p>7. Name two household items that are powered by battery electricity</p> <p>8. Name two ways of making electricity from a renewable source</p> <p>9. Name these pieces of equipment that you would use when constructing a circuit</p> <p>10. Can you explain how a switch works?</p>	<p>6. I want to investigate if how I pull a guitar string changes the volume it makes. What question should I investigate?</p> <p>7. What is one variable I should change in this investigation?</p> <p>8. Name two other variables that must stay the same</p>	<p>6. Name a characteristic of a mammal</p> <p>7. Look at this classification key. Use this key to identify the 3 animals below.</p> <p>8. If you were writing your own key, what question would you use to separate birds and cats?</p> <p>9. What question would you use to separate a bat and a bird?</p> <p>10. When developers build a new housing estate where some fields used to be, what are the problems or dangers caused to wildlife?</p> <p>11. Why do you think we are now seeing more urban foxes roaming in places where there is housing?</p>
Significant individual	William Beaumont	Bernard Palissy	Thomas Edison	Evelyn Glennie Christopher Doppler	Jane Goodall

Year 5

Unit of work	Living things and habitats	Forces	Earth and Space	Materials	Animals and Humans
Prior learning	Year 3 - basic functions of a plant Year 2 and Year 4 - and understanding of food chains	Year 3 – forces and magnets	New learning Children may recall learning in Year 3 that the sun appears to rise, but really the earth moves round the sun	Year 3 - forces and magnets Year 4 – electricity	In Key Stage 1 and SRE children will have noticed that animals, including humans, have offspring which grow into adults
Essential Knowledge	<ol style="list-style-type: none"> <li>1. Know that as part of their life cycle, plants and animals reproduce. Most animals reproduce sexually. This involves two parents where the sperm from the male fertilises the female egg.</li> <li>2. Know that animals, including humans, have offspring which grow into adults. In humans and some animals, these offspring will be born live, such as babies or kittens, and then grow into adults.</li> <li>3. Know that in other animals, such as chickens or snakes, there may be eggs laid that hatch to young which then grow to adults. Some young undergo a further change before becoming adults e.g. caterpillars to butterflies. This is called a metamorphosis.</li> <li>4. Know that plants reproduce both sexually and asexually. Bulbs, tubers, runners and plantlets are examples of asexual plant reproduction which involves only one parent. Gardeners may force plants to reproduce asexually by taking cuttings.</li> <li>5. Know that sexual reproduction occurs through</li> </ol>	<ol style="list-style-type: none"> <li>1. Know that a force causes an object to start moving, stop moving, speed up, slow down or change direction. Gravity is a force that acts at a distance. Everything is pulled to the Earth by gravity. This causes unsupported objects to fall.</li> <li>2. Know that air resistance, water resistance and friction are contact forces that act between moving surfaces. The object may be moving through the air or water, or the air and water may be moving over a stationary object.</li> <li>3. Know that a mechanism is a device that allows a small force to be increased to a larger force. The pay back is that it requires a greater movement.</li> <li>4. Know that the small force moves a long distance and the resulting large force moves a small distance, e.g. a crowbar or bottle top remover.</li> <li>5. Know that pulleys, levers and gears are all mechanisms, also known as simple machines.</li> </ol>	<ol style="list-style-type: none"> <li>1. I know that the sun is a star and is at the centre of our solar system</li> <li>2. I know about the movement of the Earth, and other planets relative to the Sun in the solar system - Earth takes 365¼ days to complete its orbit around the Sun. I know and can describe the movement of the Moon relative to the Earth – that the moon orbits the earth every 28 days</li> <li>3. I know about and can describe the Sun, Earth and Moon as approximately spherical bodies</li> <li>4. I can use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. The Earth rotates (spins) on its axis every 24 hours. As Earth rotates half faces the Sun (day) and half is facing away from the Sun (night). As the Earth rotates, the Sun appears to move across the sky.</li> </ol>	<ol style="list-style-type: none"> <li>1. I know that materials have different uses depending on their properties and state (liquid, solid, gas).</li> <li>2. I know that properties include hardness, transparency, electrical and thermal conductivity and attraction to magnets.</li> <li>3. I know that some materials will dissolve in a liquid and form a solution while others are insoluble and form sediment.</li> <li>4. I know that mixtures can be separated by filtering, sieving and evaporation.</li> <li>5. I know that some changes to materials such as dissolving, mixing and changes of state are reversible, but some changes such as burning wood, rusting and mixing vinegar with bicarbonate of soda result in the formation of new materials and these are not reversible.</li> </ol>	<ol style="list-style-type: none"> <li>1. I know that the main stages of the human life cycle are foetus, infancy, childhood, adolescence, early, middle and late adulthood</li> <li>2. I know that puberty is the change that happens in late childhood and adolescence where the body starts to change because of hormones.</li> <li>3. I know that some changes include growth in height, more sweat, hair growth on arms and legs, under the armpits and on genitals, and growth in parts of the body such as male genitals and breasts</li> <li>4. I know that females begin to menstruate</li> </ol> <p>SRE – Christopher Winter Project Material</p>

	pollination, usually involving wind or insects.				
Scientific enquiry	<p>Life Cycle Research Assessment Focus</p> <p>Can children present their research clearly? <input type="checkbox"/></p> <p>Can children present using scientific language?</p> <p>WS: Review: Report and present findings from enquiries, in oral and written forms such as displays and other presentations, using appropriate scientific language.</p>	<p>Forces Assessment Focus</p> <p>How does the surface area of a container affect the time it takes to sink?</p> <p>WS: Plan – plan a fair test</p> <p>Do: Take repeated measurements</p>	<p>Earth and Space Assessment Focus</p> <p>Is there a pattern between the size of a planet and the amount of time it takes to travel around the sun</p> <p>WS – Review – Research and present findings</p> <p>Lifecycle of a ladybird</p>	<p>Dissolving Assessment Focus</p> <p>Can children plan a fair test to investigate factors affecting the speed at which solids dissolve in water?</p> <p>WS: Plan: Plan scientific enquiry to answer question and recognise and control variables where necessary</p>	<p>Growth Survey Assessment Focus</p> <p>Can children record and present results clearly?</p> <p>WS: Do: Take measurements using a range of equipment</p>
Vocabulary	pollination fertilisation including internal and external sexual reproduction, asexual reproduction metamorphosis larva dispersal gestation Recap: sperm, egg, bulb	Gravity newton force Isaac Newton and Galileo friction air resistance water resistance levers and springs gear and pulley drag non-contact	Solar System star planet astronomy centric, geocentric and heliocentric orbit Recap: names of planets, time zone	Thermal conductor Electrical conductor solute and soluble insoluble solvent solution reversible/physical change irreversible/chemical change Recap: properties of material vocab, burning, dissolve	pregnant gestation period puberty adolescence menstruation arthritis life expectancy
Quick Quiz	<ol style="list-style-type: none"> <li>1. Name the two methods of pollination</li> <li>2. Explain how insect pollination works.</li> <li>3. Name 3 methods of seed dispersal</li> <li>4. Explain why seed dispersal is important for the survival of a plant species</li> <li>5. Why do flowers have bright petals?</li> <li>6. Select one animal and describe its life cycle.</li> <li>7. What is metamorphosis? Name as many animals as you can which experience this.</li> <li>8. What are the two types of metamorphosis?</li> <li>9. Name one similarity between the life cycle of an animal and the life cycle of a plant.</li> <li>10. What misconception do many people have about the life cycle of a butterfly?</li> </ol>	<ol style="list-style-type: none"> <li>1. In what unit do we measure force?</li> <li>2. What is the name of the force that pulls things towards the centre of the earth?</li> <li>3. Who discovered this force?</li> <li>4. Explain why astronauts move in a bouncy movement on the moon.</li> <li>5. Why do your hands feel hot when you rub them together?</li> <li>6. If you drop a feather and hammer on earth at the same time. Which will fall first? Explain your answer.</li> <li>7. If you performed this observation on the moon, which would fall first? Explain your answer.</li> <li>8. Label the force that is pushing against the swimmer in the water.</li> <li>9. How does the shape of a shark help it to move quickly throughout the water?</li> </ol>	<ol style="list-style-type: none"> <li>1. Can you name all of the planets?</li> <li>2. Roughly, what shape are the earth, sun and moon?</li> <li>3. How long does it take for the earth to spin once on its axis?</li> <li>4. How long does it take for the moon to orbit the earth once?</li> <li>5. How long does it take for the earth to go around the sun once?</li> <li>6. Why does the sun appear to move across the sky during the day? Does it really move?</li> <li>7. Describe where your country is in relation to the sun at night time.</li> <li>8. What is the difference between geocentric and heliocentric?</li> <li>9. What causes seasons in our part of the earth?</li> <li>10. Why do we have leap years?</li> </ol>	<ol style="list-style-type: none"> <li>1. Which of the following are made from natural materials?</li> <li>2. What does permeable mean?</li> <li>3. What does flexible mean?</li> <li>4. What does absorbent mean?</li> <li>5. What does it mean if a change is reversible?</li> <li>6. What does it mean if a change is irreversible?</li> <li>7. What is the difference between a chemical and physical change?</li> <li>8. What is the correct scientific words for - Something that does not dissolve in water</li> <li>9. What is the correct scientific words for - Water or another liquid that has something already dissolved into it</li> </ol>	<ol style="list-style-type: none"> <li>1. Label each stage of the human timeline.</li> <li>2. What is the stage that comes before the first picture?</li> <li>3. Why does your body need to make changes during puberty?</li> <li>4. Two parts of the brain make more hormones to make puberty happen, name one of these parts?</li> <li>5. Name two changes that happen to a human during old age.</li> </ol>



		10. Label these diagrams to say whether the forces are balanced or imbalanced.		10. Name two things that would make something dissolve quicker in water.	
Significant individual	Lucy Evelyn Cheesman	Sir Isaac Newton	Katherine Johnson Maggie Aderin-Pocock Stephen Hawking	Spencer Silver	Sarah Fowler

Year 6

Unit of work	Electricity	Living things and habitats	Animals and Humans – the circulatory system	Evolution	Light
Prior learning	Year 4 – simple series circuits	Year 4 – the classification system	Years 3 and 4 - main body parts and internal organs (skeletal, muscular and digestive system)	Year 3 – fossils	Year 3 light sources, shadows and reflection
Essential Knowledge	<ol style="list-style-type: none"> <li>1. Know that adding more cells to a complete circuit will make a bulb brighter, a motor spin faster or a buzzer make a louder sound.</li> <li>2. Know that if you use a battery with a higher voltage, the same thing happens.</li> <li>3. Know that adding more bulbs to a circuit will make each bulb less bright. Using more motors or buzzers, each motor will spin more slowly and each buzzer will be quieter.</li> <li>4. Know that turning a switch off (open) breaks a circuit so the circuit is not complete and electricity cannot flow.</li> <li>5. Know that you can use recognised circuit symbols to draw simple circuit diagrams.</li> </ol>	<ol style="list-style-type: none"> <li>1. Know that living things can be formally grouped according to characteristics.</li> <li>2. Know that plants and animals are two main groups but there are other living things that do not fit into these groups e.g. micro-organisms such as bacteria and yeast, and toadstools and mushrooms.</li> <li>3. Know that plants can make their own food whereas animals cannot. Plants can be divided broadly into two main groups: flowering plants; and non-flowering plants.</li> <li>4. Know that animals can be divided into two main groups: those that have backbones (vertebrates); and those that do not (invertebrates).</li> <li>5. Know that vertebrates can be divided into five small groups: fish; amphibians; reptiles; birds; and mammals.</li> <li>6. Know that invertebrates can be divided into a number of groups, including insects, spiders, snails and worms.</li> </ol>	<p>Double Loop/ Dual Circulatory System</p> <ol style="list-style-type: none"> <li>1. The heart pumps blood in the blood vessels around to the lungs.</li> <li>2. Oxygen goes into the blood and carbon dioxide is removed. The blood goes back to the heart and is then pumped around the body.</li> <li>3. Nutrients, water and oxygen are transported in the blood to the muscles and other parts of the body where they are needed. As they are used, they produce carbon dioxide and other waste products.</li> <li>4. Carbon dioxide is carried by the blood back to the heart and then the cycle starts again as it is transported back to the lungs to be removed from the body. This is the human circulatory system.</li> <li>5. Diet, exercise, drugs and lifestyle have an impact on the way our bodies function. They can affect how well our heart and lungs work, how likely we are to suffer from conditions such as diabetes, how clearly we think, and generally how fit and well we feel.</li> <li>6. Some conditions are caused by deficiencies in</li> </ol>	<ol style="list-style-type: none"> <li>1. I know that evolution is a process of change that takes place over many generations, during which species of animals, plants, or insects slowly change some of their physical characteristics. This is because offspring are not identical to their parents.</li> <li>2. I know that evolution occurs when there is competition to survive. This is called natural selection.</li> <li>3. I know that difference within a species (for example between parents and offspring) can be caused by inheritance and mutations.</li> <li>4. I know that evidence of evolution comes from fossils - when these are compared to living creatures from today, palaeontologists can compare similarities and differences. Other evidence comes from living things - comparisons of some species may reveal common ancestors.</li> <li>5. I know that adaptation is when animals and plants have evolved so that they have adapted to survive in their environments. For example, polar bears have a thick layer of blubber under their fur to survive the cold, harsh environment of</li> </ol>	<ol style="list-style-type: none"> <li>1. I know that light appears to travel in straight lines, and we see objects when light from them goes into our eyes.</li> <li>2. I know that the light may come directly from light sources, but for other objects some light must be reflected from the object into our eyes for the object to be seen.</li> <li>3. I know and can 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>4. I know that objects that block light (are not fully transparent) will cause shadows. Because light travels in straight lines the shape of the shadow will be the same as the outline shape of the object.</li> </ol>

			our diet e.g. lack of vitamins.	the Arctic while giraffes have long necks to reach the leaves on trees.	
Scientific enquiry	<p>Investigating Shadows Assessment Focus</p> <p>Can children make accurate measurements? Can children choose the appropriate type of graph to present their results?</p> <p>WS: Do: Take accurate measurements and record data on a graph</p>	<p>Invertebrate Research Assessment Focus</p> <p>Can children report and present information about an invertebrate classification group</p> <p>WS: Review: Report and present findings from enquiries using appropriate scientific language</p> <p>CLEAPS yeast investigation for micro-organisms</p> <p>Outdoor Keys Assessment Focus□</p> <p>Can children create questions which separate animal groups? Can children use a classification key? Can children record their research clearly, using scientific language?</p> <p>WS: Do: Do: Record the results of a survey using a classification key</p>	<p>Heart rate exercise Assessment Focus</p> <p>Can children plan a scientific enquiry to answer their question? Can children explain their findings and consider the degree of trust in their results? Can children make predictions based on their results?</p> <p>WS: Do: Use test result to make predictions to set up further comparative and fair tests</p>	<p>Fossil habitats Assessment Focus</p> <p>Can children use evidence to develop ideas? Can children discuss whether evidence supports ideas?</p> <p>WS: Review: Identifying scientific evidence that has been used to support or refute ideas or arguments.</p>	<p>Investigating Shadows Assessment Focus</p> <p>Can children make accurate measurements? Can children choose the appropriate type of graph to present their results?</p> <p>WS: Do: Take accurate measurements and record data on a graph</p>
Vocabulary	Cell, battery, switch, bulb, motor wire, complete, buzzer, series, parallel, symbol, fuse wire, conductor, circuit, insulator, plug, dim, mains, variety, average, lightening, relevant, necessary, equipment, symbol, system, interfere, explanation.	fungi microbes vertebrates invertebrates fauna flora recap words: classify, mammal, insect, bird, amphibian, reptile, fish	white and red blood cells plasma platelet circulatory system oxygenated /deoxygenated veins and arteries respiratory recap words: nutrients, health, systemic and pulmonary	Evolution, inheritance adaptation offspring genes/genetic and environmental variation characteristics recap words: habitat, reproduction	light ray iris pupil cornea lens incident and reflected rays recap words: reflect, reflection, transparent, translucent, opaque, shadow

Quick Quiz	<p>1. What components do you need to make a simple circuit?</p> <p>2. Can you draw a diagram of a simple circuit using the correct symbols?</p> <p>3. Using the equipment on your table, make the bulb light up. Explain to your partner why this works.</p> <p>4. How does variation in voltage impact a circuit?</p> <p>5. Look at the following images, explain why the buzzer/bulb/motor is not working.</p> <p>6. Explain, using scientific vocabulary, how a switch works. Construct, draw and label a simple series circuit.</p>	<p>1. What is the difference between a vertebrate and an invertebrate?</p> <p>2. What is a distinguishing feature of a mammal?</p> <p>3. What is the meaning of flora and fauna?</p> <p>4. What is a microbe?</p> <p>5. What is the difference between a reptile and an amphibian?</p> <p>6. What does it mean to 'classify'?</p> <p>7. Use the classification key to find the correct category of the animals in the images.</p>	<p>1. What parts of the body make up the circulatory system?</p> <p>2. What is the function of the red blood cells?</p> <p>3. What is the function of the white blood cells?</p> <p>4. What is the function of plasma?</p> <p>5. What is the function of a platelet?</p> <p>6. How many chambers does the heart have and what are their names?</p> <p>7. Do veins carry only deoxygenated blood? Explain how you know.</p> <p>8. How are nutrients transported around the body?</p> <p>9. Describe in 2 ways how exercise can have a positive impact on your body's function.</p> <p>10. Describe how diet can have a: a) positive impact b) negative impact on your body.</p> <p>11. What are the names of the two different systems that make up the circulatory system?</p>	<p>1. What are the 2 types of variation called?</p> <p>2. What is the difference between genetic and environmental variation?</p> <p>3. Can you name one animal that lives in a hot climate and explain how it is adapted to its environment?</p> <p>4. Can you explain how a polar bear is adapted to its habitat?</p> <p>5. What is the current stage of human evolution named?</p> <p>6. Who developed the theory of evolution?</p> <p>7. Where does a child inherit characteristics? Can you explain this process?</p> <p>5. What does 'survival of the fittest' mean and how does this impact evolution?</p> <p>9. Is evolution/adaptation a choice? Explain.</p> <p>10. How can a fossil provide evidence towards what has happened in the past?</p>	<p>1. Explain in your own words how light travels.</p> <p>2. Can you explain how a shadow is formed?</p> <p>3. Are all shadows the same size? Why?</p> <p>4. What is meaning of the words reflection?</p> <p>5. What are the parts of the eye called?</p> <p>6. What is an incident ray?</p> <p>7. What is a reflected ray?</p>
Significant individual	Benjamin Franklin	Chris Nelson	Christian Barnard	Charles Darwin	Abu Ali Al-Hasan
KS3	<p>Electricity and electromagnetism</p> <p>Current electricity</p> <p>Electric current, measured in amperes, in circuits, series and parallel circuits, currents add where branches meet and current as flow of charge</p> <p>Potential difference, measured in volts, battery and bulb ratings; resistance, measured in ohms, as the</p>	<p>The skeletal and muscular systems</p> <p>The structure and functions of the human skeleton, to include support, protection, movement and making blood cells</p> <p>Biomechanics – the interaction between skeleton and muscles, including the measurement of force exerted by different muscles</p>	<p>Nutrition and digestion</p> <p>Content of a healthy human diet: carbohydrates, lipids (fats and oils), proteins, vitamins, minerals, dietary fibre and water, and why each is needed</p> <p>Calculations of energy requirements in a healthy daily diet</p> <p>The consequences of imbalances in the diet, including obesity, starvation and deficiency diseases</p>	<p>Inheritance, chromosomes, DNA and genes</p> <p>Heredity as the process by which genetic information is transmitted from one generation to the next</p> <p>A simple model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model</p>	<p>Light waves</p> <p>The similarities and differences between light waves and waves in matter</p> <p>Light waves travelling through a vacuum; speed of light</p> <p>The transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface</p> <p>Science – key stage 3 12</p>

	<p>ratio of potential difference (p.d.) to current</p> <p>Differences in resistance between conducting and insulating components (quantitative). Static electricity</p> <p>Separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects</p> <p>The idea of electric field, forces acting across the space between objects not in contact. Magnetism</p> <p>Magnetic poles, attraction and repulsion</p> <p>Magnetic fields by plotting with compass, representation by field lines</p> <p>Earth's magnetism, compass and navigation</p> <p>The magnetic effect of a current, electromagnets, D.C. motors (principles only).</p>	<p>The function of muscles and examples of antagonistic muscles.</p> <p>Cells and organisation</p> <p>Cells as the fundamental unit of living organisms, including how to observe, interpret and record cell structure using a light microscope</p> <p>The functions of the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplast</p> <p>The similarities and differences between plant and animal cell</p> <p>The role of diffusion in the movement of materials in and between cells</p> <p>The structural adaptations of some unicellular organisms</p> <p>The hierarchical organisation of multicellular organisms: from cells to tissues to organs to systems to organisms</p>	<p>The tissues and organs of the human digestive system, including adaptations to function and how the digestive system digests food (enzymes simply as biological catalysts)</p> <p>The importance of bacteria in the human digestive system</p> <p>Plants making carbohydrates in their leaves by photosynthesis and gaining mineral nutrients and water from the soil via their roots.</p> <p>Gas exchange systems</p> <p>The structure and functions of the gas exchange system in humans, including adaptations to function</p> <p>The mechanism of breathing to move air in and out of the lungs, using a pressure model to explain the movement of gases, including simple measurements of lung volume</p> <p>The impact of exercise, asthma and smoking on the human gas exchange system</p> <p>The role of leaf stomata in gas exchange in plants.</p> <p>Cellular respiration</p> <p>Aerobic and anaerobic respiration in living organisms, including the breakdown of organic</p>	<p>Differences between species</p> <p>The variation between individuals within a species being continuous or discontinuous, to include measurement and graphical representation of variation</p> <p>The variation between species and between individuals of the same species means some organisms compete more successfully, which can drive natural selection</p> <p>Changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction</p> <p>The importance of maintaining biodiversity and the use of gene banks to preserve hereditary material.</p>	<p>Use of ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and action of convex lens in focusing (qualitative); the human eye</p> <p>Light transferring energy from source to absorber leading to chemical and electrical effects; photo-sensitive material in the retina and in cameras</p> <p>Colours and the different frequencies of light, white light and prisms (qualitative only); differential colour effects in absorption and diffuse reflection</p>
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