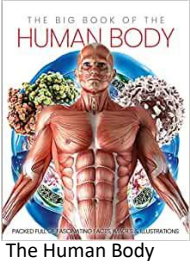







**UNIT ENQUIRY QUESTION: Do all plants and animals reproduce the same way?**

EYFS/PRIOR LEARNING	FUTURE LEARNING	PRE/POST LEARNING QUIZ QUESTIONS	CONNECTED KNOWLEDGE & SUBJECTS	LINKED TEXTS
<p>In Class 2, children should:</p> <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>	<p>By the end of KS2:</p> <ul style="list-style-type: none"> <li>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</li> <li>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</li> </ul> <p>Describe the ways in which nutrients and water are transported within animals, including humans.</p>	<ul style="list-style-type: none"> <li>What do humans look like?</li> <li>Do all animal embryos look the same?</li> <li>How do humans change?</li> <li>Why do humans change?</li> <li>What is a life cycle? What types of life cycles are there?</li> <li>Are life cycles the same?</li> <li>What causes puberty?</li> <li>What changes do we go through during puberty?</li> <li>Are there any patterns between vertebrate animals and their gestation periods?</li> <li>Do plants reproduce in the same way</li> </ul>	<p>PSHE – Growing and changing</p> <p>Maths – data and line graphs showing change over time</p> <p>English – persuasive writing</p>	<div data-bbox="1352 320 1541 584" style="text-align: center;">  <p>THE BIG BOOK OF THE HUMAN BODY</p> <p>PACKED FULL OF ACCURATE FACTS AND ILLUSTRATIONS</p> <p>The Human Body</p> </div> <p style="text-align: center;"><b>SCIENTIFIC ENQUIRY</b></p> <p><u>Comparative Tests</u> How does the level of salt affect how quickly brine shrimp hatch? How does age affect a human's reaction time? Who grows the fastest, girls or boys?</p> <p><u>Identify &amp; Classify</u> Can you identify all the stages in the human life cycle? Compare this collection of animals based on similarities and differences in their lifecycle.</p> <p><u>Observation Over Time</u> How do brine shrimp change over their lifetime? How does a bean change as it germinates? How do different animal embryos change?</p> <p><u>Pattern Seeking</u> Is there a relationship between a mammal's size and its gestation period?</p> <p><u>Research</u> What are the differences between the life cycle of an insect and a mammal? Why do people get grey/white hair when they get older?</p> <p><u>Enquiry Question</u> Do all plants and animals reproduce in the same way?</p>
<p><b>KEY SCIENTISTS &amp; SCIENCE CAPITAL</b></p>			<p><b>END POINTS</b></p>	
<p>Aristotle  Hippocrates </p>			<ul style="list-style-type: none"> <li>Describe the changes as humans develop to old age.</li> <li>Outline, in detail, the changes experienced by people during puberty.</li> </ul>	
<p><b>KEY VOCABULARY</b></p>				
<p>Foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty, Hormone, Physical, Emotional, Sexual, Asexual, Pollination, Dispersal, reproduction, cell, fertilisation, pollination, male, female, pregnancy, young, mammal, metamorphosis, amphibian, insect, egg, embryo, bird, plant</p>				

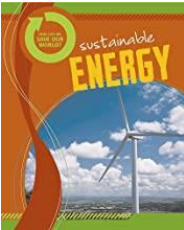
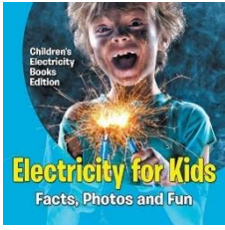


**UNIT ENQUIRY QUESTION: Do all animals have the same parts?**

EYFS/PRIOR LEARNING	FUTURE LEARNING	PRE/POST LEARNING QUIZ QUESTIONS	CONNECTED KNOWLEDGE & SUBJECTS	LINKED TEXTS
<p>In class 3, the children should:</p> <ul style="list-style-type: none"> <li>Describe the changes as humans develop to old age.</li> <li>Know the life cycle of different living things, e.g. Mammal, amphibian, insect bird.</li> <li>Know the differences between different life cycles.</li> <li>Know the process of reproduction in plants. Know the process of reproduction in animals.</li> </ul>	<p>In Key Stage 3 children will learn about:</p> <ul style="list-style-type: none"> <li>the hierarchical organisation of multicellular organisms: from cells to tissues to organs to systems to organisms.</li> <li>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)</li> <li>calculations of energy requirements in a healthy daily diet</li> <li>the consequences of imbalances in the diet, including obesity, starvation and deficiency diseases</li> <li>the structure and functions of the gas exchange system in humans, including adaptations to function</li> <li>the effects of recreational drugs</li> </ul>	<ul style="list-style-type: none"> <li>Why do we need oxygen?</li> <li>How do we breathe? • Do fish and plants breathe?</li> <li>Do all living things need oxygen?</li> <li>How does the size of a person’s lungs affect their lung capacity?</li> <li>Are there ways to increase/decrease our lung capacity? Is lung capacity fixed?</li> <li>Why do we have blood?</li> <li>How does our heart work?</li> <li>How does size of muscle affect our pulse rate?</li> <li>How does exercise effect our pulse rate?</li> <li>How might the circulatory system of an elephant, a hummingbird, or a polar bear differ?</li> <li>Is the air you breathe out, the same as that you breathe in?</li> </ul>	<p>History – Aztecs and human sacrifice</p> <p>Art &amp; Design – The art of anatomy</p> <p>PSHE – keeping myself safe (drugs and medicines)</p>	<div data-bbox="1339 325 1559 603" data-label="Image"> </div> <p>Your Hardworking Heart</p> <hr/> <p><b>SCIENTIFIC ENQUIRY</b></p> <p><u>Comparative Tests</u> How does the length of time we exercise for affect our heart rate? Can exercising regularly affect your lung capacity?</p> <p><u>Identify &amp; Classify</u> Which organs of the body make up the circulation system, and where are they found?</p> <p><u>Observation Over Time</u> How does my heart rate change over the day? How much exercise do I do in a week?</p> <p><u>Pattern Seeking</u> Is there a pattern between what we eat for breakfast and how fast we can run?</p> <p><u>Research</u> How have our ideas about disease and medicine changed over time?</p> <p><u>Enquiry Question</u> How do our choices affect how our bodies work? Why does my heart beat?</p>
<b>KEY SCIENTISTS &amp; SCIENCE CAPITAL</b>			<b>END POINTS</b>	
Leonardo DaVinci	 <p>William Harvey</p>		<ul style="list-style-type: none"> <li>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</li> <li>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</li> <li>Describe the ways in which nutrients and water are transported within animals, including humans.</li> </ul>	
<b>KEY VOCABULARY</b>				
<p>Oxygenated, Deoxygenated, Valve, Exercise, Respiration Circulatory system, heart, lungs, blood vessels, blood, artery, vein, pulmonary, alveoli, capillary, digestive, transport, gas exchange, villi, nutrients, water, oxygen, alcohol, drugs, tobacco.</p>				

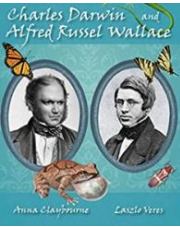

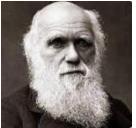

**UNIT ENQUIRY QUESTION: Do all animals have the same parts?**

EYFS/PRIOR LEARNING	FUTURE LEARNING	PRE/POST LEARNING QUIZ QUESTIONS	CONNECTED KNOWLEDGE & SUBJECTS	LINKED TEXTS
<p>In class 3, the children should:</p> <ul style="list-style-type: none"> <li>• Describe the changes as humans develop to old age.</li> <li>• Know the life cycle of different living things, e.g. Mammal, amphibian, insect bird.</li> <li>• Know the differences between different life cycles.</li> <li>• Know the process of reproduction in plants. Know the process of reproduction in animals.</li> </ul>	<p>In Key Stage 3 children will learn about:</p> <ul style="list-style-type: none"> <li>• the hierarchical organisation of multicellular organisms: from cells to tissues to organs to systems to organisms.</li> <li>• 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)</li> <li>• calculations of energy requirements in a healthy daily diet</li> <li>• the consequences of imbalances in the diet, including obesity, starvation and deficiency diseases</li> <li>• the structure and functions of the gas exchange system in humans, including adaptations to function</li> <li>• the effects of recreational drugs</li> </ul>	<ul style="list-style-type: none"> <li>• Why do we need oxygen?</li> <li>• How do we breathe? • Do fish and plants breathe?</li> <li>• Do all living things need oxygen?</li> <li>• How does the size of a person’s lungs affect their lung capacity?</li> <li>• Are there ways to increase/decrease our lung capacity? Is lung capacity fixed?</li> <li>• Why do we have blood?</li> <li>• How does our heart work?</li> <li>• How does size of muscle affect our pulse rate?</li> <li>• How does exercise effect our pulse rate?</li> <li>• How might the circulatory system of an elephant, a hummingbird, or a polar bear differ?</li> <li>• Is the air you breathe out, the same as that you breathe in?</li> </ul>	<p>History – Aztecs and human sacrifice</p> <p>Art &amp; Design – The art of anatomy</p> <p>PSHE – keeping myself safe (drugs and medicines)</p>	<div data-bbox="1339 325 1559 603" data-label="Image"> </div> <p data-bbox="1592 416 1809 437">Your Hardworking Heart</p> <hr/> <p data-bbox="1615 627 1845 647"><b>SCIENTIFIC ENQUIRY</b></p> <p data-bbox="1330 678 1496 699"><u>Comparative Tests</u> How does the length of time we exercise for affect our heart rate? Can exercising regularly affect your lung capacity?</p> <p data-bbox="1330 756 1496 777"><u>Identify &amp; Classify</u> Which organs of the body make up the circulation system, and where are they found?</p> <p data-bbox="1330 807 1536 828"><u>Observation Over Time</u> How does my heart rate change over the day? How much exercise do I do in a week?</p> <p data-bbox="1330 858 1473 879"><u>Pattern Seeking</u> Is there a pattern between what we eat for breakfast and how fast we can run?</p> <p data-bbox="1330 909 1415 930"><u>Research</u> How have our ideas about disease and medicine changed over time?</p> <p data-bbox="1330 960 1487 981"><u>Enquiry Question</u> How do our choices affect how our bodies work? Why does my heart beat?</p>
<b>KEY SCIENTISTS &amp; SCIENCE CAPITAL</b>			<b>END POINTS</b>	
<p>Leonardo DaVinci</p>	<p>William Harvey</p>		<ul style="list-style-type: none"> <li>• Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</li> <li>• Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</li> <li>• Describe the ways in which nutrients and water are transported within animals, including humans.</li> </ul>	
<b>KEY VOCABULARY</b>				
<p>Oxygenated, Deoxygenated, Valve, Exercise, Respiration Circulatory system, heart, lungs, blood vessels, blood, artery, vein, pulmonary, alveoli, capillary, digestive, transport, gas exchange, villi, nutrients, water, oxygen, alcohol, drugs, tobacco.</p>				

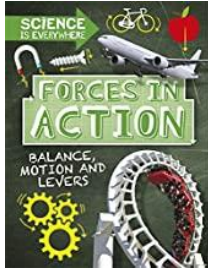

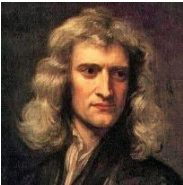
**UNIT ENQUIRY QUESTION: Can we vary the effects of electricity?**

PRIOR LEARNING	FUTURE LEARNING	PRE/POST LEARNING QUIZ QUESTIONS	CONNECTED KNOWLEDGE & SUBJECTS	LINKED TEXTS
<p>In Class 2, children should:</p> <ul style="list-style-type: none"> <li>Identify common appliances that run on electricity.</li> <li>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</li> <li>Recognise whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery.</li> <li>Recognise that a switch opens and closes the circuit and associate this with whether or not a lamp lights in a simple series circuit. Recognise some common conductors and insulators, and associate metals with being good conductors.</li> <li>Know the difference between a conductor and an insulator; giving examples of each.</li> <li>Safety when using electricity.</li> </ul>	<p>In Key Stage Three children will learn:</p> <ul style="list-style-type: none"> <li>Electric current, measured in amperes, in circuits, series and parallel circuits, currents add where branches meet and current as flow of charge</li> <li>Potential difference, measured in volts, battery and bulb ratings; resistance, measured in ohms, as the ratio of potential difference (p.d.) to current</li> <li>Differences in resistance between conducting and insulating components (quantitative).</li> <li>Separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects</li> <li>The idea of electric field, forces acting across the space between objects not in contact.</li> </ul>	<ul style="list-style-type: none"> <li>Do all batteries push as hard as each other? • What is electricity?</li> <li>How does the voltage of a battery affect how much current is pushed?</li> <li>How does the length of time it leave the current flowing for affect the brightness of the bulb?</li> <li>How does number of bulbs affect the brightness of a bulb?</li> <li>Are all types of wires as good as conducting electricity?</li> <li>Why are wires insulated in plastic? Does type of material make a difference?</li> <li>Does length of wire make a difference?</li> <li>Does the type of circuit affect how the components work/long the battery lasts?</li> <li>What renewable ways can we generate electricity?</li> <li>How does current affect heat?</li> <li>What are the dangers of a short circuit?</li> </ul>	<p>Geography – how compasses work (magnetism and electricity); sustainable electricity production</p> <p>English – discussion writing (merits of sustainable electricity and electric cars)</p>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Sustainable Energy</p> </div> <div style="text-align: center;">  <p>Electricity for Kids</p> </div> </div>
<b>SCIENTIFIC ENQUIRY</b>				
<p><u>Comparative Tests</u> How does the voltage of the batteries in a circuit affect the brightness of the lamp? How does the voltage of the batteries in a circuit affect the volume of the buzzer?</p> <p><u>Identify &amp; Classify</u> How would you group electrical components and appliances based on what electricity makes them do?</p> <p><u>Observation Over Time</u> How does brightness of bulb change as the battery runs out? How can we measure how quickly a battery is used up?</p> <p><u>Pattern Seeking</u> Does the temperature of a light bulb go up the longer it is on?</p> <p><u>Research</u> How has our understanding of electricity changed over time? <u>Enquiry Question</u> Can we vary the effects of electricity?</p>				
<b>KEY SCIENTISTS &amp; SCIENCE CAPITAL</b>			<b>END POINTS</b>	
Benjamin Franklin		Michael Faraday 	<ul style="list-style-type: none"> <li>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</li> <li>Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.</li> <li>Use recognised symbols when representing a simple circuit in a diagram.</li> </ul>	
<b>KEY VOCABULARY</b>				
Electricity, neutrons, protons, electrons, nucleus, atom, electric current, appliances, mains, crocodile clips, wires, bulb, battery cell, battery holder, motor, buzzer, switch, conductor, electrical insulator, conductor.				

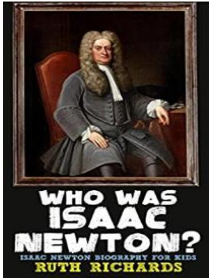


**UNIT ENQUIRY QUESTION: What is evolution, what is the evidence for it and how does it occur?**

PRIOR LEARNING	FUTURE LEARNING	PRE/POST LEARNING QUIZ QUESTIONS	CONNECTED KNOWLEDGE & SUBJECTS	LINKED TEXTS
<p>In Class 2 and 3, children should:</p> <ul style="list-style-type: none"> <li>• Understand there is a variety of life on Earth</li> <li>• Know that some animal's differences are important to their survival</li> <li>• Know how animals and plants reproduce</li> <li>• Know how fossils form over time</li> </ul>	<p>In Key Stage 3 children will learn about:</p> <ul style="list-style-type: none"> <li>• heredity as the process by which genetic information is transmitted from one generation to the next</li> <li>• the variation between individuals within a species being continuous or discontinuous, to include measurement and graphical representation of variation</li> <li>• the variation between species and between individuals of the same species means some organisms compete more successfully, which can drive natural selection</li> <li>• 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</li> <li>• the importance of maintaining biodiversity and the use of gene banks to preserve hereditary material.</li> </ul>	<ul style="list-style-type: none"> <li>• Why are we all different?</li> <li>• What is variation, and why is it important?</li> <li>• How did life begin on Earth?</li> <li>• How do we change?</li> <li>• What is evolution?</li> <li>• What evidence is there for evolution?</li> <li>• How does evolution happen?</li> <li>• What reasons do animals become extinct?</li> <li>• Polar Bears habitat is rapidly changing, what possible futures do they face and can we predict which is most likely?</li> <li>• How did Darwin come up with the theory?</li> <li>• Why was his theory not initially accepted?</li> </ul>	<p>History – The Victorians and Charles Darwin; eugenics and pseudoscience</p> <p>Geography – International trade (the spread of exotic and invasive species)</p> <p>English – Biographies (Charles Darwin and Alfred Russel Wallace)</p>	<div style="display: flex; justify-content: space-around;"> <div data-bbox="1339 323 1518 550">  </div> <div data-bbox="1906 331 2085 550">  </div> </div> <p style="text-align: center;">Charles Darwin and Alfred Russel Wallace      Amazing Evolution</p> <hr/> <p style="text-align: center;"><b>SCIENTIFIC ENQUIRY</b></p> <p><u>Comparative Tests</u> What is the most common eye colour in our class?</p> <p><u>Identify &amp; Classify</u> Compare the skeletons of apes, humans, and Neanderthals – how are they similar, and how are they different? Can you classify these observations into evidence for the idea of evolution, and evidence against?</p> <p><u>Observation Over Time</u> How has the skeleton of the horse changed over time?</p> <p><u>Pattern Seeking</u> Is there a pattern between the size and shape of a bird's beak and the food it will eat?</p> <p><u>Research</u> What happened when Charles Darwin visited the Galapagos islands? What ideas did American geneticist Barbara McClintock have about genes that won her a Nobel Prize?</p> <p><u>Enquiry Question</u> What is evolution, how does it happen and how do scientists know?</p>
<p><b>KEY SCIENTISTS &amp; SCIENCE CAPITAL</b></p>			<p><b>END POINTS</b></p>	
<p>Charles Darwin</p> 		<p>Alfred Russel Wallace</p> 		
<p><b>KEY VOCABULARY</b></p>			<ul style="list-style-type: none"> <li>• Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</li> <li>• Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution-</li> <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>	
<p>Fossils, Adaptation, Evolution, Characteristics, Reproduction, Genetics, Variation, Inherited, Environmental, Mutation, Competition, Survival of the Fittest, Evidence</p>				

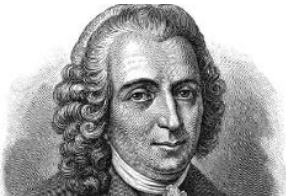

**UNIT ENQUIRY QUESTION: How and why do objects move?**

PRIOR LEARNING	FUTURE LEARNING	PRE/POST LEARNING QUIZ QUESTIONS	CONNECTED KNOWLEDGE & SUBJECTS	LINKED TEXTS
<p>In Class 2, children should:</p> <ul style="list-style-type: none"> <li>• Compare how things move on different surfaces.</li> <li>• Know how a simple pulley works and use making lifting an object simpler</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 and 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 with attract or repel each other, depending on which poles are facing.</li> </ul>	<p>In KS3 children will learn about:</p> <ul style="list-style-type: none"> <li>• opposing forces and equilibrium: weight held by stretched spring or supported on a compressed surface</li> <li>• forces being needed to cause objects to stop or start moving, or to change their speed or direction of motion (qualitative only)</li> <li>• change depending on direction of force and its size.</li> </ul>	<p>What actually is a force?</p> <ul style="list-style-type: none"> <li>• How can a force act on an object?</li> <li>• How can we see forces?</li> <li>• How can we measure forces?</li> <li>• How does the saltiness (salinity) of water affect the water resistance?</li> <li>• How does the length of a piece of a paper helicopter’s wings affect the time it takes to fall?</li> <li>• How does the changing the shape of a piece of plasticine affect water resistance?</li> <li>• How does adding holes to a parachute affect the time it takes to fall?</li> <li>• How does the amount/depth of tread affect the friction between a shoe and a surface?</li> <li>• How can we use levers to lit more?</li> <li>• What is the most effective way to move an object?</li> <li>• How do see-saws work?</li> <li>• Can you create a pulley system to life a given load?</li> </ul>	<p>Design Technology – frame structures</p> <p>History – Viking ships and why they are effective (upthrust floatation force)</p>	<div style="text-align: center;">  <p>Forces in Action</p> </div> <div style="text-align: center; background-color: #d3d3d3; padding: 5px;"> <p><b>SCIENTIFIC ENQUIRY</b></p> </div> <p><u>Comparative Tests</u> How does the angle of launch affect how far a paper rocket will go?</p> <p><u>Identify &amp; Classify</u> Can you label and name all the forces acting on the objects in each of these situations?</p> <p><u>Observation Over Time</u> Can you label and name all the forces acting on the objects in each of these situations?</p> <p><u>Pattern Seeking</u> Do all objects fall through water in the same way? How does surface area of parachute affect the time it takes to fall?</p> <p><u>Research</u> How do submarines sink if they are full of air?</p> <p><u>Enquiry Question</u> How and why do objects move?</p>
<p><b>KEY SCIENTISTS &amp; SCIENCE CAPITAL</b></p>			<p><b>END POINTS</b></p>	
<p>Aristotle</p> 	<p>Isaac Newton</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> </ul>	
<p><b>KEY VOCABULARY</b></p>				
<p>Air resistance, Water resistance, Friction, Gravity, Newton, Gears, Pulleys, force, push, pull, opposing, streamline, brake, mechanism, lever, cog, machine, pulley.</p>				

**UNIT ENQUIRY QUESTION: How and why does my shadow change over the course of a day?**


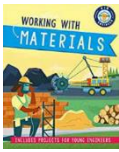


PRIOR LEARNING	FUTURE LEARNING	PRE/POST LEARNING QUIZ QUESTIONS	CONNECTED KNOWLEDGE & SUBJECTS	LINKED TEXTS
<p>In Class 2, children should:</p> <ul style="list-style-type: none"> <li>Recognise that they need light in order to see things and that dark is the absence of light.</li> <li>Notice that light 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 a solid object.</li> <li>Find patterns in the way that the sizes of shadows change.</li> </ul>	<p>In Key Stage 3, children will learn about:</p> <ul style="list-style-type: none"> <li>the similarities and differences between light waves and waves in matter</li> <li>light waves travelling through a vacuum; speed of light</li> <li>the transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface Science</li> <li>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</li> <li>light transferring energy from source to absorber leading to chemical and electrical effects; photo-sensitive material in the retina and in cameras</li> <li>colours and the different frequencies of light, white light and prisms (qualitative only); differential colour effects in absorption and diffuse reflection.</li> </ul>	<ul style="list-style-type: none"> <li>How does the size of an object affect the size of a shadow?</li> <li>How does the distance between the light and the object change the size of a shadow?</li> <li>How does the distance between the object and the size of the screen affect the size of a shadow?</li> <li>How would a solar eclipse be different if: - The moon was a different size? - The earth span faster or slower? - The sun was larger or smaller? - If the earth and moon were the same size but further away in the solar system?</li> <li>How does the amount of aluminium foil crumpled affect how much light is scattered?</li> <li>How does the amount of polishing affect how well a piece of metal scatters light?</li> <li>How perfect are our mirrors? Do some scatter light more than others?</li> <li>What happens to light when it is shone through water? How is this affected by putting glitter, salt or talc in the water?</li> <li>How does a periscope/microscope/telescope work?</li> </ul>	<p>Art &amp; Design – the relationship between light and colour</p> <p>RE – The symbolism and metaphor of ‘light’ in religious belief</p>	<div style="text-align: right;">  </div> <p>Who was Isaac Newton?</p> <p style="text-align: center;"><b>SCIENTIFIC ENQUIRY</b></p> <p><u>Comparative Tests</u> How does the angle that a light ray hits a plane mirror affect the angle at which it reflects off the surface? Which material is most reflective?</p> <p><u>Identify &amp; Classify</u> Can you identify all the colours of light that make white light when mixed together? What colours do you get if you mix different colours of light together?</p> <p><u>Observation Over Time</u> Does the temperature of a light bulb go up the longer it is on? How does my shadow change over the day?</p> <p><u>Pattern Seeking</u> Is there a pattern to how bright it is in school over the day? And, if there is a pattern, is it the same in every classroom?</p> <p><u>Research</u> Why do some people need to wear glasses to see clearly? How do our eyes adapt to different conditions?</p> <p><u>Enquiry Question</u> Why does my shadow change length over the course of a day?</p>
<b>KEY SCIENTISTS &amp; SCIENCE CAPITAL</b>			<b>END POINTS</b>	
Isaac Newton	 Thomas Young		<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>	
<b>KEY VOCABULARY</b>				
Light source, dark, reflect, ray, mirror, bounce, visible, beam, sun, glare, travel, straight, opaque, shadow, block, transparent, translucent, reflected Absorbed, emitted, scattered, refraction				

**UNIT ENQUIRY QUESTION: In what ways can we sort living things?**

PRIOR LEARNING	FUTURE LEARNING	PRE/POST LEARNING QUIZ QUESTIONS	CONNECTED KNOWLEDGE & SUBJECTS	LINKED TEXTS
<p>In Class 2, children should:</p> <ul style="list-style-type: none"> <li>Recognise that living things can be grouped in a variety of ways.</li> <li>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Recognise that environments can change and that this can sometimes pose danger to living things.</li> </ul>	<p>In Key Stage 3 children will learn about:</p> <ul style="list-style-type: none"> <li>the dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants and algae, to use sunlight in photosynthesis to build organic molecules that are an essential energy store and to maintain levels of oxygen and carbon dioxide in the atmosphere</li> <li>the adaptations of leaves for photosynthesis.</li> <li>the interdependence of organisms in an ecosystem, including food webs and insect pollinated crops</li> <li>the importance of plant reproduction through insect pollination in human food security</li> <li>how organisms affect, and are affected by, their environment, including the accumulation of toxic materials.</li> </ul>	<ul style="list-style-type: none"> <li>Why do we need to classify living things?</li> <li>How do we classify? • What are the difficulties with classification? (penguins, whales, platypus)</li> <li>How do animals change over time?</li> <li>Why does variation exist?</li> <li>What happens if animals of different species breed? (hybrids)</li> <li>What happens to house plants outside? • What are microorganisms?</li> <li>How can we prevent the spread of disease? • Why do animals and plants compete – and what for?</li> </ul>	<p>History - Victorian Period and Mary Anning</p> <p>Computing – Creating hierarchy charts</p> <p>English – information reports</p>	<div data-bbox="1608 323 1809 608" data-label="Image"> </div> <p>Linnaeus: Organising nature</p> <hr/> <p style="text-align: center;"><b>SCIENTIFIC ENQUIRY</b></p> <p><u>Comparative Tests</u> Which is the most common invertebrate on our school playing field?</p> <p><u>Identify &amp; Classify</u> How would you make a classification key for vertebrates/invertebrates or microorganisms?</p> <p><u>Observation Over Time</u> Does the assemblage of organisms in our forest area change over the course of a month?</p> <p><u>Pattern Seeking</u> Do all mammals have fur?</p> <p><u>Research</u> What do different types of microorganisms do? Are they always harmful?</p> <p><u>Enquiry Question</u> In what ways can we sort living things?</p>
<p><b>KEY SCIENTISTS &amp; SCIENCE CAPITAL</b></p>			<p><b>END POINTS</b></p>	
<p>Carl Linnaeus</p>  <p>Mary Anning</p> 		<ul style="list-style-type: none"> <li>Classify living things into broad groups according to observable characteristics and based on similarities and differences.</li> <li>Give reasons for classifying plants and animals based on specific characteristics</li> </ul>		
<p><b>KEY VOCABULARY</b></p>				
<p>Variation Organisms Populations. Classification Characteristics Environment, flowering, nonflowering, plants, animals, vertebrates, fish, amphibians, reptiles, mammals, invertebrate, human impact, nature reserves, deforestation. Classify, compare, bacteria, microorganism, organism, invertebrates, vertebrates, Linnaean.</p>				



**UNIT ENQUIRY QUESTION: How can we change materials reversibly and irreversibly?**

PRIOR LEARNING	FUTURE LEARNING	PRE/POST LEARNING QUIZ QUESTIONS	CONNECTED KNOWLEDGE & SUBJECTS	LINKED TEXTS
<p>In Class 2, children should:</p> <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>	<p>In KS3 children will learn about:</p> <ul style="list-style-type: none"> <li>• the concept of a pure substance mixtures, including dissolving</li> <li>• diffusion in terms of the particle model</li> <li>• simple techniques for separating mixtures: filtration, evaporation, distillation and chromatography the identification of pure substances</li> </ul>	<ul style="list-style-type: none"> <li>• What are mixtures?</li> <li>• What does dissolving mean?</li> <li>• Which of the following dissolve in water: sugar, bicarbonate of soda, oil, chocolate, coffees, dark vinegar and wax?</li> </ul> <p>How does the amount of water used affect how much sugar will dissolve in it?</p> <ul style="list-style-type: none"> <li>• Which sweets dissolve in water?</li> <li>• How can we separate mixtures?</li> <li>• How can we clean our dirty water?</li> <li>• Add sugar to fizzy water; it fizzes up.</li> <li>• Has a new substance been made? (No, the gas was dissolved in the water and adding sugar made it become un dissolved)</li> <li>• Add baking powder to vinegar, it fizzes up. Has a new substance been made? (Yes the gas was not in the vinegar as it wasn't fizzy, so it must have been made)</li> <li>• Use lemon juice as an invisible ink, heating gently makes the ink visible. Is this a new substance?</li> <li>• When water is added to jelly and it is set, is it a new substance.</li> <li>• When materials are heated or mixed with other materials they sometimes can be made to turn into new materials.</li> </ul>	<p>History – Saxon metallurgy</p> <p>DT – Making bread rise with yeast and bicarbonate of soda</p> <p>English – persuasive writing (plastic materials and pollution)</p>	<div style="display: flex; justify-content: space-around;">   </div> <p>The Whale who Ate Plastic      Working With Materials</p> <p style="text-align: center;"><b>SCIENTIFIC ENQUIRY</b></p> <p><u>Comparative Tests</u> How does the temperature of tea affect how long it takes for a sugar cube to dissolve? Which type of sugar dissolves the fastest? Which material rusts fastest/slowest? How can we change the 'jellyness' of jelly?</p> <p><u>Identify &amp; Classify</u> Can you identify and classify these reactions and changes into reversible, and irreversible? Can you describe their groups similarities and differences?</p> <p><u>Observation Over Time</u> How does a container of salt water change over time? How does a sugar cube change as it is put in a glass of water? How does a nail in salt water change over time?</p> <p><u>Pattern Seeking</u> Do all stretchy materials stretch in the same way? How does temperature affect how much solute we can dissolve? What patterns can you notice in different reactions? How does the amount of bicarbonate of soda, washing up liquid and vinegar affect the reaction?</p> <p><u>Research</u> What are microplastics and why are they harming the planet? What are smart materials and how can they help us?<u>Enquiry Question</u> How can we separate a mixture of water, iron filings, salt and sand? How can we change materials reversibly and irreversibly?</p>
<b>KEY SCIENTISTS &amp; SCIENCE CAPITAL</b>			<b>END POINTS</b>	
<p>Alfred Nobel</p> 	<p>Ruth Benerito</p> 	<ul style="list-style-type: none"> <li>• Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.</li> <li>• Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</li> <li>• Use knowledge of solids, liquids, and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</li> <li>• Give reasons based on evidence from comparative and fair tests, for the particular uses of everyday materials, including wood, metals and plastic.</li> <li>• Demonstrate that dissolving, mixing and changes of state are reversible changes.</li> <li>• Explain that some changes result in the formation of new materials, and this kind of change is usually not reversible, including changes associated with burning and the action of acid on bicarbonate of soda</li> </ul>		
<b>KEY VOCABULARY</b>				
<p>Temperature, process, Hardness, Solubility, Transparency, Conductivity, dissolve, insoluble, suspension, chemical, physical, irreversible, solution, reversible, separate, mixture, insulator, flexible, permeable, soluble.</p>				