











Year 2 - Animals, including humans - LIFE

<p align="center">National Curriculum objectives</p> <ul style="list-style-type: none"> notice that animals, including humans, have offspring which grow into adults find out about and describe the basic needs of animals, including humans, for survival (water, food and air) describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. 	<p align="center">Sticky knowledge</p> <ul style="list-style-type: none"> Animals move in order to survive. Different animals move in different ways to help them survive. Exercise keeps animal's bodies in good condition and increases survival chances. All animals eventually die. Animals reproduce new animals when they reach maturity. Animals grow until maturity and then do not grow any larger 	<p align="center">Vocabulary</p> <p>Offspring, reproduction, growth, child, young/old stages (examples - chick/hen, baby/child/adult, caterpillar/butterfly), exercise, heartbeat, breathing, hygiene, germs, disease, food types (examples - meat, fish, vegetables, bread, rice, pasta)</p>	
<p align="center">Notes and guidance</p> <p>Pupils should be introduced to the basic needs of animals for survival, as well as the importance of exercise and nutrition for humans. They should also be introduced to the processes of reproduction and growth in animals. The focus at this stage should be on questions that help pupils to recognise growth; they should not be expected to understand how reproduction occurs.</p> <p>The following examples might be used: egg, chick, chicken; egg, caterpillar, pupa, butterfly; spawn, tadpole, frog; lamb, sheep. Growing into adults can include reference to baby, toddler, child, teenager, adult.</p>	<p>Animals, including humans, have offspring which grow into adults. In humans and some animals, these offspring will be young, such as babies or kittens, that grow into adults. In other animals, such as chickens or insects, there may be eggs laid that hatch to young or other stages which then grow to adults. The young of some animals do not look like their parents e.g. tadpoles. All animals, including humans, have the basic needs of feeding, drinking and breathing that must be satisfied in order to survive. To grow into healthy adults, they also need the right amounts and types of food and exercise. Good hygiene is also important in preventing infections and illnesses.</p>	<p align="center">Key scientists</p> <p>Steve Irwin (Crocodile Hunter) Robert Winston (Human Scientist) Joe Wicks (Personal Trainer)</p>	<p align="center">Linked texts</p> <p>The Gruffalo (Julia Donaldson) Meerkat Mail (Emily Gravett) Tadpole's Promise (Jeanne Willis and Tony Ross)</p>
<p align="center">Prior Learning</p>	<p align="center">Future learning</p>		<p align="center">Possible misconceptions</p>
<ul style="list-style-type: none"> identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals, including humans) Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans) 	<ul style="list-style-type: none"> Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. (Y3 - Animals, including humans) Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. (Y5 - Living things and their habitats) Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats) Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. (Y6 - Animals, including humans) 		<p>Some children may think:</p> <ul style="list-style-type: none"> an animal's habitat is like its 'home' all animals that live in the sea are fish respiration is breathing breathing is respiration

Enquiry						
Comparative tests	Identify and classify	Observation over time	Pattern seeking	Research	Ideas over time	Key Questions
Do amphibians have more in common with reptiles or fish? Do bananas make us run faster? 	Which offspring belongs to which animal? How would you group things to show which are living, dead, or have never been alive? 	How does a tadpole change over time? How much food and drink do I have over a week? 	Which age group of children wash their hands the most in a day? 	What food do you need in a healthy diet and why? What do you need to do to look after an egg/chick and keep it healthy? 	When the first fizzy drink machine was invented in 1775, scientist Joseph Priestley said it was the cure to many health problems. What ideas do scientists have about fizzy drinks today? How did George Washington Carver use science to improve farming in America?	How long do should my pets live for? Do all animals grow and live the same way? Do bigger animals live longer? Why are we all different heights? How and why do we grow and change?
Report findings using tally charts, pictograms, or block charts	Focus on asking questions about the similarities and differences between things. Going outside to explore the world around them at all times of the year. Reporting by producing scientific drawings of their observations, increasing in fine detail. Developing scientific vocabulary.	Observe using magnifying glasses Take photographs to evidence observations over time Record own drawings over time Ask questions about what they have observed to find out more.	Begin to look for patterns in their measurements and observations. Describe them both orally and in writing. Start to think about cause and effect relationships. Start to use appropriate vocabulary to discuss these.	Pose their own 'big question'. Interpret the information they find and consider its relevance in answering their questions. Use a range of secondary sources, including books, websites, and video. Listen to presentations from experts and science professionals to get their information, or ask them questions in interviews and letters.	Report findings using posters, leaflets, newspapers, reports or letters Timeline of scientists	
Linked TAPS Assessment		Additional TAPS ideas		Working scientifically		
Comparing Handspans ♣ Can children compare different hand spans? Can children suggest answers to their questions about hand spans? Nature Spotters ♣ Can children use spotter sheets to identify plants/animals? Can children identify the types of plants/animals they are looking for?		<ul style="list-style-type: none"> Try out a range of exercises and discuss the effect on their body. Sort and sequence life cycles. Match offspring to adults. 		<ul style="list-style-type: none"> asking simple questions and recognising that they can be answered in different ways observing closely, using simple equipment performing simple tests identifying and classifying using their observations and ideas to suggest answers to questions gathering and recording data to help in answering questions. 		<ul style="list-style-type: none"> observing, through video or first-hand observation and measurement, how humans, grow asking questions about what humans need to stay healthy suggesting ways to find answers to their questions. observing, through video or first-hand observation and measurement, how different animals grow asking questions about what things animals need for survival suggesting ways to find answers to their questions.
Activities			Possible evidence			
<ul style="list-style-type: none"> Ask people questions and use secondary sources to find out about the life cycles of some animals. Observe animals growing over a period of time e.g. chicks, caterpillars, a baby. Ask questions of a parent about how they look after their baby. Ask pet owners questions about how they look after their pet. Explore the effect of exercise on their bodies. Classify food in a range of ways, including using the Eatwell Guide. Investigate washing hands, using glitter gel. 			<ul style="list-style-type: none"> Can describe how animals, including humans, have offspring which grow into adults, using the appropriate names for the stages Can state the basic needs of animals, including humans, for survival Can state the importance for humans of exercise, eating the right amounts of different types of food, and hygiene Can name foods in each section of the Eatwell Guide Can describe, including using diagrams, the life cycle of some animals, including humans, and their growth to adults e.g. by creating a life cycle book for a younger child Can measure/observe how animals, including humans, grow. Show what they know about looking after a baby/animal by creating a parenting/pet owners' guide Explain how development and health might be affected by differing conditions and needs being met/not met 			






Year 2 - Living things and their habitats - LIFE

<p align="center">National Curriculum objectives</p> <ul style="list-style-type: none"> • explore and compare the differences between things that are living, dead, and things that have never been alive • identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • identify and name a variety of plants and animals in their habitats, including microhabitats • describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. 	<p align="center">Sticky knowledge</p> <ul style="list-style-type: none"> • Some things are living, some were once living but now dead and some things never lived. • There is variation between living things. • Different animals and plants live in different places. Living things are adapted to survive in different habitats. • Environmental change can affect plants and animals that live there. <p>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 (This is a simplification, but appropriate for Year 2 children.) An object made of wood is classed as dead. Objects made of rock, metal and plastic have never been alive (again ignoring that plastics are made of fossil fuels). 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. 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. 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</p>	<p align="center">Vocabulary</p> <p>Living, dead, never alive, suited, suitable, basic needs, habitats, micro-habitats, shelter, move, feed, food, food chain, leaf litter, shelter, seashore, woodland, ocean, rainforest, conditions, desert, damp, shade</p>	
<p align="center">Notes and guidance</p> <p>Pupils should be introduced to the idea that all living things have certain characteristics that are essential for keeping them alive and healthy. They should raise and answer questions that help them to become familiar with the life processes that are common to all living things. Pupils should be introduced to the terms 'habitat' (a natural environment or home of a variety of plants and animals) and 'micro-habitat' (a very small habitat, for example for woodlice under stones, logs or leaf litter). They should raise and answer questions about the local environment that help them to identify and study a variety of plants and animals within their habitat and observe how living things depend on each other, for example, plants serving as a source of food and shelter for animals. Pupils should compare animals in familiar habitats with animals found in less familiar habitats, for example, on the seashore, in woodland, in the ocean, in the rainforest.</p>		<p align="center">Key scientists</p> <p>Terry Nutkins (TV Presenter) Liz Bonnin (Conservationist)</p>	<p align="center">Linked texts</p> <p>The Gruffalo (Julia Donaldson) Meerkat Mail (Emily Gravett) No Place Like Home (Jonathon Emmett)</p>
<p align="center">Prior Learning</p>	<p align="center">Future learning</p>	<p align="center">Possible misconceptions</p>	
<ul style="list-style-type: none"> • Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants) • Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants) • Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals including humans) • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals including humans) • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 - Animals, including humans) • Observe changes across the four seasons. (Y1 - Seasonal changes) 	<ul style="list-style-type: none"> • Recognise that living things can be grouped in a variety of ways. (Y4 - Living things and their habitats) • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. (Y4 - Living things and their habitats) • Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats) • Construct and interpret a variety of food chains, identifying producers, predators and prey. (Y4 - Animals, including humans) 	<p>Some children may think:</p> <ul style="list-style-type: none"> • an animal's habitat is like its 'home' • plants and seeds are not alive as they cannot be seen to move • fire is living • arrows in a food chain mean 'eats'. 	

Enquiry						
Comparative tests	Identify and classify	Observation over time	Pattern seeking	Research	Ideas over time	Key Questions
<p>Do amphibians have more in common with reptiles or fish?</p> <p>Is there the same level of light in the evergreen wood compared with the deciduous wood?</p> 	<p>How would you group these plants and animals based on what habitat you would find them in?</p> <p>How would you group things to show which are living, dead, or have never been alive?</p> 	<p>How does the school pond change over the year?</p> 	<p>What conditions do woodlice prefer to live in?</p> <p>Which habitat do worms prefer - where can we find the most worms?</p> 	<p>How does the habitat of the Arctic compare with the habitat of the rainforest?</p> 	<p>What ideas did Charles Darwin have about evolution and adaptation? How have the materials we use changed over time?</p>	<p>How do animals eat? Do all animals eat the same thing? Which animals hunt, and which animals are hunted? Why? What animals live in our school environment? How are animals and plants 'adapted' to live in their habitats? Why do animals and plants like to live in different places? How do seasons affect our animals and plants? Which animals hibernate and why? Why do snails hibernate, but slugs do not? How do habitats change over our school year?</p>
<p>Report findings using tally charts, pictograms, or block charts</p>	<p>Focus on asking questions about the similarities and differences between things.</p> <p>Going outside to explore the world around them at all times of the year. Reporting by producing scientific drawings of their observations, increasing in fine detail. Developing scientific vocabulary.</p>	<p>Observe using magnifying glasses</p> <p>Take photographs to evidence observations over time</p> <p>Record own drawings over time</p> <p>Ask questions about what they have observed to find out more.</p>	<p>Begin to look for patterns in their measurements and observations. Describe them both orally and in writing. Start to think about cause and effect relationships. Start to use appropriate vocabulary to discuss these.</p>	<p>Pose their own 'big question'. Interpret the information they find and consider its relevance in answering their questions.</p> <p>Use a range of secondary sources, including books, websites, and video.</p> <p>Listen to presentations from experts and science professionals to get their information, or ask them questions in interviews and letters.</p>	<p>Report findings using posters, leaflets, newspapers, reports or letters</p> <p>Timeline of scientists</p>	
Linked TAPS Assessment	Additional TAPS ideas	Working scientifically				
<p>Adaptation</p> <ul style="list-style-type: none"> Can children explain adaptation.... <p>Woodlice Habitat</p> <ul style="list-style-type: none"> Can children identify where plants and animals live? Can children make a record of where plants and animals live? Can children discuss why they might live in chosen habitat? 	<p>Explore a local habitat and create a map of the plants and animals they find.</p> <p>Sorting pictures of objects into living and non-living and explaining why</p>	<ul style="list-style-type: none"> asking simple questions and recognising that they can be answered in different ways observing closely, using simple equipment performing simple tests identifying and classifying using their observations and ideas to suggest answers to questions gathering and recording data to help in answering questions. 	<ul style="list-style-type: none"> construct a simple food chain that includes humans (e.g. grass, cow, human). describe the conditions in different habitats and micro-habitats (under log, on stony path, under bushes) and find out how the conditions affect the number and type(s) of plants and animals that live there. sorting and classifying things according to whether they are living, dead or were never alive, and recording their findings using charts. describe how they decided where to place things, exploring questions for example: 'Is a flame alive? Is a deciduous tree dead in winter?' and talk about ways of answering their questions. describe the conditions in different habitats and micro-habitats (under log, on stony path, under bushes) and find out how the conditions affect the number and type(s) of plants and animals that live there. 			






Activities	Possible evidence
<ul style="list-style-type: none"> • Explore the outside environment regularly to find objects that are living, dead and have never lived. • Classify objects found in the local environment. • Observe animals and plants carefully, drawing and labelling diagrams. • Create simple food chains for a familiar local habitat from first-hand observation and research. • Create simple food chains from information given e.g. in picture books (Gruffalo etc.). 	<ul style="list-style-type: none"> • Can find a range of items outside that are living, dead and never lived • Can name a range of animals and plants that live in a habitat and micro-habitats that they have studied • Can talk about how the features of these animals and plants make them suitable to the habitat • Can talk about what the animals eat in a habitat and how the plants provide shelter for them • Can construct a food chain that starts with a plant and has the arrows pointing in the correct direction • Can sort into living, dead and never lived • Can give key features that mean the animal or plant is suited to its micro-habitat • Using a food chain can explain what animals eat • Can explain in simple terms why an animal or plant is suited to a habitat e.g. the caterpillar cannot live under the soil like a worm as it needs fresh leaves to eat; the seaweed we found on the beach cannot live in our pond because it is not salty

Year 2 - Plants - LIFE		
<p>National Curriculum objectives</p> <ul style="list-style-type: none"> observe and describe how seeds and bulbs grow into mature plants find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. 	<p>Sticky knowledge</p> <ul style="list-style-type: none"> Plants grow from seeds/bulbs Plants need light, water and warmth to grow and survive Flowers make seeds to make more plants (reproduce) Plants are important We need plants to survive (to clean air, to eat) We can eat different parts of the plants (leaves, stems, roots, seeds, fruit) <p>Plants may grow from either seeds or bulbs. These then germinate and grow into seedlings which then continue to grow into mature plants. These mature plants may have flowers which then develop into seeds, berries, fruits etc. Seeds and bulbs need to be planted outside at particular times of year and they will germinate and grow at different rates. Some plants are better suited to growing in full sun and some grow better in partial or full shade. Plants also need different amounts of water and space to grow well and stay healthy.</p>	<p>Vocabulary</p> <p>Leaves, trunk, branch, root, seed, bulb, flower, stem, wild, garden, deciduous, evergreen, observe, grow, compare, record, temperature, predict, measure, diagram, germinate, warmth, sunlight.</p> <p>As for Year 1 plus light, shade, sun, warm, cool, water, grow, healthy</p>
<p>Notes and guidance</p> <ul style="list-style-type: none"> use the local environment throughout the year to observe how different plants grow. be introduced to the requirements of plants for germination, growth and survival, as well as to the processes of reproduction and growth in plants. <p><i>Note: Seeds and bulbs need water to grow but most do not need light; seeds and bulbs have a store of food inside them.</i></p>	<p>Key scientists</p> <p>Agnes Arber (Botanist) Alan Titchmarsh (Botanist & Gardener)</p>	<p>Linked texts</p> <p>The Tin Forest (Helen Ward) Jack and the Beanstalk (Richard Walker) Ten Seeds (Ruth Brown) A Seed Is Sleepy (Dianna Aston)</p>
Prior Learning	Future learning	Possible misconceptions
<ul style="list-style-type: none"> Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants) Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants) 	<ul style="list-style-type: none"> Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. (Y3 - Plants) Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. (Y3 - Plants) Investigate the way in which water is transported within plants. (Y3 - Plants) Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants) 	<p>Some children may think:</p> <ul style="list-style-type: none"> plants are not alive as they cannot be seen to move seeds are not alive all plants start out as seeds seeds and bulbs need sunlight to germinate.

Enquiry						
Comparative tests	Identify and classify	Observation over time	Pattern seeking	Research	Ideas over time	Key Questions
Do cress seeds grow quicker inside or outside? 	How can we identify the trees that we observed on our tree hunt? 	What happens to my bean after I have planted it? 	Do bigger seeds grow into bigger plants? 	How does a cactus survive in a desert with no water? 	What ideas did botanist Arthur Tansley have about habitats in 1935?	Do cress produce seeds, how could we find out? Do all plants produce flowers and seeds? What is different between freshly cut and planted flowers? Do plants flower all year round? What are flowers for? What happens to a plant after it has produced seeds?
Report findings using tally charts, pictograms, or block charts	Focus on asking questions about the similarities and differences between things. Going outside to explore the world around them at all times of the year. Reporting by producing scientific drawings of their observations, increasing in fine detail. Developing scientific vocabulary.	Observe using magnifying glasses Take photographs to evidence observations over time Record own drawings over time Ask questions about what they have observed to find out more.	Begin to look for patterns in their measurements and observations. Describe them both orally and in writing. Start to think about cause and effect relationships. Start to use appropriate vocabulary to discuss these.	Pose their own 'big question'. Interpret the information they find and consider its relevance in answering their questions. Use a range of secondary sources, including books, websites, and video. Listen to presentations from experts and science professionals to get their information, or ask them questions in interviews and letters.	Report findings using posters, leaflets, newspapers, reports or letters Timeline of scientists	
Linked TAPS Assessment	Additional TAPS ideas		Working scientifically			
Comparing plant growth in different conditions <ul style="list-style-type: none"> Can children observe closely, noticing differences and similarities? Can children measure and compare the height of plants? 	<ul style="list-style-type: none"> Draw seeds before and after they have grown, observing changes. Observe plant growth and then order plant life cycle. 		<ul style="list-style-type: none"> asking simple questions and recognising that they can be answered in different ways observing closely, using simple equipment performing simple tests identifying and classifying using their observations and ideas to suggest answers to questions gathering and recording data to help in answering questions. 		<ul style="list-style-type: none"> observing and recording, with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb, or observing similar plants at different stages of growth setting up a comparative test to show that plants need light and water to stay healthy. 	
Activities			Possible evidence			
<ul style="list-style-type: none"> Make close observations of seeds and bulbs. Classify seeds and bulbs. • Research and plan when and how to plant a range of seeds and bulbs. Look after the plants as they grow - weeding, thinning, watering etc. Make close observations and measurements of their plants growing from seeds and bulbs. Make comparisons between plants as they grow 			<ul style="list-style-type: none"> Can describe how plants that they have grown from seeds and bulbs have developed over time Can identify plants that grew well in different conditions Can spot similarities and difference between bulbs and seeds Can nurture seeds and bulbs into mature plants identifying the different requirements of different plants 			

Year 2 - Uses of everyday materials - MATTER and ENERGY

Year 2 - Uses of everyday materials - MATTER and ENERGY						
<p>National Curriculum objectives</p> <ul style="list-style-type: none"> • identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching 	<p>Sticky knowledge</p> <ul style="list-style-type: none"> • Materials can be changed by physical force (twisting, bending, squashing and stretching) <p>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. 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. A material can be suitable for different purposes and an object can be made of different materials. 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.</p>	<p>Vocabulary</p> <p>Waterproof, fabric, rubber, cars, rock, paper, cardboard, wood, metal, plastic, glass, brick, twisting, squashing, bending, matches, cans, spoons,</p> <p>Names of materials - wood, metal, plastic, glass, brick, rock, paper, cardboard Properties of materials - as for Year 1 plus opaque, transparent and translucent, reflective, non-reflective, flexible, rigid Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching</p>				
<p>Notes and guidance</p> <p>Pupils should identify and discuss the uses of different everyday materials so that they become familiar with how some materials are used for more than one thing (metal can be used for coins, cans, cars and table legs; wood can be used for matches, floors, and telegraph poles) or different materials are used for the same thing (spoons can be made from plastic, wood, metal, but not normally from glass). They should think about the properties of materials that make them suitable or unsuitable for particular purposes and they should be encouraged to think about unusual and creative uses for everyday materials. Pupils might find out about people who have developed useful new materials, for example John Dunlop, Charles Macintosh or John McAdam.</p> <p>Pupils might work scientifically by: comparing the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs); observing closely, identifying and classifying the uses of different materials, and recording their observations.</p>		<table border="1"> <thead> <tr> <th data-bbox="1902 674 2386 743">Key scientists</th> <th data-bbox="2386 674 2852 743">Linked texts</th> </tr> </thead> <tbody> <tr> <td data-bbox="1902 743 2386 1335"> William Addis (Toothbrush Inventor) Charles Mackintosh (Waterproof coat) John McAdam (roads) </td> <td data-bbox="2386 743 2852 1335"> The Tin Forest (Helen Ward) Traction Man (Mini Grey) Three Little Pigs (Lesley Sims) </td> </tr> </tbody> </table>	Key scientists	Linked texts	William Addis (Toothbrush Inventor) Charles Mackintosh (Waterproof coat) John McAdam (roads)	The Tin Forest (Helen Ward) Traction Man (Mini Grey) Three Little Pigs (Lesley Sims)
Key scientists	Linked texts					
William Addis (Toothbrush Inventor) Charles Mackintosh (Waterproof coat) John McAdam (roads)	The Tin Forest (Helen Ward) Traction Man (Mini Grey) Three Little Pigs (Lesley Sims)					
<p>Prior Learning</p>	<p>Future learning</p>	<p>Possible misconceptions</p>				
<ul style="list-style-type: none"> • Distinguish between an object and the material from which it is made. (Y1 - Everyday materials) • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 - Everyday materials) • Describe the simple physical properties of a variety of everyday materials. (Y1 - Everyday materials) • Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1 - Everyday materials) 	<ul style="list-style-type: none"> • Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. (Y3 - Rocks) • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. (Y3 - Forces and magnets) • 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. (Y5 - Properties and changes of materials) • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. (Y5 - Properties and changes of materials) 	<p>Some children may think:</p> <ul style="list-style-type: none"> • only fabrics are materials • only building materials are materials • only writing materials are materials • the word rock describes an object rather than a material • solid is another word for hard. 				

Enquiry						
Comparative tests	Identify and classify	Observation over time	Pattern seeking	Research	Ideas over time	Key Questions
<p>Which shapes make the strongest paper bridge? Which material would be best for the roof of the little pig's house?</p> 	<p>Which materials are shiny and which are dull? Which materials will let electricity go through them, and which will not?</p> 	<p>Would a paper boat float forever? How long do bubble bath bubbles last for? What will happen to our snowman?</p> 	<p>Do magnetic materials always conduct electricity? How do materials change with heat? leave outside in sunshine/windowsill/radiator How does amount of water affect the strength of a kitchen towel?</p> 	<p>How have the materials we use changed over time? How are plastics made?</p> 	<p>How has glass making changed since it was first made in ancient Egypt? How have the materials that humans use for tools changed since the Stone Age?</p>	<p>It is recommended that materials be taught three times through KSI. Give a theme for each topic e.g. buildings, exploration, toys, the seaside. Plan to investigate a couple of classes of materials and properties in each topic so children get a depth of experience each topic and cover all the classes of materials over the key stage Buildings • Which rocks are the least crumbly? • Which materials absorb the most water? • Which type of brick would be the easiest to drag to make a pyramid? • Which material would be the strongest to use as a floor tile? Toys & Nice things • Which fabric would make the softest blanket? • The baby has spilt her drink, which material would absorb the drink the best? • We want to make a really slippery slide, which liquid would be best to use? • Which chocolate will melt the fastest on a warm plate (a model of a warm hand) • Which wrapping papers are strong enough to wrap and send a present? Clothing & Materials • Which material could be used to make a waterproof hat for the teacher when she is on the playground at playtime? • Which plastic would be flexible enough to make a belt? • Which material could I wrap my ice egg / snowman in to stop it melting, or would it make it melt quicker? • What could I wrap a chicken egg in to keep it warm when it is waiting to hatch? • What could you paint on the runaway gingerbread man that would allow him to swim the river and get away from the fox and not turn to mush?</p>
<p>Report findings using tally charts, pictograms, or block charts</p>	<p>Focus on asking questions about the similarities and differences between things. Going outside to explore the world around them at all times of the year. Reporting by producing scientific drawings of their observations, increasing in fine detail. Developing scientific vocabulary.</p>	<p>Observe using magnifying glasses Take photographs to evidence observations over time Record own drawings over time Ask questions about what they have observed to find out more.</p>	<p>Begin to look for patterns in their measurements and observations. Describe them both orally and in writing. Start to think about cause and effect relationships. Start to use appropriate vocabulary to discuss these.</p>	<p>Pose their own 'big question'. Interpret the information they find and consider its relevance in answering their questions. Use a range of secondary sources, including books, websites, and video. Listen to presentations from experts and science professionals to get their information, or ask them questions in interviews and letters.</p>	<p>Report findings using posters, leaflets, newspapers, reports or letters Timeline of scientists</p>	
Linked TAPS Assessment		Additional TAPS ideas		Working scientifically		
<p>Waterproof Materials</p> <ul style="list-style-type: none"> Can children discuss/use different ways to test how waterproof materials are? Can children compare materials on the basis of waterproofness? 		<p>Discussions to talk about suitability of materials for a project eg building a house for a lego figure. Test different papers to see how waterproof they are and then make their own record of their findings. Materials hunt around school and explain suitability. Rocket mice investigation (Forces/materials)</p>		<ul style="list-style-type: none"> asking simple questions and recognising that they can be answered in different ways observing closely, using simple equipment performing simple tests identifying and classifying using their observations and ideas to suggest answers to questions gathering and recording data to help in answering questions. 		<ul style="list-style-type: none"> comparing the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs) observing closely, identifying and classifying the uses of different materials, and recording their observations.
Activities			Possible evidence			
<ul style="list-style-type: none"> Classify materials. Make suggestions about alternative materials for a purpose that are both suitable and unsuitable Test the properties of materials for particular uses e.g. compare the stretchiness of fabrics to select the most appropriate for Elastigirl's costume, test materials for waterproofness to select the most appropriate for a rain hat 			<ul style="list-style-type: none"> Can name an object, say what material it is made from, identify its properties and make a link between the properties and a particular use Can label a picture or diagram of an object made from different materials For a given object can identify what properties a suitable material needs to have Whilst changing the shape of an object can describe the action used Can use the words flexible and/or stretchy to describe materials that can be changed in shape and stiff and/or rigid for those that cannot Can recognise that a material may come in different forms which have different properties Can sort materials using a range of properties Can explain using the key properties why a material is suitable or not suitable for a purpose Can begin to choose an appropriate method for testing a material for a particular property Can use their test evidence to select appropriate material for a purpose e.g. Which material is the best for a rain hat? 			