Which type of compost grows the tallest sunflower? Which tree has the biggest leaves?	Comparative tests		In EYFS Children should: • Make observations of p • Know some names of p • May be able to name a trees and flowers • Show some care for the	Prior Le	National Curricu I dentify and name a v and garden plants, ind evergreen tress. I dentify and describe variety of common file I dentify and name the and leaves of trees.	
How can we sort the leaves that we collected on our walk?	Identify & Classify		lants lants, trees and flowers nd describe different plants, ir world around them	arning	Ium Objectives ariety of common wild luding deciduous and the basic structure of a wering plants. roots, trunk, branches	
How does a daffodil bulb change over the year? How does my sunflower change each week? How does the oak tree change over the year?	O <u>bservation over time</u>		 How do Plants grow? What do Plants need to ; Do all plants need water Are all plants green? Why do seeds look differ Can plants grow as big in What is the biggest/smatree/flower/plant on the 	Key Que	Key Knc Plants grow from seeds/b Plants are important We can eat lots of plants We can eat lots of plants	
Do trees with bigger leaves lose their leaves first in autumn? Is there a pattern in where we find moss growing in the school grounds?	P <u>attern Seeking</u>	Teaching Ideas	grow? ? n the shade? llest/smelliest (etc) planet?	stion(s):	ulbs ir to grow and survive	<u>Year 1 - Plants</u>
What are the most common British plants and where can we find them? How did Beatrix Potter help our understanding of mushrooms and toadstools?	Research		In Year 2 Children will: • Observe and describe • Find out and describe healthy		Leaves, trunk, branch, root, se Key Scientists Beatrix Potter (Author & Botanist)	
How many types of plant are there?	BIG Question: Assessment Opportunitu		how seeds and bulbs grow into mature plants. how plants need water, light and warmth to grow and stay	Future Learning	Vocabulary ied, bulb, flower, stem, wild, garden, deciduous, evergreen Linked Texts Tree: Seasons Come, Seasons Go (Patricia Hegarty and Britta Teckentrup) A Little Guide to Wild Flowers (Charlotte Voake) The Things That I LOVE about TREES (Chris Butterworth) Harry's Hazelnut (Ruth Parsons)	

Comparative tests Do cress seeds grow quicker inside or outside?	Comparative tests	 In Year 1 Children should: Identify and name a vo and garden plants, incl evergreen trees. Identify and describe th variety of common flov Identify and name the i and leaves of trees. 	Prior Lea	 Observe and describe I into mature plants. Find out and describe I and warmth to grow ar 	National Curricul	
Identify & Classify How can we identify the trees that we observed on our tree hunt?	Identifu & Classifu	riety of common wild Jding deciduous and he basic structure of a vering plants. roots, trunk, branches	rning	now seeds and bulbs grow ow plants need water, light nd stay healthy.	um Objectives	
Observation over time What happens to my bean after I have planted it?	Observation over time	 Do cress produce seeds, Do all plants produce flow What is different between flowers? Do plants flower all year What are flowers for? What happens to a plant Do you remember what p 	Key Que:	 Plants grow from seeds/bu Plants need light, water and Plants are important We need plants to survive in we can eat different parts roots, seeds, fruit) 	Кеу Кпо	
Pattern Seeking Do bigger seeds grow into bigger plants?	Teaching Ideas	how could we find out? wers and seeds? round? after it has produced seeds? plants need to grow?	stion(s):	lbs d warmth to grow and survive ke more plants (reproduce) (to clean air, to eat) (to eat) of the plants (leaves, stems,	wledge	<u>Year 2 - Plants</u>
Besearch How does a cactus survive in a desert with no water?	Respective	In Year 3 Children will: • Identify and describe the plant:roots, stem/trur • Explore the part flowers part seed formation and s • Explain the requirements from soil, room to gro • Know the way in which w		Leaves, trunk, branch, root, seed observe, grow, compare, record, warmth, sunlight. Key Scientists Agnes Arber (Botanist) Alan Titchmarsh (Botanist & Gardener)		
<u>BIG Question - Assessment Opportunity</u> What should I do to grow a healthy plant?	RIG Direction - Assessment Opportunitu	· functions of different parts of the flowering Ik/leaves and flowers play in a flowering plants life cycle, including: pollination, eed dispersal of plants for life and growth (air, light, water, nutrients w) and how they vary between plants ater is transported between plants	Future Learning	, bulb, flower, stem, wild, garden, deciduous, evergreen, temperature, predict, measure, diagram, germinate, Linked Texts The Tin Forest (Helen Ward) Jack and the Beanstalk (Richard Walker) Ten Seeds (Ruth Brown) A Seed Is Sleepy (Dianna Aston)	Vocabulary	

Comparative tests		 In Year 2 Children should: Observe and describe how seeds and bulbs grow into mature plants. Find out and describe how plants need water, light and warmth to grow and stay healthy. In Year 1 Children should: Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of a variety of common flowering plants. Identify and name the roots, trunk, branches and leaves of trees. 	Prior Learning	 National Curriculum Objectives Identify and describe the functions of different parts of the flowering plant: roots, stem/trunk/leaves and flowers Explore the part flowers play in a flowering plants life cycle, including: pollination, seed formation and seed dispersal Explain the requirements of plants for life and growth (air, light, water, nutrients from soil, room to grow) and how they vary between plants Know the way in which water is transported between plants 	
O <u>bservation over time</u>		 How do plants reproduce? Do all flowers look the same How do insects know which Why do flowers smell? What do seeds do? Can a plant live without its le Can a plant live without its le Do grass/trees make flower What conditions are perfect Where do weeds come from How does the space betwee grow? Does seed size match plant Do plants take in water thro How does water move throu How does light affect plant How does a plant get carbo 	Key Ques	Key Knov Plants are producers, they make th Their leaves absorb sunlight and cc Plants have roots, which provide su the soil Flowering plants have specific adar out pollination, fertilisation and seed Seed dispersal improves a plants d reproduction Seeds/bulbs require the right condi Seeds contain enough food for the	
P <u>attern Seeking</u>	Teaching Ideas	e? flowers to pollinate? flor a seed to grow? for a seed to grow? an seeds affect how well they an seeds affect how well they size? size? ugh their roots? ugh the plant? pod? growth? growth?	tion(s):	wledge eir own food. arbon dioxide pport and draw water from stations which help it to carry production hances of successful hances of successful tions to germinate and grow. plant's initial growth	<u>Year 3 - Plants</u>
Research		 In Year 6 Children will: Recognise that living things have c information about living things Recognise that living things produce offspring vary and are not identical. Identify how animals and plants and and that adaptation can lead to evo 		Air, light, water, nutrients, soil, supp transportation, flower, energy, gro- material, photosynthesis, chloroph, Key Scientists Jan Ingenhousz (Photosynthesis) Joseph Banks (Botanist)	
BIG Question - Assessment Opportunity		hanged over time and that fossils provide ce offspring of the same kind, but normally to their parents "e adapted to suit their environment in different ways, lution.	Future Learning	Vocabulary ort, anchor, reproduction, pollination, dispersal, wth, seedling, carbon dioxide, oxygen, sugar, JI Linked Texts Cleannie Baker) George and Flora's Secret Garden (Jo Elworthy) Big Book Blooms (Yuval Zommer)	

<u>Comparative tests</u>		 In Early Years children should: be able to identify different pa Have some understanding of Have some understanding of Pave some understanding of Conce And the effects exercise has Have some understanding of Conce talk about things they have animals 	Prior Learning	and mammals, including pe identify, name, draw and lab the human body and say wh associated with each sense.	 describe and compare the st common animals (fish, amph 	 Identify and name a variety animals including fish, amphibirds and mammals. Identify and name a variety attacts are carnivores, herbivorethat are carnivores. 	National Curriculum Ot		seeds germinate faster?
l <u>dentifu & Classifu</u>		rts of their body. nealthy food and the neir diets. Sern for living things. on their bodies. growth and change. growth and change. e observed including		s) el the basic parts of ich part of the body is	ructure of a variety of hibians, reptiles, birds	of common bians, reptiles, of common animals es and omnivores	ojectives		
O <u>bservation over time</u>		 What do animals eat? Do all animals eat the same Which of our senses is the n food? Do all animals hunt? Why are animals different c 	Key Quest		bodies, be active and stay healthy.	 There are many different animals v Animals have senses to help individ animals sense things they are able to Animals need food to survive. Animals need a vorietu of food to h 	Key Knov	Y <u>ear 1</u>	How does taking away water/light/heat affect the growth of a plant?
P <u>attern Seeking</u>	Teaching Ideas	rood? nost accurate at identifying olours and patterns?	tion(s):		-	vith different characteristics. uals survive. When respond. elo them arow repair their	vledge	- Animals, including Humans	
Research		In Year 2 children will: • Know that animals, including • Find out and describe the by (water, food and air). • Describe the importance for different types of food, c		Chris Packham (Animal Conservationist)	Key Scientists	Amphibians, birds, fish, mammals, re touch, taste, smell, head, neck, ear, i nose, knee, toes, teeth, elbow			
BIG Question - Assessment Opportunitu		g humans, have offspring which grow into adults asic needs of animals, including humans, for survival r humans of exercise, eating the right amounts of and hygiene.	Future Learning	One Year with Kipper (Mick Inkpen) Snail Trail (Ruth Brown) Superworm (Julia Donaldson & Axel Scheffler)	Linked Texts	eptiles, carnivores, herbivore, omnivore, sight, hearing, mouth, shoulder, hand, fingers, leg, foot, thumb, eye,	Vocabulary		

How does the length of the carnation stem affect how long it takes for the food colouring to dye the petals?

How many different ways can you group our seed collection?

What happens to celery when it is left in a glass of coloured water?

What colour flowers do pollinating insects prefer?

What are all the different ways that seeds disperse?

Why do plants have flowers?

How do flowers in a vase change over time?

In Year 1. • Identify a including fit • Identify and carnivores,				 Describe the right an 	 Know tha grow into a Find out a including hu 					ls our ser better wh see?
children should: nd name a variety of coi sh, amphibians, reptiles, t nd name a variety of coi herbivores and omnivori	Prior Lear			the importance for hum nounts of different types	t animals, including hum dults ind describe the basic ne imans, for survival (wate	National Curriculur		·		ıse of smell ıen we can't
mmon animals sirds and mammals. mmon animals that are es.	ning			ans of exercise, eating of food, and hygiene.	ans, have offspring which seds of animals, rr, food and air).	n Objectives			What are the names for all the parts of our bodies?	How can we organise all the zoo animals?
 How long do should my pe Do all animals grow and liv Do bigger animals live long Why are we all different he How and why do we grow 	Key Qu		Animais grow until maturit	 All animals eventually die. Animals reproduce new an 	 Animals move in order to ; Different animals move in Exercise keeps animal's bo increases survival chances. 	Key Kr	Year á			How does my height change over the year?
ets live for? ve the same way? ger? aights? and change?	estion(s):		y and then don't grow any larger.	imals when they reach maturity.	survive. different ways to help them survive. dies in good condition and	nowledge	2 - Animals, including Humans			Do you get better at smelling as you get older?
In Year 3 children will: Identify that animals of nutrition, and they from what they eat. Identify that humans muscles for support,		Robert Winston (Human Scientist) Joe Wicks (Personal Trainer)	Steve Irwin (Crocodile Hunter)	Key Scientists	Living, dead, never alive, habit sea shore, woodland, ocean, ro					Do all animals have the same senses as humans?
s, including humans, need th y cannot make their own for s and some other animals H protection and movement:	Future Learning	Meerkat Mai (Emily Gravet Tadpole's Pra (Jeanne Willi	The Gruffalo (Julia Donald	Linked Texts	ats, micro-habitats, food, fo ainforest, conditions, desert	Vocabulary				What are animals like?
re right types and amount oc; they get their nutrition rave skeletons and		1 tt) s and Tony Ross)	son)		vod chain, leaf litter, shelter, , damp, shade,					

			Teaching Ideas			
<u>Comparative tests</u>	Identify & Classify	Observation over time	Pattern Seeking	Research	BIG Question	 Assessment Opportunity
Do amphibians have more in common with reptiles or fish?	Which offspring belongs to which animal?	How does a tadpole change over time? How much food and drink	Which age group of children wash their hands the most in a day?	What food do you need in a healthy diet and why?	Do living thing	gs change or stay the same?
Do bananas make us run faster?	How would you group things to show which are living, dead, or have never been alive?	do I have over a week?		What do you need to do to look after a pet dog/cat/lizard and keep it healthy?		
		Y <u>ear 3</u>	i – Animals. including Humans			
National Curricu	lum Objectives	Key Kn	owledge		Vocab	ulary
 Identify that animals, right types and amou cannot make their ow nutrition from what th Identify that humans a 	ncluding humans, need the nt of nutrition, and they n food; they get their ney eat. and some other animals	 Different animals are ad Many animals have skele and protect vital organs. Muscles are connected to they contract. 	apted to eat different foods. tons to support their bodies b bones and move them when	Nutrients, nutrition, carboh skeleton, bones, joints, endc invertebrates, muscles, contr	ydrates, protein skeleton, exosk act, relax,	1, fats, vitamins, minerals, water, fibre, eleton, hydrostatic skeleton, vertebrates,
nave skeletons and mover	nent:	 Movable joints connect b 	ones.	Key Scientists		Linked Texts
				Adelle Davis (20 th Century Nutritionist)		The Story of Frog Belly Rat Bone (Timothy Basil Ering)
				Marie Curie (Radiation / X-Rays)		Funnybones (Janet and Allan Ahlberg)
						I Will Never Not Ever Eat a Tomato (Lauren Child)
						Goldilocks and the Three Bears (Samantha Berger)

Prior Le	arning	• Why do we need a skeletor	sstion(s):	In Year 4 children will:	Future Learning
 In Year 2 children should: Know that animals, including hu grow into adults Find out and describe the basic including humans, for survival (wa basic) bescribe the importance for huthe right amounts of different types the right amounts of the second second	imans, have offspring which needs of animals, ater, food and air). Jmans of exercise, eating bes of food, and hygiene.	 Why do we need a skeletor What types of skeleton are Are all skeletons the same? Can something survive with What happens if we break How do we move? Are bones that are bigger. Why do we need joints? Why do muscles get tired? Can we 'break' muscles? 	1? there? a bone? stronger?	In Year 4 children will: • Describe the simple function: humans. • Identify the different types o • Construct and interpret a var predators and prey	s of the basic parts of the digestive system in f teeth in humans and their simple functions. riety of food chains, identifying producers,
			Teaching Ideas		
Comparative tests	Identify & Classify	Observation over time	Pattern Seeking	Research	BIG Question - Assessment Opportunity
How does the angle that your elbow/knee is bent affect the circumference of your upper arm/thigh? How does the skull circumference of a girl compare with that of a boy? Can people with longer legs jump further?	How do the skeletons of different animals compare?	How does our skeleton change over time? (from birth to death)	Do male humans have larger skulls that female humans?	Why do different types of vitamins keep us healthy and which foods can we find them in?	Why do animals have skeletons? What is a healthy diet and why is it important?
jump further?					

	Y <u>ear 4 - Animals, including Humans</u>		
National Curriculum Objectives	Key Knowledge	Vocc	abulary
 Describe the simple functions of the basic parts of the directive sustem in humans 	 Animals have teeth to help them eat. Different tunes of teeth do different inhe 	Herbivore, Carnivore, Digestive system, tor aall bladder small intestine pancreas larc	ngue, mouth, teeth, oesophagus, stomach, ce intestine liver tooth canine incisor
 Identify the different types of teeth in humans and their simple functions. Construct and interpret a variation of food chains 	 Food is broken down by the teeth and further in the stomach and intestines where nutrients go into the blood. The blood tables intriants around the body 	molar, premolar, producer, consumer.	
 Construct on a mice precia variety or noted chains, identifying producers, predators and prey 	 Inclusion draws and the body Nutrients produced by plants move to primary consumers then to secondary consumers through food chains. 	Key Scientists	Linked Texts
	secondary consumers through tood chains.		

Prior Learning					
Key Question(s):					
Futu				Joseph Lister (Discovered Antiseptics)	Ivan Pavlov (Digestive System Mechanisms)
re Learning	(Katie Bronsen)	The Gut Garden	Wolves (Emily Gravett)	Crocodiles Don't Brush Their Teeth (Colin Fancy)	Human Body Odyssey (Werner Holzwarth)

6		In our class, are omnivores taller than vegetarians?	Comparative tests		 In Year 3 children should: Identify that animals, incright types and amore cannot make their on nutrition from what they eat. Know how nutrients, wa transported within air transported within air transported within air kleetons and muscle and movement
	How can we organise teeth into groups?	What are the names for all the organs involved in the digestive system?	I <u>dentifu & Classifu</u>		Luding humans, need the unt of nutrition, and they wn food; they get their ter and oxygen are nimals and humans. nice of a nutritious, balanced d some other animals have es for support, protection
		How does an egg shell change when it is left in cola?	O <u>bservation over time</u>		 What different types of fo Why do we need a variety Do all organisms eat the s Why do some people neemarathon runner) Why are teeth important? What happens to our foce What is our digestive systematic sour foce the systematic source sour
		Are foods that are high in energy always high in sugar?	P <u>attern Seeking</u>	Teaching Ideas	od are there? Jo d different foods? ame things? d different diets? (weightlifter vs d different diets? (weightlifter vs m? m? m? to poo and wee?
		How do dentists fix broken teeth?	Research		In Year 5 children will: • Know the life cycle c bird. • Know the difference • Know the process o • Know the process o • Describe the chan
		What do our bodies do with the food we eat?	BIG Ouestion – Assessment Opportunity		of different living things, e.g. Mammal, amphibian, insect es between different life cycles. f reproduction in plants. f reproduction in animals iges as humans develop to old age

Vocabulary	Key Knowledge	National Curriculum Objectives
	Y <u>ear 5 - Animals, including Humans</u>	

					-	 				
• Describe the changes c						Prior Le	 In Year 4 children should: Describe the simple for the digestive system in the digestive system in the different and their simple functions. 		<u>Comparative tests</u>	How does age affect a human's reaction time? Who grows the fastest, girls or boys?
is humans develop to old age.						earning	unctions of the basic parts of in humans. Types of teeth in humans tions.		I <u>dentifu & Classifu</u>	Can you identify all the stages in the human life cycle?
 Different animals mature to different ages. Puberty is something w which prepares our bod reproduction 	 Hormones control these housing and/or emotion 		Will also be covered in our PSHE th			Key Qu	 What do humans look like? Do all animal embryos loo How do humans change? Why do humans change? What causes puberty? What changes do we go the Are there any patterns bet gestation periods? 		O <u>bservation over time</u>	How do different animal embryos change?
at different rates and live e all go through, a process lies for being adults, and	changes; which can be	ŝ	hrough Jigsaw programme			:tion(s): ihe same? ugh during puberty? een vertebrate animals and their		Teaching Ideas	P <u>attern Seeking</u>	Is there a relationship between a mammal's size and its gestation period?
Foetus, Embryo, Womb, Gestc Development, Puberty, Horm	Key Scientists	Dr Steve Jones (Genetisist)	Prof Robert Winston (Human Scientist)				In Year 6: Identify and name the and describe the fur Recognise the impative their bodies function Describe the ways in animals, including hu		Research	Why do people get grey/white hair when they get older?
station, Baby, Toddler, Teenager, Elderly, Growth, mone, Physical, Emotional, 	Linked Texts	Hair in Funny Places (Babette Cole)	Giant (Kate Scott)	You're Only Old Once! (Dr. Seuss)		Future Learning	the main parts of the human circulatory system, functions of the heart, blood vessels and blood. pact of diet, exercise, drugs and lifestyle on the way on. s in which nutrients and water are transported within humans.		BIG Ouestion - Assessment Opportunitu	Why and how does the human body change ove
										time?

	 Describe the changes as 	Prior Lec			
	humans develop to old age.	rning			
	 Why do we need oxygen? How do we breathe? Do fish and plants breathe? Do all living things need oxygen? How does the size of a person's lur capacity fixed? Are there ways to increase/decrea capacity fixed? Why do we have blood? Why does size of muscle affect our pulse How does size of muscle affect our pulse How does sercise effect our yulse How might the circulatory system a polar bear differ? Is the dir you breathe out, the same 	Key Que			
Teaching Ideas	igs affect their lung se our lung capacity? Is lung pulse rate? rate? of an elephant, a hummingbird, or a e as that you breathe in?	stion(s):			
	 In Key Stage 3 children will learn a the hierarchical organisation of mu to systems to organisms. the tissues and organs of the huma function and how the digestive system catalysts) calculations of energy requirement the consequences of imbalances in deficiency diseases the structure and functions of the g adaptations to function the effects of recreational drugs (in and life processes. 		Sir Richard Doll (Linking Smoking and Health Proble Leonardo Da Vinci (Anatomy)		(Theories of Nutrition and Metaboli
	titicellular organisms: from cells to tissues to organs an digestive system, including adaptations to m digests food (enzymes simply as biological :s in a healthy daily diet 1 the diet, including obesity, starvation and 1 the diet, including system in humans, including gas exchange system in humans, including ncluding substance misuse) on behaviour, health	Future Learning	ems) Skellig (David Almond) A Heart Pumping Adventure (Heather Manley) Kay's Anatomy (Adam Kay)		sm) (Malorie Blackman)
	Teaching Ideas	In Year 5 children shoud: • Why do we need oxygen? In Key Stoge 3 children will learn about: 6 • Describe the changes as humans develop to old age. • How do we breathe? • How do we breathe? • Do all luing things need oxygen? • Do all luing things need oxygen? • The tissues and organs of the human digestive system. including adaptations to tunctions of the digestive system in digestive system. including adaptations to tunctions of the digestive system. including adaptations to tunction and how the digestive system. including adaptations of tunctions of the digestive system ingests food (enzymes simply as biological carditys). • Are there vays to increase/decrease our lung capacity? • How does are reds effect our pulse rate? • The consequences of imbolances in the diet. Including obesity, starvation and bow the digestive system in humans, including obesity, starvation and polarite the circlulatory system of an elephant, a hummingbird, or a polarite the circlulatory system of an elephant, a hummingbird, or a in the effects of recreational drugs (including substance misuse) on behaviour, health and life processes. Teaching Ideas Teaching Ideas	Prior Learning Future Learning In Year 5 children should: • Describe the changes as humans develop to old age. • Describe the changes as humans develop to old age. • Describe the changes as humans develop to old age. • Do oll king things need avggen? • Do oll king things need avggen? • Do oll king things need avggen? • New does the size of a person's lungs affect their lung copacity? • New does the size of a person's lungs affect their lung copacity? • New does the size of a person's lungs affect their lung copacity? • New does the size of a person's lungs affect their lung copacity? • New does the size of a person's lungs affect their lung copacity? • New does our lung capacity? Is lung • New does are rule of the out we had blood? • Hew does are rule of the out we have blood? • Hew does are rule? • Hew ages the circulatory system of an elephant, a hummingbird, ar a on the effects of recreational drugs (including substance misuse) on behaviour, health in the effects of recreational drugs (including substance misuse) on behaviour, health and life processes.	Prior Learning Key Bay (Invig) Str Rubard Coll (Invig) Str Rubard Coll (Invig)	Prior Learning Key Question(5): Future Learning Single (Lilving Sincled grand Headth Problems) Single (Since Among) In Yoar 5 children aboute: • Describe the changes as humans develop to oldrops: • Heav dows the served to a plents breather • Describe the changes as in heart and plent the served to a plent the served of the plent the served to a plent the served of the plent the served to a plent the served of the plent term plant the served of the served plent term plant the served of the plent term plant term plant the plant term plant the served of the plent term plant term plant the plent term plant term pla

	Y <u>ear 6 - Animals, including Humans</u>		
National Curriculum Objectives	Key Knowledge	Уоса	bulary
 Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and 	 The heart pumps blood around the body. Oxygen is breathed into the lungs where it is absorbed by the blood. Muscles need oxygen to release energy from food to do work. (Oxygen is taken into the blood in the lungs; the heart pumps the blood 	Oxygenated, Deoxygenated, Valve, Exercise lungs, blood vessels, blood, artery, vein, pul transport, gas exchange, villi, nutrients, wat	, Respiration Circulatory system, heart, monary, alveoli, capillary, digestive, er, oxygen, alcohol, drugs, tobacco.
 Describe the way their bodies function. Describe the ways in which nutrients and water are 	through blood vessels to the muscles; the muscles take oxygen and nutrients from the blood)	Key Scientists	Linked Texts
transported within animals, including humans.		Justus von Liebig (Theories of Nutrition and Metabolism)	Pig-Heart Boy (Malorie Blackman)

		heart rate?	Which type of exercise has the greatest effect on our	Can exercising regularly affect your lung capacity?	How does the length of time we exercise for affect our heart rate?
				tound?	Which organs of the body make up the circulation system, and where are they
۲ <u>ear</u>				How much exercise do I do in a week?	How does my heart rate change over the day?
· 6 - Evolution & Inheritance				Is there a pattern between what we eat for breakfast and how fast we can run?	
					How have our ideas about disease and medicine changed over time?
					How do our choices affect how our bodies work? Why does my heart beat?

National Curriculum Objectives

Key Knowledge

Vocabulary

								•		,	•	,	•	•
Prior Learning						living things that inhabited the Earth millions of years ago	time and that fossils provide information about	adaptation may lead to evolution recoanise that living things have changed over	suit their environment in different ways and that	not identical to their parents	the same kind, but normally offspring vary and are	the past.	Know how fossils can be used to find out about	Know about evolution and can explain what it is.
Key Question(s):				Competition exists for resources and mates	 Variation exists within a population (and between offspring of some plants) 	 Organisms reproduce and offspring have similar characteristic patterns. 	adapted to reproduce are more likely to do so.	 Organisms best suited to their environment are more likely to survive long enough to reproduce. Organisms are best 	their habitats.	NR. The following could be duplicated in Year 6 living things and	פרוארטוווזיפרוג מפכטוזיפ וווכרפמצוווקוון כטווווזיוטיו.	 Over time the characteristics that are most suited to the 	adulthood.	 Life cycles have evolved to help organisms survive to
Futu			Mary Anning (Palaeontologist)	Jane Goodall (Chimpanzees)	Selection)	Alfred Russel Wallace (Theory of Evolution by Natural		(Theory of Evolution by Natural Selection)	Charles Darwin	Key Scientists			Inherited, Environmental, Mutation, Com	Fossils, Adaptation, Evolution, Character
ıre Learning	Origin of The Species (Sabina Radeva)	Moth (Isabel Thomas)	What Mr Darwin saw (Mick Manning)	History VIP Mary Anning (Kay Barnham)	Our Family Tree (Lisa Westberg Peters)	(Jules Pottle)	The Molliebird	(Christopher Wormell)	One Smart Fish	Linked Texts			petition, Survival of the Fittest, Evidence,	istics, Reproduction, Genetics, Variation,

What is the most common eye colour in our class?	<u>Comparative tests</u>		From Key Stages 1 & 2, children • Understand there is a v • Know that some animo to their survival • Know how animals and • Know how fossils form
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?	l <u>dentifu & Classifu</u>		should: rariety of life on Earth rs differences are important plants reproduce over time over time
How has the skeleton of the horse changed over time?	O <u>bservation over time</u>		 Why are we all different? What is variation, and why How did life begin on Earth How do we change? What is evolution? What evidence is there for How does evolution happe What reasons do animals Polar Bears habitat is rapi do they face and can w How did Darwin come up v Why was his theory not ini
Is there a pattern between the size and shape of a bird's beak and the food it will eat?	P <u>attern Seeking</u>	Teaching Ideas	r is it important? evolution? evolution? pn? become extinct? dly changing, what possible futures dly changing, what possible futures ve predict which is most likely? with the theory? tially accepted?
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?	<u>Research</u>		 In Key Stage 3 children will le heredity as the process by w generation to the next the variation between individ discontinuous, to include meas the variation between specie some organisms compete mo changes in the environment species, less well adapted to c lead to extinction the importance of maintainin preserve hereditary material.
What is evolution, how does it happen and how do scientists know?	BIG Ouestion - Assessment Opportunitu		earn about: ≤ which genetic information is transmitted from one duals within a species being continuous or surement and graphical representation of variation es and between individuals of the same species means are successfully, which can drive natural selection may leave individuals within a species, and some entire compete successfully and reproduce, which in turn may ng biodiversity and the use of gene banks to

	<u>Year 2 - Living Things & their Habitats</u>		
National Curriculum Objectives	Key Knowledge	Vocabulary	
 Explore and compare the difference 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 	 Some things are living, some were once living but now dead and some things never lived. There is variation between living things. Different mimors and plants live in different places Living things 	Living, dead, never alive, habitats, micro-habitats, food, fo sea shore, woodland, ocean, rainforest, conditions, desert	'ood chain, leaf litter, shelter, t, damp, shade,
 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 micro habitats. Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name the different sources of food. 	 Environmental change can affect plants and animals that live there. 	Key Scientists	v

		- Living Things & their Habitats	Y <u>ear 4</u> .		
different animals live in different places?	why do stralia different to the es that we find in Itain? Woes the habitat of the ctic compare with the bitat of the rainforest? hat ideas did botanist thur Tansley have about bitats in 1935?	What conditions do woodlice prefer to live in? At or Which habitat do worms prefer - where can we find the most worms? At ha Ar	How does the school pond change over the year? NB This needs revisiting each term to be measured or can be die with predictions and photographs	How would you group these plants and animals based on what habitat you would find them in?	Which pets are the easiest to look after? Is there the same level of light in the evergreen wood compared with the deciduous wood?
BIG Ouestion - Assessment Opportunity	Research	P <u>attern Seeking</u>	O <u>bservation over time</u>	l <u>dentifu & Classifu</u>	<u>Comparative tests</u>
	r	Teaching Ideas			
uped in a variety of ways. relp group, identify and name a variety of living nt. rge and that this can sometimes pose	 In Year 4 children will: Recognise that living things can be gro Explore and use classification keys to the things in their local and wider environments of a river Know and label the features of a river Recognise that environments can chard danger to living things. 	re thing? Anich animals are hunted? Why? Chool environment? ts 'adapted' to live in their habitats is like to live in different places? • animals and plants? and why? ut slugs don't? ver our school year?	 How to animals eat? Do all animals eat the sam Which animals hunt, and w What animals live in our sc How are animals and plant Why do animals and plant Why do seasons affect our a Which animals hibernate a Why do snails hibernate, bit How to habitats change ov 	: ing things and the e observed such as plants heir environment. s about their familiar world.	 In Early Years children should Comments and questions about natural world. Shows care and concern for livenvironment. Can talk about things they hav and animals. Notices features of objects in . Comments and asks question
ure Learning	Fut	Jestion(s)	Key Qu	earning	Prior L
The Gruffalo (Julia Donaldson) Meerkat Mail (Emily Gravett) No Place Like Home (Jonathon Emmett)	Terry Nutkins (TV Presenter) Liz Bonnin (Conservationist)				

National Curriculum Objectives Key Knowledge Vocabulary

How does the average temperature of the pond water change in each season?	Does the amount of light Ca affect how many cla woodlice move ide around? we	Comparative tests		 In Year 2, children should: Explore and compare the difference t living, dead and things that have never Identify that most living things live in t they are suited and describe how diffen habitats provide for the basic needs of animals and plants, and how they depe Identify and name a variety of plants habitats, including micro habitats. Describe how animals obtain their fac other animals, using the idea of a simplic chain, and identify and name the differe 	Prior Learning					can sometimes pose danger to living th	 Recognise that environments can chat 	 Recognise that living things can be gr of ways. Explore and use classification keys to and name a variety of living things in th
	n we use the sssification keys to antify all the animals that caught pond dipping?	Identify & Classify		been alive. been alive. nabitats to which ent and animals in their and from plants and e food ent sources of food.	3					ings.	inge and that this	ouped in a variety help group, identify reir
	How does the variety of invertebrates on the school field change over the year?	O <u>bservation over time</u>		 What food chains and webs are the does energy move through the food How does removal of one species i others? (Keystone species) How does environmental change a What are the most important things voltside area? (big hotels, pond, com ethe does human activity affect ou Solent? Sandown Airport? KFC?) 	Key Que					 Human activity significantly 	 Different food chains occur 	 Living things can be divided characteristics Environmental change affe Different organisms are aff
	How has the use of insecticides affected bee population?	P <u>attern Seeking</u>	Teaching Ideas	re in our local habitat? • How chain? from an environment, affect ffect different organisms? • we could do to improve our cost, wildflowers) r environment (ferries on the	stion(s):					affects the environment	in different habitats	l into groups based upon their cts different habitats differently ected differentlu bu environmental
	Why are people cutting A down the rainforests and what effect does that have?	Research		In Year 5: • Describe the differences • Describe the life process					Jaques Cousteau (Marine Biologist)	Cindy Looy (Environmental Change and Extir	Key Scientists	Environment, flowering, nonflow amphibians, reptiles, mammals, deforestation.
	re living things in danger?	BIG Question - Assessment Opportunity		in the life cycles of a mammal, an amphibian, an insect of reproduction in some plants and animals.	Future Learning	Red Alert (Catherine Barr)	Fourteen Wolves (Catherine Barr)	Journey to the River Sea (Eva Ibbotson)	The Morning I Met a Whale (Michael Morpurgo)	ction) The Vanishing Rainforest (Richard Platt)	Linked Texts	ering, plants, animals, vertebrates, fish, invertebrate, human impact, nature reserves,

Comparative tests		 In Year 4 children should: Construct and interpret a variety of food chains, identifying producers, predators and prey Identify that most living things live in habitats to which they are suited and describe how different kinds of 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 micro habitats. 	Prior Learning	National Curriculum Objectives • Know the life cycle of different living things, e.g. Mammal, amphibian, insect bird. • Know the process of reproduction in plants. • Know the process of reproduction in animals.
Observation over time	. Teaching Ideas	 What is a life cycle? What types of life cycles are there? Are life cycles the same? Do plants reproduce in the same ways as us? How do plants spread their seeds? 	Key Question(s):	Year 5 - Living things and their F Key Knowledge Different animals mature at different rates and live to different ages. Some organisms reproduce sexually where offspring inherit nformation from both parents. Some organisms reproduce asexually where offspring inherit nformation from both parents. Some organisms reproduce asexually by making a copy of a signarent. Environmental change can affect how well an organism is suite o its environment. Different types of organisms have different lifecycles.
BIG Question – Assessment Opportunity		 In Year 6: Classify living things into broad groups according to observable characteristics and based on similarities and differences. Give reasons for classifying plants and animals based on specific characteristics. 	Future Learning	Idbitatis Idbitatis Vocabulary Reproduction, Sexual, Asexual, Pollination, Dispersal, reproduction, cell, fertilisation, pollination, male, female, pregnancy, young, mammal, metamorphosis, amphibian, insect, egg, embryo, bird, plant Ingle Key Scientists James Brodie of Brodie (Reproduction of Plants by Spores) Linked Texts David Attenborough (Naturalist and Nature Documentary Broadcaster) Mummy Laid an Egg (Babette Cole) Fox (Isabel Thomas) Fox (Isabel Thomas)

		Teaching Ideas	
th on the ability of photosynthetic organisms, 1 photosynthesis to build organic molecules naintain levels of oxygen and carbon dioxide ecosystem, including food webs and insect cough insect pollination in human food by, their environment, including the	 In Key Stage 3 children will learn about: the dependence of almost all life on Earth such as plants and algae, to use sunlight in that are an essential energy store and to m in the atmosphere the adaptations of leaves for photosynthe the interdependence of organisms in an epollinated crops the importance of plant reproduction thro security how organisms affect, and are affected b accumulation of toxic materials. 	 Why do we need to classify living things? How do we classify? What are the difficulties with classification? (penguins, whales, platypus) How do animals change over time? Why does variation exist? What happens if animals of different species breed? (hybrids) What happens or bouse plants outside? What are microorganisms? How can we prevent the spread of disease? Why do animals and plants compete - and what for? 	 In Year 4, children should: Recognise that living things can be grouped in a variety of ways. 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.
re Learning	Futura	Key Question(s):	Prior Learning
Beetle Boy (M G Leonard) Insect Soup (Barry Louis Polisar) Fur and Feathers (Janet Halfmann)	Carl Linnaeus (Identifying, Naming and Classifying Organisms)	Competition exists for resources and mates.	
Linked Texts	Key Scientists	 Organisms reproduce and offspring have similar characteristic patterns 	
ication Characteristics Environment, vertebrates, fish, amphibians, reptiles, nature reserves, deforestation. Classify, nism, invertebrates, vertebrates, Linnaean.	Variation Organisms Populations. Classific flowering, nonflowering, plants, animals, v mammals, invertebrate, human impact, n compare, bacteria, microorganism, organ	 Variation exists within a population (and between offspring of some plants) - NB: this Key Idea is duplicated in Year 6 Evolution and Inheritance. Organisms best suited to their environment are more likely to survive long enough to reproduce. 	 Classify living things into broad groups according to observable characteristics and based on similarities and differences. Give reasons for classifying plants and animals based on specific characteristics.
cabulary	Voc	Key Knowledge	National Curriculum Objectives
	<u>Characteristics</u>	Year 6 - Living Things & their Habitats: Classifications &	
		How does a bean change as it germinates?	

How does the level of salt affect how quickly brine shrimp hatch?

Compare this collection of animals based on similarities and differences in their lifecycle.

> How do brine shrimp change over their lifetime?

Is there are relationship between number of petals and number of stamen?

What are the differences between the life cycle of an insect and a mammal?

Do all plants and animals reproduce in the same way?

Which is the most common invertebrate on our school playing field?	How does the temperature affect how much gas is produced by yeast?	<u>Comparative tests</u>
vertebrates/invertebrate s or microorganisms?	How would you make a classification key for	I <u>dentify & Classify</u>
	What happens to a piece of bread if you leave it on the windowsill for two weeks?	O <u>bservation over time</u>
	Do all flowers have the same number of petals?	P <u>attern Seeking</u>
	What do different types of microorganisms do? Are they always harmful?	<u>Research</u>
	In what ways can we sort living things?	BIG Ouestion - Assessment Opportunitu

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Which is the most common invertebrate on our school playing field?
vertebrates/invertebrate s or microorganisms?

e Learning	Future	Key Question(s):	Prior Learning
Until I Met Dudley (Roger McGough) Oscar and the Bird: A Book about Electricity (Geoff Waring) Electrical Wizard: How Nikola Tesla Lit Up the World (Elizabeth Rusch)	Thomas Edison (First Working Lightbulb) Joseph Swan (Incadesecant Light Bulb)	 A complete circuit is needed for electricity to flow and devices to work. Some materials allow electricity to flow easily and these are called conductors. Materials that don't allow electricity to flow easily are called insulators. 	 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. Know the difference between a conductor and an insulator; giving examples of each. Safety when using electricity.
Linked Texts	Key Scientists	 Devices work harder when more electricity goes through them. 	 identify whether of not a tarrip will light in a striple series circuit, based on whether or not the lamp is part of a complete loop with a bottoor.
ains, crocodile clips, wires, bulb, battery , conductor, electrical insulator,	Electricity, electric current, appliances, mo cell, battery holder, motor, buzzer, switch, component.	 A source of electricity (mains of battery) is needed for electrical devices to work. Electricity sources push electricity round a circuit. More batteries will push the electricity round the circuit factor 	 Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bubs, switches and buzzers.
cabulary	Voc	Key Knowledge	National Curriculum Objectives
		Y <u>ear 4 - Electricitu</u>	

 brightness of bulbs, the love and the on/off position of s Use recognised symbols will simple circuit in a diagram. 	 Associate the brightness of of a buzzer with the number used in the circuit. Compare and give reasons 	National Curriculum C		How does the thickness Ho of a conducting material th affect how bright the lamp is? eld which metal is the best conductor of electricity?		Comparative tests		 In Early Years children: May have some understanding that a electricity to work. May understand that a switch will tur
hincrouning the Miness of buzzers Witches. hen representing a	r a lamp or the volume r and voltage of cells for variations in	Objectives		ow would you group ese electrical devices used on where the ectricity comes from?		Identify & Classify		n something on or off.
 Current is how much elect circuit. When current flows throug The greater the current, the greater the current the current. 	 Batteries are a store of er electricity round the circui gone it stops pushing. Vol- The greater the current fit 	Key Kno		How long does a battery light a torch for?		Observation over time		 What would life be like without elect What sorts of things use/need elec What electricity do I use? In which ways can we 'get' electricit (mains/plugs/batteries/w How do we make electricity? How do batteries work? How quickly can batteries run out? difference depending on number of a elevice? What materials can carry electricity
rricity is flowing round a gh wires heat is released. ne more heat is released.	nergy. This energy pushes It. When the battery's energy is tage measures the 'push.' owing through a device the harder	owledge	Y <u>ear 6 - Electricity</u>	Which room has the most electrical sockets in a house?	-	P <u>attern Seeking</u>	Teaching Ideas	tricity? :tricity? y? Does this make a components? added to the circuit affect a y? (conductors/insulators)
Key Scientists	Electricity, neutrons, protons, mains, crocodile clips, wires, b conductor, electrical insulator			How has electricity changed the way we live? How does a light bulb work?		Research		In Year 6 children will: Associate the bright number and voltage Compare and give including the brightr position of switches. Use recognised syn
Linked Texts	electrons, nucleus, atom, electric current, appliances, ulb, battery cell, battery holder, motor, buzzer, switch, , conductor.	Vocabulary		What can we do with electricity?		BIG Question – Assessment Opportunity		ness of a lamp or the volume of a buzzer with the 9 of cells used in the circuit. reasons for variations in how components function, ness of bulbs, the loudness of buzzers and the on/off nbols when representing a simple circuit in a diagram.

mperes, in circuits, series and parallel inches meet and current as flow of charge in volts, battery and bulb ratings; as the ratio of potential difference (p.d.) to sen conducting and insulating tive charges when objects are rubbed forces between charged objects acting across the space between objects not	 In Key Stage Three children will learn: Electric current, measured in an circuits, currents add where bran Potential difference, measured in ohms, a current Differences in resistance betwee components (quantitative). Separation of positive or negati together: transfer of electrons, for The idea of electric field, forces or in contact. 	 Do all batteries push as hard as each other? What is electricity? How does the voltage of a batters affect how much current is pushed? How does the length of time I leave the current flowing for affect the brightness of the bulb? How does number of bulbs affect the brightness of a bulb? Are all types of wires as good as conducting electricity? Why are wires insulated in plastic? Does type of material make a difference? Does length of wire make a difference? Does the type of circuit affect how the components work/long the battery lasts? What renewable ways can we generate electricity? What are the dangers of a short circuit? 	 In Year 4, children should: Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Identify 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. 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. Know the difference between a conductor and an insulator; giving examples of each. Safety when using electricity.
e Learning	Future	Key Question(s):	Prior Learning
Goodnight Mister Tom (Michelle Magorian) Blackout (John Rocco) Hitler's Canary (Sandi Toksvig)	Alessandro Volta (Electrical Battery) Nicola Tesla (Alternating Currents)		

How does the voltage of the batteries in a dircuit affect the brightness of the lamp? How does the voltage of the batteries in a circuit affect the volume of the buzer? Which make of battery lasts the longest? Which type of fruit makes the best fruity battery?	Comparative tests		
How would you group electrical components and appliances based on what electricity makes them do?	ldentify & Classify		
How does brightness of bulb change as the battery runs out? How can we measure how quickly a battery is used up?	Observation over time		
Does the temperature of a light bulb go up the longer it is on?	Pattern Seeking	Teaching Ideas	
How has our understanding of electricity changed over time?	Research		
Can we vary the effects of electricity?	BIG Question - Assessment Opportunity		

 In Early Years children should: Explore the natural world around them, making observations and drawing pictures of animals and plants Know some similarities and differences between natural world around them and contrasting environments, drawing on their experiences and what has been read in class Understand some important processes and changes i the natural world around them, including the seasons and changing states of matter 	Prior Learning	 Compare how things move on different surfaces. Know how a simple pulley works and use making lifting an object simpler Notice that some forces need contact between two objects, but magnetic forces can act at a distance. Observe how magnets attract and repel each other and attract some materials and not others. Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. Predict whether two magnets with attract or repel each other, depending on which poles are facing. 	National Curriculum Objectives		
 What are magnetic materials? How can we find out? Can I make a magnetic material non-magnetic? How far away does a magnet have to be before it attracts a magnetic material? How far away can the magnetic attraction between two magnets be experiences? Is the repulsive force the same size? How is the magnetic attraction of repulsion force affected by putting materials between the magnets? 	Key Question(s):	 Magnets exert attractive and repulsive forces on each other. Magnets exert non-contact forces, which work through some materials. Magnets exert attractive forces on some materials. Magnet forces are affected by magnet strength, object mass, distance from object and object material. 	Key Knowledge	<u>Year 3 - Forces (& Magnetism)</u>	
In Year 5 children will: Explain that unsupported objec of gravity acting between the E gravity on our lives. Identify the effects of air resist act between moving surfaces. Recognise that some mechanis a smaller force to have a great Describe the movement of the in the solar system Describe the movement of the	Futu	Force, push, pull, friction, surface, magne south, attract, repel, compass Key Scientists William Gilbert (Theories on Magnetism) Andre Marie Ampere (Founder of Electro-Magnetism)	Yc.		
cts fall towards the Earth because of the force Earth and the falling object and the impact of tance, water resistance and friction, which sms, including levers, pulleys and gears, allow ter effect. Earth, and other planets, relative to the Sun Moon relative to the Earth	re Learning	et, magnetic, magnetic field, pole, north, Linked Texts The Iron Man (Ted Hughes) Mrs Armitage: Queen of the Road (Quentin Blake) Mr Archimedes' Bath (Pamela Allen)	ocabulary		

			 ,
How does the mass of an object affect how much force is needed to make it move? Which magnet is strongest? Which surface is best to stop you slipping?	Comparative tests		
Which materials are magnetic?	l <u>dentifu & Classifu</u>		
If we magnetise a pin, how long does it stay magnetised for?	O <u>bservation over time</u>		 Are bigger magnets stror How could you use magr pages in a book?
Do magnetic materials always conduct electricity? Does the size and shape of a magnet affect how strong it is?	P <u>attern Seeking</u>	Teaching Ideas	iger? iets to measure the number of
How have our ideas about forces changed over time? How does a compass work?	Research		Describe the son, the opportunity of the apparent move the ap
How can we move magnets?	BIG Ouestion – Assessment Opportunitu		-arth and Moon as approximately spherical boates of the Earth's rotation to explain day and night and ement of the sun across the sky.
			· ·

	Y <u>ear 5 - Forces</u>		
National Curriculum Objectives	Key Knowledge	۷٥	cabulary
 Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object and the 	 Air resistance and water resistance are forces against motion caused by objects having to move air and water out of their way. 	Air resistance, Water resistance, Friction, pull, opposing, streamline, brake, mechan	Gravity, Newton, Gears, Pulleys, force, push, lism, lever, cog, machine, pulley.
 Identify the effects of air resistance water 	 Friction is a force against motion caused by two 	Key Scientists	Linked Texts
resistance and friction, which act between moving surfaces.	 Some objects require large forces to make them move; gears, pulley and levers can reduce the force needed to 	Galileo Galilei (Gravity and Acceleration)	The Enormous Turnip (Katie Daynes)
 Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to 	make things move	Isaac Newton (Gravitation)	Leonardo's Dream (Hans de Beer)
nave a greater errect.		Archimedes of Syracuse (Levers)	The Aerodynamics of Biscuits (Clare Helen Welsh)
		John Walker (The Match)	

 Describe the movement the Earth Describe the Sun, Earth 	 Describe the movemer other planets, relative t system 	National Curricul		How does the angle of launch affect how far a paper rocket will go? How does the surface area of an object affect the time it takes to sink?	<u>Comparative tests</u>		In year 3: Compare how things m surfaces. Notice that some force two objects, but magned distance. Observe how magnets other and attract some everyday materials on are attracted to a mag magnetic materials. Predict whether two m repel each other, depei facing.
nt of the Moon relative to n and Moon as	t of the Earth, and to the Sun in the solar	um Objectives		Can you label and name all the forces acting on the objects in each of these situations?	l <u>dentifu & Classifu</u>		nove on different ley works and use t simpler s need contact between etic forces can act at a attract and repel each materials and not others. gether a variety of the basis of whether they net, and identify some Describe magnets as agnets with attract or nding on which poles are
 Objects with larger mass forces. Objects like planets, mod 	 Stars, planets and moon other things, including ec gravity. Gravity works ov 	Key Kr		How long does a pendulum swing for before it stops?	O <u>bservation over time</u>		 What actually is a force? How can a force act on ar How can we see forces? How does the saltiness (sa water resistance? How does the length of a wings affect the time it How does the changing th plasticine affect water How does the amount/de between a shoe and a How can we use levers to What is the most effective How do see-saws work? Can you create a pulley si
ses exert bigger gravitational ons and stars spin.	s have so much mass they attract ach other due to a force called ver distance.	nowledge	Y <u>ear 5 - Earth & Space</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 <u>attern Seeking</u>	Teaching Ideas	n object? res? plice of a paper helicopter's takes to fall? resistance? a parachute affect the time it takes a parachute affect the time it takes surface? th of tread affect the friction surface? lit more? way to move an object? stem to life a given load?
Key Scientists	Earth, Sun, Moon, Axis, Rotc waxing, waning, crescent, ç Neptune, planets, solar sys heliocentric.			How do submarines sink if they are full of air?	Research		In KS3 children will learn aboy on a compressed forces being needed their speed or dire change depending or
Linked Texts	ation, Day, Night, Phases of the Moon, star, constellation, gibbous. Mercury, Venus, Mars, Jupiter, Saturn, Uranus, tem, day, night, rotate, orbit, axis, spherical, geocentric,	Vocabulary		How and why do objects move?	BIG Question – Assessment Opportunitu		ut: equilibrium: weight held by stretched spring or supported surface to cause objects to stop or start moving, or to change action of motion (qualitative only) n direction of force and its size.

Prior Learning

Key Question(s):

Future Learning

How does the length of daylight hours change in each season?	Comparative tests		 In Key Stage 1 and in Year 3 ch Understand changes in weathe seasons. Compare how things move on a Notice that some forces need cobjects, but magnetic forces can Describe magnets as having tw whether two magnets with attracother, depending on which poles 	Prior Le					explain day and night movement of the sun	approximately sphericDescribe the idea of the
How could you organise all the objects in the solar system into groups?	ldentifu & Classifu		i ldren should: r patterns and different surfaces. ontact between two act at a distance. ro poles. Predict t or repel each are facing	arning					and the apparent across the sky.	al bodies ne Earth's rotation to
Can you observe and identify all the phases in the cycle of the Moon?	O <u>bservation over time</u>		 How does temperature/s change as you get closer How does distance from much light hits an object? Does having more moons planet? How could you te How does speed/size of moon crater formed? If the moon became hear collisions what would hop If the Earth's surface of the Earth's surface of the moon? Wh day/night/months/years Why does shadow size ch 	Key Qu				חה אהנו חהרמתאה תוהח נהו	 Stars produce vast amou All other objects are lump 	 Smaller mass objects like objects like stars.
Is there a pattern between the size of a planet and the time it takes to travel around the Sun?	P <u>attern Seeking</u>	Teaching Ideas	ize/day length/year length /further to the sun? a light source affect how s result in more light hitting a sst this? a meteorite affect the size of the a meteorite affect the size of the s a result of meteorite occ only for greater than at the a so that of the moon, why is the foce only for greater than at the yseasons? nange?	estion(s):				rect the light of stars.	nts of heat and light. ss of rock, metal or ice and can	e planets orbit large mass
What unusual objects did Jocelyn Bell Burnell discover? How do astronomers know what stars are made of? How have our ideas about the solar system changed over time?	Research		 In KS3 children will learn about: Gravity force, weight = mass x different on other planets and si between Earth and Sun (qualitat Our Sun as a star, other stars The seasons and the Earth's ti different hemispheres the light y 		Tim Peake (First British ESA astronaut)			Helen Sharman (First British astronaut)	Neil Armstrong (First man on the Moon)	Claudius Ptolemy and Nicolau Copernicus (Heliocentric vs Geocentric Uni
Sun, Earth & Moon:	B <u>IG Ouest</u> i		gravitational field s tars; gravity forces t tive only) in our galaxy, other in, day length at diff lt, day length at diff jear as a unit of ast	Future Learnii		Hidde Margo	Count Helair	The w (Olive	Georg (Lucy Christe	JS The S (Charl iverse)
What is moving and how do we know?	on – Assessment Opportunity		itrength (g), on Earth g=10 N/kg, between Earth and Moon, and galaxies erent times of year, in ronomical distance	ng		n Figures xt Lee Shetterly	i ng on KAtherine ie Becker	r Jeffers)	ye's Secret Key to the Universe and Stephen Hawking with pphe Galfard)	k ies Above My Eyes otte Guillain & Yuval Zommer)

Prior Learning					 Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies. 	National Curriculum Objectives	
Key Question(s):			 There are four seasons: Spring, Summer, Autumn, Winter 	 Days are longer and hotter in the summer Days are shorter and colder in the winter 	 Weather can change There are lots of different types of weather: Rain, Sun, Cloud, Wind, Snow, etc 	Key Knowledge	Y <u>ear 1 - (ENERGY) Seasons and How they Ch</u>
Futu		Holly Green (Meteorologist)	Dr Steve Lyons (Extreme Weather)	Key Scientists	Seasons, spring, summer, autumn, winter	Vo	<u>ange</u>
re Learning	After the Storm (Nick Butterworth)	One Year with Kipper (Mick Inkpen)	Tree: Seasons Come, Seasons Go (Patricia Hegarty and Britta Teckentrup)	Linked Texts	r, windy, sunny, overcast, snow, rain, temperature	scabulary	

BIG Question - Assessment Opportunitu	Research	P <u>attern Seeking</u>	O <u>bservation over time</u>	I <u>dentify & Classify</u>	Comparative tests
		Teaching Ideas			
ight in order to see things and that dark is the d from surfaces. he sun can be dangerous and that there are ways to re formed when the light from a light source is at the sizes of shadows change.	 In Year 3 children will: Recognise that they need I absence of light. Notice that light is reflected Recognise that light from the protect their eyes. Recognise that shadows a blocked by a solid object. Find patterns in the way the final patterns in the way the solution of the solution. 	in saturate the ground? ,nd to dry after it has been tures have less rain? re change over time in our school hade cover/best at directing water? nt leaves? a tree? wn in Winter? ? Does this change across the ? Does this change across the environment? o much rain? 't enough rain?	 Why do more frequent days of ra How long does it take for the grouraining? Does more rain take longer to dry Do countries with higher temperatur grounds? Which leaf is the strongest/best si What do you notice about different What purpose to leaves serve for What purpose to leaves serve for What colours can we find outside seasons? What effect does rain have on the What would happen if there was to 	r change. 1 things may occur (e.g anges). rences, patterns and the place they live or the	 In Early Years children should: Developing an understanding of Observe and explain why certail leaves falling off trees, weather ah e Look closely at similarities, differ change. Comments and questions about natural world.

et.	In which season does it rain the most?
	How could you organise all the objects in the solar system into groups?
	How does the colour of a UV bead change over the day?
	Does the wind always blow the same way?
	Are there plants that are in flower in every season? What are they?
	What is it like in Winter, Spring, Summer and Autumn?

<u>Year 3 - (ENERGY) Light & Sight</u>

National Curriculum Objectives	Key Knowledge	Voc	abulary
 Recognise that they need light in order to see things and that dark is the absence of light. Notice that light is reflected from surfaces. 	 There must be light for us to see. Without light it is dark. We need light to see things even shiny things. Transparent materials let light through them and opaque 	Light source, dark, reflect, ray, mirror, bou straight, opaque, shadow, block, transpare	ınce, visible, beam, sun, glare, travel, ənt, translucent.
 Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. 	 materials don't let light through. Beams of light bounce off some materials (reflection). 	Key Scientists	Linked Texts
 Recognise that shadows are formed when the light from a light source is blocked by a solid object. Find patterns in the way that the sizes of shadows 	 Shiny materials reflect light beams better than non-shiny materials. Light comes from a source 	James Clerk Maxwell (Visible and Invisible Waves of Light)	The Owl Who Was Afraid of the Dark (Jill Tomlinson)
 Finite protections in the weighting the sizes of singlows change. 	עריקוור בטווופא דטווו ע אטטיבפ		The Dark (Lemony Snicket)
			The Firework-Maker's Daughter

Prior Learning	
Key Question(s):	
Future Learnin	(Philip
- Bu	› Pullman)

 Know what happens to a sound as it travel. its source to our ears. 	 Know how sound is made associating some them with vibrating. 	National Curriculum Objectives		Which pair of sunglasses will be best at protecting our eyes?	How does the distance between the shadow puppet and the screen affect the size of the shadow?	Comparative tests									ullet May understand they need light to be able to see th	 Have some understanding of a reflection. 	 have seen their shadows and may know they appec It is computed. 	 have some knowledge of were light comes from. 		seasons and how day length varies.	• Observed and describe weather associated with the	 Observed changes across the four seasons 	
 Sound spreads out as it travels. Changing the shape, size and mc 	 e of Sound travels from its source in a it travels to our ears. Sound travel can be blocked. 	Key K			rganise When is our classroom darkest? cial Is the Sun the same brightness all day?	lassifu Observation over time		shadow?	 How can we change the 	 How does the shape of reflects? 	a single piece of white p	 How many pieces of tra 	can pass through it?		What would be the best	is?	ar when How does the colour of 	 What colour would be the from? 	 How does being in dark 	it looks?	 How does distance from 	the lights out and see it	
aterial of an object will change the	all directions and we hear it when	nowledge	<u>Year 4 - (ENERGY) Sound</u>		Are you more likely to have bad eye sight and to wear glasses if you are older?	Pattern Seeking	Teaching Ideas		e darkness. size and shape of a	a mirror affect how the light	paper?	acing paper are as translucent as	מ ווומנפושו מוופרנ ווסא ווומכוו ווקוונ	a mathematical affects became hight	t material to make a blind for a		a material affect how reflective it	he best to make a safety jacket	ness affect your sense of hearing?		n a light source affect how bright	shine? Use a torch to see it reflect?)	ום מכיווב מבצי אתץ נס וווום וו: (וסווו
Key Scientists	Amplitude, volume, quiet, lou				How does the Sun make light?	Research									binoculars, mirror, r	 Know how simple o 	the same shape as	 Use the idea that lig 	 Explain that we see eyes or from light s 	seen because they	 Use the idea that light is that light is that light is that light is that ligh	 Recognise that light 	
Linked Texts	d, ear, pitch, high, low, particles, instruments, wave.	Vocabulary			What is a shadow?	BIG Question - Assessment Opportunity									nagnitying glass etc.	ptical instruments work, e.g. periscope, telescope,	the objects that cast them.	ht travels in straight lines to explain why shadows have	things because light travels from light sources to our ources to objects and then to our eyes.	give out or reflect light into the eye.	travels in straight lines to explain that objects are	t appears to travel in straight lines.	

Sound spreads out as it travels.
Changing the shape, size and material of an object will change the

Research
 their effects o are longitudin auditory rang
 sound needs (solids
In KS3 children will learn frequencies of and absorptic
Alexander Graham Bel (Invented the Telephone
(Frequency and Pitch o Waves)
Gailileo Galilei
Aristotle

one?	Are two ears better than	sound?	How does the length of a guitar string/tuning fork affect the pitch of the	How does the volume of a drum change as you move further away from it?
				Which material is best to use for muffling sound in ear defenders?
				When is our classroom the quietest?
			every area of the schools	Is there a link between how loud it is in school and the time of day? If there is a pattern, is it the same in construction of the school
				Do all animals have the same hearing range?
				How can we make different sounds?

 Recognise that light appears to travel in straight lines. Use the idea that light travels in straight lines to explain that objects are seen because they give out or 	National Curriculum Objectives	
 Animals see light sources when light travels from the source into their eyes. Animals see objects when light is reflected off that object 	Key Knowledge	<u>Year 6 – (ENERGY) Light and Sight</u>
Light source, dark, reflect, ray, mirror, bot straight, opaque, shadow, block, transpar Scattered Refraction	Vo(
unce, visible, beam, sun, glare, travel, rent, translucent. Reflect Absorb Emitted	cabulary	
	 Recognise that light appears to travel in straight Animals see light sources when light travels from the light source, dark, reflect, ray, mirror, bounce, visible, beam, sun, glare, travel, straight, opaque, shadow, block, transparent, translucent. Reflect Absorb Emitted source into their eyes. Use the idea that light travels in straight lines to explain that objects are seen because they give out or Animals see light sources when light travels from the straight, opaque, shadow, block, transparent, translucent. Reflect Absorb Emitted Scattered Refraction 	National Curriculum Objectives Key Knowledge Vocabulary • Recognise that light appears to travel in straight • Animals see light sources when light travels from the source into their eyes. • Use the idea that light travels in straight lines to explain that objects are seen because they give out or • Animals see objects when light is reflected off that object Light source, dark, reflect, ray, mirror, bounce, visible, beam, sun, glare, travel, straight, opaque, shadow, block, transparent, translucent. Reflect Absorb Emitted

	•	• •
	Know how simple optical instruments work, e.g. periscope, telescope, binoculars, mirror, magnifying glass etc.	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. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
		 Light reflects off all objects (unless they are black). Non shiny surfaces scatter the light so we don't see the beam. Light travels in straight lines.
D +		Thomas Young (Wave Theory of Light) Ibn al-Haytham (Alhazen) (Light and our Eyes) Percy Shaw (The Cats Eye)
	How does Lighthouse work? Roman Belyaev	Letters from the Lighthouse (Emma Carroll) The Gruffalo's Child (Julia Donaldson) The King Who Banned the Dark (Emily Haworth-Booth)

Prior Learning	 Know how simple optical instruments work, e.g. periscope, telescope, binoculars, mirror, magnifying glass etc. 	explain why shadows have the same shape as the objects that cast them.	 Use the idea that light travels in straight lines to 	from light courses to our pupe or from light courses
Key Question(s):		 Light travels in straight lines. 	 Non shiny surfaces scatter the light so we don't see the beam. 	
Futu		Percy Shaw (The Cats Eye)	Ibn al-Haytham (Alhazen) (Light and our Eyes)	(Wave Theory of Light)
re Learning	How does Lighthouse work? Roman Belyaev	The King Who Banned the Dark (Emily Haworth-Booth)	The Gruffalo's Child (Julia Donaldson)	(Emma Carroll)

water and rock,	 Distinguish between an ob material from which it is m Identify and name a variet 	National Curriculum		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?	Comparative tests		 In Year 3 children should: Recognise that they need light in or that dark is the absence of light. Notice that light is reflected from s. Recognise that shadows are forme that there are ways to protect their e. Recognise that shadows are forme light source is blocked by a solid obje. Find patterns in the way that the siz change.
חופנמו, סומצוור, שומצג,	iject and the rade. Ty of everyday	Objectives		Can you identify all the colours of light that make white light when mixed ogether? What colours do you get if you mix different colours of light together?	I <u>dentifu & Classifu</u>		der to see things and urfaces. an be dangerous and jes. d when the light from a ct. res of shadows
ceramics (including glass	 There are many different different describable and Materials that have similation to the similation of the simil	Key Kn	<u>Yec</u>	Does the temperature of a light bulb go up the longer it is on? How does my shadow change over the day?	O <u>bservation over time</u>		 How does the size of an a shadow? How does the distance by change the size of a shad the screen affect the size of a shad the screen affect the size. How would a solar eclips o - The moon w o - The moon w o - The sun was o The sun was o
).).	materials that have measurable properties. Ir properties are grouped	owledge	ar 1 - Materials (Everyday)	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 <u>attern Seeking</u>	Teaching Ideas	bject affect the size of a etween the light and the object dow? etween the object and the size of of a shadow? e be different if: as a different size? and moon where the same size but n the solar system? aluminum foil scrunched affect s? polishing affect how well a piece polishing affect how well a piece polishing affect how well a piece is shone through water? How glitter, salt or talc in the water? icroscope/telescope work?
Key Scientists	Hard, soft, stretchy, stiff, shiny waterproof/not waterproof, c			Why do some people need to wear glasses to see clearly? How do our eyes adapt to different conditions?	Research		In Key Stage 3, children will lear matter Ilght waves travellin the transmission of i and specular reflect use of ray model to refraction of light ar human eye light transferring en and electrical effect cameras Colours and the diff (qualitative only); di reflection.
Linked Texts	y, dull, rough, smooth, bendy/not bendy, ibsorbent, opaque,	Vocabulary		Why does my shadow change length over the course of a day?	BIG Question - Assessment Opportunity		rn about: g through a vacuum; speed of light light through materials: absorption, diffuse scattering ion at a surface Science explain imaging in mirrors, the pinhole camera, the nd action of convex lens in focusing (qualitative); the ergy from source to absorber leading to chemical s; photo-sensitive material in the retina and in s; photo-sensitive material in the retina and prisms fferential colour effects in absorption and diffuse

Which materials are the most flexible? Which materials are the most absorbent?	<u>Comparative tests</u>				 In Early Years children should: Be able to ask questions Talk about why things he Discuss the things they h natural and found objects. Manipulates materials to 	Prior Lec	 Describe the simple ph variety of everyday my Compare and group to everyday materials on properties
We need to choose a material to make an umbrella. Which materials are waterproof?	I <u>dentifu & Classifu</u>				about the place they live. appen and how things work. ave observed such as .achieve a planned effect.	arning	ysical properties of a aterials. ogether a variety of the basis of their simple
What happens to materials over time if we bury them in the ground? What happens to shaving foam over time?	O <u>bservation over time</u>		 <u>Clothing & Materials</u> Which material could be used to make the playground at playtime? Which plaste, would be fissible enough Which material could I wrap my ice eg mote it melt quicker? What could i wrap a chicken egg in to could you paint on the runaway gingerb and get away from the fox and not turn 	Tous & Nice things • Which fabric would make the softest b • The baby has split her drink, which ma • We wont to make a really slippy slide, • Which chocolate will melt the fastest o • Which wrapping papers are strong end	It is recommended that materials be taught thre topic e.g. buildings, exploration, tays, the seaside materials and properties in each topic so childred cover all the classes of materials over the key st <u>Buildings</u> • Which racks are the least crumbly? • Which materials absorb the most wate • Which material would be the easis • Which material would be the strongest	Key Qu	 The properties of a mate are suitable for a purpose
Is there a pattern in the types of materials that are used to make objects in a school?	P <u>attern Seeking</u>	Teaching Ideas	a waterproof hat for the teacher when she is on to make a belt? g / snowman in to stop it melting, or would it keep it warm when it is waiting to hatch? • What read man that would allow him to swim the river to mush?	lanket? terial would absorb the drink the best? which liquid would be best to use? n a warm plate (a model of a warm hand) pugh to wrap and send a present?	e times through KS1 Give a theme for each . Plan to investigate a couple of classes of n get a depth of experience each topic and age r? r? r? to drag to make a pyramid? to use as a floor tile?	estion(s):	rial determine whether they 9.
How are bricks made? v Which materials can be recycled?	Research				In Year 2 children will: Identify and compare including wood, metal. for particular uses. Find out how shapes changed by sa		William Addis (Toothbrush Inventor) Charles Mackintosh (Waterproof coat) John MacAdam (roads)
vhat are the things I use made from?	BIG Question - Assessment Opportunity				the suitability of a variety of everyday materials, plastic, glass, brick, rock, paper and cardboard of solid objects made from some materials are rashing, bending, twisting and stretching.	Future Learning	The Great Paper Caper (Oliver Jeffers) Who Sank the Boat (Parmela Allen) The Story of Cinderella (Walt Disney)

<u>Year 2 - Materials (Use of Everyday Materials)</u>

		How does amount of water affect the strength of a kitchen towel?	snowman?	electricity go through them, and which will not?	little pig's house?
e change materials? o we choose the best material?	How have the materials we Can we use changed over time? How d	How do materials change with heat? leave outside in sunshine/windowsill/radiator	How long do bubble bath bubbles last for? What will barren to our	Which materials will float and which will sink? Which moterials will let	Which shapes make the strongest paper bridge?
BIG Ouestion - Assessment Opportunity	Research	P <u>attern Seeking</u>	O <u>bservation over time</u>	l <u>dentifu & Classifu</u>	<u>Comparative tests</u>
		Teaching Ideas			
		e a waterproof hat for the teacher when she is on h to make a bel? gg / snowman in to stop it melting, or would it skeep it warm when it is waiting to hatch? • What sread man that would allow him to swim the river to mush?	Clathing & Materials • Which material could be used to mak the playground at playtime? • Which plastic would be flexible enoug • Which material could I wrap my ice e make it melt quicker? • What could I wrap a chicken egg in to could jour paint on the unaway ginger and get away from the fax and not turi		
		blanket? aterial would absorb the drink the best? ,which liquid would be best to use? on a warm plate (a model of a warm hand) nough to wrap and send a present?	Tous & Nice things • Which fabric would make the softest • The baby has split her drink, which m • We want to make a realiy slippy slide • We want to make an unit the fastest • Which wrapping papers are strong et	ogether a variety of 1 the basis of their simple	 Compare and group to everyday materials on properties.
w tossils are tormed when things that have lived de from rocks and organic matter.	 Describe in simple terms ho are trapped within rock Recognise that soils are ma 	er? seset to drag to make a pyramid? st to use as a floor tile?	Buildings which rocks are the least crumbly? • Which materials absorb the most war • Which type of brick would be the ess • Which material would be the stronge	ariety of everyday ood, metal, plastic, glass, nysical properties of a naterials.	 Identity and name a v materials, including wc water and rock, Describe the simple ph varietu of everudau m
er different kinds of rocks on the basis of e physical properties	In Year 3 children will: Compare and group together their appearance and simple t	ee times through KSI. Give a theme for each e. Plant to investigate a couple of classes of en get a depth of experience each topic and tage	It is recommended that materials be taught thr topic e.g. buildings, exploration, tays, the seasid materials and properties in each topic so childr cover all the classes of materials over the key :	nd object and the is made.	In Year 1 children should: Distinguish between an material from which it
sture Learning	Fi	estion(s):	Key Qu	arning	Prior Lec
Three Little Pigs (Lesley Sims)	John MacAdam (roads)				
Traction Man (Mini Grey)	Charles Mackintosh (Waterproof coat)				
The Tin Forest (Helen Ward)	William Addis (Toothbrush Inventor)			stretching.	bending, twisting and
Linked Texts	Key Scientists			of solid objects made from e chanaed bu sauashina	 Find out how shapes o some materials can be
, paper, cardboard, wood, metal, plastic, glass, atches, cans, spoons,	Waterproof, fabric, rubber, cars, rock, brick, twisting, squashing, bending, m	sical force (twisting, bending,	 Materials can be changed by phy squashing and stretching) 	the suitability of a variety , including wood, metal, ck, paper and cardboard	 Identify and compare of everyday materials, plastic, glass, brick, roc for porticular upon
Vocabulary		nowledge	Key Kr	lum Objectives	National Curricu

Which materials are shiny and which are dull?		
	<u>Year 3 - Materials (Rocks)</u>	
National Curriculum Objectives	Key Knowledge	Vocabulary
 Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties Describe in simple terms how fossils are formed when things that have lived are trapped within rock 	 There are different types of rock. There are different types of soil. Soils change over time. Different plants grow in different soils. 	Rocks, igneous, metamorphic, sedimentary, anthropic, permeable, impermeable, chemical fossil, body fossil, trace fossil, Mary Anning, cast fossil, mould fossil, replacement fossil, extinct, organic matter, top soil, sub soil, base rock.
 Recognise that soils are made from rocks and organic matter 	 Fossils tell us what has happened before. Fossils provide evidence. 	Key Scientists Linked Texts
	 Falson including the provide evidence that living things have changed over time. 	Mary Anning The Pebble in My Pocket (Discovery of Fossils) (Meredith Hooper)
		Inge Lehmann Stone Girl, Bone Girl (Earth's Mantle) (Laurence Anholt)
		The Street Beneath My Feet (Charlotte Guillain & Yuval Zommer)
Prior Learning	Key Question(s):	Future Learning
 In Year 2 children should: Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. 	 How are the soils different? Which do you think has best drainage? Which is more likely to lead to flooding? Which is more likely to lead to flooding? How many soil types have we found? Where might you find more? 	 In Year 4 children will: Compare and group materials together, according to whether they are solids, liquids or gases. Observe that some materials change state when heated or cooled, and measure and research the temperature at which this happens in degrees Celsius.
 Find out how shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. 	 How might the soil be different in different countries? What rock is best for a kitchen chopping board? What might be the issues with various materials and what they have to withstand? 	 Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.
 Children may: May have some understanding of a variety of different rocks in the natural world. Some understanding of what soil is. (how to identify soil etc) 	 What types of rocks are there? How do rocks change? What would grow best in your soil? What would grow best in your soil? Why do you think worms are important to the creation of soil? How can we use composting to make our own soil? Does it currently look like real soil? 	 In Year 6 children will: Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.
• May have some knowledge of what a tossilits.	 How long do you think this process will take and why? How are fossils created? Why do fossils help us find out about historical events? If you could fossilise an object what would it be? 	

re Learning	Futu	Key Question(s):	Prior Learning
Sticks (Diane Alber)	Daniel Fahrenheit (Fahrenheit Temperature Scale / Invention of the Thermometer)		
Once Upon a Raindrop: The Story of Water (James Carter)	Anders Celcius (Celcius Temperature Scale)	 The temperature at which given substances change state are always the same. 	 Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.
Linked Texts	Key Scientists	evaporate into gases. d) Cooling causes gases to condense into liquids and liquids to freeze into solids.	research the temperature at which this happens in degrees Celsius.
	precipitation, collection,	 Materials can be divided into solids, liquids and gases. Heating causes solids to melt into liquids and liquids 	 Observe that some materials change state when heated or cooled, and measure and
Ils, properties, matter, melt, freeze, water, , evaporation, water vapour, energy,	Solid, liquid, gas, particles, state, material ice, temperature, process, condensation,	 Solids, liquids and gases are described by observable properties. 	 Compare and group materials together, according to whether they are solids, liquids or gases.
scabulary	Vo	Key Knowledge	National Curriculum Objectives
	of Matter	<u>Year 4 - Materials - Solids, Liquids & Gases/States</u>	

			Teaching Ideas		
<u>Comparative tests</u>	I <u>dentifu & Classifu</u>	O <u>bservation over time</u>	P <u>attern Seeking</u>	<u>Research</u>	BIG Question - Assessment Opportunity

Linked Texts	Keu Scientists	materials	properties between two	ש	ווסא ווווצנטן בא וווקוור מב
tate, materials, properties, matter, melt, freeze, water, ondensation, evaporation, water vapour, energy,	Solid, liquid, gas, particles, str ice, temperature, process, cc precipitation, collection,	cances are mixed and remain present rated. sversed and some can't. y heating and cooling. re used when there is a difference in	 When two or more subsite the mixture can be sepane changes can be referred to the separating state Separating techniques a 	rials will dissolve in liquid to escribe how to recover a tion. Iquids, and gases to decide	 Know that some mate form a solution, and de substance from a solu Use knowledge to solit
Vocabulary		Knowledge	Кеу	Jum Objectives	National Curricu
	<u>. (D</u>	Materials (Mixtures and Separatin	<u>Year 5 - 1</u>		
					Does seawater evaporate faster than fresh water?
		How does evaporation rate change as you add more salt to your water?	How does the level of water in a glass change when left on the windowsill?	How would you sort these objects/materials based on their temperature?	How does the surface area of water affect how long it takes to evaporate?
Where do ice cubes go when they disappear? Why does it rain and hail?	What are hurricanes, and why do they happen?	Is there a pattern in how long it takes different sized ice lollies to melt?	Which material is best for keeping our hot chocolate warm?	Can you group these materials and objects into solids, liquids, and gases?	How does the mass of a block of ice affect how long it takes to melt?
BIG Ouestion - Assessment Opportunity	<u>Research</u>	P <u>attern Seeking</u>	O <u>bservation over time</u>	l <u>dentify & Classify</u>	<u>Comparative tests</u>
		Teaching Ideas			
of everyday materials, including wood, metals and lissolving, mixing and changes of state are hanges result in the formation of new materials, and is usually not reversible, including changes associated e action of acid on bicarbonate of soda.	 the particular uses of plastic. Demonstrate that diversible changes. Explain that some change is this kind of change is with burning and the source of the so	ature? of ice and how does it ture of water? < the same as its freezing	chocolate affect its melting temper • What is the melting temperature compare with the freezing tempera- • Is the melting temperature of way temperature?	, the basis of their simple the suitability of a variety , including wood, metal, ck, paper and cardboard es of solid objects made can be changed by visting and stretching.	everyday materials on physical properties. Identify and compare of everyday materials, plastic, glass, brick, roc for particular uses. Find out how the shap from some materials c squashing, bending, tw
olids, liquids, and gases to decide how mixtures might ling through filtering, sieving and evaporating. on evidence from comparative and fair tests, for	 Use knowledge of sc be separated, includi Give reasons based 	on ice and snow affect how quickly smuggle? How does the type of	 How does the material sprinkled a it melts? What chocolate would be best to 	nysical properties of a aterials. ogether a variety of	 Describe the simple physical variety of everyday m Compare and group to
(cal and thermal), and response to magnets. Iterials will dissolve in liquid to form a solution, and over a substance from a solution.	 Conductivity (electric Know that some main describe how to reconductivity 	now viscous a inquia is (use ande and watch it spin. Why does it e it?	 How does une temperature arreated to be a peach in a glass of lemone behave that way and can you provide that way and can y	ariety of everyday ood, plastic, glass, metal,	 Identify and name a variable value of the second sec
o together everyday materials on the basis of their otheir hardness solubility transparency	In Year 5 children will: Compare and group properties including	dded to flour affect its state? • How ed to water affect how slippy it is? how viscous a liquid is fuse	 How does the amount of water a does the amount of detergent adds How does the temperature offert 	n object and the material	In KS1 children should: Distinguish between ar from which it is made

Key Scientists

Linked Texts

filtering, sieving and evaporating.	 Filtration and sieving are used when a solid does not dissolve in a liquid. Solid particles are different sizes. Some materials are magnetic and will be attracted to magnets Evaporation is the process by which a liquid turns into a gas as a process of a liquid seconding a gas due to being heated. Some materials float and others sink and this is due to density 	Spencer Silver, Arthur Fry and Alan Amron (Post-It Notes) Itch (Simon Mayo) (Mrinkle-Free Cotton) Ruth Benerito (Wrinkle-Free Cotton) Kensuke's Kingdom (Michael Morpurgo) The BFG (Roald Dahl) The BFG (Roald Dahl) Nano (Jess Wade) Less Wade)
Prior Learning	Key Question(s):	Future Learning
 In KS1 children should: Distinguish between an object and the material from which it is made. Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. Describe the simple physical properties of a variety of everyday materials. Compare and group together a variety of everyday materials on the basis of their simple physical properties. 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. 	 What are mixtures? What does dissolving mean? Which of the following dissolve in water: sugar, bicarbonate of soda, oil, chocolate, coffees, dark vinegar and wax? How does the amount of water used affect how much sugar will dissolve in it? Which sweets dissolve in water? How can we separate mixtures? How can we clean our dirty water? 	 In Year 5 children will: 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. Give reasons based on evidence from comparative and fair tests, for the particular uses of everyday materials, including wood, metals and plastic. Demonstrate that dissolving, mixing and changes of state are reversible changes. 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

C <u>omparative tests</u>		
l <u>dentifu & Classifu</u>		
O <u>bservation over time</u>		
Pattern Seeking	Teaching Ideas	
R <u>esearch</u>		
BIG Question - Assessment Opportunitu		
	Comparative tests Identify & Classify Observation over time Pattern Seeking Research BIG Question – Assessment Opportunity	Comparative tests Identify & Classify Observation over time Pattern Seeking Research BIG Question - Assessment Opportunity

	Year 5 – Materials (Properties and Changes)		
National Curriculum Objectives	Key Knowledge	Voca	bulary
 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. comparative and fair tests, for the particular uses of everyday materials, including wood, metals and plastic. 	 All matter (including gas) has mass. Sometimes mixed substances react to make a new substance. These changes are usually irreversible. Heating can sometimes cause materials to change permanently. When this happens, a new substance is made. These changes are not reversible. Indicators that something new has been made are. The 	Hardness, Solubility, Transparency, C Evaporation, Dissolving, Mixing Mater suspension, chemical, physical, irreve mixture, insulator, transparent, flexib magnetic, hard.	Conductivity, Magnetic, Filter, rial, conductor, dissolve, insoluble, rsible, solution, reversible, separate, e, permeable, soluble, property,
 Explain that some changes result in the formation of 	properties of the material are different (colour, state, texture, hardness, smell, temperature)	Key Scientists	Linked Texts
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	 If it is not possible to get the material back easily it is likely that it is not there anymore and something new has been made (irreversible change) 	Spencer Silver, Arthur Fry and Alan Amron (Post-It Notes)	Itch (Simon Mayo)
		Ruth Benerito (Wrinkle-Free Cotton)	Kensuke's Kingdom (Michael Morpurgo) The BFG
			Nano (Jess Wade)
Prior Learning	Key Question(s):	Future	Learning
 In Year 4 children should: Compare and group materials together, according to whether they are solids, liquids or gases. Observe that some materials change state when heated or cooled, and measure and research the temperature at which this happens in degrees Celsius. Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. 	 The key question we want children to interrogate is "have we made a new substance?" Wet clay air-dried clay fired clay. OR Flour and water dough bread Add sugar to fizzy water; it fizzes up. Has a new substance been made? (No, the gas was dissolved) 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) Add water to instant snow. Use lemon juice as an invisible ink, heating gently makes the ink visible. Is this a new substance? When water is added to jelly and it is set, is it a new substance. When materials are heated or mixed with other materials they sometimes can be made to turn into new materials. The question is how would we know if it was a new material or the same material mixed differently? 	 In KS3 children will learn about: the concept of a pure substance mix diffusion in terms of the particle mood for separating mix distillation and chromatography the identification of pure substances 	tures, including dissolving del (tures: filtration, evaporation,

Which material rusts fastest/slowest? How can we change the 'jellyness' of jelly?	<u>Comparative tests</u>	
Can you identify and classify these reactions and changes into reversible, and irreversible? Can you describe their groups similarities and differences?	<u>Identifu & Classifu</u>	
How does a nail in salt water change over time?	O <u>bservation over time</u>	
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 <u>attern Seeking</u>	Teaching Ideas
What are smart materials and how can they help us?	<u>Research</u>	
How can we change materials reversibly and irreversibly?	BIG Question - Assessment Opportunitu	