The Federation of Middleham (VA) and Spennithorne (VC) CE Primary Schools

Blessed is the one who trusts in the Lord, whose confidence is in him.
They will be like a tree planted by the water that sends out its roots by the stream.
It does not fear when heat comes; its leaves are always green.
It has no worries in a year of drought and never fails to bear fruit.
Jeremiah 17: 7 - 8

A PLACE TO LEARN, LOVE & GROW

Science Long Term Plan Overview

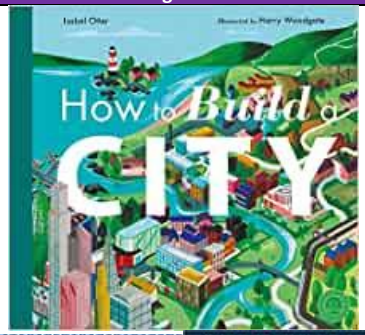
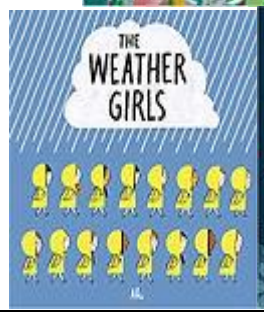
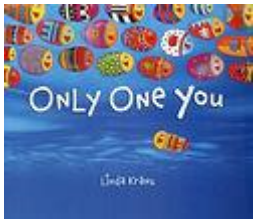
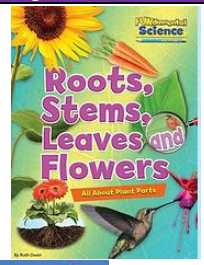
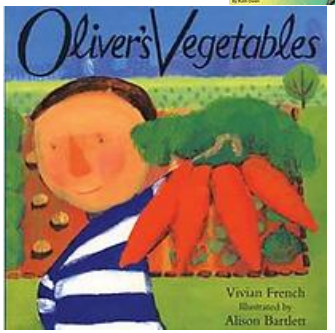
Cycle A	EYFS	Year 1/2	Year 3/4	Year 5/6
Autumn	All about me (Autumn 1) Let's Celebrate (Autumn 2)	Everyday Materials – Brilliant Builders! Seasonal Changes – Wild weather	Animals including humans – The circle of life Sound – sounds spectacular	Properties and changes of materials – Special Effects materials
Spring	Ticket to ride (Spring 1) Come outside (Spring 2)	Living Things and their Habitats – Homes & Habitats Animals including humans – Wild and wonderful creatures	Living Things and their habitat – habitat helpers Light – Light & Shadow	Earth & Space – Space! Light - Theatre Lighting Technicians
Summer	Amazing Animals (Summer 1) Fun at the seaside (Summer 2)	Animals including humans – Amazing me! Plants – Growing things	States of matter – What's the matter? Plants – Feast of flowers, fruits and seeds	All Living things and their habitats – Art of living Animals, including humans – Art of being human

Cycle B	EYFS	Year 1/2	Year 3/4	Year 5/6
Autumn	All about me (Autumn 1) Let's Celebrate (Autumn 2)	Everyday Materials – Comparing materials Seasonal Changes – Weather Art	Electricity – Electric Personalities Forces & magnets – Magnetic fun and games	Electricity – Electric Art Forces – Welcome to Force Land
Spring	Ticket to ride (Spring 1) Come outside (Spring 2)	Living Things and Habitats – Food Chains Animals including humans – People and their pets	Animals including humans – fit for success Rocks and soils – This planet rocks	Evolution & inheritance – survival of the fittest
Summer	Amazing Animals (Summer 1) Fun at the seaside (Summer 2)	Plants – Art and Nature	Plants – Greatly Green Growers Living things and their habitats – A world of living things	Animals, including humans – Life Explorers Living things and their habitats - Classification Connoisseurs

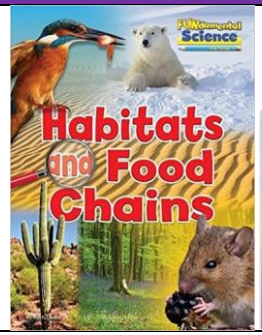
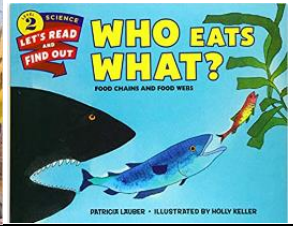
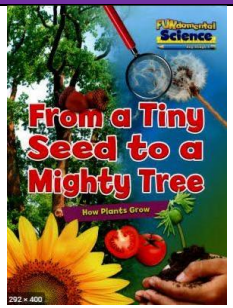
The Federation of Middleham (VA) & Spennithorne (VC) CE Primary Schools
Curriculum Progression EYFS

	Development Matters (Guidance)	ELG (Statutory Framework)	How this achieved in EYFS	Knowledge, skills and vocabulary: By the end of EYFS the children will know…
Understanding the World (Science)	**Reception:** - Learn new vocabulary - Ask questions to find out more and to check wat has been said to them - Articulate their ideas and thoughts in well-formed sentences. - Describe events in some detail. - Use talk to work out problems and organise thinking and activities. Explain how things work and why they might happen - Use new vocabulary in different contexts - Know and talk about different factors that support overall health and wellbeing such as: regular physical activity, healthy eating, tooth brushing, sensible amounts of screen time, having a good sleep routine - Being a safe pedestrian. - Explore the natural world around them - Describe what they see, hear and feel whilst outside. - Recognise some environments that are different to the one in which they live. - Understand the effect of changing seasons on the natural world around them.	**The Natural World** - Explore the natural world around them, making observations and drawing pictures of animals and plants. - Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. - Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. **Managing Self** - Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. **Listening, Attention and Understanding** - Make comments about what they have heard and ask questions to clarify their understanding.	**Autumn Term:** *All about me:* - Discussions around snack time and lunch time - healthy eating choices. - Discussions around healthy living choices including: washing hands, brushing teeth, eating and exercise. - Story time and circle time to explore books focusing on staying healthy and the human body: Funnybones, Germs, What makes me a me? and The Little Book of Manners. - Naming body parts through songs: if you're happy and you know it and head, shoulders, knees and toes… - Talking about our pets at home and drawing out pets in our family portraits. *Seasonal changes – Autumn:* - Exploring school's grounds and observing seasonal changes in the Autumn. - Exploring natural autumnal resources in a Tuff Tray, asking questions and making/drawing observations. - Explore hibernation and migration, looking at contrasting environments/animals around the world in the autumn. - Explore harvest time in the UK and farming at harvest time. - Observe seasonal weather changes and longer nights in the autumn compared to the summer. - Observe and explain decomposition of pumpkins *Let's Celebrate:* - Explore festival origins/celebrations across the world, using a world map/globe. - Observe changes – light **Spring Term:** *Seasonal Changes – Winter & Spring:* - Exploring schools' grounds and observing seasonal changes in the winter/spring. - Explore compare/contrast our environment with polar regions. - Discuss global warming and the impact on polar regions - Observe seasonal weather changes in the winter/spring (ice exploration) - Observe, question and draw spring plants/spring growth. - Explore natural spring resources in Tuff Tray, asking questions and making/drawing observations. - Spring walk around School grounds describing and discussing what is found. - Explore the life cycle of frogs and butterflies. - Explore the life cycle of plants - Still life observations and drawings of spring flowers. *Come Outside!* - Planting seeds and plants - Discover, compare and contrast food produce/grown in different climates around the world. *Ticket To Ride/Come Outside!* - Build a boat for the Gingerbread man (floating and sinking exploration). - Materials – what is the best material for the Three Pigs to build a house out of? **Summer Term:** *Seasonal Changes – Summer:* - Exploring schools' grounds and observing seasonal changes in the summer. - Observe seasonal weather changes in the summer *Come outside/Seasides:* - Explore looking after our community environment and recycling. - Discuss how we can help look after our local and world environments. *Amazing Animals:* - Observe, explore and compare contrasting natural environments around the world: rainforest, great barrier reef, Kenya - Explore, compare, contrast, observe, draw and discuss animals native to Australia, polar regions and Africa. - Knowing where different animals come from. - Explore creatures that live in the sea. *The UK outdoors: Come Outside!/Amazing Animals* - Explore, observe and identify UK minibeasts. Look after our local environment – build minibeast houses	**Knowledge:** • Know some foods that are healthy and not healthy. • Know why we need to wash our hands and brush our teeth. • Know how to use the toilet. • Know how to get myself dressed. • Know some body parts and can say what they do. • Know who is in my family, including pets. • Know the difference between animals and plants. • Know the names of different animals: from our country and far away. • Know the names of the four seasons. • Know what the weather is like in each of the seasons. • Know the main changes that happen in Autumn, Winter, Spring and Summer. • Know that ice melts when it gets hot. • Know that water turns into ice when it freezes. • Know that some animals sleep during the winter. • Know that the weather is different in different parts of the world. • Know that a plant needs light, soil and water to grow. • Know that plants die if they don't have enough water. • Know that some food grows on trees and some comes from plants on and under the ground. • Know that a tadpole becomes a frog and a caterpillar becomes a butterfly. • Know that some materials float and some sink. • Know that some materials are more suited to jobs than others. • Know that my actions affect the world. • Know the name of some insects. **Skills:** • Observe people, plants and animals in the local area • Talk about what they have noticed • Record some observations of the local area • Talk about why things happen and how. **Vocabulary:** • Healthy, unhealthy, germs, head, legs, arms, hands, feet, shoulders, face, eyes, ears, mouth, tongue, teeth heart, brain, bones, skin. • Dog, cat, fish, hamster, rabbit cow, horse, sheep, goat, elephant. tiger, lion, crocodile, giraffe. • Autumn, winter, spring, summer, weather, hot, cold, snowing, freezing, warm, wet, cloudy, harvest, farming, leaves, light, dark, desert, polar. • Plants, grow, soil, sunlight, fruit, vegetable, tree, flower, bush, water. • Life cycle, grow, change, tadpole, froglet, frog, larva, caterpillar, chrysalis, cocoon. • Material, float, sink, plastic, fabric, wood, strong, waterproof, bendy, light, • Pollution, recycle, rubbish, environment, community. • Minibeast, ant, spider, worm, snail, habitat.

The Federation of Middleham (VA) & Spennithorne (VC) CE Primary Schools
Curriculum Progression Key Stage 1

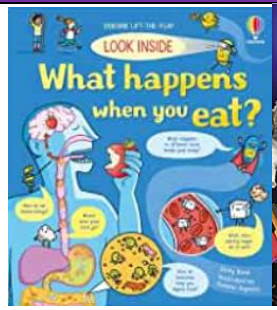
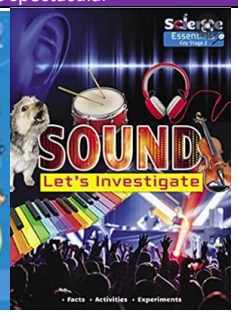
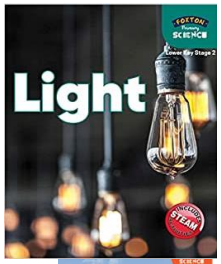
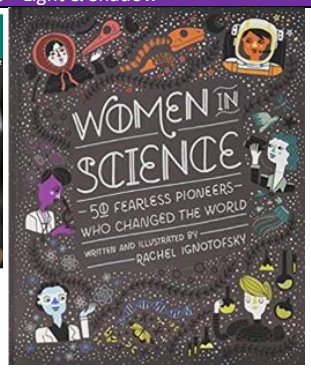
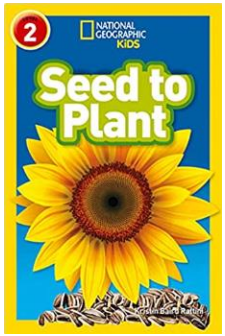
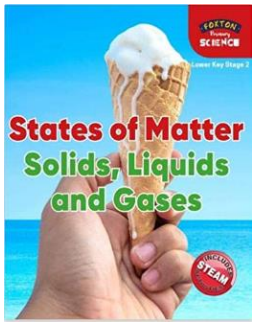
YEAR 1 & 2 CYCLE A		**Autumn Term** **Everyday Materials – Brilliant Builders!** **Seasonal Changes – Wild weather**	Spring Term Living Things and their Habitats – Homes & Habitats Animals including humans – Wild and wonderful creatures	**Summer Term** Animals including humans – Amazing me! Plants – Growing things
	High Quality texts	  	 	  
	Enrichment Opportunities	**Everyday Materials – Brilliant Builders!** Explorify - https://explorify.uk/en/activities/odd-one-out/fit-for-purpose https://explorify.uk/en/activities/listen-what-can-you-hear/material-world https://www.bbc.co.uk/bitesize/topics/zrssgk7 **Seasonal Change – Wild Weather** Explorify - https://explorify.uk/en/activities/whats-going-on/seasons Life Centre Newcastle - https://www.life.org.uk/schools/workshops/key-stage-1/living-in-space	**Living Things and their Habitats – Homes & Habitats** https://explorify.uk/en/activities/odd-one-out/a-home-for-baby-birds https://explorify.uk/en/activities/whats-going-on/hungry-snails **Animals including humans – Wild and wonderful creatures** https://explorify.uk/en/activities/whats-going-on/unexpected-eggs Visit to Foxglove Grow a butterfly	**Animals including humans – Amazing me!** Health and well-being week. **Plants – Growing things** Grow vegetables in the school community garden. https://explorify.uk/en/activities/what-if/everything-tasted-the-same
	Cross Curricular links & making connections	**Everyday Materials – Brilliant Builders!** Link to DT and use of materials to make moving story book. **Seasonal Change – Wild Weather** Geography – weather around the world. Love for our World – develop an understanding of the impact of the weather around the world	**Living Things and their Habitats – Homes & Habitats** **Animals including humans – Wild and wonderful creatures** Forest schools – explore animals and animal habitats in the local area Love for animals – develop knowledge on the conservation work at Foxglove	**Animals including humans – Amazing me!** PSHE – Growing and Changing; PE – the positive impact of exercise **Plants – Growing things** DT – Healthy eating Love for our community – make and serve a community lunch
	Link to school vision and values	A FEDMAS scientist ... is aspirational, curious and raises questions to develop their scientific knowledge. Their love of learning is rooted in confidence and resilience. They show competence in a full range of practical skills, for example, planning and carrying out scientific investigations. They have love to grow in their scientific knowledge and understanding which is demonstrated in written and verbal explanations, solving challenging problems and reporting scientific findings. They have a passion for science and its application in past, present and future technologies.		

	British Values	1st Half – Introduction to British Values 2nd Half - Democracy	1st Half - The rule of law 2nd Half - Individual liberty	1st Half - Mutual respect 2nd Half - Tolerance of those of different faiths and beliefs
	Knowledge (National Curriculum links)	**Everyday Materials – Brilliant Builders!** **Year 1** - 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. **Year 2** - 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 **Seasonal Changes – Wild weather** **Year 1 & 2** - observe changes across the four seasons - observe and describe weather associated with the seasons and how day length varies	**Living Things and their Habitats – Homes & Habitats** **Year 1 & 2** - explore and compare the differences between things that are living, dead, and things that have never been alive - identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other - identify and name a variety of plants and animals in their habitats, including microhabitats - describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. **Animals including humans – Wild and wonderful creatures** Year 1 & 2 - Identify and name a variety of common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates - Identify, name a variety of common animals that are carnivores, herbivores & omnivores - Describe and compare the structure of a variety of common animals (birds, fish, amphibians, reptiles, mammals and invertebrates, and including pets) - Notice that animals, including humans, have offspring which grow into adults	**Animals including humans – Amazing me!** **Year 1 & 2** - Notice that animals, including humans, have offspring which grow into adults - Identify, name, draw and label the basic parts of the human body and say which of the body is associated with each sense - Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) - Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. **Plants – Growing things** **Year 1 & 2** - 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, including trees - Observe and describe how seeds and bulbs grow into mature plants - Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy
	Skills – Working Scientifically	- asking simple questions and recognising that they can be answered in different ways - observing closely, using simple equipment - performing simple tests - identifying and classifying - using their observations and ideas to suggest answers to questions - gathering and recording data to help in answering questions		
	Vocabulary	**Everyday Materials – Brilliant Builders!** Rough/smooth, flat/bumpy, sharp/blunt, wood, metal, plastic, glass, rock, materials, properties, Magnetic, non-magnetic, useful **Seasonal Changes – Wild weather** Rain, snow, storm, thunder, lightning, cloudy, clothing, warm, cold, forecast, forecast, summer, autumn, winter, spring, seasons, day, night, shadow length, change, light, dark, weather, rainfall, precipitation, data, direction, gauge, patterns	**Living Things and their Habitats – Homes & Habitats** Growth, germination, planting, edible, mini-beasts, habitats, harvest, grow, allotment, produce, soil, wash, cook **Animals including humans – Wild and wonderful creatures** Birds, fish, reptiles, mammals, invertebrates, group, classify, carnivores, herbivores, omnivores, basic needs, water, food, air, breathing, survival, habitats, offspring, babies, adults	**Animals including humans – Amazing me!** Compare, describe, similar, different, notice patterns, measure, record, predict, gather, centimetre, millimetre, ears, senses, hearing, spotting patterns, touch, sight, smell, taste, hear, sense, fruit/vegetables, bread/rice/potatoes/pasta, milk/dairy/food high in fat/sugar, meat/fish/egg/beans **Plants – Growing things** Plant, leaf, leaves, stem, root, grow, weed, change, living, water, healthy, similar to, different from, potato, chitting, seed, garden centre, warmth, light, water, dry, wet, moist, growth, germination, seed coat, bean, warmth, nutrients

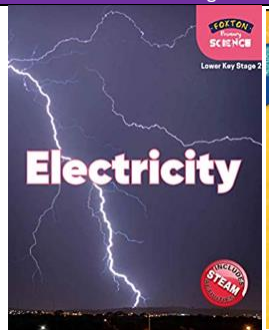
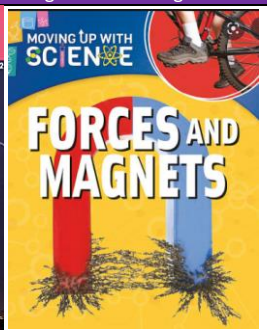
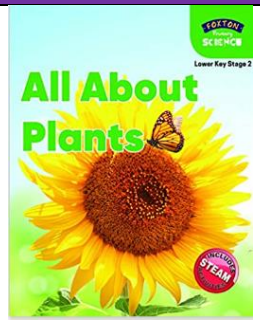
YEAR 1 & 2 CYCLE B		**Autumn Term** Everyday Materials – Comparing materials & exploring changes Seasonal Changes – Weather Art	**Spring Term** Living Things and Habitats – Food Chains Animals including humans – People and their pets	**Summer Term** Plants – Art and Nature
	High Quality texts	 	 	
	Enrichment Opportunities	https://explorify.uk/en/activities/listen-what-can-you-hear/bottle-it-up Invite a visitor from 'Yorwaster' to talk about recycling.	Invite the RSPCA or Dog's Trust (or similar) to talk to the children about caring for pets. Butterfly World - Teeside	Grow vegetables in the school community garden to provide a local for the local community.
	Cross Curricular links & making connections	Links to the materials in 'The Great Fire of London' and how the materials changed. Love for our World – develop an understanding of the impact of the weather around the world	Make 'How to care for…' pet guides in English. Love for animals – develop knowledge on how to care for different pets.	Link back to last terms DT project – healthy eating Love for our community – make and serve a community lunch
	Link to school vision and values	A FEDMAS scientist ... is aspirational, curious and raises questions to develop their scientific knowledge. Their love of learning is rooted in confidence and resilience. They show competence in a full range of practical skills, for example, planning and carrying out scientific investigations. They have love to grow in their scientific knowledge and understanding which is demonstrated in written and verbal explanations, solving challenging problems and reporting scientific findings. They have a passion for science and its application in past, present and future technologies.		
	British Values	1st Half – Introduction to British Values 2nd Half - Democracy	1st Half - The rule of law 2nd Half - Individual liberty	1st Half - Mutual respect 2nd Half - Tolerance of those of different faiths and beliefs
	Knowledge (National Curriculum links)	**Everyday Materials – Comparing materials** - 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 **Seasonal Changes – Weather Art** **Year 1 & 2** - observe changes across the four seasons - observe and describe weather associated with the seasons and how day length varies	**Living Things and Habitats – Food Chains** - Explore and compare the differences between things that are living, dead and things that have never been alive - Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other - Identify and name a variety of plants and animals in their habitats, including 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 different sources of food. **Animals including humans – People and their pets** - Identify, name a variety of common animals including fish, amphibians, reptiles, birds, mammals - identify and name a variety of common animals that are carnivores, herbivores and omnivores - Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).	**Plants – Art and Nature** - 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, including trees - Observe and describe how seeds and bulbs grow into mature plants - Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy
	Skills – Working Scientifically	- asking simple questions and recognising that they can be answered in different ways - observing closely, using simple equipment - performing simple tests		

		- identifying and classifying - using their observations and ideas to suggest answers to questions - gathering and recording data to help in answering questions		
	Vocabulary	**Everyday Materials – Comparing materials** Waterproof, absorbent, breaks/tears, materials, properties, material, properties, absorbency, strong, weak, hypothesis **Seasonal Changes – Weather Art** Rain, snow, storm, thunder, lightning, warm, cold, forecast, summer, autumn, winter, spring, seasons, wind, strength, direction, forecast, light source, shadow, day, night, shadow length, change, light, dark	**Living Things and Habitats – Food Chains** Food chain, predator, habitats, dependence, dead, alive, habitat, savannah, rainforest, tundra, micro-habitat, features, ocean, water **Animals including humans – People and their pets** Notice, patterns, behaviour, habitat, living things, damp, shady, dry, observations, predictions, happy, healthy, explore, investigate, observe, Birds, fish, amphibians, reptiles, mammals, invertebrates, group, similarities and difference	**Plants – Art and Nature** Plant, leaf, grow, weed, change, living, water, healthy, similar to, different from, useful, seed, bean, water, warmth, nutrients, leaves, stem, roots, deciduous, evergreen, flower, trunk, bark

The Federation of Middleham (VA) & Spennithorne (VC) CE Primary Schools
Curriculum Progression Lower Key Stage 2

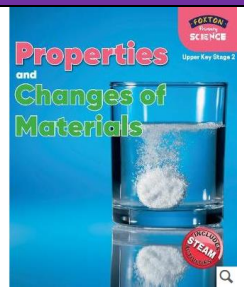
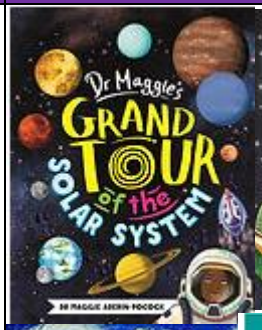
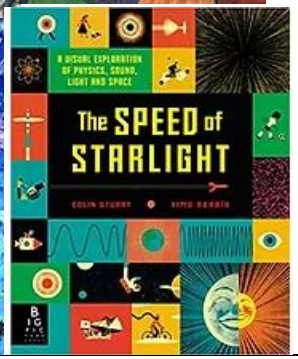
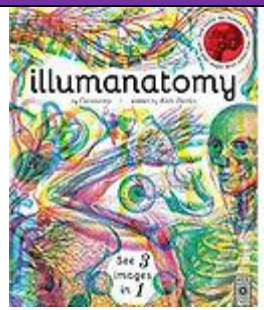
YEAR 3 & 4 CYCLE A		**Autumn Term** Animals including humans – The circle of life Sound – sounds spectacular	**Spring Term** Living Things and their habitat – habitat helpers Light – Light & Shadow	**Summer Term** States of matter – What's the matter? Plants – Feast of flowers, fruits and seeds
	High Quality texts	 	  	 
	Enrichment Opportunities	Invite local musicians to talk about their instruments. Architect designer – how to soundproof, where and when it is needed. https://explorify.uk/en/activities/odd-one-out/funny-bones https://explorify.uk/en/activities/whats-going-on/the-sound-of-silence	Forest Schools – look for habitats in the local environment Visit to Harlow Carr - https://www.rhs.org.uk/gardens/harlow-carr https://explorify.uk/en/activities/the-big-question/why-do-some-birds-migrate https://explorify.uk/en/activities/problem-solvers/light-up-the-dark https://explorify.uk/en/activities/odd-one-out/in-the-shade	Plant and grow seeds in the school garden Grinton Moor farming project Countryside Show at Harrogate https://explorify.uk/en/activities/odd-one-out/sensing-evaporation https://explorify.uk/en/activities/listen-what-can-you-hear/sharing-is-caring
	Cross Curricular links & making connections	PSHE – Healthy Eating, build on from knowledge in KS1/LKS2 Sound – link to music	Link to geography and work on local environment study	DT – Eating seasonally Make links to the Water Cycle in Geography
	Link to school vision and values	A FEDMAS scientist ... is aspirational, curious and raises questions to develop their scientific knowledge. Their love of learning is rooted in confidence and resilience. They show competence in a full range of practical skills, for example, planning and carrying out scientific investigations. They have love to grow in their scientific knowledge and understanding which is demonstrated in written and verbal explanations, solving challenging problems and reporting scientific findings. They have a passion for science and its application in past, present and future technologies.		
	British Values	1st Half – Introduction to British Values 2nd Half - Democracy	1st Half - The rule of law 2nd Half - Individual liberty	1st Half - Mutual respect 2nd Half - Tolerance of those of different faiths and beliefs
	Knowledge (National Curriculum links)	**Animals including humans – The circle of life** - Describe the simple functions of the basic parts of the digestive system in humans - Identify the different types of teeth in humans and their simple functions - Construct and interpret a variety of food chains, identifying producers, predators and prey **Sound – sounds spectacular** - identify how sounds are made, associating some of them with something vibrating - recognise that vibrations from sounds travel through a medium to the ear	**Living Things and their habitat – habitat helpers** - Recognise that environments can change and that this can sometimes pose dangers to living things. **Light – Light & Shadow** - 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 - recognise that light from the sun can be dangerous and that there are ways to protect their eyes - recognise that shadows are formed when the light from a light source is blocked by an opaque object - find patterns in the way that the size of shadows change.	**States of matter – What's the matter?** - compare and group materials together, according to whether they are solids, liquids or gases - observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) - identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature **Plants – Feast of flowers, fruits and seeds** - identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers

		- find patterns between the pitch of a sound and features of the object that produced it - find patterns between the volume of a sound and the strength of the vibrations that produced it - recognise that sounds get fainter as the distance from the sound source increases.		- explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant – investigate the way in which water is transported within plants - explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.
	Skills – Working Scientifically	- asking relevant questions and using different types of scientific enquiries to answer them - setting up simple practical enquiries, comparative and fair tests - making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers - gathering, recording, classifying and presenting data in a variety of ways to help in answering questions - recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables - reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions - using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions - identifying differences, similarities or changes related to simple scientific ideas and processes - using straightforward scientific evidence to answer questions or to support their findings		
	Vocabulary	**Animals including humans – The circle of life** Digestion, digestive system, organ, saliva, peristalsis, oesophagus, stomach, acid, intestines, faeces, enzymes, gastric acid, bowels, villi, colon, rectum, anus, Jaw, incisors, molars, premolars, canines, tear, grind, chew, gums, enamel, acid, bacteria, tooth decay, Herbivore, carnivore, omnivore, diet, features, adaptations, life style, survival, predator, prey, energy, scavengers, decomposers, breakdown, recycle **Sound – sounds spectacular** Music, sound, noise, investigate, explain, vibration, vibrate, ears, hear, travel, air, water, solid, source, sound waves, sound proof, medium, transmit, detect, energy, decibel, fair test, data, graph, loudness, volume, strength, rhythm, stronger, weaker	**Living Things and their habitat – habitat helpers** Environment, habitat, ecosystem, pollution, climate change, human activity, survey, evidence, data, adapted, adaptation, depend, survival, natural, manmade, changes, global warming, greenhouse gases, carbon dioxide, temperature, waste, landfill, incinerator, reduce, reuse, recycle, plastic, habitat, environment, break down, material, deforestation, sustainable, unsustainable, population, species, endangered, threatened, erosion **Light – Light & Shadow** Light, beam, darkness, illuminate, straight lines, investigate, light source, reflector, reflect, predict, investigate, fair test, reflective materials, mirror, image, angle, line of reflection, concave, convex, symmetrical, transparent, translucent, opaque, shadow, screen, light source, block, Light source, shadow, measure, distance, plot, graph, data, fair test, results, rainbow, white light, spectrum, prism, refraction, dispersion	**States of matter – What's the matter?** States of matter, material, solid, liquid, gas, natural, manmade, classify, molecule, atom, bonds, air, oxygen, nitrogen, carbon dioxide, argon, change, state, bromine, ice, freeze, melt, heat, energy, solidify, vapour, evaporation, condensation, condense, water vapour, invisible, liquid, change state, energy, particles, precipitation, water cycle **Plants – Feast of flowers, fruits and seeds** Botany, botanist, botanical, petals, reproduction, male, female, stigma, style, stamens, seed, nectar, pollination, fertilisation, bee, pollen, nectar, waggle dance, honey, hive, pollination, fertilization, attract, transfer, ovary, ovules, pollen grains, fruit, pod, dispersal, germination, investigate, fair test, record, results

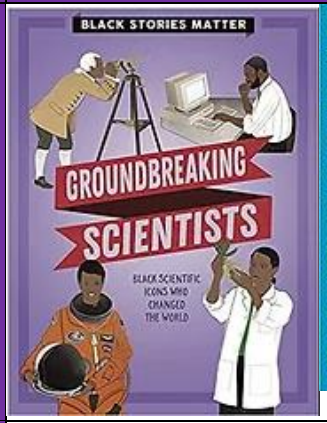
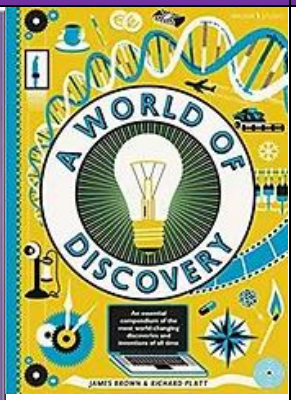
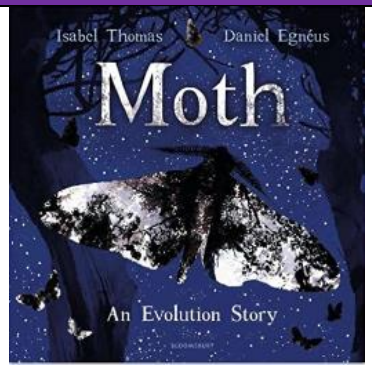
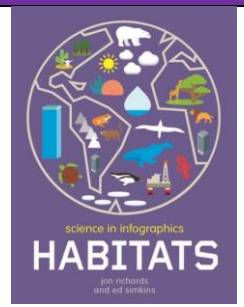
YEAR 3 & 4 CYCLE B		**Autumn Term** Electricity – Electric Personalities Forces & magnets – Magnetic fun and games	**Spring Term** Animals including humans – fit for success Plants – Greatly Green Growers	**Summer Term** Rocks and soils – This planet rocks Living things and their habitats – A world of living things
	High Quality texts	 		
	Enrichment Opportunities	https://explorify.uk/en/activities/what-if/everything-conducted-electricity https://explorify.uk/en/activities/problem-solvers/to-the-wire https://explorify.uk/en/activities/what-if/you-had-magnets-for-fingers Life Centre, Newcastle - https://www.life.org.uk/schools/workshops/key-stage-2/light-up-newcastle	Visit to Foxglove – develop knowledge from KS1 visits. https://explorify.uk/en/activities/odd-one-out/thorny-issue Invite a dentist in to talk about teeth and brushing them properly	https://explorify.uk/en/activities/zoom-in-zoom-out/a-hinge-in-the-rock https://explorify.uk/en/activities/listen-what-can-you-hear/rock-my-world
	Cross Curricular links & making connections	DT & Computing	PE – link in PE warm-up sessions to muscles in the body PSHE – caring for our bodies	Computing – branching database
	Link to school vision and values	A FEDMAS scientist ... is aspirational, curious and raises questions to develop their scientific knowledge. Their love of learning is rooted in confidence and resilience. They show competence in a full range of practical skills, for example, planning and carrying out scientific investigations. They have love to grow in their scientific knowledge and understanding which is demonstrated in written and verbal explanations, solving challenging problems and reporting scientific findings. They have a passion for science and its application in past, present and future technologies.		
	British Values	1st Half – Introduction to British Values 2nd Half - Democracy	1st Half - The rule of law 2nd Half - Individual liberty	1st Half - Mutual respect 2nd Half - Tolerance of those of different faiths and beliefs
	Knowledge (National Curriculum links)	**Electricity – Electric Personalities** - 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 a 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. **Forces & magnets – Magnetic fun and games** - compare how things move on different surfaces - notice that some forces need contact between two objects, but magnetic forces can act at a distance - observe how magnets attract or repel each other and attract some materials and not others	**Animals including humans – fit for success** - identify that animals, including humans, need the right types and amount of nutrition and that they cannot make their own food. They get nutrition from what they eat. - identify that humans and some other animals have skeletons and muscles for support, protection and movement. **Plants – Greatly Green Growers** - identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers - explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant – investigate the way in which water is transported within plants - explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	**Rocks and soils – This planet rocks** - 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 - recognise that soils are made from rocks and organic matter **Living things and their habitats – A world of living things** - 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.

		- 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 - describe magnets as having two poles - predict whether two magnets will attract or repel each other, depending on which poles are facing.		
	Skills – Working Scientifically	- asking relevant questions and using different types of scientific enquiries to answer them - setting up simple practical enquiries, comparative and fair tests - making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers - gathering, recording, classifying and presenting data in a variety of ways to help in answering questions - recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables - reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions - using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions - identifying differences, similarities or changes related to simple scientific ideas and processes - using straightforward scientific evidence to answer questions or to support their findings		
	Vocabulary	**Electricity – Electric Personalities** Electricity, cell, battery, plug, mains, cable, appliance, device, connection, power, danger, safety, circuit, device, wire, lead, crocodile clip, bulb, bulb holder, buzzer, connection, cell, energy, flow, current, switch, motor, component, current, conductor, insulator, disconnect, design, test, adapt, modify **Forces & magnets – Magnetic fun and games** Force, push, pull, prediction, fair test, investigate, measure, friction, twist, gravity, magnetism, contact, Newton, force meter, measure, plot, magnet, magnetic, attract, attraction, question, strength, fair test, investigation, non-magnetic, theory, metal, iron, steel, repel, repulsion, poles, north, south	**Animals including humans – fit for success** Herbivore, carnivore, omnivore, nutrition, diet, food chain, data, table, bar chart, carbohydrates, proteins, dairy, fats, sugars, vitamins, minerals, fibre, growth, repair, health, energy, vertebrate, invertebrate, bone, skeleton, skull, ribcage, pelvis, femur, muscles, joints, tendons, contract, relax, biceps, triceps, data, scattergram, lungs, diaphragm, heart, investigate, measure, compare, breathing rate **Plants – Greatly Green Growers** Plants, growth, light, warmth, air, soil, water, investigate, seedlings, research, height, root, stem, leaves, flowers, petals, shoots, petals, buds, fruits, seeds, classify, data logger, light level, temperature, wilting, yellowing, requirement, measure, record, line graph, bar graph, light levels, lux, temperature, transported, results	**Rocks and soils – This planet rocks** Rock, sandstone, limestone, chalk, granite, slate, marble, classification, observation, petrologist, man-made rocks, brick, tile, concrete, Igneous, sedimentary, metamorphic, permeable, impermeable, acid, erosion, marble, chalk, limestone, slate, granite, sandstone, identification key, bedrock, fossil, ichthyosaur, plesiosaur, ammonite, sediment, minerals, mould, cast, Soil, micro-organisms, organic matter, particles, sand, silt, fair test, compare, sort, predict **Living things and their habitats – A world of living things** Life processes, movement, reproduction, sensitivity, nutrition, excretion, respiration, growth, living things, oxygen, energy, waste products, senses, environment, plants, animals, similarities, differences, kingdom, classify, classification, flowering plants, trees, mosses, ferns, spores, cones, leaves, flowers, seeds, vertebrates, invertebrates, classify, classification, insects, spiders, worms, woodlice, habitat, slugs, snails, molluscs, annelids, echinoderms, arthropods, crustaceans, arachnids, kingdom, insects, molluscs, annelids, arthropods, crustaceans, arachnids, fish, amphibians, birds, reptiles, mammals, warm blooded, cold blooded, scales, feathers

The Federation of Middleham (VA) & Spennithorne (VC) CE Primary Schools
Curriculum Progression Upper Key Stage 2

YEAR 5 & 6 CYCLE A		Autumn Term Properties and changes of materials – Special Effects materials	Spring Term Earth & Space – Space! Light - Theatre Lighting Technicians	Summer Term All Living things and their habitats – Art of living Animals, including humans – Art of being human
	High Quality texts		   	
	Enrichment Opportunities	Yorwaste - https://www.changeworks.org.uk/sites/default/files/Waste-education-resources-for-primary-and-secondary-schools.pdf	Planetarium visit Interview an astronaut https://explorify.uk/en/activities/listen-what-can-you-hear/prepare-for-launch https://explorify.uk/en/activities/odd-one-out/wonderful-women-in-science	Visit from police https://explorify.uk/en/activities/the-big-question/what-is-a-balanced-diet-for-us-and-the-planet
	Cross Curricular links & making connections	Build on knowledge from LKS2	Build on knowledge from LKS2	PSHE – Growing and changing
	Link to school vision and values	A FEDMAS scientist ... is aspirational, curious and raises questions to develop their scientific knowledge. Their love of learning is rooted in confidence and resilience. They show competence in a full range of practical skills, for example, planning and carrying out scientific investigations. They have love to grow in their scientific knowledge and understanding which is demonstrated in written and verbal explanations, solving challenging problems and reporting scientific findings. They have a passion for science and its application in past, present and future technologies.		
	British Values	1st Half – Introduction to British Values 2nd Half - Democracy	1st Half - The rule of law 2nd Half - Individual liberty	1st Half - Mutual respect 2nd Half - Tolerance of those of different faiths and beliefs
	Knowledge (National Curriculum links)	**Properties and changes of materials – Special Effects materials** - 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	**Earth & Space – Space!** - describe the movement of the Earth, and other planets, relative to the Sun in the solar system - describe the movement of the Moon relative to the Earth	**All Living things and their habitats – Art of living** - Describe the life process of reproduction in some plants and animals. - Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.

		- know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution - use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating - give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood 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 that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.	- describe the Sun, Earth and Moon as approximately spherical bodies - use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky **Light - Theatre Lighting Technicians** - 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 reflect light into the eye - 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	**Animals, including humans – Art of being human** - identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. - describe the ways in which nutrients and water are transported within animals, including humans.
	Skills – Working Scientifically	- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary - taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate - recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs - using test results to make predictions to set up further comparative and fair tests - reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations - identifying scientific evidence that has been used to support or refute ideas or arguments.		
	Vocabulary	**Properties and changes of materials – Special Effects materials** Enquiry, solid, liquid, gas, dissolve, soluble, solute, solution, insoluble, heterogeneous/homogeneous mixture, colloid, suspension, reversible, irreversible, changes of state, evaporation, sieving, filtering, heating/cooling, variables, precision, enquiry, solid, liquid, gas, dissolve, soluble, solute, solution, line graph, bar chart, accuracy, enquiry, reaction, reactant, non-reversible, rust, oxidation, reaction, reactant	**Earth & Space – Space!** Heliocentric, geocentric, spherical, solar system, astrology, enquiry, evidence, star, moon, planet, sun, Earth, Galileo, Copernicus, Spherical, solar system, scale, enquiry, evidence, star, moon, planet, planet names, Earth, sun, orbit, Enquiry, evidence, star, sun, moon, sundial, shadow, axis, day, night, time-zone, Greenwich Meantime, evidence, star, moon, eclipse, light, reflection, telescope, satellite, tide, mass, gravity, phase, lunar, Evidence, direct/indirect light, axis, equinox, solstice, sun, season, hemisphere, longitude, latitude, Enquiry, evidence, proof, theory, hypothesis, argument, idea, fact **Light - Theatre Lighting Technicians** Light, source, dark, shadow, block, absorb, direct/direction, transparent, opaque, translucent, straight, colour, reflect, cone, eye, straight, spectrum, rainbow, Reflective materials, reflection, angle of incidence/reflection, light, beam, straight, scatter, distort, convex, concave, plane, reflection, ray, straight, bent, focal point, refraction	**All Living things and their habitats – Art of living** Gamete, stamen, stigma, carpel, pistil, pollination, germination, flowering, sexual reproduction, life cycle, seed, pollen, anther, filament, style, ovary, botanical illustration, dissection, Corm, bulb, spores, cutting, fern, moss, liverwort, tubers, asexual, non-flowering, propagation, artificial, natural, metamorphosis, amphibian, insect, Mammal, bird, sexual reproduction, life cycle, gestation, foetus, sperm, egg, uterus, chick, egg, baby, adult **Animals, including humans – Art of being human** Blood, blood vessels, arteries, veins, capillaries, heart, pumps, oxygen, carbon dioxide, lungs, nutrients, water, Circulatory system, heart, nutrients, water, exercise, diet, drugs, lifestyle, addiction, disease, medicine, alcohol, cigarettes, stimulant, depressant, analgesic, hallucinogen

YEAR 5 & 6 CYCLE B		Autumn Term Electricity – Electric Art Forces – Welcome to Force Land	Spring Term Evolution & inheritance – survival of the fittest	Summer Term Animals, including humans – Life Explorers Living things and their habitats - Classification Connoisseurs
	High Quality texts	 		
	Enrichment Opportunities	Life Centre, Newcastle - https://www.life.org.uk/schools/workshops/key-stage-2/light-up-newcastle https://explorify.uk/en/activities/mission-survive/red-amber-green	https://www.stem.org.uk/resources/community/collection/12648/year-6-evolution-and-inheritance https://explorify.uk/en/activities/odd-one-out/blackbird-variation https://explorify.uk/en/activities/what-if/penguins-could-fly	Eureka at home/school - https://www.eureka.org.uk/ https://explorify.uk/en/activities/odd-one-out/feathered-friends https://explorify.uk/en/activities/odd-one-out/making-tracks
	Cross Curricular links & making connections	D&T: Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups; Understand and use electrical systems in their products; Evaluate ideas and products against design criteria and consider the views of others to improve their work; Understand and use electrical systems in their products	Links with RE unit	PSHE – Growing and Changing
	Link to school vision and values	A FEDMAS scientist ... is aspirational, curious and raises questions to develop their scientific knowledge. Their love of learning is rooted in confidence and resilience. They show competence in a full range of practical skills, for example, planning and carrying out scientific investigations. They have love to grow in their scientific knowledge and understanding which is demonstrated in written and verbal explanations, solving challenging problems and reporting scientific findings. They have a passion for science and its application in past, present and future technologies.		
	British Values	1st Half – Introduction to British Values 2nd Half - Democracy	1st Half - The rule of law 2nd Half - Individual liberty	1st Half - Mutual respect 2nd Half - Tolerance of those of different faiths and beliefs
	Knowledge (National Curriculum links)	**Electricity – Electric Art** - Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches - Use recognised symbols when representing a simple circuit in a diagram - Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit **Forces – Welcome to Force Land** - explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object	**Evolution & inheritance – survival of the fittest** - recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago - recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents - identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution	**Animals, including humans – Life Explorers** - Describe the changes as humans develop to old age. **Living things and their habitats - Classification Connoisseurs** - Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. - Give reasons for classifying plants and animals based on specific characteristics.

		- identify the effects of air resistance, water resistance and friction, that act between moving surfaces - recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect		
	Skills – Working Scientifically	- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary - taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate - recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs - using test results to make predictions to set up further comparative and fair tests - reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations - identifying scientific evidence that has been used to support or refute ideas or arguments.		
	Vocabulary	**Electricity – Electric Art** Electricity, appliances/device, electrical circuit, complete circuit, circuit diagram, circuit symbol, components, cell, battery, positive/negative, terminal, connect/connection, loose connection, short circuit, wire, crocodile clip, bulb, bright/dim, switch, buzzer, volume, motor, fast(er)/slow(er), conductor, insulator, metal/non-metal, voltage, current, resistance **Forces – Welcome to Force Land** Support, fall, Earth, gravity, balancing force, resistance force, weight, Newtons, elasticity, variables, accuracy, gravity, friction, air resistance, causal relationship, water resistance, up thrust, mechanisms, levers, pulleys, transfers,	**Evolution & inheritance – survival of the fittest** Offspring, characteristics, vary/variation, inherit/inheritance, environmental variation, Suited/suitable, adaptation, characteristics, natural selection	**Animals, including humans – Life Explorers** Scatter and line graphs, bar charts, causal relationships, support/refute, gestation, life cycle, sperm, egg, foetus. scientific diagram, foetus, development, nutrition, uterus, adolescence, adolescent, puberty, teenager, reproduction **Living things and their habitats - Classification Connoisseurs** Classification, kingdom, phylum, class, order, family, genus, species, Linnaeus, opinion, similarities, differences, phylum, , branching classification key, opinion, similarities, differences, group, observations, support, refute