Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1
Unit title	**Electricity**	**Animals Including Humans**	**Living Things and Their Habitats**	**Evolution and Inheritance**	**Light**
Objectives Covered	Pupils know some different types of sustainable energy such as solar, wind and hydro power and how they can help reduce carbon emissions.		Pupils know that there are different types of grassland, and this determines which species are found there.	Pupils begin to understand how rising temperatures and changing precipitation patterns are affecting the habitats and survival of different plants and animal species	
	Find out the energy efficiency rating of different items in the classroom or their home.		Pupils understand that grasslands are home to a variety of different species e.g., wildflowers, grasses, butterflies and other invertebrates.	Pupils understand the impact of climate change on biodiversity and how this may impact in future.	
			Pupils can choose which classification key to use for a number of species they may find in grassland.	Pupils understand the impact of climate change on ecosystems both locally and globally.	

				Pupils can explain how/why having a healthy natural environment is beneficial for all life on earth.	
				Create a plan to improve a habitat locally.	
				Create a plan to improve a patch of grassland in the school grounds/local area.	

				Pupils understand why grasslands are threatened and what can be done to improve them.	
				Plan and carry out a survey to identify what lives in a habitat in the local area.	
				Pupils can choose and use a range of survey methods for a specific purpose.	

Vocabulary					

Scientific basis	Scientific Basis	Urgency	Climate Justice	Biodiversity	Mitigation and Adaptatic
Pupils know how the greenhouse effect, and excessive greenhouse gases, are now causing changes to our climate.	Pupils know some different types of sustainable energy such as solar, wind and hydro power and how they can help reduce carbon emissions.	Pupils can explore a range of future scenarios based on scientific research.		Pupils begin to understand how rising temperatures and changing precipitation patterns are affecting the habitats and survival of different plants and animal species	Pupils explore ways in which individuals and communities can reduce their carbon footprint through conservation, recycling and lifestyle changes.
Pupils know about, and interpret, current trends in total global climate emissions.	Pupils understand the process of carbon sequestration, which involves capturing and storing carbon dioxide from the atmosphere, and how it can help mitigate climate change.	Pupils are aware of future scenarios based on current scientific understanding (including best case scenarios).		Pupils understand the impact of climate change on biodiversity and how this may impact in future.	Pupils can explain how a carbon footprint is calculated and give some examples of different types.
Pupils know what the IPCC (Intergovernmental Panel on Climate Change) is and draw on some of its	Pupils know some different carbon sequestration methods such as afforestation and carbon capture and	Pupils start to understand why there is a lack of certainty in future predictions.		Pupils understand the impact of climate change on ecosystems both locally and globally.	

Pupils understand the concept of a carbon footprint and how human activities, such as transportation and energy use, contributes to the greenhouse gas emissions that cause climate change.	Pupils can explain what climate tipping points are and why action is urgent.	Pupils understand that grasslands are home to a variety of different species e.g., wildflowers, grasses, butterflies and other invertebrates.
		Pupils can choose which classification key to use for a number of species they may find in grassland.
		Pupils know that there are different types of grassland, and this determines which species are found there.
		Pupils understand why grasslands are threatened and what can be done to improve them.

Pupils can choose and use a range of survey methods for a specific purpose.

Summer 2	
Climate Change	
Pupils know how the greenhouse effect, and excessive greenhouse gases, are now causing changes to our climate.	Pupils can explore a range of future scenarios based on scientific research.
Pupils know about, and interpret, current trends in total global climate emissions.	Pupils are aware of future scenarios based on current scientific understanding (including best case scenarios).
Pupils know what the IPCC (Intergovernmental Panel on Climate Change) is and draw on some of its current research.	Pupils start to understand why there is a lack of certainty in future predictions.

Pupils understand the concept of a carbon footprint and how human activities, such as transportation and energy use, contributes to the greenhouse gas emissions that cause climate change.	Pupils can explain what climate tipping points are and why action is urgent.
Pupils understand the process of carbon sequestration, which involves capturing and storing carbon dioxide from the atmosphere, and how it can help mitigate climate change.	Calculate the carbon footprint of either their food, travel or energy use for a day.
Pupils know some different carbon sequestration methods such as afforestation and carbon capture and storage technologies.	Suggest ways they can reduce their own carbon footprint.

Pupils explore ways in which individuals and communities can reduce their carbon footprint through conservation, recycling and lifestyle changes.	Pupils can imagine different futures within their own likely lifetime based on different levels of heating including optimistic scenarios.
Pupils can explain how a carbon footprint is calculated and give some examples of different types.	Pupils know that the action people take now is directly linked to what will happen in the future
Pupils use information available to begin to develop their own ideas about rights and responsibilities now and in the future.	Pupils can explain how their lifestyle impacts on the environment and can identify ways to reduce their impact.
Pupils can identify and name their own feelings about the earth, the natural world and the climate and explain why they feel that way.	

Sequestration

Climate Actions	Biodiversity Action	Future Scenarios	Vocabulary	Key Concepts	Feelings and Behaviours
Find out the energy efficiency rating of different items in the classroom or their home.	Plan and carry out a survey to identify what lives in a habitat in the local area.	Pupils use information available to begin to develop their own ideas about rights and responsibilities now and in the future.	Sequestration	Carbon Capture	Pupils can identify and name their own feelings about the earth, the natural world and the climate and explain why they feel that way.
Calculate the carbon footprint of either their food, travel or energy use for a day.	Create a plan to improve a habitat locally.	Pupils can imagine different futures within their own likely lifetime based on different levels of heating including optimistic scenarios.		Carbon Storage	Pupils can explain how/why having a healthy natural environment is beneficial for all life on earth.
Suggest ways they can reduce their own carbon footprint.	Create a plan to improve a patch of grassland in the school grounds/local area.	Pupils know that the action people take now is directly linked to what will happen in the future		Carbon Sequestration	Pupils can explain how their lifestyle impacts on the environment and can identify ways to reduce their impact.

Climate Education and Biodiversity Curriculum Catch Up – Science

Year Group	Key Concepts	Vocabulary	Key Learning	Possible Delivery Ideas and Outcomes
Year 1 Key Learning	Weather	environment	Pupils understand that spending time in nature helps us to feel calm and relaxed. Pupils begin to understand some of the choices they and others make have an impact on the environment. Pupils begin to understand the world is heating up.	**Outcome 1:** know that people and nature are connected.

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				From this lesson, the children need to gain an understanding of the relationship between people and nature/the environment. Activities could include a visit to a local green space (high quality) where children can explore their feelings about the natural environment and how this compares to the built environment. Children need to be given lots of opportunity to learn about the impact that people's choices have on the environment. This needs to be age appropriate and could include activities such as comparing different types of travel (car/bus/train/plane etc), eating different types of food, deforestation etc. Ensure children understand that it is human activity that is causing the world to heat up.

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Year 2 **Key Learning**	Climate Climate change Environment	pollution climate sustainability	Pupils can explain the difference between 'weather' and 'climate'. Pupils understand the world is heating up because of human activity. Pupils are familiar with the term 'Climate Change' Pupils understand the impacts of the changing climate and environments on animals locally and globally. Pupils can name some positive actions that would help us stop having a negative impact on the environment.	**Outcome 2:** know the difference between weather and climate.

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			Pupils understand that nature is valuable.	From this lesson, children need to understand the difference between weather and climate. They could explore the impacts of climate change in an age-appropriate way – and link this to their understanding of climate. E.g. which animals live in different locations? Or which habitats are found in different locations for upper KS2? If the climate changed, would they still be able to live there? This can be linked to many areas of the Science National Curriculum and adapted to meet the needs of the children in the year group you are delivering this to. Building on the learning from the previous catch-up lesson, children could suggest ways that people could have a more positive impact on the planet.
	Greenhouse effect Carbon	Emission Carbon		**Outcome 3:** understand what the greenhouse effect is.

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Year 3 Key Learning		Carbon dioxide Greenhouse effect atmosphere	Pupils know weather and climate are affected by human activities that contribute to climate change. Pupils are familiar with the term 'greenhouse gas emissions'. Pupils know that the term given to the world's climate becoming hotter is the Greenhouse Effect. Pupils are familiar with the term 'atmosphere'. Pupils understand that the Earth's atmosphere traps heat from the sun. Pupils know that Carbon Dioxide contributes to the Greenhouse Effect. Pupils know that carbon is found in plants (and all living things). Pupils know that plants use Carbon Dioxide and take it from the air. Pupils understand that the natural environment needs to be looked after and respected.	The learning in this catch-up session will likely need to be spread over two lessons/hours as it is technical and key to the development of understanding of the scientific basis of Climate Change. Adapting the lesson resources from carbon_cycle_caper_cribsheet.pdf (sciencemuseumgroup.org.uk) will be a good starting point as a key part of this session will need to be developing the children's understanding of what Carbon is and the role it plays in climate change – as well as its connection to all living things. There are very strong links to the Science National Curriculum here so that is a good starting point when planning for the age group you will deliver this to. Another activity to explore the key learning would be a demonstration of how a greenhouse works to trap heat and then linking this to key concepts and vocabulary such as greenhouse gasses/emissions, the atmosphere, carbon dioxide etc.

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Year 4 **Key Learning**	Global Warming renewable energy Carbon sink Carbon footprint	renewable	Pupils investigate the scientific evidence behind climate change and how it is affecting global weather patterns. Pupils know how the Greenhouse Effect contributes to Global Warming and can explain this using simple models (like a car on a hot day or a greenhouse). Pupils know the amount of carbon dioxide being emitted has changed over time. Pupils have a basic understanding of the scientific processes involved when fossil fuels are burnt (including the impact on the climate). Pupils know some renewable energy sources (and their importance) such as solar, wind, and hydro power and how they can reduce greenhouse gas emissions. Pupils know some types of green technology such as electric cars and energy efficient appliances, and how they can be used in homes and businesses to reduce energy consumption. Pupils know that the impact of lifestyles on climate change can be measured. Pupils can identify actions they can take to reduce emissions. Pupils can identify and name their own feelings about the earth, the natural world and the climate and explain why they feel that way.	**Outcome 5:** understand what global warming is, as well as some of its impacts. From this, children investigate how the amount of Greenhouse Gas (GHG) emissions change over time and the impact this is having on extreme weather and climate. They create a model to show how burning fossil fuels and the greenhouse effect contributes to global warming which in turn impacts on weather and climate. **Outcome 6:** know how renewable energy helps reduce carbon emissions. Children investigate renewable energy and how it helps to reduce GHG emissions. They are familiar with different ways of generating renewable energy such as wind, hydro and solar power. They look at how different lifestyles have a greater or lesser impact on GHG emissions and how energy efficiency and electric vehicles can reduce the impact of an individual's lifestyle. Children then reflect on how they feel about this, along with ways they can reduce their own impact based on what they have learned.

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Year 5 **Key Learning**	Fossil fuels Ecosystem Sustainability Global emissions	fossil fuels ecosystem biodiversity afforestation	Pupils understand that varying lifestyles produce varying carbon emissions. Pupils identify and explain the link between burning fossil fuels and climate change. Pupils can describe how carbon levels have changed over time including during prehistoric periods, the preindustrial era, the industrial revolution and the modern era. Pupils understand that 2030 is not an end-of-the-world deadline, but a target to reduce emissions to manage future impacts of climate change. Pupils can name a range of different climate action strategies: reducing consumption, using renewable energy and protecting or restoring carbon sinks. Pupils can name key services that the natural environment provides.	**Outcome 7:** know how carbon levels have changed over time. Children explore Net Zero and the targets that have been set as part of this. They can interpret data that shows how emissions have changed since prehistoric periods and can discuss how that increased during the industrial revolution and beyond. They can link this to a global rise in temperatures and know that there is a global target to remain under a 1.5 degrees centigrade increase. **Outcome 8:** know a range of climate action strategies. Children investigate different climate action strategies as listed in key learning. They demonstrate their understanding of why this is important and can explain how the strategies can help to reduce emissions. They also explore carbon sinks and can explain how the oceans, forest and peatlands trap and store carbon along with key services that these provide to the environment.

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Science Vocabulary

Vocabulary children should use:

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Scientific Enquiry (some overlap with Tier 2, but words in this section have a specific meaning in Science)						
	Question, answer, observe, observing, equipment, test, classify, identify, gather, record, compare, sort, group, secondary sources, data, describe, predict		Fair test, method, systematic, enquiry, present, conclusion, chart, table, key, procedure, criteria, differences, similarities, comparative, present, interpret, contrast, evaluate, evidence.		Variable, accuracy, precision, causal relationship, support, refute, justify, influence, clarify, validate, analyse	
EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
acceptance	absorbent	Antarctic	anchor	abdomen	afforestation	absence of light
astronaut	amphibians	Arctic	anthropic	amplitude	anther	alcohol
bandage	bendy/not	climate	attract	annelids	arthropods	algae
body	bendy	coastal	base rock	antennae	asexual	alveoli
brush	carnivores	conditions	beam	appendix	axis	anti-biotic
care	deciduous	coniferous	block	appliances	biodiversity	artery
change	environment	consumer	body fossil	arachnids	brake	atom
change	evergreen	desert	bones	atmosphere	carpel	bacteria
clean	germination	diorama	carbohydrates	backbone	chemical	balanced diet
culture	herbivore	ethnic origin	carbon	bark	cog	blood
describe	magnetic	exercise	carbon dioxide	bile	conception,	blood vessels
different	mammals	fabric	cast fossil	buzzer	condense	capillary
emergency	man-made	female	cereals	canine	conductivity	circulatory system
exercise	non-living	food chain	chemical fossil	cell	constellation	deoxygenated
fingerprint	omnivore	food sources	compass	change of state	crescent	dimmer
tongue	opaque	germs	contract	circuit	degradation,	drugs
first aid	overcast	growth	dairy	colon	dissolving	electrical symbols
float	pipet	habitats	dispersal	component	dormant	electrons
float	properties	healthy	emission	condensation	ecosystem	emitted
fruit	reproduce	invertebrate	endoskeleton	conductor	embryo	evolution
ground	reptiles	lifecycle	exoskeleton	crocodile clips	evaporate,	fossils
grow	seedling	male	extinct	crustaceans	fertilisation	gene
grow	sense	micro-habitats	fats	deforestation	filament	genetics
gum	sensory	minibeasts	fertiliser	digestive system	filter	hierarchies
healthy	stiff	(names of	fibre	electric current	fledglings	homo sapiens
hear	stretchy	minibeast e.g.,	force	electrical	foetus	inherited
hydrate	trunk	milliped,	force meter	insulator	fossil fuels	internal organs
hygiene	waterproof	spider)	friction	enamel	gametes	kingdoms
lips	webbed feet	names of	glare	energy	geocentric	life domains
medicine	wild	magnets	grains	enzyme	germinate	Linnaean
operation		non-magnetic	Greenhouse Effect	evaporation	gestation	microorganisms
oral		nutrients	hydrostatic	excretion	gestation period	mould
orbit		nutrition	skeleton	fossil fuels	gibbous	muscular
planet		ocean	igneous	freeze	global emissions	mutation
rocket		polar	impermeable	gall bladder	gravitation	natural selection
same		pollution	iron	gas	gravity	neutrons
same		predator	joints	gastrointestinal tract	heliocentric	nucleus
see		prey	lava	global warming	hormone	offspring
sink		producer	life-processes	greenhouse gases	insoluble	organism
sink		rainforest	light source	gut	irreversible	oxygenated
smell		reflective	lipids	human impact	Jupiter	parallel circuit
smell		reproduction	magma	incisor	juvenile	penicillin
space		rubber	magnetic	insulator,	lever	phylum
taste		seashore	magnetic field	jaw	life-span	protons
teeth		sensing	metamorphic	large intestine	lunar	pulmonary
touch/fee		survival	minerals	liver	male	refraction
unhealthy		sustainability	mould fossil	mains	mars	series circuit
vegetable		translucent	muscles	melting point	mechanism	sequestration
watch/observe		transparent	names of magnets	metabolism	metamorphosis	side-effects
x-ray		unhealthy	non-magnetic	molar	nectary	skeletal
		urban	organic matter	molluscs	Neptune	survival of the fittest
		vertebrates	oval	motor	newton	taxonomy
		warmth			nymph	
		resistance			opposing	

		windproof woodland	oxygen permeable poles pollen pollination protein ray relax repel replacement fossil sediment sedimentary seed formation skeleton skull spring sub soil support swerve topsoil trace fossil transparent transportation visible vitamins water resistance	nature reserves nonflowering oesophagus orifice pancreas particles pitch precipitation predatory premolar rectum renewable energy respiration saliva salivary glands segments sensitivity small intestine species state states of matter thorax urbanisation, vegan vegetarian vibration warm and cold blooded water cycle water droplets water vapour wave wires	orbit ovary ovules phases of the moon Mercury physical pistil planets pollinator pregnancy processes propagation property puberty pulleys pupa resistance reversable Saturn sea anemone sepal sexual solar system solubility soluble solute solution solvent stamen stigma streamline style (plants) thermal transparency tuber Uranus Venus waning waxing womb	tobacco valve vein villi yeast