



Year 3 – Scientific Enquiry				
Lesson Intention	National Curriculum Reference	Scientific Enquiry Covered	Rocket Words Covered	Resources Needed
How can a solar oven be made more effective: posing questions and writing predictions	Asking relevant questions and using different types of scientific enquiries to answer them	Asking relevant questions and using different types of scientific enquiries to answer them	solar renewable energy scientific investigation prediction plausible	Cardboard box (not too deep) with a lid, black paper or card, foil, a thermometer, sticky tape, straws and a variety of materials to test (such as cling film, fabrics, foil, paper, card and a piece of black bin bag). Optional: chocolate or marshmallows on a plate.
How can a solar oven be made more effective: recording and presenting results	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	record results data table graph	Cardboard box (not too deep) with a lid, black paper or card, foil, a thermometer, sticky tape, straws and a variety of materials to test (such as cling film, fabrics, foil, paper, card and a piece of black bin bag). Optional: chocolate or marshmallows on a plate.
Cleaning coins: writing a method and carrying out a practical test	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	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	acid alkali PH method practical	A PH testing kit (litmus paper and test indicator), small trays, measuring cylinders, dirty coins and a range of substances to test such as vinegar, oil, ketchup, citric fruit juice, fizzy drinks, toothpaste, soap and water.
Cleaning coins: writing a conclusion	Identifying differences, similarities or changes related to simple scientific ideas and processes Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	Identifying differences, similarities or changes related to simple scientific ideas and processes Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	conclusion evidence explanation compare enquiry	Writing tools.
Making a cake: fair testing, controls and variables	Setting up simple practical enquiries, comparative and fair tests	Setting up simple practical enquiries, comparative and fair tests	baking measurements fair test control experiment variable	Butter, caster sugar, self-raising flour, eggs, vanilla extract, milk, a mixing bowl, a whisk, a wooden spoon, measuring jug, weighing scales, oven, 20cm cake tin (variables could also include baking powder, water and a selection of different flours, e.g. plain or gluten free).
Making a cake: scientific enquiry	Using straightforward scientific evidence to answer questions or to support their findings Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	Using straightforward scientific evidence to answer questions or to support their findings Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	conclusive scientific knowledge equipment diagram collated	Butter, caster sugar, self-raising flour, eggs, vanilla extract, milk, a mixing bowl, a whisk, a wooden spoon, measuring jug, weighing scales, oven, 20cm cake tin (variables could also include baking powder, water and a selection of different flours, e.g. plain or gluten free).



Year 3 – Rocks

Lesson Intention	National Curriculum Reference	Scientific Enquiry Covered	Rocket Words Covered	Resources Needed
Explore the formation and properties of igneous rocks	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	igneous rocks intrusive igneous rock extrusive igneous rock crystals magma	Chocolate chips, coconut oil, ice cubes, cooking equipment (including a microwave or hob), caster sugar, golden syrup, bicarbonate of soda, a wooden spoon and a food container.
Explore the formation and properties of sedimentary and metamorphic rocks	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	sedimentary rock metamorphic rock limestone marble sandstone	A selection of rocks to test, sandpaper, nails, small wooden spoons, water, pipettes, a bowl of water and a microscope or magnifying glass.
Weathering and the suitability of rocks for different purposes	Explore how and why [rocks] might have changed over time (non-statutory)	Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	weathering chemical weathering physical weathering biological weathering acid rain	Vinegar, a pipette, a selection of different rocks and colouring pencils.
Explore how water contributes to the weathering of rocks	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	appearance texture submerged erosion receding	A variety of different rocks, bowls of water, weighing scales and a timer.
Understand how fossils are formed	Describe in simple terms how fossils are formed when things that have lived are trapped within rock	Identifying differences, similarities or changes related to simple scientific ideas and processes	fossil extinct sediment embedded amber	Salt, flour, coffee grounds, cold coffee or water, a mixing bowl, a mixing spoon and objects to create imprints.
Explore different types of soil	Recognise that soils are made from rocks and organic matter	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	decompose fragments clay soil chalky soil sandy soil	Samples of different soils (for instance, peat soil, clay soil, sandy soil, silt soil, loam soil or chalky soil), beakers, a measuring cylinder, filter paper, a funnel, a teaspoon, a magnifying glass and pipettes.



Year 3 – Animals, including humans

Lesson Intention	National Curriculum Reference	Scientific Enquiry Covered	Rocket Words Covered	Resources Needed
Explore the 5 key food groups	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	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	nutrition carbohydrate protein vitamin mineral	A selection of food for the class to sort into the 5 key food groups.
Learn about the nutrition in the food we eat	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	Using straightforward scientific evidence to answer questions or to support their findings	nutrition label portion energy balanced diet	A range of food products containing nutrition labels.
Learn about the different types of skeletons	Identify that humans and some other animals have skeletons and muscles for support, protection and movement	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	vertebrate invertebrate endoskeleton exoskeleton hydrostatic skeleton	Scissors and glue (optional), research resources: books or internet.
Learn about the human skeleton	Identify that humans and some other animals have skeletons and muscles for support, protection and movement	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables	humerus ulna radius tibia fibular	Scissors, glue and split pins.
Learn about animals and their skeletons	Identify that humans and some other animals have skeletons and muscles for support, protection and movement	Identifying differences, similarities or changes related to simple scientific ideas and processes	endoskeleton vertebrate skull rib cage spine	Scissors and glue.
Explore the role of muscles	Identify that humans and some other animals have skeletons and muscles for support, protection and movement	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	muscle contract hamstrings biceps diaphragm	Split pins.



Year 4 - Living things and their habitats

Lesson Intention	National Curriculum Reference	Scientific Enquiry Covered	Rocket Words Covered	Resources Needed
Explore different habitats	Recognise that living things can be grouped in a variety of ways	Identifying differences, similarities or changes related to simple scientific ideas and processes	habitat microhabitat conditions adapted camouflage	Glue and scissors.
Research a habitat	Making a guide to local living things (non-statutory)	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	coastal grassland environment climate exposure	Pencils, colouring pens and research tools, such as books and the internet.
Explore how animals can be classified	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	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	classify characteristics vertebrate invertebrate species	Pencil, scissors, glue.
Create a classification key	Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	sub-groups identify criteria classification keys organism	Pencil.
Adaptations and classification within species	Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment	Identifying differences, similarities or changes related to simple scientific ideas and processes	adapted region features colouring blubber	Colouring pencils.
Explore and classify pond plants	Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	ecosystem oxygenised flowering plant non-flowering plant pond dipping	Colouring pencils For pond dipping (optional): a clear container/viewing trays/bucket, teaspoons, nets, magnifying glasses and clipboards.



Year 4 - States of matter

Lesson Intention	National Curriculum Reference	Scientific Enquiry Covered	Rocket Words Covered	Resources Needed
Compare and group the 3 states of matter	Compare and group materials together, according to whether they are solids, liquids or gases	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	matter solid liquid gas volume	Examples of the 3 states of matter, scissors, glue and pencils.
Explore how particles behave in solids, liquids and 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 ($^{\circ}\text{C}$)	Using straightforward scientific evidence to answer questions or to support their findings	particle bond arranged cooled heated	Ruler, pencil, water, an ice tray, a freezer, a kettle/stove and a thermometer/temperature probe.
Investigate melting points	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 ($^{\circ}\text{C}$)	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	particle melting melting point temperature thermometer	Mini whiteboards, variety of foods to melt (such as butter, coconut oil, dark, milk and white chocolate, gummy bears, different cheeses), tealight stand, tealight, metal pie cases, tongs, matches, or access to a kitchen stove with a saucepan and bowl over boiling water, thermometer.
Explore freezing and boiling points	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 ($^{\circ}\text{C}$)	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	freezing reverse boiling sublimation deposition	Computers/tablets, squared paper, coloured pencils, ruler, pencil.
Explore evaporation and condensation	Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	evaporation condensation absorb water vapour process	Cups or beakers, water, measuring cylinders, graph paper, ruler, pencil.
Understand the water cycle	Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	water cycle precipitation surface runoff transpiration groundwater	Coloured pencils, pencil, glue and scissors.



Year 4 - Living things and their habitats – Conservation

Lesson Intention	National Curriculum Reference	Scientific Enquiry Covered	Rocket Words Covered	Resources Needed
Describe ecosystems and how they are affected by changes in the seasons	Recognise that environments can change and that this can sometimes pose dangers to living things	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	ecosystem Northern Hemisphere Southern Hemisphere migrate monsoon	Research tools, such as books and the internet.
Understand human impact on the environment through deforestation	Recognise that environments can change and that this can sometimes pose dangers to living things	Using straightforward scientific evidence to answer questions or to support their findings	rainforest deforestation drought biodiversity recycling	Research tools, such as books or the internet. Resources for air pollution catchers: index cards, petroleum jelly, sticky tape and decibel metres.
Explore air pollution	Recognise that environments can change and that this can sometimes pose dangers to living things	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	fossil fuels pollution greenhouse gases emissions climate change	Index cards, petroleum jelly, sticky tape and decibel metres.
Understand water pollution	Recognise that environments can change and that this can sometimes pose dangers to living things	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	chemicals sewage contaminate pesticides water treatment plant	Research tools, such as books or the internet, and a muddy glass of water.
Explore methods that can be used to conserve water	Recognise that environments can change and that this can sometimes pose dangers to living things	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	conserve drought freshwater pure water butt	Paper, pencils and pens.
Understand that humans can have a positive impact on nature	Recognise that environments can change and that this can sometimes pose dangers to living things	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	endangered marine sanctuaries protect conservation areas recycling	Paper, pencils, pens and research resources such as books and the internet.