

YEAR 3					
Key Learning	Light	Plants (Parts and their function)	Animals (Nutrition, Skeleton and Muscles)	Rocks	Forces and Magnets
National Curriculum Coverage	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 a solid object. Find patterns in the way that the size of shadows can change	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.	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.	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.	Compare how some 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. 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 (like and unlike poles). Predict whether two magnets will attract or repel each other, depending on which poles are facing.
Working scientifically	Explore a collection of materials (include transparent, translucent and some opaque). Investigate which materials form shadows Sort/Group materials that form shadows and those that do	Compare the effect of different factors on plant growth Research and Model how seeds are formed g. e.g amount of light/ fertiliser Look for Patterns e.g. do big fruits have more seeds?	Compare diets of different people eg athlete and an astronaut Research different food groups and how they keep us healthy Make a model of a plate showing a balanced diet meals/menu Design based on what they find out from their research	Explore different soils and how fossils are formed Identify and Classify rocks according to whether they have grains or crystals and whether they have fossils in them Research discuss the different kinds of living things whose fossils	Raise questions children ask questions about what they notice Plan simple investigation, thinking about variables Record the results from the investigation e.g. how far the magnet was from the

	not			are found in sedimentary rock	
				Investigate what happens when rocks are rubbed together or what changes occur when they are in water	
Skills focus	Observe as a scientist materials that make the best shadows to those that do not Raise Questions e.g. which materials form a shadow? Record findings with annotated diagrams, tables, etc	Observe as a scientist how water is transported in plants e.g. by putting cut white flowers into coloured water children Raise Questions ask questions about what they notice	Pattern Seeking Are adult heads bigger than children's heads? Do taller children have longer arms/bigger feet etc.? Research skeletons from different animals Taking Measurements to help interpret enquiry questions Making Observations on animals with and without skeletons	Observe rocks, including those used in their outdoor surroundings e.g. buildings, monuments etc. Raise questions about the way soils are formed. Using (equipment) hand lens or microscope	Sort/group materials into those that are magnetic and non-magnetic Compare a variety of magnets for strength Investigate/Test Which is the strongest magnet?
Vocabulary	light source dark reflect reflective mirror shadow block direct/direction transparent opaque translucent	leaf flower petal fruit root bulb seed (formation, dispersal) stem water light air pollination life cycle nutrients soil fertiliser growth transport	nutrition nutrients fruit vegetable dairy carbohydrate protein vitamins minerals fat fibre water balanced diet skeleton muscles support protection movement skull ribs spine/vertebra joints sockets bones tendons	rock stone pebble boulder soil fossil grains crystals texture absorb marble chalk granite sandstone slate sandy clay peat	force push pull contact magnetic magnet strength bar attract repel metal iron steel material poles
Learning Revisited/ links to prior learning (Sticky Knowledge)	Year 1 Observe and describe how day length and temperature varies between seasons.	Year 2 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. Year 1	Year 2 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.	Year 2 Identify and compare the suitability of a variety of everyday materials for particular uses. Year 1 Identify and name a variety of everyday materials, including wood, plastic,	Year 2 Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching (applying a force).

Monkwray Junior School

Science Progression Map

		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.	Year 1 Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Identify and name a variety of common animals that are carnivores, herbivores and omnivores.	metal, glass and rock and describe their physical properties.	
YEAR 4					
Key Learning	Materials and their properties	Electricity	Sound	Teeth and Digestion	Living Things and their Habitats
National Curriculum Coverage	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.	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	Identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sounds travel through a medium to the ear. 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. Find patterns between the pitch of a sound and features of the object that produced	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	Recognise that living things can be grouped in a variety of ways. Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Recognise that environments can change and that this can sometimes pose dangers to living things.

Monkwray Junior School

Science Progression Map

		lights in a simple series circuit. Recognise some common conductors and insulators, and associate metals with being good conductors.	it. Recognise that vibrations from sounds travel through a medium to the ear.		
Working Scientifically Enquiry	Plan and set up a fair test with a real context, e.g. where is the best place to dry Research the school sweatshirts/ towel? the temperature at which materials change state, e.g. when ice melts Explore the effect of temperature on substances such as chocolate, butter, cream (e.g. to make food such as chocolate crispy cakes and ice cream)	Pattern Seeking e.g. that bulbs get brighter if more cells are added, the shorter the wire the brighter the bulb, etc. Sort and Group materials into conductors and insulators by setting up a simple circuit.	Explore a range of cups (e.g. paper, polystyrene) and different types of string/wool to make a string telephone. How does it work? Use this knowledge to investigate what makes the best string telephone? patterns in the sounds made by different objects or elastic bands of different thicknesses Plan an investigation on sound insulation e.g. investigate/test the best ear muffs to provide the best insulation against sound	Research the teeth of carnivores and herbivores Compare and Explain the differences between carnivores and herbivores Plan a fair test to investigate the effects that different liquids of their choosing have on teeth (using egg shells).	Classify living things into groups e.g. vertebrates / invertebrates Create subsets within groups e.g. plants into flowering / non-flowering plants etc. Research other groups of animals which could be found at different times of the day or which may have been hidden.
Working Scientifically Skills focus	Raise Questions What do you think will affect evaporation (drying of the fabric)? Consider the variables to keep the same and one to change. Measure Take relevant measurements and make decisions on how to record these.	Report on findings from enquiries (verbal or written explanations, displays or presentations of results and conclusions). Using Scientific Equipment use a data logger to help them to record and compare the light (this data can be used interpret and	Create a model of an instrument by using what they have found out about pitch and volume. Using scientific equipment Using scientific equipment use a data logger to help them to record and compare the sounds (this data can be used interpret and evaluate).	Make Scientific Observations (using appropriate equipment) of the egg shell pieces in the different drinks. Record and Explain the results of the experiment Present these findings to an audience	Raise Questions based on their observations of animals and plants and what they have found out about through research and how that informed their sorting decisions. Design a simple classification key to explore and identify local plants and animals.

Monkwray Junior School

Science Progression Map

		evaluate).			
Vocabulary	states of matter solid liquid gas air oxygen powder grain/granular crystals change state ice/water/steam water vapour heated/heating cooled/cooling temperature degrees Celsius freeze solidify melting point molten boil	electricity appliances/device mains plug circuit (diagrams, symbols) components cell battery (positive/negative) connection (loose/strong) short circuit wire crocodile clip bulb (bright/dim) switch plug buzzer motor (fast/slow) conductor insulator mains appliances/device	sound source noise vibrate/vibration travel solid/liquid/gas pitch tune high/low volume loud/quiet fainter muffle insulation instrument percussion strings brass woodwind tuned	digestive system nutrients mouth teeth canines incisor molar pre-molar saliva tongue rip tear chew grind cut oesophagus (gullet) stomach intestine (small/large) rectum carnivore herbivore omnivore producer consumer predator prey food chain	classification keys environment fish amphibians reptiles birds mammals vertebrates invertebrates human impact (positive/negative)
Learning Revisited/ links to prior learning (Sticky Knowledge)	Year 1 Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies. (*link to water cycle)	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.	Year 1 Identify, name, draw and label the basic parts of the human body and say which part of the human body is associated with each sense. (*focus on sound and listening)	Year 3 Identify that animals, including humans, need the right types 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.	Year 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.

Year 5					
Key Learning	Environment- Life Cycles	Forces	Testing Material Properties	Material Changes	Earth and Space
	Human Life Cycles				
National Curriculum Coverage	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals. Name, locate and describe the functions of the main parts of reproductive system of plants Describe the changes as humans develop to old age.	Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Identify the effects of air resistance, water resistance and friction that act between moving surfaces (causing things to slow down). Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. There are different types of forces which have different effects on objects. Gravity can act without direct contact between the Earth and an object	Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic (advantages and disadvantages).	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. 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.	Describe the movement of the Earth, and other planets, relative to the Sun and each other in the solar system. Describe the movement of the Moon relative to the Earth. Describe Sun/Earth/Moon as approximately spherical bodies. Use the idea of the Earth's rotation to explain day and night.
Working Scientifically Enquiry	Explore growing new plants from different parts of the parent plant e.g. seeds, stem/root cuttings, bulbs	Design and Make a model that can be tested to answer questions such as 'which materials would be the most effective for	Explore a range of materials and their suitability for a particular purpose.	Plan different types of scientific enquiry, including a fair test	Research questions about the Solar System using a nonfiction text, a photo or video clip to discuss the solar system.

	Compare how different animals reproduce and grow Set Up an observation over time e.g. by hatching and rearing chicks, the life cycle of a frog or a butterfly Research the gestation periods of other animals and compare them with humans	making a marble run longest or stopping ice cream from melting?" Compare materials in order to make the best model	Plan and carry out a fair test independently. From exploration identifies which material is the best insulator, e.g. bubble wrap because it is plastic and has trapped air. Investigate Carry out tests to answer questions such as 'Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains?'		Make a model of a simple solar system
Working Scientifically Skills focus	Observe and compare life cycles of plants and animals in their local environment Question ask pertinent questions to research Report Findings using the research, choose how to report their findings of different life cycles e.g. make a model, a life cycle mime, a rap or act it out. Report Choose how to report findings from the research. Report If opportunity arises find out the length and mass of a baby as it grows.	Improve the design of the model in response to test data (iterative process). Make Choices about collecting and recording results systematically	Use evidence from explorations to support prediction. Use test results to make predictions to set up further comparative and fair tests.	Record observations on the changes that take place in an experiment Question suggest a scientific question to investigate variables Predict, recognise and control when setting up a fair test Explain when a change is reversible or irreversible using accurate scientific vocabulary.	Raise Questions about different planets in our solar system e.g. movement, relative movement, size etc. Report and Present findings from research enquiry using appropriate scientific language.

Monkway Junior School

Science Progression Map

Vocabulary	life cycle reproduction sexual asexual germination pollination seed formation seed dispersal pollen stamen stigma plantlets runners life cycle baby teenager puberty adolescent adult elderly move feed grow reproduce breathe/respire excrete birth death	gravity force air/water resistance friction moving surfaces mechanisms levers pulleys gears transfer magnetic force magnet attract	hard soft stretchy rigid flexible waterproof absorbent strong/weak rough smooth reflective non reflective transparent opaque translucent	dissolve solution soluble insoluble solute solvent particle mixture filtering sieving evaporating residue condensing reversible/irreversible burning rusting	Earth planets Sun solar system Moon celestial body sphere/spherical rotate/rotation spin night and day dwarf planet orbit revolve geocentric/heliocentric model shadow clocks sundials astronomical clocks
Learning Revisited/ links to prior learning (Sticky Knowledge)	Year 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.	Year 3 Compare how some 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.	Year 3 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 Year 1 and 2 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	Year 2 Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. Year 1 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 1 Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies

	Year 2 Notice that animals, including humans, have offspring which grow into adults.		properties		
Year 6					
Key Learning	Living Things- Evolution	Living Things- Classification	Animals- Exercise and Health	Electricity	Light
National Curriculum Coverage	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.	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 and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Describe the ways in which nutrients and water are transported within animals, including humans.	Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. 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 (at least: cells, wires, switches, bulbs, buzzers and motors) when representing a simple circuit in a diagram.	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 the light that travels from light sources to our eyes or from light sources to objects and then to our eyes (and represent this in simple diagrammatic form). Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
Working Scientifically Enquiry	Research and Compare how some living things adapt to survive in extreme conditions, e.g. cactuses, penguins and camels	Classify using classification systems and keys Identify animals and plants in the immediate environment	Explore the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health Investigation	Test and systematically identify the effect of changing one thing/component at a time in a circuit. Design and making a model of a set of traffic	Design and Make a periscope, using the idea that light appears to travel in straight lines to explain how it works. Looking for Patterns between light sources, objects and shadows by using shadow

Monkwray Junior School

Science Progression Map

		Research unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system.	Plan and carry out a test into a stationary exercise. Ask the children to carry out the test and record results as in a group. Discuss findings. For above investigation consider how long the pose should last, compare with resting pulse rate, decide if one child or several children should be tested. Children make decisions about how to carry out the tests	lights, a burglar alarm or some other useful circuit.	puppets.
Working Scientifically Skills focus	Analyse the advantages and disadvantages of specific adaptations, such as being on two feet rather than four, having a long or a short beak, having gills or lungs, brightly coloured and scented flowers. Observing and raising questions about local animals and how they are adapted to the environment	Record the results of a survey using a classification key Design a branching key using yes/no questions and scientific language to name unknown plants and animals in their local habitat (use IT or large sheets of paper) Report and present information about an invertebrate classification group	Observing and measuring changes to breathing, heart beat and or pulse rates after exercise. Predict Use test results to make predictions to set up further comparative and fair tests. Recording Encourage children to use ICT to record data.	Questioning Children come up with a set of questions which identifies the 'change' and 'measure'? Identify Can children identify control variables to plan a fair test?	Children raise a range of questions about light? Children to sort these into groups for how they could be answered e.g. research, direct observation, testing, don't know... Deciding [observe/explore] where to place rear-view mirrors on cars. Use a data logger to help them to record and compare light. Interpret and evaluate this data.
Vocabulary	evolution suitable environment adapted/adaptation offspring characteristics vary/variation inherit/inheritance fossils	organism micro-organisms fungus mushrooms classification keys environment fish amphibians reptiles birds mammals vertebrates invertebrates	circulatory system heart blood blood vessels pumps oxygen carbon dioxide lungs nutrients water diet exercise drugs lifestyle	appliances/device electrical circuit diagram symbol components cell battery positive/negative terminal connection short circuit wire crocodile clip bulb bright/dim switch buzzer volume motor	opaque translucent transparent shadow pupil iris lens eyelid reflection refraction convex concave kaleidoscope Periscope Rainbow Prism Source

				faster/slower conductor insulator metal/non metal voltage current resistance	
Learning Revisited/ links to prior learning (Sticky Knowledge)	Year 5 Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals. Year 2 Notice that animals, including humans, have offspring which grow into adults. Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	Year 4 Recognise that living things can be grouped in a variety of ways. Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Recognise that environments can change and that this can sometimes pose dangers to living things.	Year 3 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. Year 2 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	Year 4 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.	Year 3 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 a solid object. Find patterns in the way that the size of shadows can change.