Bidford on Avon C. of E. Primary School Science Curriculum two year rolling programme 2022

EYFS	
Theme	**Key Vocabulary**
Sound, Light/ Earth and Space/ Seasons	*Volume, loud, quiet, noise, Night, Day, Light, Dark, Sun, Moon, Torch, Earth, Star, Planets, Weather, Sun, Clouds, Rain, Snow, Wind, Hail, Seasons, Winter, Spring, Summer, Autumn, leaves, Fog, Sleet, Frost*
Animals including Humans	*Minibeasts, Shell, Body, Head, Ears, Mouth, Nose, Tongue, Fingers, Toes, Leg, Arm, Elbow, Teeth, Tongue, Senses, touch, sight, smell, taste, hear, Tail, Wing, Claw, Fin, Beak, Paws, Hooves, Scales, Fur, Hair, Feathers, Egg, Adult, Baby, Healthy*
Plants	*Garden, Forest, Leaf, Flower, Tree, Fruit, Vegetable, Stem, Plant, Seed, Root, Nutrient, Water, Sunlight, Trunk, Growth, Branch, Petal, Bark*
Living things and their habitats	*Habitat, ponds, woodland, sea, Living, Dead, Alive, Hot, cold, Dry, wet, Bright, shade, dark, Shelter, Move, Food, Healthy*
Materials	*Wood, Plastic, Glass, Metal, Rock, Brick, Paper, Fabric, Card (board), Clay, Hard, Soft, Stretchy, Bouncy, Bendy, Squishy, Breaks, tears, Tough, Smooth, Shiny, (Not) See through*
Working Scientifically	*Question, Answer, Look, Sort, Group, Predict, Measure, Compare, Similar, Different, Test, Magnifying glasses, Bug viewers*

Even Years – Year 1/2			
Term	**Autumn**	**Spring**	**Summer**
Aspect	**Biology**	**Chemistry**	**Biology**
Theme	**Y1. Animals including humans**	**Y1. Everyday Materials**	**Y2. Living Things and their Habitats**
Coverage	• *Name common animals* • *Carnivores, etc* • *Human body and senses*	• *Properties of materials* • *Grouping materials*	• *Animal habitats* • *Plants* • *Food chains*
Key Knowledge	• *Know how to classify a range of animals* • *Know and classify animals by what they eat* • *Know how to sort by living and non-living things* • *Know the name of parts of the human body that can be seen*	• *Know the name of the materials an object is made from* • *Know about the properties of everyday materials*	• *Know which animals are suited to living in which habitats* • *Know a variety of plants and animals* • *Know simple food chains*
Key Vocabulary	*Human, Fish, Reptiles, Mammals, Birds, Amphibians, Herbivore, Omnivore, Carnivore, Leg, Arm, Elbow, Head, Neck, Body, Ears, Nose, Back, Wings, Beak, Claw, Feathers, Fin, Hooves, Paw, Fingers, Eyes, Fur, Mouth, Skin, Tail, Elbow, Scales, Teeth, Tongue, hear, see, smell, taste, touch, senses*	*Object, Material, Wood, Plastic, Glass, Metal, Rock, Brick, Paper, Fabric, Card (board), Clay, Hard, Soft, Stretchy, Stiff, Bendy, Waterproof, Absorbent, Breaks, tears, Rough, Smooth, Shiny, Dull, Not/See through, Floppy*	*Living, Dead, Alive, Habitats, pond, woodland, seashore, ocean, rainforest, Micro-habitat, logs, bushes, rocks, energy, suited, suitable Conditions, Hot, warm, cold, Dry, damp, wet, Bright, shade, dark, Basic needs, Food chain, Shelter, Move, Food, Healthy, **carnivore**, **herbivore**, **omnivore**, source, predator, prey* ** learnt before in other science topic*
Milestones	• Identify and name a variety of common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates. • 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 (birds, fish, amphibians, reptiles, mammals and invertebrates, including pets). • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	• 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. • Observe the apparent movement of the Sun during the day. • Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.	• Explore and compare the differences between things that are living, that are dead and 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.
	Y1. Seasonal Changes		
	<u>Key Knowledge</u> • *The four seasons/Seasonal weather* • *Name the seasons and know about the type of weather in each season*	<u>Milestones</u> • Observe the apparent movement of the Sun during the day. • Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.	
	<u>Key Vocabulary</u> *Weather, Sun, Clouds, Rain, Snow, Wind, Hail, Seasons, Winter, Spring, Summer, Autumn, Sunrise, Sunset, Day length, Day, Night, Fog, Sleet, Frost, Moon, Light, Dark*		
			Enquiry Ideas

Working Scientifically in Year 1/2	**During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:** • *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.* **<u>Key Vocabulary Year 1</u>** *Question, Answer, Observe, Equipment, Group, Recognise, Sort, Compare, Measure, Test, Instructions, similar, different, best, worst, change, plan, look, biggest, smallest,, group, What…? How ….? Why …?*	• *Why do some animals eat meat and others do not?* • *Which materials keeps things warmest?* • *Why do some animals have underground habitats?* • *Why does it get cold in winter?* • *Why do most people love the spring?* • *Why don't we need to wear so many clothes in summer?* • *Why are there so many leaves on the ground in autumn?*

Odd Years – Year 1/2			
Term	**Autumn**	**Spring**	**Summer**
Aspect	**Biology**	**Chemistry**	**Biology**
Theme	**Y2. Animals including humans**	**Y2. Uses of Everyday materials**	**Y1 Plants/Y2 Plants**
Coverage	• *Animal reproduction* • *Healthy living* • *Basic needs*	• *Identify different materials* • *Name everyday materials* • *Properties of materials* • *Compare the use of different materials* • *Compare movement on different surfaces*	• *Common plants* • *Plant structure* • *Plant and seed growth* • *Plant reproduction* • *Keeping plants healthy*
Key Knowledge	• *Know the basic stages in a life cycle for animals, (including humans)* • *Know why exercise, a balanced diet and good hygiene are important for humans*	• *Know how materials can be changed* • *Know why a material might or might not be used for a specific job*	• *Know and name a variety of common wild and garden plants* • *Know and name the parts of a plant/tree* • *Know and explain how plants grow* • *Know what plants need in order to grow and stay healthy*
Key Vocabulary	*Survival, Water, Growth, Air, Food, Adult, Baby, Child, Offspring, Reproduction, Teenager, Toddler, Young, Kitten, Calf, Caterpillar, Butterfly, Chick, Hen, Puppy, Fish, Exercise, Hygiene, disease, germs, Food types, Meat, Pasta, Rice, Vegetables, heartbeat, healthy, breathing*	*Elastic, Foil, Rubber, Wool, Sponge, Opaque, Translucent, Transparent, Reflective, Non-reflective, Flexible, Rigid, Shape, Push, Pull, Twist, Squash, Bend, Stretch, Roll, Press*	**Year 1:** *Deciduous, Evergreen, Tree, Leaf, Flower (blossom), Petal, Fruit, Vegetable, Root, Bulb, Seed, Trunk, Branches, Stem, berry, Oak, Holly, Willow, Birch, Chestnut, Conker, Daisy, Buttercup, Rose, Daffodil, fruit, weed, living, alive. Bark, Bud, stalk, deciduous, evergreen, common, wild* **Year 2:** *Water, Light, Shade, Sun, Suitable temperature, Grow, Healthy, Unhealthy, Germinate, Decompose, warm, cool, water*
Milestones	• Notice that animals, including humans, have offspring which grow into adults. • Identify how humans resemble their parents in many features. • Investigate 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.	• Compare and group together a variety of everyday materials on the basis of their simple physical properties. • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock, and paper/cardboard for particular uses.	• Identify and name a variety of common plants, including garden plants, wild plants and trees and those classified as deciduous and evergreen. • Identify and describe the basic structure of a variety of common flowering plants, including roots, stem/trunk, leaves and flowers. • 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.
	Y2. Seasonal Changes		
	Key Knowledge • *The four seasons/Seasonal weather* • *Name the seasons/ observe and describe the weather associated with the seasons and how day length varies*		**Milestones** • Observe the apparent movement of the Sun during the day. • Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies
	Key Vocabulary Weather, Sun, Clouds, Rain, Snow, Wind, Hail, Seasons, Winter, Spring, Summer, Autumn, Sunrise, Sunset, Day length, Day, Night, Fog, Sleet, Frost, Moon, Light, Dark		

Milestones for Working Scientifically in Year 1/2	**During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:** • *Ask simple questions.* • *Observe closely, using simple equipment.* • *Perform simple tests.* • *Identify and classify.* • *Use observations and ideas to suggest answers to questions.* • *Gather and record data to help in answering questions* **Key Vocabulary Year 2** *Classify, Identify, Gather, data, Record, tally chart, diagram, data, pictogram, Research, secondary sources, Patterns, Standard units of measure, cm, mm, seconds, minutes, hours, grams, ml, fair, unfair, observe, change, slowly, quickly, describe, name, label, measure, bigger, smaller, notice, cycle, predict*	**Enquiry Ideas** • *Why are flowers different colours?* • *Why do some trees lose their leaves in autumn and others do not?* • *How long are roots of tall trees?* • *How can we group deciduous and coniferous trees?* • *In what conditions do seeds grow best?* • *Which fruits grow naturally in our country?* • *What are the advantages/disadvantages of common materials?* • *What do the seeds of different trees look like?*

Even Years - Year 3/4					
Term	**Autumn**		**Spring**	**Summer**	
Aspect	**Biology**	**Biology**	**Physics**	**Biology**	**Physics**
Theme	**Y3. Animals Including Humans**	**Y4. Animals Including Humans**	**Y3. Forces and Magnets**	**Y3. Plants**	**Y3. Light**
Coverage	• *Skeleton and muscles* • *Nutrition* • *Exercise and health*	• *Digestive system* • *Teeth* • *Food chains*	• *Different Forces* • *Magnets*	• *Plant life* • *Basic structure & functions* • *Life cycle* • *Water transportation*	• *Reflections* • *Shadows*
Key Knowledge	• *Know about the importance of a nutritious, balanced diet* • *Know how nutrients, water and oxygen are transported within animals and humans* • *Know about the skeletal and muscular system of a human*	• *Identify and name the parts of the human digestive system* • *Know the functions of the organs in the human digestive system* • *Identify and know the different types of human teeth* • *Know the functions of different human teeth* • *Use and construct food chains to identify producers, predators and prey*	• *Know about and describe how objects move on different surfaces* • *Know how a simple pulley works and use to on to lift an object* • *Know how some forces require contact and some do not* • *Know about and explain how magnets attract and repel* • *Predict whether magnets will attract or repel and give a reason*	• *Know the function of different parts of flowing plants & trees* • *Know how water is transported within plants* • *Know the plant life cycle, especially the importance of flowers*	• *Know that dark is the absence of light* • *Know that light is needed in order to see and is reflected from a surface* • *Know and demonstrate how a shadow is formed and explain how a shadow changes shape* • *Know about the danger of direct sunlight and describe how to keep protected*
Key Vocabulary	*Movement, Muscles, Bones, Skull, Skeleton, carbohydrates fibre, lungs, joints, minerals, nutrients, nutrition protein, ribs, spine, sugars, brain, heart, vitamins, fibre, fats, water, balanced diet, support, protect, vertebrate, invertebrate, relax, contract*	*Mouth, Tongue, **Teeth**, Oesophagus, Stomach, Small Intestine, Large Intestine, Herbivore, Carnivore, Canine, Incisor, Molar, anus, digestion, digestive system, premolars, rectum, saliva, acid, enzymes, **predator**, **prey**, food chain, energy, sun, decay* ** learnt before in other topic/year*	*Magnetic, Force, Contact, Attract, Repel, Friction, Poles, **Push**, **Pull**, horseshoe, magnet, iron, material, non-contact, north pole, south pole, steel, strength, **twist**, surface, **rough**, **smooth**, direction, distance, fastest, slowest*	*Air, **Light**, **Water**, Nutrients, Soil, Reproduction, seeds, Transportation, Dispersal, Pollination, **Flower**, **germinate**, photosynthesis, insects, seed formation, wind, pollen, fertilisation, lifecycle, nectar, stamen, carpel, anther, stigma*	***Light**, Shadows, Mirror, **shiny**, Reflective, **Dark**, Reflection, light source, cast, **opaque**, **translucent, transparent**, matt, surface, source, natural, man-made, star, sun, torch, candle, lamp, sunlight, dangerous, protect, direction, object, **night**, **day***
Milestones	• Identify that humans and some animals have skeletons and muscles for support, protection and movement. • Identify that animals, including humans, need the right types and amounts of nutrition that they cannot make their own food and they get nutrition from what they eat.	• Construct and interpret a variety of food chains, identifying producers, predators and prey. • 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	• 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.	• Identify and describe the functions of different parts of flowering plants: roots, stem, leaves and flowers. • Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how	• 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.

			• 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.	they vary from plant to plant. • Investigate the way in which water is transported within plants. • Explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	• 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 change.

Working Scientifically in Year 3/4

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- *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.*

Key Vocabulary Year 3

Pattern seeking, Relevant questions, Scientific enquiry, Careful observations, Predict, Method, Data, Interpret, Results, Conclusions, Thermometer, degree, Celsius, Accurate measurements, Record, bar chart, Comparative test, Fair test, Controlled investigations, Differences and similarities, Changes, Improvements, gradually, recognise, evidence, research, length, prediction

Enquiry Ideas

- *Why does the moon appear as different shapes in the night sky?*
- *Why do shadows change during the day?*
- *What time of day is a shadow likely to be at its longest and shortest?*
- *What are the best conditions for a plant to grow?*
- *Why is the liver important in the digestive systems?*
- *Which soil is suitable to grow plants?*
- *Which is more efficient – your right hand or left hand?*

Odd Years - Year 3/4					
Term	**Autumn**		**Spring**	**Summer**	
Aspect	**Biology**	**Chemistry**	**Chemistry**	**Physics**	**Biology**
Theme	**Y4. Living Things and Their Habitats**	**Y3. Rocks**	**Y4. States of Matter**	**Y4. Electricity**	**Y4. Sound**
Coverage	• *Grouping living things* • *Classification keys* • *Adaptation of living things*	• *Fossil formation* • *Compare and group rocks* • *Soil*	• *Compare and group materials* • *Solids, liquids and gases* • *Changing state* • *Water cycle*	• *Uses of electricity* • *Simple circuits and switches* • *Conductors and insulators*	• *How sounds are made* • *Sound vibrations* • *Pitch and Volume*
Key Knowledge	• *Use classification keys to group, identify and name living things* • *Know how changes to an environment could endanger living things* • *Group materials based on their state of matter*	• *Compare and group rocks based on their appearance and physical properties, giving reasons* • *Know how soil is made and how fossils are formed* • *Know about and explain the difference between rock types*	• *Know the temperature at which materials change state* • *Know about and explore how some materials can change state* • *Know the water cycle*	• *Identify and name appliances that require electricity to function* • *Construct a series circuit* • *Identify and name the components in a series circuit* • *Predict and test whether a lamp will light within a circuit* • *Know the function of a switch* • *Know the difference between a conductor and an insulator*	• *Know how sound is made* • *Know how sound travels from a source to our ears* • *Know the correlation between pitch and the object producing a sound* • *Know the correlation between the volume of a sound and the strength of the vibrations that produced it* • *Know what happens to a sound as it travels away from its source*
Key Vocabulary	***Vertebrates**, **Fish**, **Amphibians**, **Reptiles**, **Birds**, **Mammals**, **Invertebrates**, Snails, Slugs, Worms, Spiders, **Insects**, Environment, **Habitats, Food chain,** classification, keys, hibernate, migrate, **predator**, **prey**, producer, consumer, human impact, negative, conservation, population, deforestation, urban, litter*	*Fossils, **Soil**, Sandstone, Granite, Marble, Pumice, Crystals, sedimentary, metamorphic, igneous, absorbent, porous, durable, permeable, impermeable, **hard**, **soft**, **rock**, pebble, boulder, chalk, clay, grain, layer, slate, sand/sandy, sediment, limestone, man-made* **** learnt before in other topic/year***	*Solid, Liquid, Gas, Evaporation, Condensation, Particles, matter, Temperature, Freezing (point), Heating, cooling, Precipitation, melting (point), boiling (point), state change, water cycle, water vapour, solidify, dissolve, solution, filter, separate, sieve, mix, undissolved*	*Electricity, electrical, circuit, battery, bulb, crocodile clip, buzzer, motor, conduct, conductor, insulate, wire, insulator, power, bright, brightness, switch, break, dim, batteries, appliance, complete, short circuit, danger, safety, **metal, positive**, **negative**, cell, component, connections, appliance, mains*	*Volume, Vibrate, Vibration, Wave, Tone, Speaker, loud, sound, **source**, travel, faint, insulation , Pitch, high, low, volume, loud, quiet, waves, ear, ear canal, ear drum, pinna, hammer*
Milestones	• 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	• Compare and group together different kinds of rocks on the basis of their simple, physical properties. • Relate the simple physical properties of some rocks to their	• 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 the temperature at which this happens in	• 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,	• Identify how sounds are made, associating some of them with something vibrating. • Recognise that vibrations from sounds travel through a medium to the ear.

	local and wider environment. • Recognise that environments can change and that this can sometimes pose dangers to living things	formation (igneous or sedimentary). • Describe in simple terms how fossils are formed when things that have lived are trapped within sedimentary rock. • Recognise that soils are made from rocks and organic matter.	degrees Celsius (°C), building on their teaching in mathematics. • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	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.	

Milestones for Working Scientifically in Year 3/4	**During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:** • *Ask relevant questions.* • *Set up simple, practical enquiries and comparative and fair tests.* • *Make accurate measurements using standard units, using a range of equipment, e.g. thermometers and data loggers.* • *Gather, record, classify and present data in a variety of ways to help in answering questions.* • *Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables.* • *Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.* • *Use results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests.* • *Identify differences, similarities or changes related to simple, scientific ideas and processes.* • *Use straightforward, scientific evidence to answer questions or to support their findings.* **Key Vocabulary Year 4** Data logger, Classification, keys, Guides, Systematic, observations, Scientific evidence, scientists, discovery, conclude, evaluate, rank, plan, vary, constant, bar graph, table, tally	**Enquiry Ideas** • *Why are steam and ice the same thing?* • *What do we mean by 'pitch' when it comes to sound?* • *Which materials can cut out sound?* • *How fast does ice melts in different temperatures?* • *Where does a fossil come from?* • *Which type of plants grow in woodlands or in gardens? How can we group this information?* • *What are the main differences between sedimentary and igneous rocks?*

Even Years – Year 5/6				
Term	**Autumn**		**Spring**	**Summer**
Aspect	**Biology**	**Chemistry**	**Physics**	**Physics**
Theme	**Y6. Evolution and Inheritance**	**Y5. Properties and Changes of Materials**	**Y6. Electricity**	**Y5. Earth and Space**
Coverage	• *Identical/non-identical off-spring* • *Fossil evidence and evolution* • *Adaptation and evolution*	• *Compare properties of everyday materials* • *Soluble/ dissolving* • *Reversible and irreversible substances*	• *Electrical components* • *Simple circuits* • *Fuses and voltage*	• *Movement of the Earth, planets & Moon* • *Night and day*
Key Knowledge	• *Know how the Earth and living things have changed over time* • *Know how fossils can be used to find out about the past* • *Know about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents)* • *Know how animals and plants are adapted to suit their environment* • *Link adaptation over time to evolution* • *Know about evolution and can explain what it is*	• *Compare and group materials based on their properties (e.g. hardness, solubility, transparency, conductivity, [electrical & thermal], and response to magnets* • *Know and explain how a material dissolves to form a solution* • *Know and show how to recover a substance from a solution* • *Know and demonstrate how some materials can be separated (e.g. through filtering, sieving and evaporating)* • *Know and demonstrate that some changes are reversible and some are not* • *Know how some changes result in the formation of a new material and that this is usually irreversible*	• *Compare and give reasons for why components work and do not work in a circuit* • *Draw circuit diagrams using correct symbols* • *Know how the number and voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer*	• *Know about and explain the movement of the Earth and other planets relative to the Sun* • *Know about and explain the movement of the Moon relative to the Earth* • *Know and demonstrate how night and day are created* • *Describe the Sun, Earth and Moon (using the term spherical)*
Key Vocabulary	***Fossils**, Adaptation, Evolution, Characteristics, **Reproduction**, Genetics, **environment**, **offspring**, **suited**, vary, inherited, sexual, species, survival,* ** learnt before in other topic/year*	*Changing state, **evaporate**, **evaporation**, condense, **condensation**, state, **solid**, **liquid**, **gas**, **melt**, **freeze**, **boil**, conditions, **melting**, **solidify**, **Dissolve**, dissolving, rusting, undissolved, **solution**, mixture, pure, **separate**, clear, cloudy, **filter**, air, oxygen, carbon dioxide, natural gas, carbon monoxide, **properties,** thermal **conductor, magnetic, electrical conductor,** soluble, insoluble, permanent, reversible/irreversible change, **mixture**, solvent, solute, saturated, **sieve**, chemical/physical change, reaction,*	***Battery, bulb, buzzer, cell, circuit, complete circuit, motor, switch**, symbol, diagram, voltage, **volume**, **brightness**, component, series circuit, variation, charge*	*Earth, **sun**, **moon**, sphere, revolve, orbit, spin, rotate, axis, sunrise, sunset, north, south, east, west, **light source**, **shadow,** star, planets, Jupitar, Mars, Mercury, Neptune, Saturn, Uranus, Venus, solar system, orbit, moon phases, full moon, new moon, **day**, **night**, waxing/waning crescent/gibbous, eclipse, universe, satellite, astronomy, constellation, Galaxy, Milky Way, year, month*
Milestones	• 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.	• Compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, conductivity (electrical and thermal), and response to magnets. • Understand how 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.	• 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	• 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. • Describe the Sun, Earth and Moon as approximately spherical bodies. Use the idea

	• Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	• 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, oxidation and the action of acid on bicarbonate of soda	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.	of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.

Milestones for Working Scientifically in Year 5/6

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- Plan enquiries, including recognising and controlling variables where necessary.
- Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work.
- Take measurements, using a range of scientific equipment, with increasing accuracy and precision.
- Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models.
- Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions.
- Present findings in written form, displays and other presentations.
- Use test results to make predictions to set up further comparative and fair tests.
- Use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments.

Key Vocabulary Year 5

Variables, Control, Accuracy, Precision, Reliable, Repeat readings, Line graphs, comparative, controlled, dependant, independent, relationships, quantitative, interpret, pattern, analyse, rank, control

Enquiry Ideas

- *Which materials dissolve and evaporate and why is this sometimes important?*
- *Can you think of five materials that can be changed and reversed and five that cannot?*
- *How have scientists made use of changes to create materials that make our lives easier?*
- *Can you explain why we have day and night?*
- *What do we know about the other planets in our solar system?*
- *Why do you not usually look exactly like your mum or dad?*

Odd Years – Year 5/6					
Term	**Autumn**		**Spring**	**Summer**	
Aspect	**Physics**	**Physics**	**Biology**	**Biology**	**Biology**
Theme	**Y6. Light**	**Y6. Forces**	**Y5. Animals Including Humans** **Y6. Animals Including Humans**	**Y5. Living Things and Their Habitats**	**Y6. Living Things and Their Habitats**
Coverage	• *How light travels* • *Reflection* • *Ray models of light*	• *Gravity* • *Friction* • *Forces and motion of mechanical devices*	• *Changes as humans develop from birth to old age* • *The circulatory system* • *Water transportation* • *Impact of exercise on body*	• *Life cycles – plants and animals* • *Reproductive processes* • *Famous naturalists*	• *Classification of living things and the reasons for it*
Key Knowledge	• *Know how light travels* • *Know and demonstrate how we see objects* • *Know why shadows have the same shape as the object that casts them* • *Know how simple optical instruments work e.g. periscope, telescope, binoculars, mirror, magnifying glass etc.*	• *Know what gravity is and its impact on our lives* • *Identify and know the effect of air and water resistance* • *Identify and know the effect of friction* • *Explain how levers, pulleys and gears allow a smaller force to have a greater effect*	• *Create a timeline to indicate stages of growth in humans* • *Identify and name the main parts of the human circulatory system* • *Know the function of the heart, blood vessels and blood* • *Know the impact of diet, exercise, drugs and lifestyle on health* • *Know the ways in which nutrients and water are transported in animals, including humans*	• *Know the life cycle of different living things e.g. mammal, amphibian, insect and bird* • *Know the differences between different life cycles* • *Know the process of reproduction in plants* • *Know the process of reproduction in animals*	• *Classify living things into broad groups according to observable characteristics & based on similarities and differences* • *Know how living things have been classified* • *Give reasons for classifying plants and animals in a specific way*
Key Vocabulary	*absence of light,* ***dangerous****,* ***dark****,* ***light****,* ***light source****,* ***matt****,* ***mirror****,* ***opaque****,* ***reflect****,* ***shadow****,* ***shiny****,* ***straight lines****,* ***sunlight****,* ***surface****,* ***translucent****,* ***transparent****, light rays, light beam, rainbow, refraction, bend, distortion, white light, spectrum, obstruct, block*	*Air resistance, Water resistance, Friction, Gravity, Newton, Gears, Pulleys, lever, force, pivot (fulcrum)*	*Foetus, Embryo, Womb, Gestation, Babyhood,* ***Toddler****, Teenager, adolescence, Elderly, adulthood,* ***child****,* ***Growth****, Development, Puberty; Circulatory,* ***Heart****,* ***Blood*** *Vessels, Veins, Arteries, Oxygenated, Deoxygenated, Valve,* ***Exercise****, Respiration,* ***diet****, drugs,* ***lungs****,* ***muscles****,* ***nutrients****, pulse, pumps, rate,* ***water****. Carbon dioxide, transported, oxygen, liver, kidney, lifestyle*	***Mammal****,* ***Reproduction****,* ***Fish****,* ***Insect****,* ***Amphibian****,* ***Bird****,* ***Reptile****,* ***Offspring****, egg, asexual,* ***sexual****, fertilises,* ***lifecycle****, live young, metamorphosis, sperm,* ***lifecycle****, juvenile, mating, ovule, anther*	***Classification****,,* ***Vertebrates****,* ***Invertebrates****, Microorganisms,* flowering, non-flowering, environment, bacteria, species, genus, class, microbe, germ, virus, decay, mould, bacteria
Milestones	• Understand 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 eyes. • Use the idea that light travels in straight lines to explain why shadows	• Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. • Identify the effect of drag forces, such as air resistance, water resistance and friction, that act between moving surfaces.	• Describe the changes as humans develop to old age. • 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	• 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. • Give reasons for classifying plants and animals based on specific characteristics.	• Describe how living things are classified into broad groups according to common, observable characteristics and based on similarities and differences, including micro-organisms, plants and animals.

	have the same shape as the objects that cast them, and to predict the size of shadows when the position of the light source changes. • Explain that we see things because light travels from light sources to our eyes or from light sources	• Describe, in terms of drag forces, why moving objects that are not driven tend to slow down. • Understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs. • Understand that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	transported within animals, including humans		
Working Scientifically in Year 5/6	**During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:** • *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.* **<u>Key Vocabulary Year 6</u>** *Hypothesis, categorise, database, enquiry, Scatter graphs, Degree of trust, Quantitative measurements, Hypothesis, Anomalies, systematic, refute*			**Enquiry Ideas** • *What is the relationship between pulse and exercise?* • *Which surfaces creates the most friction?* • *What can adults / children do now that they couldn't when a baby?* • *How effective are parachutes made with different materials?* • *How can we classifying vertebrate and invertebrate creatures?* • *Why do certain creatures choose their unique habitats?* • *How much easier it is to lift a heavy object using pulleys?* • *Does light travel in straight lines?*	