Science Long Term Plan – Knowledge and Skills Progression

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Sunnyhurst Cycle A	**Seasonal changes covered throughout the year - 1 session each half term**					
EYFS	**Autumn**		**Spring**		**Summer**	
Each of these initial learning experiences link to various Development Matters from Birth to 3, 3-4 and Reception.	**Brown Bear, Brown Bear, What do you see?** – *exploring colour and light* **Look Up!** – *exploring earth, space, constellations* **The Gruffalo's Child** – *exploring light, dark and shadow*		**Astro Girl** – *exploring space and forces* **Mr Archimedes Bath.** Floating and Sinking – *exploring properties of materials* **Colours, Senses and Materials** – *exploring senses*		**Dachy's Leaf** – *exploring sound and hearing* **Nighttime Symphony** – exploring properties and phenomena	**How to find Gold** – *exploring and making comparisons* **The Lumberjack's Beard** – *exploring natural materials*
Year 1	Seasonal Changes (1) **Does the garden look the same all year round?**		Materials and their properties **What materials do we use every day?**		Animal including humans (1) **How are humans not like tigers?**	Living things and their Habitats –Plants (1) – basic structure **Which plants and trees might we find in our garden?**
	Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies **Key Knowledge**: • Know how day length varies depending on the season • Know that the weather changes with the seasons • Can give examples of how season changes e.g. numbers of minibeasts found outside, leaves on trees, type of clothes needed to be outside etc.		Naming, comparing, grouping and describing properties of different materials. **Key Knowledge**: • Know the difference between an object and the material from which it is made • Identify and name a variety of everyday materials including wood, plastic, glass, metal, water and rock • Describe the simple physical properties of a variety of everyday materials • Compare and group together a variety of everyday materials on the basis of their simple physical properties • Know that some materials appear naturally and that some are man-made		Classifying animals – humans **Key knowledge:** Humans have key parts in common, but these vary from person to person Compare characteristics of people e.g. shoe size, height etc. and find patterns Humans find out about the world using their senses Humans have 5 senses – sight, hearing, touch, taste and smell Senses are linked to particular parts of the body Compare and identify different types of animals and their features –link to senses	Knowing parts of plants and trees and describe key features **Key Knowledge**: • Know and name a variety of common wild and garden plants • Know and name the common parts of a plant and tree
Key Vocabulary	Weather, sunny, rainy, windy, snowy, seasons, winter, spring, summer, autumn, sun, sunrise, sunset, day length		Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent,		Senses, touch taste, smell, sight, hearing, major parts of the body including those outlined within the RSE curriculum	Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud

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		break/tear, rough, smooth, shiny, dull, see-through, not see-through		
Sunnyhurst Cycle B	**Seasonal changes covered throughout the year - 1 session each half term**			
EYFS	**Autumn**	**Spring**	**Summer**	
	My Ocean is Blue – exploring and responding the phenomena and the natural world **Pip and Posy: The Big Balloon –** exploring changes in state **Teatime around the World –** exploring mixing and physical properties of solutions	**Peace at Least –** exploring sound and hearing **The Three Billy Goat's Gruff –** exploring materials and structures **What the Jackdaw saw –** exploring changes and how things work	**The Princess and the Pea –** exploring physical properties and insulation **The Three Little Pigs -** exploring materials and structures	**Elmer the Elephant –** exploring colour and mixing **Goldilocks and the Three Bears –** exploring changes **The Wheels on the Tuk Tuk –** exploring forces and friction
Year 1	**Seasonal changes (2)** Why are there so many leaves on the floor?	**Animals including Humans (2)** Why would a dinosaur not make a good pet?	**Living things and their Habitats** – Plants (2) Do all plants have roots?	**Everyday materials (2)** Can a spoon be made of paper?
	Seasonal changes Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies **Key knowledge:** • Name the seasons • Know about the type of weather in each season • Identify changes in leaf colour • Observe decay over time	Classifying animals **Key knowledge:** • 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 carnivore, herbivore and omnivore • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals – including pets) • Know how to sort by living and non-living things • Know and name the basic body parts of different animals	Classifying trees – Know the basic structure of plants and trees. Know the names of common plants and trees • Identify and name a variety of common wild and garden plants focusing on deciduous and evergreen trees • Know that some trees lose their leaves in autumn and some don't. Link with Seasonal Change • Can collect information on features of change • Know how to look after plants	Naming, comparing, grouping and describing properties of different materials. (WS Focus) **Key knowledge:** • All materials are made from one or more material • Some objects are made from different materials e.g. wooden, plastic or metal spoon • Identify why some objects are made from different materials • Materials can be described by their properties • Materials can be in different forms e.g. plastic can be hard or soft
Key Vocabulary	Weather, sunny, rainy, windy, snowy, seasons, winter, spring, summer, autumn, sun, sunrise, sunset, day length	Head, body, eyes, ears, mouth, teeth, leg, wing, tail, claw, fin, scales, feathers, fur, beak, paws, hooves	Deciduous, evergreen, oak, sycamore, silver birch, pine, willow, rowan, hazel, ash, yew , horse chestnut	Sort, classify, test,

Science Long Term Plan – Knowledge and Skills Progression

National Curriculum Year 1 Statements

- 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
- 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
- describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, 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
- compare and group together a variety of everyday materials on the basis of their simple physical properties.
- observe changes across the four seasons
- observe and describe weather associated with the seasons and how day length varies

KS1 Statutory Assessment Framework

Year 1 Statements

- name and locate parts of the human body, including those related to the senses
- compare the observable features of animals from a range of groups
- group animals according to what they eat
- describe seasonal changes
- distinguish objects from materials, describe their properties, identify and group everyday materials.

KS1 Working Scientifically Statements:

The pupil can, using appropriate scientific language from the national curriculum:

- ask their own questions about what they notice
- **use different types of scientific enquiry to:**
  - gather and record data
  - use simple equipment where appropriate, to answer questions
  - observe changes over time
  - notice patterns
  - group and classify things

KS1 Working Scientifically

The pupil can, using appropriate scientific language from the national curriculum:

- ask their own questions about what they notice
- use different types of scientific enquiry to gather and record data, using simple equipment where appropriate, to answer questions:
  - observing changes over time
  - noticing patterns
  - grouping and classifying things
  - carrying out simple comparative tests
  - finding things out using secondary sources of information
- communicate their ideas, what they do and what they find out in a variety of ways

Science Long Term Plan – Knowledge and Skills Progression

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Anglezarke Cycle A	Environment– Living thingsand their habitats. (Y2) **How are habitats suited to different animals?**	Properties use of materials (Y2) **What would Traction Man use to build our school?**	Living things and their Habitats – Growth – keeping plants healthy (Y2) **How quickly do plants grow?**	Living things and their Habitats – functions and parts ofa plant (Y3) **How important is pollination?**	Animals Including Humans – Healthy humans (Y2 Part 1) **How will 5 a day keep me healthy?**	Forces – non-contact forces(Y3) **What makes a material magnetic?**
	Coverage: Habitats and Food Chains **Key knowledge** Know if something is dead, alive or never alive Identify and name a variety of plants and animals in their habitats Know how animals obtain their food from plants and other animals Understand and explain a simple food chain Know about different sources of food	**Coverage:** Changing properties of Materials **Key Knowledge:** Identify and compare different materials including: wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	**Coverage:** Plant growth and basic needs **Key Knowledge** 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	**Coverage:** Basic structure and functions Life cycles Pollination and seed dispersal **Key knowledge** Know the function of different parts of flowering plants Know how water is transported within plants Know the plant life cycle, especially the importance of flowers Use classification keys to group, identify and name living things Know how changes to an environment could endanger living things Know about pollination, and seed dispersal	**Coverage:** The importance of exercising, food and hygiene **Key Knowledge:** Describe the importance of exercise Basic needs of humans for survival Know about healthy food and quantities Understand that good hygiene is important for prevention of illness and infection	**Coverage** Magnetic force Contact and non-contact force **Key Knowledge:** Compare how things move on different surfaces Know that some forces need contact Magnets act at a distance Compare and group objects using their magnetic properties Know magnets have poles Know about and explain how magnets attract and repel Predict whether magnets will attract or repel and give a reason.
Key Vocabulary	Living, dead, never alive, basic needs, food chain, shelter, move, feed Names of habitats (pond, woodland) and micro-habitats (logs, bushes)	Wood, metal, brick, plastic, glass, rock, paper, cardboard, opaque, transparent, translucent, reflective, flexible, rigid, push, pull, twist, stretch, bend	Recap on Y1 vocabulary plus light, shade, sun, warm, cool, water, grow, healthy	Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal (wind, animal, water)	Survival, healthy, exercise, heartbeat, breathing, hygiene, germs, disease, food types e.g. meat, fish, vegetables, bread, rice pasta	Force, push, pull, twist, contact force, non-contact force, magnetic force, attract, repel, iron, steel, poles

Science Long Term Plan – Knowledge and Skills Progression

	Autumn 1 and 2	Spring 1	Spring 2	Summer 1	Summer 2
Anglezarke Cycle B	Forces – Light and Shadow (Y3) **How are shadows formed?**	Health and Nutrition (Y3 Part 1) **How can we stay healthy?**	Animals including humans: skeleton, and movement (Y3 Pt 2) **What's underneath our skin?**	Animals including human: survival and growth (Y2 Part 2) **Do all animals lay eggs?**	Material properties – rocks **What is the Earth made from?**
	Coverage Light and how we see it Reflectons Shadows **Key Knowledge** Know that dark is the absence of light Know that light is needed in order to see Know that light is reflected from a surface Know and demonstrate how a shadow is formed Explain how a shadow changes shape Find patterns in the way the size of shadows change Know about the danger of direct sunlight and describe how to keep protected	**Coverage** Food and nutrition **Key Knowledge** Know about the importance of a healthy balanced diet Know that animals cannot make their own food Know about food types e.g. carbohydrates, proteins, fats etc	**Coverage** Skeleton, muscles **Key Knowledge** Know about the skeletal and muscular system of a human Know the function of a skeleton Know the function of muscles Name the main bones of the human body Know how muscles and joints help humans to move	**Coverage** Life cycles of animals Basic needs to stay alive **Key knowledge** Know what animals need to survive Know that animals grow and change Know that animals have offspring which grow in to adults Know that the young of all animals do not look like their parents Know the lifecycle of a butterfly or frog	**Coverage** Fossil formation Compare and group rocks and Soils **Key Knowledge** Compare and group rocks based on their appearance and physical properties, giving reasons Know how soil is made Know how fossils are formed Know about and explain the difference between sedimentary, metamorphic and igneous rock
Key Vocabulary	Light, source, dark, absence of light, transparent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous	Nutrition, nutrients, carbohydrates, sugars, proteins, vitamins, minerals, fibre, fat, water	Muscles, bones, skeleton, support, protect, move, skull, ribs, spine, muscles, joints	Offspring, reproduction, growth, child, young/old, adult, toddler, baby, lifecycle	Rock, stone, pebble, boulder, grain, crystal, layers, texture, absorb, soil, fossil, marble, granite, sandstone, slate, peat, clay, chalk

Science Long Term Plan – Knowledge and Skills Progression

National Curriculum Year 2 Statements

- explore and compare the differences between things that are living, dead, and things that have never been alive
- identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other
- identify and name a variety of plants and animals in their habitats, including micro-habitats
- describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food
- 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
- 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
- identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses
- find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching

KS1 Statutory Assessment Framework

Year 2 Statements

- describe the importance of exercise, a balanced diet and hygiene for humans
- describe the basic needs of animals for survival and the main changes as young animals, including humans, grow into adults
- describe the basic needs of plants for survival and the impact of changing these and the main changes as seeds and bulbs grow into mature plants
- identify whether things are alive, dead or have never lived
- describe how animals get their food from other animals and/or from plants, and use simple food chains to describe these relationships
- name different plants and animals and describe how they are suited to different habitats
- compare materials and their suitability for different uses

KS1 Working Scientifically Statements:

The pupil can, using appropriate scientific language from the national curriculum:

- ask their own questions about what they notice
- **use different types of scientific enquiry to:**
  - gather and record data
  - use simple equipment where appropriate, to answer questions
  - observe changes over time
  - notice patterns
  - group and classify things
  - carryout simple comparative tests
  - find things out using secondary sources of information
- communicate their ideas, what they do, what they find out in a variety of ways

Science Long Term Plan – Knowledge and Skills Progression

National Curriculum Year 3 Statements

- 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
- recognise that they need light in order to see things and that dark is the absence of light
- notice that light is reflected from surfaces
- recognise that light from the sun can be dangerous and that there are ways to protect their eyes
- recognise that shadows are formed when the light from a light source is blocked by an opaque object
- find patterns in the way that the size of shadows change
- 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
- 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

KS2 Framework Year 3 Statements

- name and describe the functions of the main parts of the musculoskeletal system
- name, locate and describe the functions of the main parts of plants, including those involved in transporting water and nutrients and describe the requirements of plants for life and growth
- describe how fossils are formed
- group and identify rocks in different ways according to their properties, based on first-hand observation
- use the idea that light from light sources, or reflected light, travels to form shadows in different shapes and sizes
- describe the effects of simple forces that act at a distance (magnetic forces, including those between like and unlike magnetic poles)

KS2 Working Scientifically Statements:

The pupil can, using appropriate scientific language from the national curriculum:

- describe and evaluate their own and others' scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources
- ask their own questions about the scientific phenomena that they are studying, and select the most appropriate ways to answer these questions, recognising and controlling variables where necessary (i.e. observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests, and finding things out using a wide range of secondary sources)
- use a range of scientific equipment to take accurate and precise measurements or readings, with repeat readings where appropriate
- record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- draw conclusions, explain and evaluate their methods and findings, communicating these in a variety of ways
- raise further questions that could be investigated, based on their data and observations.

Science Long Term Plan – Knowledge and Skills Progression

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Roddlesworth **Cycle A**	Material properties and changes – states of matter (Y4 Part 1) **Can materials be found in all three states of matter?**	Material properties and changes – irreversible changes (Y5) **Can things disappear?**	Living things and their Habitats – classification (Y6) **How can we group living things?**	Sound (Y4) **How do we hear different sounds?**	Animals including Humans– Exercise, health, and the circulatory system (Y6) **What if your heart stopped?**	
	Coverage: Solids, liquids and gas **Key knowledge** Compare and group materials into solids, liquids gases Know the temperature at which materials change state Know about and explore how some materials can change state Know the part played by evaporation and condensation in the water cycle	Coverage: Soluble/ dissolving Reversible and irreversible **Key knowledge** **Compare and group materials in terms of their properties** **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 new material and that this is usually irreversible**	Coverage: Classification of living things into broad groups **Key knowledge** Give reasons for classifying plants and animals based on specific characteristics. Living things can be grouped into micro-organisms, plants and animals. Vertebrates can be grouped as fish, amphibians, reptiles, birds and mammals. Invertebrates can be grouped as snails and slugs, worms, spiders and insects Plants can be grouped as flowering plants (incl. trees and grasses) and non-flowering plants (such as ferns and mosses)	Coverage: Sound vibrations Pitch and Volume **Key knowledge** Know how sound is made, associating some of them with vibrating Know how sound travels from a source , through a medium, 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 sound as it travels away from its source	Coverage: The circulatory system Water transportation Impact of exercise on body **Key knowledge** Identify and name the main parts of the human circulatory system Know the function of the heart, blood vessels and blood Know how blood is transported around the body Know the impact of diet, exercise, drugs and lifestyle on health Know about the effects of drugs and alcohol on the body Find patterns to investigate pulse rate Know the ways in which nutrients and water are transported in animals, including humans	
Key Vocabulary	Solid, liquid, gas, state, matter, change, melt, freeze, evaporate, temperature, water cycle, precipitation	Thermal, insulator, conductor, state, dissolve, solution, soluble, sieve, burn, reversible, irreversible	Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering, non-flowering	Sound, source, vibrate, vibration, travel, pitch (high, low) volume, faint, loud, insulation	Heart, pulse, rate, circulation, pumps, blood vessels, blood, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, diet, exercise, drugs, lifestyle NB: Elements of this unit are also covered within PSHE/RSE including mental health and wellbeing	

Science Long Term Plan – Knowledge and Skills Progression

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Roddlesworth **Cycle B**	Electricity (Y4) **What is electricity?**	Forces– effects of movement (Y5) **Does everything that goes up always come down?**	Evolution and Inheritance (Y6) **Have we always looked the same?**	Electricity (Y6) **Could you be the next Nintendo apprentice?**	Earth and Space– Light and astronomy (Y5) **Can we use shadows to tell the time?**	
	Coverage: Electricity Simple circuits and switches, conductors and insulators **Key knowledge** Identify and name appliances that require electricity to function Construct a series circuit that includes a switch Identify and name the components in a series circuit (including cells, wires, bulbs, switches and buzzers) 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 Name materials that will conduct electricity	**Coverage:** Gravity Friction Forces and motion of mechanical devices Resistance **Key knowledge** 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 Know who was Newton and how he was important Know that force is measured in Newtons Know the difference between weight and mass	**Coverage:** Identical and non-identical off-spring Fossil evidence and evolution Adaptation and evolution **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 Know who Darwin and Wallace are and why they were important	**Coverage:** Electrical components Simple circuits Fuses and voltage Circuit Diagrams **Key knowledge** 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	**Coverage:** Earth and space The movement of the Earth and other planets **Key knowledge** 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 Know and demonstrate why we have seasons Know why we have a leap year Describe the Sun, Earth and Moon (using the term spherical) Know about the planets within our galaxy	
Key Vocabulary	Electricity, appliance, device, mains, plug, circuit, component, cell, battery, positive, negative, connect, bulb, switch, buzzer, motor, conductor, insulator, symbol	Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears	Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils	Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, switch, voltage	Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, solar system, rotates, star, orbits, planets	

Science Long Term Plan – Knowledge and Skills Progression

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Roddlesworth **Cycle C**	How light travels (Y6) **How can you light up your life?**	Living things and their habitats (Y6) **How can we sort living things?**	Testing material properties (Y5 Part 2– Working Scientifically **What makes a good insulator?**	Living things and their habitats- lifecycles (Y5) **Do all animals start life as an egg?**	Animals including humans– teeth, eating and digestion (Y4) **What happens to the food we eat?**	
	Coverage: How light travels Reflection Ray models of light **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.	**Coverage** Classification of plants, animals and micro–organisms **Key knowledge** Describe how living things are classified into broad groups based on common characteristics Can find similarities and differences between groups Know that plants can be grouped into categories such as flowering plants (including grasses) and non–flowering plants, such as ferns and mosses. Know about micro–organisms such as bacteria, yeast, toadstools and mushrooms	**Coverage** Compare and group together everyday materials on the basis of their properties **Key knowledge** Know objects/liquids will warm up or cool down until they reach the temperature of their surroundings Know some materials (insulators) are better at slowing down the movement of heat than others. Plan and investigate temperature to see what makes a good insulator Know how to pattern seek and hypothesis from results	**Coverage:** Life cycles – plants and animals **Key knowledge** 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 some animals Know and can explain metamorphosis	**Coverage** Digestive system and Teeth **Key Knowledge** 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	
Key Vocabulary	(Recap Y3 Vocab– Light, source, dark, absence of light, transparent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous) straight lines, light rays	Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering non–flowering	Plan, investigate, insulate, insulator, fair test, variable, pattern seeking, measure, causal relationships, heat, hypothesis	Life cycle, reproduce, sexual, sperm, fertilises, egg, live, young, metamorphosis, asexual, plantlets, runners, bulbs, cuttings NB: Sexual reproduction in humans is covered in RSE Y6 (non–statutory|)	Digestive system, digestion, mouth, teeth, saliva, esophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolar, herbivore, carnivore, omnivore, producer, predator, prey, food chain	

Science Long Term Plan – Knowledge and Skills Progression

National Curriculum Year 4 Statements

- 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
- 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
- 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 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 pitch of a sound and features of the object that produced it
- find patterns between the volume of a sound and the strength of the vibrations that produced it
- recognise that sounds get fainter as the distance from the sound source increases
- identify common appliances that run on electricity
- construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
- identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery
- recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit
- recognise some common conductors and insulators, and associate metals with being good conductors

KS2 Framework Year 4 Statements

- name and describe the functions of the main parts of the digestive system
- construct and interpret food chains
- explain how environmental changes may have an impact on living things and habitats
- describe the characteristics of different states of matter and group materials on this basis; and describe how materials change state at different temperatures, using this to explain everyday phenomena, including the water cycle
- use the idea that sounds are associated with vibrations, and that they require a medium to travel through, to explain how sounds are made and heard
- describe the relationship between the pitch of a sound and the features of its source; and between the volume of a sound, the strength of the vibrations and the distance from its source

KS2 Working Scientifically Statements:

The pupil can, using appropriate scientific language from the national curriculum:

- describe and evaluate their own and others' scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources
- ask their own questions about the scientific phenomena that they are studying, and select the most appropriate ways to answer these questions, recognising and controlling variables where necessary (i.e. observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests, and finding things out using a wide range of secondary sources)
- use a range of scientific equipment to take accurate and precise measurements or readings, with repeat readings where appropriate
- record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- draw conclusions, explain and evaluate their methods and findings, communicating these in a variety of ways
- raise further questions that could be investigated, based on their data and observations.

Science Long Term Plan – Knowledge and Skills Progression

National Curriculum Year 5 Statements

- 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
- 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 of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky
- 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
- recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect
- 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
- know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution
- use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating
- give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic
- demonstrate that dissolving, mixing and changes of state are reversible changes
- explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda

KS2 Framework Year 5 Statements

- describe and compare different reproductive processes and life cycles in animals
- name, locate and describe the functions of the main parts of plants involved in reproduction
- group and identify materials in different ways according to their properties, based on first-hand observation; and justify the use of different everyday materials for different uses, based on their properties
- identify and describe what happens when dissolving occurs in everyday situations; and describe how to separate mixtures and solutions into their components
- identify, with reasons, whether changes in materials are reversible or not
- describe the effects of simple forces that involve contact (air and water resistance, friction) and gravity
- identify simple mechanisms, including levers, gears and pulleys, that increase the effect of a force
- describe the shapes and relative movements of the Sun, Moon, Earth and other planets in the solar system; and explain the apparent movement of the sun across the sky in terms of the Earth's rotation and that this results in day and night

KS2 Working Scientifically Statements:

The pupil can, using appropriate scientific language from the national curriculum:

· describe and evaluate their own and others' scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources

· ask their own questions about the scientific phenomena that they are studying, and select the most appropriate ways to answer these questions, recognising and controlling variables where necessary (i.e. observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests, and finding things out using a wide range of secondary sources)

· use a range of scientific equipment to take accurate and precise measurements or readings, with repeat readings where appropriate

· record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs

draw conclusions, explain and evaluate their methods and findings, communicating these in a variety of ways

· raise further questions that could be investigated, based on their data and observations

Science Long Term Plan – Knowledge and Skills Progression

National Curriculum Year 6 Statements

- 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
- 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
- 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
- recognise that light appears to travel in straight lines
- use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye
- explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes
- use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them
- 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 when representing a simple circuit in a diagram

KS2 Framework Year 6 Statements

- name and describe the functions of the main parts of circulatory systems
- describe the effects of diet, exercise, drugs and lifestyle on how the body functions
- use the observable features of plants, animals and micro-organisms to group, classify and identify them into broad groups, using keys or other methods
- use the basic ideas of inheritance, variation and adaptation to describe how living things have changed over time and evolved
- use the idea that light from light sources, or reflected light, travels in straight lines and enters our eyes to explain how we see objects and their shapes
- use simple apparatus to construct and control a series circuit, and describe how the circuit may be affected when changes are made to it; and use recognised symbols to represent simple series circuit diagrams

KS2 Working Scientifically Statements:

The pupil can, using appropriate scientific language from the national curriculum:

· describe and evaluate their own and others' scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources

· ask their own questions about the scientific phenomena that they are studying, and select the most appropriate ways to answer these questions, recognising and controlling variables where necessary (i.e. observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests, and finding things out using a wide range of secondary sources)

· use a range of scientific equipment to take accurate and precise measurements or readings, with repeat readings where appropriate

· record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs

· draw conclusions, explain and evaluate their methods and findings, communicating these in a variety of ways

· raise further questions that could be investigated, based on their data and observations.