Science Progression

The following curriculum progression has been adapted from the Fulbridge Academy Science Curriculum.

Year 1 Science

Unit title	Area of Study	Core Concepts	Unit Description	Core Knowledge	Core Vocabulary
Animals, including humans	Biology	Classification	Children learn to classify and compare animals by what they eat, where they live, and their skeleton structures.	• Know that reptiles are different to other animals in that they breathe air *and* have scaly skin. • Know that birds are different to other animals in that they have feathers and wings. • Know that mammals are different to other animals in that they have fur/hair and they feed milk to their young. • Know that feet, legs, arms, hands, torso, head, skin, ears, eyes, nose, mouth and tongue are parts of the body and identify them. • Know that eyes are associated with sight, ears with sound, nose with smell, tongue with taste and skin with touch.	energy, growth, habitat, fish, amphibian, reptile, bird, mammal, offspring, carnivore, herbivore, omnivore, vertebrate, skeleton, organ
Everyday materials	Chemistry	Material properties	Children learn to name and answer questions about materials and become familiar with the properties through exploration and experimentation.	• Know that an object is made from/of a material and know some examples of materials in the real world. • Know that materials can be hard, soft, strong, weak, absorbent, heavy, light, solid and runny, smooth and rough; these descriptions denote the properties of a material.	absorption, matter, property, wood, plastic, glass, metal, water, rock
Seasonal Change	Earth Science	Change	Children learn to observe and talk about changes in the weather and the seasons.	• Know that days are longer in the summer and shorter in winter. • Know that weather changes through the year, getting hotter in the summer and colder in the winter. • Know that the four seasons are spring, summer, autumn and winter and know the order of the cycle. • Know that the winter is likely to bring ice on the ground when water freezes due to the cold. • Know that the Earth orbits the Sun with one orbit constituting a year of roughly 365 days.	energy, freezing, melting, orbit, reflection, Sun, clouds, wind, snow, ice, spring, summer, autumn, winter
Plants	Biology	Structures and functions	Children should learn the names of common flowers and describe plant structures.	• Know that evergreen trees maintain their leaves throughout the year and that deciduous trees shed their leaves in autumn. • Know that flowering plants consist of roots, stem, leaves and flowers, and that a tree's stem is called a trunk. • Know familiar flowers (roses, sunflowers and dandelions) and trees (oak, horse chestnut and pine) by sight.	component, energy, growth, deciduous, evergreen, flower, plant, tree, structure, roots, stem, leaf, trunk, flower
Year 1 Working Scientifically					
<u>New learning and vocabulary</u> ● Know that we can ask questions about the world and that when we observe the world to answer these questions, this is science ● Know that we can use magnifying glasses to observe objects closely ● Know that we can test our questions to see if they are true ● Know that objects can be identified or sorted into groups based on their observable properties ● Know that we can write down numbers and words or draw pictures to record what we find					**properties,** observe, test, magnifying glass, object, record, equipment

Year 2 Science

Unit title	Area of Study	Core Concepts	Unit Description	Core Knowledge	Core Vocabulary
Living things and their habitats	Biology	Comparison and patterns.	Children learn about the idea that all living things have certain characteristics that are essential for keeping them alive and healthy.	• Know that living things move, grow, consume nutrients, and reproduce; that dead things used to do these things, but no longer do; and that things that never lived have never done these things. • Know that herbivorous animals eat plants; a carnivorous animal eats other animals; omnivorous animals eat both animals and plants. • Know, name, and identify examples of common plants and trees.	**New vocab:** birth, decay, energy, reproduction, microhabitat, dead, life cycle, food chain, source, nutrients, consumption, environment.
Everyday materials	Chemistry	Structure and functions.	Children learn to recognise common materials and think about the properties of materials that make them suitable (or not) for particular purposes.	• Know that objects are made from materials (e.g., wood, plastic, glass, metal, water, rock). • Know that materials have properties such as being hard, soft, strong, weak, absorbent, heavy, light, solid, runny, smooth and rough; these descriptions denote the properties of a material. • Know that materials can have useful properties for a given job (including being waterproof, strong, hard, soft, flexible, rigid, light or heavy). • Know that many types of plastic are waterproof, that steel (a type of metal) is strong, that rock is hard, that cotton wool is soft, that rubber is flexible, that rock is rigid, that polystyrene (a type of plastic) is light, and that iron (a type of metal) is heavy.	**Revisit:** absorption, matter, property **New:** conductor, brick, paper, cardboard, friction, movement, suitability, surface, stretch, twist, waterproof, deformation, flexible, rigid.
Plants	Biology	Structure and functions.	Children learn about the requirements of plants for germination, growth and survival, as well as to the processes of reproduction and growth in plants.	• Know that seeds and bulbs need to be buried underground in soil and that they will grow into adult plants under the right conditions (water, warmth). • Know that plants that are deprived of light, food or air will not grow and will die. • Know that plants and animals produce offspring that grow into adults.	**Revisit:** growth, habitat, reproduction, nutrients, consumption. **New:** offspring, adult, bulb, seed, survival, temperature, hygiene, exercise.
Animals	Biology	Cause and effect. Change.	Children learn about the basic needs of animals for survival, as well as the importance of exercise and nutrition for humans. They should begin to learn about reproduction and growth in animals.	• Know that plants and animals produce offspring that grow into adults. • Know that proteins are good for growth, carbohydrates for energy and fruit and vegetables provide vitamins and minerals which help keep us healthy (e.g. calcium for healthy bones and teeth). • Know that more than half of our diet should be made up of carbohydrates, fruit and vegetables. • Know that people need to exercise often to help their body stay strong and fit. • Know that plants and animals produce offspring that grow into adults.	**Revisit:** growth, habitat, reproduction, nutrients, consumption **New:** offspring, adult, bulb, seed, survival, temperature, hygiene, exercise
Year 2 Working Scientifically					
<u>Continue learning from Year 1</u> ● Know that we can ask questions about the world and that when we observe the world to answer these questions, this is science ● Know that we can use magnifying glasses to observe objects closely ● Know that we can test our questions to see if they are true ● Know that objects can be identified or sorted into groups based on their observable properties ● Know that we can write down numbers and words or draw pictures to record what we find					**properties,** observe, test, magnifying glass, object, record, equipment

Year 3

Unit title	Area of Study	Core Concepts	Unit Description	Core Knowledge	Core Vocabulary
Plants	Biology	Classification	Children learn about plant structures, including the role of the roots and stem in nutrition.	• Know that different parts of plants have one or more functions (jobs) • Know that the roots collect water and minerals from the soil, and hold the plant firmly in the ground • Know that the stem holds up the leaves so that they can gather light to make food and holds up the flowers so that they can receive pollen and disperse their fruits; know that the stem also transports water and minerals from the roots to the other parts of the plant • Know that the leaves make food by absorbing light and using its energy to turn carbon dioxide and water into carbohydrates	extinction, fruit, nectar, anther, ovary, ovule, petal, pollen, stigma, style, stamen, function, exchange, dispersal, fertilization, vitamin, balanced diet
Animals including Humans	Biology	Structure and functions	Children learn about the skeleton and organs, understanding that each has a specific role to play.	• Know that animals, including humans, have a skeleton made up of solid objects. • Know that some animals (such as insects) have an exoskeleton – a solid covering on the outside of their body. • Know that many invertebrates (such as earthworms and slugs) have water held inside by muscles which acts like a skeleton. • Know that skeletons provide support for muscles and protect the body; for example, the rib cage protects the vital organs in the human body. • Know that human skeletons are made up of bones and cartilage. • Know that muscles can only contract, so they must be arranged in pairs in the body so that as one contracts the other loosens.	vertebrate, skeleton, invertebrate, contract, loosen, rib cage, insect
Light	Physics	Processes	Children learn about how light travels, including reflection and the formation of shadows.	• Know that light is a form of energy. • Know that we need light to see things and that darkness is the absence of light. • Know that light travels in straight lines. • Know that light is reflected when it travels from a light source and then 'bounces' off an object. • Know that everything that we can see is either a light source or something that is reflecting light from a light source into our eyes.	Reflection, wave, mirror, incident ray, image, beam, photons, solid, opaque, transparent, object, source, data logger
Rocks	Earth science	Materials, properties and changes over time	Children learn about different types of rock and soil, including those in the local environment.	• Know that rock is a type of solid material. (Retrieval) • Know that applying forces to objects can change their shape, by squeezing, stretching, bending and twisting. • Know that the Earth has a solid crust made up of tectonic plates with molten rock beneath • Know that there are three kinds of rocks: igneous, sedimentary and metamorphic. • Know that fossils can help us learn about things that lived long ago. • Know that soil is made from tiny particles of rock broken down by the action of weather.	extinction, particle, igneous, metamorphic, sedimentary, paleontologist, weathering, molten rock, crust, tectonic plates, scavengers, fossil.
Forces including Magnets	Physics	Cause and effect	Children learn about push and pull forces, including learning to measure force; magnets and magnetism.	• Know that metal is a material from which objects can be made. • Know that as objects move across a surface there is friction when they rub against each other and that sometimes this friction is larger or smaller. • Know that applying forces to objects can change their shape. • Know that a force can be thought of as a push or a pull. • Know that there are different types of contact force: impact forces (when two surfaces collide), frictional forces (when two surfaces are already in contact) and strain forces (when an elastic material is stretched or squashed).	magnetic, non-magnetic, pole, north, south, sliding friction, static friction, elastic, resist, attraction, repulsion.

				• Know that objects move differently on rough and smooth surfaces; objects resist movement more on rough surfaces because there is higher friction as the object moves. • Know that there are also non-contact forces that can act between objects without them touching and that magnetism is an example of a non-contact force. • Know that magnets have two poles called north and south. • Know that like poles (south-south and north-north) of two magnets repel each other and that opposite poles of two magnets (north-south) attract each other.	
Year 3 Working Scientifically					
• Know that we can ask questions and answer them by setting up scientific enquiries. • Know how to make relevant predictions that will be tested in a scientific enquiry. • Know that in a fair test one thing is altered (independent variable) and one thing that may change as a result is measured (dependent variable) while all other conditions are kept the same. • Know how to use a range of equipment to measure accurately, including thermometers, data loggers, rulers and stopwatches. • Know how to draw bar charts; how to label a diagram using lines to connect information to the diagram; how to use a coloured key how to draw a neat table; how to draw a classification key; how to show the relationship between an independent variable in a two-way table; and how to label specific results in a two-way table. • Know that scientific enquiries can suggest relationships, but that they do not prove whether a prediction is true. • Know that they can draw conclusions from the findings of other scientists.					prediction, measurement, enquiry, dependent variable, independent variable, fair test, similar, theory, hypothesis

Year 4/5 Cycle A

Unit title	Area of Study	Core Concepts	Unit Description	Core Knowledge	Core Vocabulary
Living things and habitats	Biology	Processes and change	Children learn about life-cycle changes in a variety of living things.	• Know that the life cycle of a living thing is a series of stages of development starting with a fertilized egg in animals or a seed in many plants. • Know that in most mammals (e.g. dogs) a fertilized egg develops in the womb into an embryo and is then born and fed on milk before it is weaned onto the food that is adapted to eat; it then develops to maturity in a period called adolescence after which it can reproduce and the cycle can begin again. • Know that in birds (e.g. robins) a fertilized egg hatches in a nest (a hatchling) and is fed by its parents until it is ready to fly (i.e. becomes a fledgling); it then leaves the nest and grows into an adult after which it can reproduce and the cycle can begin again.	metamorphosis, pupa, larva, chrysalis, caterpillar, tadpole, hatchling, fledgling.
Animals including humans	Biology	Life processes, structures, functions and change	Children learn about growth and development of humans.	• Know that humans go through stages of development as they grow and age. • Know that humans begin as fertilized eggs and then develop into embryos before developing into babies. • Know that once they are born, newborn babies become infants (roughly 2 months to 2 years) then into young children (roughly 2-12 years old); children develop into adults during adolescence (roughly 12-16 years old) at which age they become physically capable of reproduction. • Know that as adults develop into old age (roughly 55+ years old) they experience changes in their body which require them to move more carefully and rest more frequently.	life cycle, life span, embryo, womb, weaned, adolescence,
Properties and Change of Materials	Chemistry and Earth Sciences	Structure and properties Processes and change	Children develop their understanding of changes of state, including learning about reversible and irreversible changes.	• Know that things are made of particles (tiny building blocks) and that these are organized differently in solids, liquids and gases. • Know that materials can change state when temperature changes. • Know that there are bonds between the particles (building blocks) in a solid; as temperature increases, these bonds are somewhat overcome as the particles absorb energy and solids can change into liquids; with a further increase in temperature, the particles become even more energetic and the bonds are overcome entirely so the liquid changes into a gas. • Know that in some solid materials the bonds between particles break when surrounded by a liquid; this allows the liquid to absorb the solid; when this happens, the solid is called a solute, the liquid is called a solvent and the result is a solution; when a solid does dissolve in a liquid it is described as being soluble in that solvent (e.g. sugar in water); when it cannot it is insoluble (e.g. sand in water). • Know how to dissolve a solute in a solvent and then how to evaporate the solvent to recover the solute. • Know that a reversible change is one that can be reversed and that examples of this are mixing, dissolving and changes of state where no chemical reaction takes place. • Know that an irreversible change is one that cannot be reversed and that examples of this often involve a chemical change where a new material is made, often a gas (e.g. burning, boiling an egg, the reaction of bicarbonate of soda and acid).	absorption, bond, condensation, conductor, evaporation, matter, melting, particle, property, reversible, irreversible, dissolve, soluble, insoluble, solvent, solute, solution, filter, sieve, saturation, crystallization, thermal, chemistry
Earth and Space	Physics	Cause and effect	Children learn about the main bodies in the solar system and the rotation and orbit of the earth	• Know that Earth orbits the Sun with one orbit constituting a year of 365 (or 366) days. • Know that the Sun is a light source, but that the Moon is not (reflecting light from the Sun). • Know that a celestial body is a large object in the universe.	planet, satellite, sphere, solar system, eclipse, star, universe, constellation, axis,

			leading to day/night and seasonal change.	• Know that a star (such as the Sun) is an exceptionally hot ball of gas, originally made from hydrogen and helium. • Know that a planet (e.g., Earth) is defined as a spherical celestial body that orbits a star. • The Sun and the objects that orbit it are collectively known as our Solar System. • Know that there are eight major planets in our solar system: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune. • Know that a satellite orbits a planet and that moons are natural satellites. • Know that the Earth spins around an imaginary line through its centre called an axis and that this axis is tilted relative to the Earth's orbit. • Know that night and day are the result of the Earth rotating on its axis. • Know that the Moon orbits the Earth roughly every 28 days. • Know that as the Moon orbits the Sun, different parts of it are lit up by the Sun, which is why we see a different shape lit up on the Moon as the lunar cycle progresses; these are called phases of the Moon.	celestial body, Moon, rotating, lunar, solar, telescope, rotation
Forces	Physics	Cause and effect	Children should learn about accelerating and decelerating forces, including air resistance; and simple mechanisms.	• Know that a force is measured in a unit called Newtons. • Know that the amount of matter (stuff) in an object is its mass. • Know that gravity is a force that acts between all objects in the universe, but that it acts more strongly between objects that have more mass and that are close together. • Know that unsupported objects are pulled towards the Earth by the force of gravity. • Know that air resistance is a force felt by an object as it moves through the air; it is caused by the object bumping into the gas particles that make up air; the quicker an object moves, the more gas particles it bumps into and the more air resistance it experiences. • Know that water resistance is a force felt by an object as it moves through water; it is caused by the object bumping into the water particles. • Know that the shape of an object determines how much air resistance or water resistance it experiences.	acceleration, air resistance, buoyancy, effort, force meter, fulcrum, gravity, load, mass, mesh, Newton, pivot, rigid, streamlined, terminal velocity, unsupported, water resistance, weight.
Year 4/5 Working Scientifically					
• Know how (with structured guidance) to write a simple scientific enquiry write-up including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion. • Know that scientific enquiries are limited by the accuracy of the measurements (and measuring equipment) and by the extent to which conditions can vary even, and that repeating enquiries, measurements and taking measures to keep conditions as consistent as possible can improve an enquiry. • Know that the conclusions of scientific enquiries can lead to further questions, where results can be clarified or extended to different contexts (e.g. effect of changing sunlight on a plant – does this work with other plants / different types of light / etc). • Know that a theory is an explanation of observations that has been tested to some extent and that a hypothesis is an explanation that has not yet been tested, but that can be tested through a scientific enquiry.				prediction, measurement, enquiry, dependent variable, independent variable, fair test, similar, theory, hypothesis

Year 4/5 Cycle B

Unit title	Area of Study	Core Concepts	Unit Description	Core Knowledge	Core Vocabulary
Living things and habitats	Biology	Classification	Children learn to classify living things and identify ways in which habitats change throughout the year.	• Know that living things are divided into kingdoms: the animal kingdom, plants, fungi, bacteria, and single-celled organisms. • Know that changes to the environment can make it more difficult for living things to survive and reproduce; in extreme cases this leads to extinction, where an entire species dies. • Know that human activity – such as climate change caused by pollution - can change the environment for many living things, endangering their existence. • Know that many species of living things have already been made extinct as a result of human activity.	kingdom, classification key, species, fungi, bacteria, climate change, characteristics, offspring, extinction, pollution.
Animals including humans	Biology	Structure and functions	Children learn about digestion and the main body parts, including teeth, involved in eating and digesting food.	• Know that food passes through the body with the nutrients being extracted and the waste products excreted, and that this process is called digestion. • Know that the process of digestion involves breaking complex foodstuffs into simpler building blocks that can be absorbed by the body. • Know that the process of digestion begins with food being chewed in the mouth by the teeth and saliva added. • Know that a human has three types of teeth – incisors, canines and molars – and that these each perform different functions. • Know that incisors slice food, canines tear food (especially meat) and that molars grind food.	digestion, excretion, peristalsis, anus, duodenum, small intestine, large intestine, stomach, rectum, oesphagus, tongue, acid, saliva, bile, enzymes, incisors, canines, molars, predator, prey, producer, consumer, primary, secondary, tertiary.
Materials and states of matter	Chemistry	State and matter, process and change	Children should explore a variety of everyday materials and develop simple descriptions of the states of matter and changes of state that occur through heating and cooling.	• Know that things are composed of a matter commonly in one of three states of matter: solid, liquid or gas. • Know that things are made of particles (tiny building blocks) and that these are organized differently in different states. • Know that materials can change state when temperature changes. • Know that there are bonds between the particles (building blocks) in a solid; as temperature increases, these bonds are somewhat overcome as the particles absorb energy and solids can change into liquids; with a further increase in temperature, the particles become even more energetic and the bonds are overcome entirely so the liquid changes into a gas. • Know that when solids turn into liquids, this is called melting and that the reverse process is called freezing. • Know that when liquids turn into gases, this is called evaporation and that the reverse process is called condensation. • Know that water flows around our world in a continuous process called the water cycle.	absorption, dissolving, energy, evaporation, freezing, matter, melting, particle, temperature, ice, water, solid, bond, condensation, evaporation, reversible, boiling point, melting point, liquid, gas, thermometer, water cycle, continuous precipitation, transpiration, surface runoff, sublimation
Sound	Physics	Cause and effect	Children learn how sound is made through vibration; and find out how pitch and volume of sounds can be changed in various ways.	• Know that sound is generated when an object vibrates; some of the energy from the vibrating object is transferred to the air, making the air particles move. • Know that sound is a form of energy. • Know that sound travels through a medium. • Know that sound waves are detected in the ear by humans and that the brain interprets this as the sounds we hear.	vibration, percussion instrument, wind instrument, string instrument, frequency, volume, pitch, transverse wave, longitudinal wave, medium, vacuum

				• Know that pitch is how high or low a sound is and that this is determined by how many vibrations per second are being made by the vibrating object; the number of vibrations per second is called frequency. • Know that volume is how loud or quiet a sound is and that this is determined by the amount of energy in the wave (e.g. from how hard or soft a percussion instrument is hit).	
Electricity	Physics	Processes	Children should learn about simple series circuits, and trying to use components, to create simple devices.	• Know that electrical energy is one of many forms of energy. • Know that current electricity is the flow of charged particles called electrons around a circuit. • Know that current electricity is the form of electricity that we use in our lives in lights, computers, televisions, etc. • Know that electrical current can flow if there is a complete circuit. • Know that electrical current flows well through some materials, called electrical conductors, and poorly through other materials, called electrical insulators. • Know that wires – which contain a conductor inside them, usually made of metal – can allow electrical current to flow around a circuit. • Know that metals are good electrical conductors. • Know that when electrical current flows through circuit components within that circuit – such as buzzers which make a noise and bulbs which emit light – begin to work.	circuit, component, appliance, charge, electron, battery, cell, bulb, buzzer, switch, wire, current electricity, static electricity, negative terminal, positive terminal, voltage, chemical reaction
Year 4/5 Working Scientifically					
• Know how (with structured guidance) to write a simple scientific enquiry write-up including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion. • Know that scientific enquiries are limited by the accuracy of the measurements (and measuring equipment) and by the extent to which conditions can vary even, and that repeating enquiries, measurements and taking measures to keep conditions as consistent as possible can improve an enquiry. • Know that the conclusions of scientific enquiries can lead to further questions, where results can be clarified or extended to different contexts (e.g. effect of changing sunlight on a plant – does this work with other plants / different types of light / etc). • Know that a theory is an explanation of observations that has been tested to some extent and that a hypothesis is an explanation that has not yet been tested, but that can be tested through a scientific enquiry.					prediction, measurement, enquiry, dependent variable, independent variable, fair test, similar, theory, hypothesis

Year 5/6 Cycle A

Unit title	Area of Study	Core Concepts	Unit Description	Core Knowledge	Core Vocabulary
Living things and habitats	Biology	Processes and change	Children learn about life-cycle changes in a variety of living things.	• Know that the life cycle of a living thing is a series of stages of development starting with a fertilized egg in animals or a seed in many plants. • Know that in most mammals (e.g. dogs) a fertilized egg develops in the womb into an embryo and is then born and fed on milk before it is weaned onto the food that is adapted to eat; it then develops to maturity in a period called adolescence after which it can reproduce and the cycle can begin again. • Know that in amphibians (e.g. frogs) a fertilized egg develops into an embryo and then hatches into a tadpole; the tadpole develops adult characteristics, metamorphoses into the adult form after which it can reproduce and the cycle can begin again.	metamorphosis, pupa, larva, chrysalis, caterpillar, tadpole, hatchling, fledgling.
Animals including humans	Biology	Structure, functions and processes	Children learn about keeping safe and healthy living, including the effect of drugs on the body.	• Know that blood travels around the body transporting nutrients that have been absorbed into the bloodstream from digestion. • Know that drugs are chemicals that have an impact on the natural chemicals in a person's body; know that drugs can be harmful or helpful, depending on what they are and how they are used; know that all drugs can be harmful if overused. • Know that paracetamol and aspirin are examples of drugs that can be helpful as a painkiller. • Know that cannabis and cocaine are examples of illegal drugs that can have serious negative effects. • Know that alcohol and tobacco are examples of drugs that are legal to adults but that can have serious negative effects, such as liver disease and lung disease, respectively.	artery, aorta, atrium, blood vessels capillary, circulatory system, vein, pulse, ventricle, replenished, resting heart rate, body
Materials and states of matter	Chemistry	State and matter, process and change	Children should explore a variety of everyday materials and develop simple descriptions of the states of matter and changes of state that occur through heating and cooling.	• Know that materials can change state when temperature changes. • Know that there are bonds between the particles (building blocks) in a solid; as temperature increases, these bonds are somewhat overcome as the particles absorb energy and solids can change into liquids; with a further increase in temperature, the particles become even more energetic and the bonds are overcome entirely so the liquid changes into a gas. • Know that when solids turn into liquids, this is called melting and that the reverse process is called freezing. • Know that when liquids turn into gases, this is called evaporation and that the reverse process is called condensation.	absorption, dissolving, energy, evaporation, freezing, matter, melting, particle, temperature, ice, water, solid, bond, condensation, evaporation, reversible, boiling point, melting point, liquid, gas, thermometer
Forces	Physics	Cause and effect	Children should learn about accelerating and decelerating forces, including air resistance; and simple mechanisms.	• Know that a force is measured in a unit called Newtons. • Know that gravity is a force that acts between all objects in the universe, but that it acts more strongly between objects that have more mass and that are close together. • Know that unsupported objects are pulled towards the Earth by the force of gravity. • Know that a lever is a rigid length pivoting around a fulcrum. • Know that a pulley is a wheel with a fulcrum that supports a moving cable or belt. • Know that a gear is a rotating wheel with cut teeth that mesh with the teeth of another gear so that turning one gear turns an adjacent gear in the opposite direction. • Know that gears, levers and pulleys are simple machines that are used to allow a smaller force to have a greater effect.	acceleration, air resistance, buoyancy, effort, force meter, fulcrum, gravity, load, mass, mesh, Newton, pivot, rigid, streamlined, terminal velocity, unsupported, water resistance, weight.

Earth and Space	Physics	Cause and effect	Children learn about satellites and the phases of the moon.	• Know that the Sun is a light source, but that the Moon is not (reflecting light from the Sun). • Know that a satellite orbits a planet and that moons are natural satellites. • Know that the Earth spins around an imaginary line through its centre called an axis and that this axis is tilted relative to the Earth's orbit. • Know that night and day are the result of the Earth rotating on its axis. • Know that the Moon orbits the Earth roughly every 28 days. • Know that as the Moon orbits the Sun, different parts of it are lit up by the Sun, which is why we see a different shape lit up on the Moon as the lunar cycle progresses; these are called phases of the Moon.	planet, satellite, sphere, solar system, eclipse, star, universe, constellation, axis, celestial body, Moon, rotating, lunar, solar, telescope, rotation
Year 5/6 Working Scientifically					
● Know how to choose appropriate variables to test a hypothesis (e.g. plant height as a dependent variable when measuring effect of light on plant growth). ● Know how to identify conditions that were imperfectly controlled and can explain how these might affect results. ● Know how to accurately use further measuring devices, including digital and analogue scales, measuring cylinders and beakers, recognizing the relative accuracy of each device. ● Know how and when to repeat measurements, how to find an average of a set of measurements and how to recognize and remove outliers from a set of data, justifying the removal as a potential mismeasurement. ● Know how to independently write a simple scientific enquiry write-up including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion. ● Know how to present brief oral findings from an enquiry, speaking clearly and with confidence and using notes where necessary. ● Know examples of instances where scientific evidence has been used to support or refute ideas or arguments (e.g. fossil records as evidence of natural selection).					Continue to use the key words from Year 3 and 4 plus the following: line graph, relationship, outlier.

Year 5/6 Cycle B

Unit title	Area of Study	Core Concepts	Unit Description	Core Knowledge	Core Vocabulary
Living things and habitats	Biology	Classification	Children learn to classify living things and identify ways in which habitats change throughout the year.	• Know that living things are divided into kingdoms: the animal kingdom, plants, fungi, bacteria, and single-celled organisms. • Know that changes to the environment can make it more difficult for living things to survive and reproduce; in extreme cases this leads to extinction, where an entire species dies. • Know that human activity – such as climate change caused by pollution - can change the environment for many living things, endangering their existence. • Know that many species of living things have already been made extinct as a result of human activity.	kingdom, classification key, species, fungi, bacteria, climate change, characteristics, offspring, extinction, pollution.
Animals including humans	Biology	Structure and function	Children learn about the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.	• Know that the heart beats, pumping blood around the body and that blood vessels carry the blood; arteries carry blood away from the heart; veins carry blood towards the heart; capillaries are tiny blood vessels that connect arteries and veins. • Know that blood travels around the body transporting nutrients that have been absorbed into the bloodstream from digestion; blood also absorbs oxygen from the lungs and carries it around the body which is used to power the body; this use of oxygen to create energy is called respiration. • Know that when we exercise, our heart beats more frequently so that the oxygen that is used around the body can be replenished; it returns to a resting heart rate afterwards; fitter people tend to have lower resting heart rates.	artery, aorta, atrium, blood vessels capillary, circulatory system, vein, pulse, ventricle, replenished, resting heart rate, body
Electricity	Physics	Processes	Children should develop their understanding of how electricity travels, the difference between series and parallel circuits. Children learn to make and use circuits for specific purposes.	• Know that current electricity is the flow of charged particles called electrons around a circuit. • Know that electrical current flows well through some materials, called electrical conductors, and poorly through other materials, called electrical insulators. • Know that electrical current can flow if there is a complete circuit. • Know how to draw simple circuit diagrams. • Know the recognized symbols for a battery, bulb, motor, buzzer and wire. • Know how to predict whether components will function in a given circuit, depending on whether or not the circuit is complete; whether or not a switch is in an on or off position; and whether or not there is a cell to provide electrical current to the circuit.	series circuit, parallel circuit, resistance, voltage
Light	Physics	Structure Change Processes	Children explore the way that light behaves, including light sources, reflection and shadows	• Know that translucent objects allow some light to pass through, but some of the light changes direction as it passes through the object. • Know that when light passes from one medium to another (e.g. from air to water), it changes direction; this is called refraction; this happens because light travels at different speeds in different media. • Know that white light comprises all the colours of light. • Know that white light refracted by two surfaces in a prism will spread out so that all of its constituent colours can be seen; this array of colours is called a spectrum; it happens because the different colours that constitute white light travel at different speeds. • Know how to draw a diagram to show why the shape of a shadow will match the shape of an object. • Know that when light reflects off an object, the angle of incidence is equal to the angle of reflection.	angle of incidence, angle of reflection, refraction, spectrum, translucent, medium, periscope

Evolution and Inheritance	Biology	Classification Change Structure	Children learn about variation and inherited characteristics; and find out about the work of key scientists.	• Know that all life on Earth began from a single point around 4.5 thousand million years ago. • Know that living things change over time and that this gradual change is called evolution. • Know that natural selection is the cause of this change; members of a species with less advantageous characteristics do not survive and reproduce – these characteristics are not passed down to offspring. • Know that offspring that result from sexual reproduction (i.e. two parents) vary and are not identical to their parents. • Know that the gradual change of species over millions of years can be observed by looking at examples of fossils. • Know that Charles Darwin posited this theory of evolution by natural selection.	evolution, natural selection, variation, advantageous
Year 5/6 Working Scientifically					
● Know how to choose appropriate variables to test a hypothesis (e.g. plant height as a dependent variable when measuring effect of light on plant growth). ● Know how to identify conditions that were imperfectly controlled and can explain how these might affect results. ● Know how to accurately use further measuring devices, including digital and analogue scales, measuring cylinders and beakers, recognizing the relative accuracy of each device. ● Know how and when to repeat measurements, how to find an average of a set of measurements and how to recognize and remove outliers from a set of data, justifying the removal as a potential mismeasurement. ● Know how to independently write a simple scientific enquiry write-up including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion. ● Know how to present brief oral findings from an enquiry, speaking clearly and with confidence and using notes where necessary. ● Know examples of instances where scientific evidence has been used to support or refute ideas or arguments (e.g. fossil records as evidence of natural selection).					Continue to use the key words from Year 3 and 4 plus the following: line graph, relationship, outlier.