Unsworth
Primary School

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Science Curriculum

The Unsworth Science Curriculum

Our children begin their science journey within the Early Years Foundation Stage (Reception Class) through playing, exploring and thinking critically. This enables them to develop knowledge and understanding of both the world and themselves. As they move through the different age phases, we continue to apply these principles to provide a high quality science curriculum that enables all pupils to develop a secure understanding of scientific knowledge and skills.

Each year group focuses on a range of units of work which include key concepts of science knowledge (the big ideas) and the key ideas of how we work scientifically. The development of spoken language, including technical vocabulary and the application of mathematical knowledge to collect, present and interet data are also an important aspect of the science curriculum helping learners to articulate the big ideas clearly and precisely.

Our curriculum aims to develop our children's understanding of the 10 big ideas of science and the ability to work scientifically.

This involves asking simple questions and investigating, observing over time, pattern seeking, identifying, classifying and grouping as well as researching using secondary sources.

We have identified a number of scientists from different aspects of science, different times and different parts of the world in order to educate our pupils about the important work scientists do and how it affects their lives today.

We use the *Cornerstones Curriculum* to enhance our offer.

Part of the Oak Learning Partnership

Our big ideas in science

Unsworth Primary School

Our curriculum delivers the EYFS and the national curricum programme of study for science. As a core subject, we dedicate 1.5 hours weekly to the science curriculum from Y1 to Y6. Science in Reception Class is covered in the 'Understanding the World' area of the EYFS Curriculum. Our curriculum is designed to enable our children to work towards an understanding of the following 'big ideas' in science. This culmlative knowledge is developed over time in appropriate, age-related steps.

By the time a child reaches Y6 we expect them to have some understanding of the following:

- 1. All material in the Universe is made of very small particles.
- 2. Objects can affect other objects at a distance.
- 3. Changing the movement of an object requires a net force to be acting on it.
- 4. The total amount of energy in the Universe is always the same but energy can be transformed when things change or are made to happen.
- 5. The composition of the Earth and its atmosphere and the processes occurring within them shape the Earth's surface and its climate.
- 6. The solar system is a very small part of one of millions of galaxies in the Universe.
- 7. Organisms are organised on a cellular basis.
- 8. Organisms require a supply of energy and materials for which they are often dependent on or in competition with other organisms.
- 9. Genetic information is passed down from one generation of organisms to another.
- 10. The diversity of organisms, living and extinct, is the result of evolution.

Working with Big Ideas of Science Education, edited by Wayne Harlen, 2015

Science Curriculum Overview

Year Group	Autumn	Spring	Summer
R	Seasons		
	Let's Explore	Ready Steady Grow (Plant and Animals)	Animal Safari / On the Beach
	SCIENTIST & ARTIST - Leonardo DaVinci		
1	Everyday materials	Seasonal Changes	Plant Parts
	Human Senses		Animal Parts
	SCIENTIST LINKED TO Y1 – Archimedes		
2	Human Survival	Use of materials	Animal Survival
	Habitats	Plant Survival	
	SCIENTIST - Albert Einstein		
3	Animal nutrition and the skeletal system	Forces and Magnets	Plant Nutrition and Reproduction
			Light and Shadows
	SCIENTIST- Sir Isaac Newton and George Washington Carver		
4	Food and the Digestive System	States of Matter	Electrical Circuits and Conductors
	Sound	Grouping and Classifying	
	SCIENTISTS- Alexander Bell and Thomas Edison		
5	Forces and Mechanisms	Human Reproduction and Ageing	Properties and Changes of Materials
	Earth and Space		
	SCIENTISTS- Zang Heng & Stephen Hawking		
6	Circulatory Systems	Electrical Circuits and Components	Light Theory
			Evolution and Inheritance
	SCIENTISTS- Ibn al – Haytham, Louis Pasteur and Mary Anning		

Science Units Overview

Unsworth Primary School

Class	Autumn	Spring	Summer
Unit	Lets's Explore	Ready Steady Grow	Animals Safari/On the Beach
R	**Key knowledge:** The environment (weather and some plants/trees) changes through the year. Day and night and weather can affect the way the environment appears. Explore the local environment and use senses to make observations Represent scientific observations by mark making, drawing or creating simple charts and tables. Offer explanations for why things happen, making use of vocabulary, such as, because, then and next. In winter the days are short and the nights are cold. Some birds need us to feed them during winter to help them survive. **Key vocabulary:** Change, colour, different, season, seasonal, Autumn, spring, summer, winter, weather Day, night,	**Animals including humans** **Key knowledge:** A human body normally has a head, neck, body, two arms, two legs, two hands, two feet, five fingers and five toes. A human face has two eyes, a nose and a mouth. Know changed which have taken place since being a baby. Animal babies are known by different names that adult animals (cow/calf, sheep/lamb) Food is produced on farms and can come from plants, and animals Animals provide meat and also produce food such as eggs, milk and honey Animals need food, water, air and shelter to survive. Healthy lifestyle choices include eating fruit and vegetables, drinking water, limiting sugary snacks, regular exercise, a good sleep routine, sensible amounts of screen time and good hygiene. It is important to have at least one hour of physical activity every day. **Key vocabulary:** baby, child, adult, head, neck, feet, hands, fingers, nose, mouth, healthy, fruit and vegetables, water, exercise, sleep, hygiene, handwashing, animal, crop, plant, farm, food, cow/calf, sheep/lamb **Plants** **Key knowledge:** Plants are living things. Parts of plants and trees include trunk, branch, twig, roots, stem, flowers and leaves.	**Key knowledge:** A habitat is a place where living things live. Living things, including plants and animals, live in our school grounds. Different animal groups have some common body parts, such as birds have wings and fish have fins, and paw is the name for an animal's foot. Whiskers are the long hairs that grow out of an animal's face. Pets are domestic or tamed animals. Eggs are laid by female birds and are surrounded by a shell. Zoos are places that have collections of wild animals for study, conservation and public display. A habitat is a place where living things live. Local habitats include woodlands, gardens and ponds. Other habitats include hot places, such as deserts, and cold places, the oceans/seas/seashore and woodlands/forests **Key vocabulary:** habitat, wings, beak, feathers, fins, paw, whiskers, domestic, tame, shell, deserts, the Arctic, sea, ocean, seashore, woodland, forest,

		Plants need water, sunlight and air to survive. Some plants produce seeds which grow into new plants. Seeds need water, air and warmth to begin growing Food can be produced by plants such as fruit, vegetables, nuts and seeds **Key vocabulary:** Trunk, branch, twig, roots, stem, flowers, leaves, water, sunlight, air, shelter, plants, fruit, soil, sunlight, water, air, warmth, vegetable, nuts, seeds	
	All year round themes		
	Seasons **Key knowledge:** There are four seasons and different things happen to the natural world in each season e.g. weather, changes in plants, how the environment looks. Some plants and trees change with the seasons e.g. new green leaves grow in the spring and some leaves change colour in autumn and fall from the trees. Spring is one of the four seasons. The season of spring follows winter. Spring is a season associated with new life. It has changeable weather In summer wearing sunscreen, a hat and sunglasses can protect the skin and eyes from sun damage. Winter is one of the seasons. Winter is associated with cold weather, snow and ice. Explore weather changes compared to Autumn. Daily weather includes sunny, rainy, windy, cloudy, warm or cold. Rain is drops of water that fall from the sky. Rainbows are made up the colours, red, orange, yellow, green, blue, indigo and violet Weather is warmer in the summer with more sunshine and colder in the winter with frost, snow, hail and rain. Waterproof materials keep us dry **Key vocabulary:** Autumn, winter, spring and summer, seasons, changes, sunscreen, sunny, rainy, windy, cloudy, snow, frost, hail, rain, freeze, melt		
	CONTINUOUS & ENHANCED PROVISION Children will use their senses to explore the natural world around them, describing and understanding the effect of changing seasons on the natural world. Planting occurs regularly across the year and children have opportunities to make observations of plants and talk about changes. Children are supported and encouraged ways to look after themselves and the importance of health and hygiene. They will also be encouraged to be curious, question and to give explanations for why things happen. Children will be encouraged to represent scientific observations by mark making, drawing or creating simple charts and tables.		
Unit	**Everyday Materials** **Big idea link: 1**	**Seasonal Changes** **Big idea link: 5**	**Plant Parts** **Big idea link: 7**

1	**Key knowledge:** A material is what an object is made of. They are all around us and we use them to make everyday objects. Materials have different properties**.** Natural materials come from the world around us, such as the ground, plants and animals and people make new materials from natural materials. These materials are called human-made materials. Human-made materials look and feel different to the natural materials they are made from. **Key vocabulary:** natural and human-made material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, hard or soft, stretchy or stiff, rough or smooth, opaque or transparent, bendy or rigid, waterproof or not waterproof.	**Key knowledge:** There are four seasons and events and weather patterns happen in different seasons. All living things (plants and animals) change over time as they grow and mature and some change with the seasons. There are different types of weather. It can change daily. Some weather types are more common in certain seasons, such as snow in winter. A weather forecast predicts the weather. Day length is longer in the summer and shorter in the winter. Temperature is the measure of how hot or cold something is. The Sun provides Earth with heat and light and it gives out invisible rays that can damage our skin and eyes over time. **Key vocabulary:** Spring, summer, autumn and winter. Deciduous and evergreen trees. Sunshine, rain, hail, wind, snow, fog, lightning, storm and cloud. Heat, temperature, thermometer, weather forecast	**Key knowledge:** Plants are living things. Common plants include the daisy, daffodil and grass. Trees are large, woody plants and are either evergreen or deciduous and they have a trunk. Plants grow from seeds or bulbs and need water and sunlight to grow. Plants grow in different places like gardens, meadows, woodlands and hedgerows. Garden plants are looked after by people. Wild plants are not. The basic plant parts include root, stem, leaf, flower, petal, fruit, seed and bulb. **Key vocabulary:** Evergreen, deciduous, oak, beech, rowan, holly, pine, daisy, daffodil, grass, seeds, bulbs, garden and wild plants, root, stem, leaf, flower, petal, fruit, trunk
Unit	**Human Senses** **Big idea link:**		**Animal Parts** **Big idea link: 8**
1	**Key knowledge:** Humans are living things. And belong to a group of animals called mammals. All animals, including humans, use their senses, breathe, feed, sleep, get rid of waste, grow and move to stay alive. Humans are the same in that they have the same body parts. Humans are different in that they have different sexes, hair colours, eye colours and heights. The five senses are hearing, sight, smell, taste and touch. **Key vocabulary:** Humans, mammals, head, arms, legs, nose, eyes, ears, mouth, hands, senses - hearing, sight, smell, taste and touch.		**Key knowledge:** Animals are living things. Animals can be sorted and grouped into six main groups: fish, amphibians, reptiles, birds, invertebrates and mammals. All animals are born and grow and change over time. They have senses, breathe, move A pet is an animal that humans keep at home as a companion, such as a rabbit, eat, get rid of waste and have offspring. **Key vocabulary:** fish, amphibians, reptiles, birds, invertebrates and mammals, born, grow, breathe, move, pets
Working scientifically: 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 question			
Unit	**Human Survival** **Big idea link:**	**Use of Materials** **Big idea link: 1**	**Animal Survival** **Big idea link:**

2	**Key knowledge:** Humans are living things. They belong to an animal group called mammals. Humans are omnivores. There are six stages of human life: baby, toddler, child, teenager, adult and elderly person. Humans need water, food, air and shelter to survive. A healthy lifestyle includes exercise, good personal hygiene, good quality sleep and a balanced diet **Key vocabulary:** baby, toddler, child, teenager, adult and elderly person, exercise, personal hygiene, balanced diet	**Key knowledge:** Materials can be natural and human-made. Some objects and materials can be changed by squashing, bending, twisting, stretching, heating, cooling, mixing and being left to decay. A material's physical properties make it suitable for particular purposes, such as glass for windows and brick for building walls. Earth provides natural resources, and humans need to ensure that these resources do not run out. **Key vocabulary:** rock, stone, water, sand, soil, water and clay, brick, glass, plastic and concrete, squashing, bending, twisting, stretching, heating, cooling, mixing, decay, recycling, predictions.	**Key knowledge:** Local habitats include parks, woodland and gardens. Habitats beyond the locality include beaches, rainforests, deserts, oceans and mountains. All living things live in a habitat to which they are suited and it must provide everything they need to survive. Invertebrates are animals without a backbone. Animals need water, food, air and shelter to survive. All animals have a life cycle, which is a series of changes that happens to a living thing during its life. **Key vocabulary:** Habitats, parks, woodlands, gardens, beaches, oceans, rainforests, deserts, mountains, invertebrates, water, food, air, shelter, life-cycle
Unit	**Habitats** **Big idea link: 1**	**Plant Survival** **Big idea link:**	
2	**Key knowledge:** A habitat is a place where plants and animals live. Habitats contain both living and non-living things. Living things are those that are alive. Dead things are those that were once living but are no longer. Some things have never been alive. Animals eat food that is found in their habitat. Herbivores eat plants. Omnivores eat plants and animals. Carnivores eat animals. Food chains show how living things depend on one another for food. All food chains start with a plant, followed by animals that either eat the plant or other animals. **Key vocabulary:** Herbivores, omnivores, carnivores, food chains	**Key knowledge:** Many plants grow from seeds or bulbs. A bulb contains a tiny plant and all the food needed to grow. Spring bulbs can start to grow in winter when the ground is frozen. Seeds and bulbs need water and warmth to start growing (germinate). As the plant grows bigger, it develops leaves and flowers. Plants need water, light and a suitable temperature to grow and stay healthy. **Key vocabulary:** Plants, seeds, bulbs, germinate, temperature	
Working scientifically: 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 question			
Unit	**Animal Survival and the Skeletal System** **Big idea link:**	**Forces and Magnets** **Big idea link: 3**	**Plant Nutrition and Reproduction** **Big idea link:**

3	**Key knowledge:** Animals get nutrition from the food they eat. Nutrition is the life process of making or finding food to eat. Nutrition allows plants and animals to grow, stay healthy, and survive. Humans have to get nutrition from what they eat. It is important to have a balanced diet made up of the main food groups. Humans need to stay hydrated by drinking water. Humans have a skeleton and muscles for movement, support and protecting organs. Some animals have skeletons for support, movement and protection on the inside or outside and some animals have no skeleton. **Key vocabulary:** Nutrition, proteins, carbohydrates, fruit and vegetables, dairy products and alternatives, and fats and spreads, hydration, skeletons, endo skeleton. Exoskeletons	**Key knowledge:** An object will not move unless a pushing or pulling force is applied. Some forces require direct contact, whereas other forces can act at a distance, such as magnetic force. Forces cause objects to move, change speed or change shape. A force meter is a piece of equipment that measures a force or mass. Forces are measured in newtons (N). Mass is measured in kilograms (kg). Magnets have two poles. Opposite poles attract each other, while like poles repel each other. There are different types of magnets and they have different strengths. All magnetic materials are metals but not all metals are magnetic. The Earth acts like a huge bar magnet Friction is a force between two surfaces as they move over each other. Friction slows down a moving object. Smooth surfaces usually generate less friction than rough surfaces. **Key vocabulary:** Magnetic force, force meter, newtons, mass, north and south poles, attract and repel, Magnets - horseshoe, magnetic marbles, wand and floating magnets, friction	**Key knowledge**: Plants need air, light, water, minerals from the soil and room to grow, in order to survive. The plant's roots anchor the plant in the ground and transport water and minerals from the ground to the plant. The stem (or trunk) support the plant above the ground. The leaves collect energy from the Sun and make food for the plant. Flowers make seeds to produce new plants. Plant parts have specific functions. The stem transports water, nutrients and food around the plant. The leaves draw water and nutrients from the soil up through the roots and the stem of the plant. Seeds are dispersed away from the parent plant. **Key vocabulary:** Anchor, energy, function, transports, nutrients, dispersed, parent plant **Light and Shadows** **Big idea link: 2** **Key knowledge:** Dark is the absence of light and we need light to be able to see. Light is a form of energy that travels in straight lines. A light source produces light. A reflector reflects light. Light sources and reflectors can be natural, such as the Sun and Moon, or artificial, such as a light bulb or bike reflector. Light can be reflected from different surfaces. Some surfaces are poor reflectors, such as some fabrics, while other surfaces are good reflectors, such as mirrors. Light from the Sun is damaging for vision and the skin. **Key vocabulary:** Light, dark, energy, source, reflector, natural and artificial light

Working scientifically: 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.

Unit	Food and the Digestive System Big idea link:	States of Matter Big idea link:	Electrical Circuits and Conductors Big idea link:
4	**Key knowledge:** The digestive system is responsible for digesting food and absorbing nutrients and water. The mouth starts digestion by chewing food and mixing it with saliva. The oesophagus transports the chewed food to the stomach, where it mixes with stomach acid and gets broken down into smaller pieces. In the small intestine, nutrients from the food are absorbed by the body. In the large intestine, water is absorbed by the body. The remaining undigested waste is stored in the rectum before excretion through the anus. There are four different types of teeth. Incisors are used for cutting. Canines are used for tearing. Premolars and molars are used for grinding and chewing. Carnivores, herbivores and omnivores have characteristic types of teeth. Herbivores have many large molars for grinding plant material. Carnivores have large canines for killing their prey and tearing meat. **Key vocabulary:** Digestive system, mouth, oesophagus, stomach, small intestines, large intestines and rectum, saliva, oesophagus, anus, excretion, incisors, canines, premolars and molars, carnivores, herbivores, omnivores	**Key knowledge:** Materials can be grouped according to whether they are solids, liquids or gases. Each has their own properties Particles make up all materials. Heating or cooling materials can bring about a change of state. This change of state can be reversible or irreversible. The process of changing from a solid to liquid is called melting. The reverse process of changing from a liquid to a solid is called freezing. The process of changing from a liquid to a gas is called evaporation. The reverse process of changing from a gas to a liquid is called condensation. **Key vocabulary:** Solids (wood, metal, plastic and clay), liquids (water, juice and milk) gases (oxygen, helium and carbon dioxide) solid, flow, particles, melting, freezing, boiling and condensing points, Celsius	**Key knowledge:** Electricity is a type of energy Electricity can also come from batteries. Electricity is essential to our daily lives and makes peoples' lives easier. Electricity comes from two sources, mains and batteries. Electrical components include cells, wires, lamps, motors, switches and buzzers. Switches open and close a circuit and provide control. A circuit is a collection of components connected by wires through which an electric current can flow. A circuit must be a complete loop to work. Electrical conductors allow electricity to flow through them, whereas insulators do not. Common electrical conductors are metals. Common insulators include wood, glass, plastic and rubber. **Key vocabulary:** Electricity, energy, battery, mains, cells, wires, lamps, Motors, switches, buzzers, flow, current, Loop
	Sound **Big idea link:**	**Grouping and Classifying** **Big idea link:**	
	Key knowledge: When an instrument is played, the air around or inside it vibrates. These vibrations travel as a sound wave. Sound waves travel through a medium, such as air or water, to the ear. Sound is energy produced by vibrations made by a sound source. Sound travels a	**Key knowledge:** Scientists classify living things according to shared characteristics. Classification is the arrangement of living and non-living things into groups or categories. Classification	

	lot more slowly than light. There is no sound in space. Volume is the loudness of a sound and is measured in decibels (dB). Pitch is how high or low a sound is and is measured in hertz. Loud or continuous noise can damage hearing. Hearing can be protected by ear defenders that muffle the sound. **Key vocabulary:** Vibration, sound waves, travel, energy, volume, loudness, decibels, pitch, hertz	keys are scientific tools that aid the identification of living things. Classification keys are created by devising a set of yes or no questions that separate a group into two groups until objects end up on their own. Classification keys are also called branching trees. **Key vocabulary:** Characteristics, living and non-living, categories, classification, keys, branching trees	

Working scientifically: 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.

Unit	Forces and Mechanisms Big idea link:	Human Reproduction and Ageing Big idea link:	Properties and Changes of Materials Big idea link:
5	**Key knowledge:** A force is a push or a pull that makes something move, change its speed or change its shape. There are two types of forces: contact forces and non-contact forces. Contact forces include friction, air resistance and water resistance. Non-contact forces include magnetism and gravitational force, or gravity. The Earth's large mass exerts a gravitational pull on all objects on Earth, making dropped objects fall to the ground. Gravity is a non-contact, pulling force which attracts two objects that have mass. Friction, air resistance and water resistance are forces that oppose motion and slow down moving objects **Key vocabulary:** Contact and non-contact forces, friction, air resistance, water resistance, gravity, motion	**Key knowledge:** A life cycle is the series of changes in the life of a living thing and includes these basic stages: birth, growth, reproduction and death. Mammals' life cycles include the stages: embryo, juvenile, adolescent and adult. Amphibians' life cycles include the stages: egg, larva (tadpole), adolescent and adult. Some insects' (butterflies, beetles and bees) life cycles include the stages: egg, larva, pupa and adult. Birds' life cycles include the stages: egg, baby, adolescent and adult. Humans are mammals and have a mammalian life cycle. Puberty is the transition between childhood and adulthood. Gestation is the length of time the young of a mammal develops inside the female's body before birth. Good personal hygiene (washing, wearing clean clothes and brushing teeth) can prevent disease or illness.	**Key knowledge:** Properties include hardness, solubility, transparency, conductivity (electrical and thermal) and magnetism. A material's properties dictate what it can be used for Thermal conductors conduct heat. Solid metals are good thermal conductors because their particles are closely packed and they have strong, lattice metallic bonds. Solids, such as plastic, wood and glass do not have these bonds so they do not conduct heat. They are thermal insulators. Liquids and gases are poor conductors of heat because their particles are further apart. Some materials (solutes) will dissolve in liquid (solvents) to form a solution. The solute can be recovered by evaporating off the solvent by heating **Key vocabulary:** Hardness, solubility, transparency, conductivity, magnetism, thermal conductors, particles, thermal insulators, solutes, solvents, solution, evaporating
	Earth and Space **Big idea link:**		

	Key knowledge: The Solar System is made up of the Sun and everything that orbits around it. There are eight planets in our Solar System. Earth orbits around the Sun and a year (365.25 days) is the length of time it takes for Earth to complete a full orbit. The Sun is a huge, hot ball of gas and is the only source of heat and light in the Solar System. The planets closer to the Sun (Mercury, Venus, Earth and Mars) are made of rock. Planets farther from the Sun (Jupiter, Saturn, Uranus and Neptune) are made of gas. The Moon orbits the Earth every 27.3 days and rotates every 27.3 days, so we only see one side from Earth. Different amounts of the lit side can be seen from Earth during each month and are called the phases of the Moon. The Earth rotates on its axis once every 24 hours, which is a day. This rotation creates daytime and night time. The Earth's axis is tilted at an angle of 23.5°. This tilt creates the different seasons on Earth each year as the Earth orbits the Sun. **Key vocabulary:** Solar system, Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune, orbits, phases of the Moon, rotates, axis, tilt	Reproduction is the process of producing offspring. As humans age, many of the body's systems gradually change. **Key vocabulary:** Life cycle, process, stage, birth, growth, reproduction, death, embryo, juvenile, adolescent and adult, egg, larva (tadpole), adolescent and adult, egg, larva, pupa and adult, egg, baby, adolescent and adult. Puberty and gestation. Hygiene, reproduction, ageing.	

Working scientifically: 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

Unit	Circulatory Systems Big idea link:	Electrical Circuits and Components Big idea link: 4	Light Theory Big idea link:

6	**Key knowledge:** The human body has different systems that support the seven life processes. The skeletal system supports movement, gives the body shape and protects the organs. The skeletal muscular system also supports movement. The endocrine system supports growth. It is made up of glands that produce hormones, which control growth and other processes. The nervous system supports sensation and movement as it controls almost everything the body does. The digestive system supports nutrition by breaking down food so the body can absorb nutrients. The excretory system supports excretion (getting rid of waste). The reproductive system supports reproduction. The respiratory system supports respiration by taking in oxygen when we breathe in and removing carbon dioxide when we breathe out **Key vocabulary:** Skeletal, endocrine, hormones, nervous, digestive, excretory, respiratory, oxygen, carbon dioxide	**Key knowledge:** Electricity is a form of energy that makes things work. Circuit components include cells, buzzers, switches, wires, lamps and motors. A collection of components connected by wires in a loop is called a series circuit. Materials that allow electricity to flow through them are called electrical conductors. Materials that do not allow electricity to flow through them are called electrical insulators. There are recognised symbols for different components of circuits. An electric current is the flow of electric charge around a circuit. Electric current is measured using an ammeter. The force that pushes electric charge around a circuit, called the voltage, is measured using a voltmeter. **Key vocabulary:** Circuits, cells, buzzers, switches, wires, lamps, motors, series circuit, electrical conductors, electrical insulators	K**ey knowledge:** Light is a form of energy that travels as waves. Darkness is the absence of light. A light source produces light. Shiny, smooth and light-coloured materials reflect light; dull, rough and dark-coloured materials absorb light. The Sun creates day and night and shadows that move and change. Shadows form when light is blocked. Light travels in waves in straight lines. Light waves in diagrams are drawn as straight lines with arrowheads that show the direction of travel. **Key vocabulary:** Light, energy, reflect, absorb, shadows, waves **Evolution and Inheritance** **Big idea link: 9 & 10** **Key knowledge:** Scientists classify living organisms into broad groups according to their characteristics. Vertebrates are an example of a classification group. There are a number of ranks, or levels, within the biological classification system. The first rank is called a kingdom. There are five kingdoms: animals, plants, fungi, protists and monerans. Members of each kingdom have features in common. Microorganisms are microscopic living things, and can be helpful or harmful to other living things. Viruses are not included in the kingdoms as they are not living and need a host to survive and reproduce. Fossils are the remains or traces of once-living things preserved as rock and are over 10,000 years old. The theory of evolution was developed in the 19th century by the naturalists Charles Darwin and Alfred Russel Wallace. It states that: all life on Earth has evolved from simple life forms to more complex ones over time. **Key vocabulary:** Organisms, ranks, levels, kingdoms, animals, plants, microorganisms, fungus, viruses, fossils, the theory of evolution

Working scientifically: 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