St Mary's Roman Catholic Primary School

Science- Skills and Knowledge progression map

Reception	Autumn Term	Spring Term	Summer Term
Big Question	**What signs of Autumn can you see, hear, smell, feel?** <u>The Natural World</u>	**What would you invent as a Scientist?**	**If you were a mini-beast which one would you be? Where would you live?**
Knowledge and Skills	Using senses to explore the world; Exploring the weather as it changes to Autumn; Explore the changes from Autumn to Winter; Planting Spring bulbs By exploring the world using their senses, they are able to name these and be able to talk about their environment. This will prepare them for Y1 Humans and seasons.	- <u>The Natural World</u> - Changing States of Matter; Exploring Winter/Spring; Signs of Spring; Growing plants, light and shadows, floating and sinking - Why we have a subject called science. **Safe-To undertake the experiments safely and listening to instructions.** **Try- Creatively invent new inventions to help us.** **Aspire- To aspire to be a Scientist, Police Officer, Nurse or other role in society.** **Respect- To listen respectfully to visitors who come in and talk about their jobs.** - Through observing plants growing over time, prepares them for Y2 Plants - By finding out about Animals and their young we prepare them for Y2 Science- Animals including humans. - By knowing the names of different materials children are prepared with the vocabulary for Y1 Everyday Materials, Y2 Everyday Materials	**Safe- To explore environments and use resources safely.** **Try- To look after our environment.** **Aspire- By understanding the creatures who live in our environment and their needs we can help to protect our planet.** **Respect- To respect all living creatures.** - <u>The Natural World</u> - Know some similarities and differences between the natural world around them and contrasting environments; Exploring Spring/Summer; Exploring the natural world around them including the beach, Minibeasts - Through learning where England is and relating this to Africa, enables them to learn that there are many countries in the world, and these environments vary - can relate this to knowledge of weather and seasons, also possibility to discuss adaptations to environments ie. wearing different clothing. This prepares them for Y1 seasons. - Through noticing similarities and differences between minibeasts, the children will be prepared for Y1 Classifying Animals.
Vocabulary	Toddler, Teenager, Elderly, See, Hear, Touch, smell, taste Autumn, winter, summer, spring, cloudy, sunny, windy, rain, snow, hot, cold, temperature	Liquid, gas, solid, floating, sinking, magnet, magnetic, nonmagnetic, materials, scientist, science, invent Animal young Plant, roots, stem, flower, leaf, fruit, light, dark, shadows	Habitat, Camouflage, Survive, England, Africa, Savannah, Tropical Grassland, Name of African Animals, Minibeasts, Herbivores, Carnivores, Minibeast body parts

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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Plants	**Seasonal Changes - Autumn/winter**	**Everyday Materials**	**Animals incl. humans - Classifying Animals**	**Animals incl. humans - Humans and senses**	**Seasonal Changes - Spring/Summer**
Year 1 Big Que	- **Can you design a school garden using local plants?**	**How is Winter different to Autumn?**	**What is the best material to make a raincoat/umbrella for my Teddy bear?**	**Which animal would be the best class pet?**	**Which of the 5 senses are the most important to you?**	**How is summer different to spring?**
Critical Knowledge	- Identify and name a variety of common wild and garden plants - Identify and describe the basic structure of a variety of common flowering plants. - Identify and name the roots, trunk, branches and leaves of trees. - Plants grow from seeds/bulbs - Plants need light and water to grow and survive - Plants are important - We can eat lots of plants.	- Observe changes across four seasons - Observe and describe weather associated with the seasons and how day length varies. - Weather can change - There are lots of different types of weather: Rain, Sun, CLoud, Wind, Snow, etc. - Days are longer and hotter in summer - Days are shorter and colder in the winter There are four seasons: Spring, Summer, Autumn, Winter	- 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 physical properties of a variety of everyday materials. - Compare and group together a variety of everyday materials on the basis of their simple properties. - There are many different describable and measurable properties. - Materials that have similar properties are grouped into metals, rocks, fabrics, wood, plastics and ceramics (including glass). - The properties of a material determine whether they are suitable for purpose.	• 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 • There are many different animals with different characteristics. • Animals have senses to help individuals survive. When animals sense things they are able to respond. • Animals need food to survive. • Animals need a variety of food to help them grow, repair their bodies, be active and stay healthy.	• identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. - There are 5 senses associated to different parts of the body. - What these five senses do for humans. - Which senses are used to identify foods. - How senses help animals and humans to survive. **Linked to previous topic with focus on humans as animals.**	**See Autumn 1** **See Autumn 1**

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Vocabulary	Leaves, trunk, branch, root, seed, bulb, flower, stem, wild, garden, deciduous, evergreen	Seasons, spring, summer, autumn, winter, windy, sunny, overcast, snow, rain, temperature.	Hard, soft, stretchy, stiff, shiny, dull, rough, smooth, bendy/not bendy, waterproof/not waterproof, absorbent, opaque,	Amphibians, birds, fish, mammals, reptiles, carnivores, herbivore, omnivore, sight, hearing, touch, taste, smell, head, neck, ear, mouth, shoulder, hand, fingers, leg, foot, thumb, eye, nose, knee, toes, teeth, elbow	sight, hearing, touch, taste, smell, head, neck, ear, mouth, shoulder, hand, fingers, leg, foot, thumb, eye, nose, knee, toes, teeth, elbow	**See Autumn 1**
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
	Exciting experiments	**Everyday Materials**		**Plants (also monitor throughout the year)**	**Animals incl. Humans**	**Living Things and Their Habitats**
Year 2 Big Question	**What is a fair test?**	**Which materials would you use to design your dream school and why?**		**How do we keep plants healthy?**	**Design a healthy meal plan for a week.**	**Design a habitat for an animal of your choice.**

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Critical Knowledge	• • **Asking simple questions and recognizing that they can be answered in different ways.** • **Observing closely, using simple equipment.** • **Performing simple tests.** • **Using their observations and ideas to suggest answers to questions.** • **Gathering and recording data to help in answering questions.** • Be able to carry out a fair test by changing one factor. • Be able to use different equipment to carry out tests. • Ask a simple question to answer. •	• **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 shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.** Materials can be changed by physical force (twisting, bending, squashing and stretching)	• **Observe and describe how seeds and bulbs grow into mature plants.** • **Find out and describe how plants need water, light and warmth to grow and stay healthy.** • Plants grow from seeds/bulbs • Plants need light, water and warmth to grow and survive • Flowers make seeds to make more plants (reproduce) • Plants are important • We need plants to survive (to clean air, to eat) • We can eat different parts of the plants (leaves, stems, roots, seeds, fruit)	• **Know that animals, including humans, have offspring which grow into adults** • **Know the basic stages in a life cycle for animals, including humans.** • **Find out 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.** • Animals move in order to survive. • Different animals move in different ways to help them survive. • Exercise keeps animal's bodies in good condition and increases survival chances. • All animals eventually die. • Animals reproduce new animals when they reach maturity. • Animals grow until maturity and then do not grow any larger.	• **Explore and compare the difference 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 the different sources of food.** • Some things are living, some were once living but now dead and some things never lived. • There is variation between living things. • Different animals and plants live in different places. Living things are adapted to survive in different habitats. Environmental change can affect plants and animals that live there.

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Vocabulary	Fair test, equipment, questions, data, measurements	Waterproof, fabric, rubber, cars, rock, paper, cardboard, wood, metal, plastic, glass, brick, twisting, squashing, bending, matches, cans, spoons,		Leaves, trunk, branch, root, seed, bulb, flower, stem, wild, garden, deciduous, evergreen, observe, grow, compare, record, temperature, predict, measure, diagram, germinate, warmth, sunlight.	Living, dead, never alive, habitats, micro-habitats, food, food chain, leaf litter, shelter, seashore, woodland, ocean, rainforest, conditions, desert, damp, shade,	Living, dead, never alive, habitats, micro-habitats, food, food chain, leaf litter, shelter, seashore, woodland, ocean, rainforest, conditions, desert, damp, shade,
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
	Rocks	**Animals incl. humans**	**Forces and Magnets**	**Plants**		**Light**
Year 3 Big Question	**What do rocks tell us about the past?**	**What do humans need to stay healthy?**	**Where can we find forces and magnets in everyday life?**	**How did that blossom become an apple?**		**Why does my shadow change?**

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Critical Knowledge	• **Compare and group together different kinds of rocks based on 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** • There are different types of rock. • There are different types of soil. • Soils change over time. • Different plants grow in different soils. • Fossils tell us what has happened before. • Fossils provide evidence. • Palaeontologists use Fossils to find out about the past. • Fossils provide evidence that living things have changed over time.	• **Identify that animals, including humans, need the right types and amount of nutrition, and they cannot make their own food; they get their nutrition from what they eat.** • **Know how nutrients, water and oxygen are transported within animals and humans.** • **Know about the importance of a nutritious, balanced diet.** • **Identify that humans and some other animals have skeletons and muscles for support, protection and movement:** • Different animals are adapted to eat different foods. • Many animals have skeletons to support their bodies and protect vital organs. • Muscles are connected to bones and move them when they contract. • Movable joints connect bones.	• **Compare how things move on different surfaces.** • **Know how a simple pulley works and use making lifting an object simpler** • **Notice that some forces need contact between two objects, but magnetic forces can act at a distance.** • **Observe how magnets attract and repel each other and attract some materials and not others.** • **Compare and group together a variety of everyday materials based on whether they are attracted to a magnet and identify some magnetic materials.** • **Describe magnets as having two poles.** • **Predict whether two magnets with attract or repel each other, depending on which poles are facing.** • Magnets exert attractive and repulsive forces on each other. • Magnets exert non-contact forces, which work through some materials. • Magnets exert attractive forces on some materials. • Magnet forces are affected by magnet strength, object mass, distance from object and object material.	• **Identify and describe the functions of different parts of the flowering plant: roots, stem/trunk/leaves and flowers** • **Explore the part flowers play in a flowering plants life cycle, including pollination, seed formation and seed dispersal** • **Explain the requirements of plants for life and growth (air, light, water, nutrients from soil, room to grow) and how they vary between plants** • **Know the way in which water is transported between plants** • Plants are producers, they make their own food. • Their leaves absorb sunlight and carbon dioxide • Plants have roots, which provide support and draw water from the soil • Flowering plants have specific adaptations which help it to carry out pollination, fertilisation and seed production • Seed dispersal improves a plants chances of successful reproduction • Seeds/bulbs require the right conditions to germinate and grow. Seeds contain enough food for the plant's initial growth	• **Recognise that they need light in order to see things and that dark is the absence of light.** • **Notice that light is reflected from surfaces.** **Recognise that light from the sun can be dangerous and that** • **there are ways to protect their eyes.** • **Recognise that shadows are formed when the light from a light source is blocked by a solid object.** • **Find patterns in the way that the sizes of shadows change.** • There must be light for us to see. Without light it is dark. • We need light to see things even shiny things. • Transparent materials let light travel through them, and opaque materials don't let light through. • Beams of light bounce off some materials (reflection). • Shiny materials reflect light beams better than non-shiny materials. • Light comes from a source	Light source, dark, reflect, ray, mirror, bounce, visible, beam, sun, glare, travel, straight, opaque, shadow, block, transparent, translucent.

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Vocabulary	Rocks, igneous, metamorphic, sedimentary, anthropic, permeable, impermeable, chemical fossil, body fossil, trace fossil, Mary Anning, cast fossil, mould fossil, replacement fossil, extinct, organic matter, topsoil, sub soil, base rock.	Nutrients, nutrition, carbohydrates, protein, fats, vitamins, minerals, water, fibre, skeleton, bones, joints, endoskeleton, exoskeleton, hydrostatic skeleton, vertebrates, invertebrates, muscles, contract, relax,	Force, push, pull, friction, surface, magnet, magnetic, magnetic field, pole, north, south, attract, repel, compass	Air, light, water, nutrients, soil, support, anchor, reproduction, pollination, dispersal, transportation, flower, energy, growth, seedling, carbon dioxide, oxygen, sugar, material, photosynthesis, chlorophyll		
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
	States of Matter	**Electricity**	**Sound**	**Animals incl. Humans - The Digestive System**	**Living things and their habitats**	
Year 4	**Can I uncook an egg?**	**How would you build a simple electrical circuit?**	**How does sound travel? Sound Project - Museum curator visitor - "The Science of Sound"**	**How does my digestive system work?**	**How can we improve the habitats around our school?**	

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Critical Knowledge	• **Compare and group materials together, according to whether they are solids, liquids or gases.** • **Observe that some materials change state when heated or cooled, and measure and research the temperature at which this happens in degrees Celsius.** • **Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.** • Solids, liquids and gases are described by observable properties. • Materials can be divided into solids, liquids and gases. • Heating causes solids to melt into liquids and liquids evaporate into gases. d) Cooling causes gases to condense into liquids and liquids to freeze into solids. • The temperature at which given substances change state are always the same.	• **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 a lamp will light in a simple series circuit, based on whether the lamp is part of a complete loop with a battery.** • **Recognise that a switch opens and closes the circuit and associate this with whether a lamp lights in a simple series circuit. Recognise some common conductors and insulators, and associate metals with being good conductors.** • **Know the difference between a conductor and an insulator, giving examples of each.** • **Safety when using electricity.** • A source of electricity (mains of battery) is needed for electrical devices to work. • Electricity sources push electricity round a circuit. • More batteries will push the electricity round the circuit faster. • Devices work harder when more electricity goes	• **Know how sound is made associating some of them with vibrating.** • **Know what happens to a sound as it travels from its source to our ears.** • **Know the correlation between the volume of a sound and the strength of the vibrations that produced it.** • **Know how sound travels from a source to our ears.** • **Know the correlation between pitch and the object producing a sound.** • Sound travels from its source in all directions and we hear it when it travels to our ears. • Sound travel can be blocked. • Sound spreads out as it travels. • Changing the shape, size and material of an object will change the sound it produces. • Sound is produced when an object vibrates. • Sound moves through all materials by making them vibrate. • Changing the way an object vibrates changes its sound. • Bigger vibrations produce louder sounds and smaller vibrations produce quieter sounds. • Faster vibrations (higher frequencies) produce higher pitched sounds	• **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** • Animals have teeth to help them eat. • Different types of teeth do different jobs. • Food is broken down by the teeth and further in the stomach and intestines where nutrients go into the blood. • The blood takes nutrients around the body. • Nutrients produced by plants move to primary consumers then to secondary consumers through food chains.	• **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 danger to living things.** • Living things can be divided into groups based upon their characteristics • Environmental change affects different habitats differently • Different organisms are affected differently by environmental change • Different food chains occur in different habitats Human activity significantly affects the environment

		through them. • A complete circuit is needed for electricity to flow and devices to work. • Some materials allow electricity to flow easily and these are called conductors. Materials that don't allow electricity to flow easily are called insulators.			

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Vocabulary	Solid, liquid, gas, particles, state, materials, properties, matter, melt, freeze, water, ice, temperature, process, condensation, evaporation, water vapour, energy, precipitation, collection,	Electricity, electric current, appliances, mains, crocodile clips, wires, bulb, battery cell, battery holder, motor, buzzer, switch, conductor, electrical insulator, component.	Amplitude, volume, quiet, loud, ear, pitch, high, low, particles, instruments, wave.	Herbivore, Carnivore, Digestive system, tongue, mouth, teeth, oesophagus, stomach, gall bladder, small intestine, pancreas, large intestine, liver, tooth, canine, incisor, molar, premolar, producer, consumer.	Environment, flowering, nonflowering, plants, animals, vertebrates, fish, amphibians, reptiles, mammals, invertebrate, human impact, nature reserves, deforestation.	
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
	Properties of Materials (mixtures and separating)	**Changes in Materials**	**Living things and their Habitats AND Animals including humans**	**Earth and space**		**Forces**
Year 5	**Challenge : create your own reversible mixture.**	**How can we change materials reversibly and irreversibly?**	**Do all life cycles follow the same pattern?**	**Why do we have a leap year?** **or** **Sun, Earth & Moon: What is moving and how do we know?**		**Challenge: Design the safest parachute possible.**
Key Concepts	• Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. • 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.	• Compare and group together everyday materials based on their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. • comparative and fair tests, for the uses of everyday materials, including wood, metals 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 this kind	• Know the life cycle of different living things, e.g. Mammal, amphibian, insect bird. • Know the process of reproduction in plants. • Know the process of reproduction in animals. • • Describe the changes as humans develop to old age.	• 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 • Describe 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 and the impact of gravity on our lives. • Identify the effects of air resistance, water resistance and friction, which act between moving surfaces. Recognise that some mechanisms, including levers, pulleys, and gears, allow a smaller force to have a greater effect.

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		of change is usually not reversible, including changes associated with burning and the action of acid on bicarbonate of soda			
Critical Knowledge	• When two or more substances are mixed and remain present the mixture can be separated. • Some changes can be reversed, and some cannot. • Materials change state by heating and cooling. **Separating technique** / **Difference in property required** Filtration and sieving — A solid that does not dissolve in a liquid. Different sized solid bits Magnets — Some materials magnetic others not Evaporation — A solid dissolved in water and the solid has a high boiling temperature Floating — Some materials float and other sink	• All matter (including gas) has mass. • Sometimes mixed substances react to make a new substance. These changes are usually irreversible. • Heating can sometimes cause materials to change permanently. When this happens, a new substance is made. These changes are not reversible. • Indicators that something new has been made are: The properties of the material are different (colour, state, texture, hardness, smell, temperature) • If it is not possible to get the material back easily it is likely that it is not there anymore and something new has been made (irreversible change)	• Different animals mature at different rates and live to different ages. • Some organisms reproduce sexually where offspring inherit information from both parents. • Some organisms reproduce asexually by making a copy of a single parent. • Environmental change can affect how well an organism is suited to its environment. • Different types of organisms have different lifecycles. • • Different animals mature at different rates and live to different ages. • Puberty is something we all go through, a process which prepares our bodies for being adults, and reproduction • Hormones control these changes, which can be physical and/or emotional.	• Stars, planets and moons have so much mass they attract other things, including each other due to a force called gravity. Gravity works over distance. • Objects with larger masses exert bigger gravitational forces. • Objects like planets, moons and stars spin. • Smaller mass objects like planets orbit large mass objects like stars. • Stars produce vast amounts of heat and light. • All other objects are lumps of rock, metal or ice and can be seen because they reflect the light of stars.	• Air resistance and water resistance are forces against motion caused by objects having to move air and water out of their way. • Friction is a force against motion caused by two surfaces rubbing against each other. Some objects require large forces to make them move; gears, pulley and levers can reduce the force needed to make things move
Vocabulary	Solid, liquid, gas, particles, state, materials, properties, matter, melt, freeze, water, ice, temperature, process, condensation, evaporation, water vapour, energy,	Hardness, Solubility, Transparency, Conductivity, Magnetic, Filter, Evaporation, Dissolving, Mixing Material, conductor, dissolve, insoluble, suspension, chemical, physical,	Reproduction, Sexual, Asexual, Pollination, Dispersal, reproduction, cell, fertilisation, pollination, male, female, pregnancy, young, mammal, metamorphosis, amphibian, insect,	Earth, Sun, Moon, Axis, Rotation, Day, Night, Phases of the Moon, star, constellation, waxing, waning, crescent, gibbous. Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, planets, solar system, day, night, rotate, orbit, axis, spherical, geocentric, heliocentric.	Air resistance, Water resistance, Friction, Gravity, Newton, Gears, Pulleys, force, push, pull, opposing, streamline, brake, mechanism, lever, cog, machine, pulley.

	precipitation, collection,	irreversible, solution, reversable, separate, mixture, insulator, transparent, flexible, permeable, soluble, property, magnetic, hard.	egg, embryo, bird, plant . Foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty, Hormone, Physical, Emotional,			
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
	Living things and their Habitats	**Evolution and Inheritance**	**Light**		**Electricity**	**Animals including Humans**
Year 6	**How do we classify different groups of animals?**	**Choose an animal: How has it adapted over time? Use evidence to explain.**	**Design a light experiment to show that light travels in straight lines.**		**Does it matter how many components there are in my circuit?**	**Why do I need to look after my heart?**
Key Concepts	• **Classify living things into broad groups according to observable characteristics and based on similarities and differences.** • **Give reasons for classifying plants and animals based on specific characteristics.**	• **Know about evolution and can explain what it is.** • **Know how fossils can be used to find out about the past.** • **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 living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of**	• **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.** • **Know how simple optical instruments work, e.g. periscope, telescope, binoculars, mirror, magnifying glass etc.**		• 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.	• **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.**

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		years ago			
Critical Knowledge	• Variation exists within a population (and between offspring of some plants) – *NB: this Key Idea is duplicated in Year 6 Evolution and Inheritance.* • Organisms best suited to their environment are more likely to survive long enough to reproduce. • Organisms are best adapted to reproduce are more likely to do so. • Organisms reproduce and offspring have similar characteristic patterns. • Competition exists for resources and mates.	• Life cycles have evolved to help organisms survive to adulthood. • Over time the characteristics that are most suited to the environment become increasingly common. *NB: The following could be duplicated in Year 6 Living things and their habitats*. • Organisms best suited to their environment are more likely to survive long enough to reproduce. Organisms are best adapted to reproduce are more likely to do so. • Organisms reproduce and offspring have similar characteristic patterns. • Variation exists within a population (and between offspring of some plants) • Competition exists for resources and mates	• Animals see light sources when light travels from the source into their eyes. • Animals see objects when light is reflected off that object and enters their eyes. • Light reflects off all objects (unless they are black). Non shiny surfaces scatter the light, so we do not see the beam. • Light travels in straight lines.	• Batteries are a store of energy. This energy pushes electricity round the circuit. When the battery's energy is gone it stops pushing. Voltage measures the 'push.' • The greater the current flowing through a device the harder it works. • Current is how much electricity is flowing round a circuit. • When current flows through wires heat is released. The greater the current, the more heat is released.	• The heart pumps blood around the body. • Oxygen is breathed into the lungs where it is absorbed by the blood. Muscles need oxygen to release energy from food to do work. (Oxygen is taken into the blood in the lungs; the heart pumps the blood through blood vessels to the muscles; the muscles take oxygen and nutrients from the blood.)
Vocabulary	Variation Organisms Populations. Classification Characteristics Environment, flowering, nonflowering, plants, animals, vertebrates, fish, amphibians, reptiles, mammals, invertebrate,	Fossils, Adaptation, Evolution, Characteristics, Reproduction, Genetics, Variation, Inherited, Environmental, Mutation, Competition, Survival of the Fittest, Evidence,	Light source, dark, reflect, ray, mirror, bounce, visible, beam, sun, glare, travel, straight, opaque, shadow, block, transparent, translucent. Reflect Absorb Emitted Scattered Refraction	Electricity, neutrons, protons, electrons, nucleus, atom, electric current, appliances, mains, crocodile clips, wires, bulb, battery cell, battery holder, motor, buzzer, switch, conductor, electrical insulator,	Oxygenated, Deoxygenated, Valve, Exercise, Respiration Circulatory system, heart, lungs, blood vessels, blood, artery, vein, pulmonary, alveoli, capillary, digestive, transport, gas exchange, villi, nutrients,

	human impact, nature reserves, deforestation. Classify, compare, bacteria, microorganism, organism, invertebrates, vertebrates, Linnaean.			conductor.	water, oxygen, alcohol, drugs, tobacco.