St James CE Primary School curriculum overview - Science

Year		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
1	Skills	I can identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. I can identify and describe the basic structure of a variety of common flowering plants, including trees	I can observe changes across the four seasons. I can observe and describe weather associated with the seasons and how day length varies.	I can ask simple questions and recognising that they can be answered in different Ways. I can observe closely, using simple equipment.	I can identify and name avariety of common animals including fish, amphibians, reptiles, birds and mammals identify and name a variety of common animals that are carnivores, herbivores and omnivores. I can describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) I can identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	I can ask simple questions and recognising that they can be answered in different Ways. I can observe closely, using simple equipment.	I can distinguish between an object and the material from which it is made. I can identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. I can describe the simple physical properties of a variety of everyday materials. I can compare and group together a variety of everyday materials on the basis of their simple physical properties.
	Knowledge	Animals, like plants, need food, water, and space to live and grow. • Plants make their own food, but animals get food from eating plants	The four seasons Characteristic local weather patterns during the different seasons. The sun: source of light and warmth. Daily weather changes. Temperature: thermometers	How to conduct a fair test. What are variables Which method is the best for a chosen experiment and why.	The five senses and associated body parts: Sight: eyes Hearing: ears Smell: nose Taste: tongue Touch: skin. Taking care of your body: exercise, cleanliness, healthy foods, rest	How to conduct a fair test. What are variables Which method is the best for a chosen experiment and why.	Classifying materials with different properties. What characteristics make each material unique?

		or other living things. • Offspring are very much (but not exactly) like their parents. • Most animal babies need to be fed and cared for by their parents; human babies are especially in need of care when young. • Pets have special needs and must be cared for by their owners. • Jane Goodall (studied Chimpanzees)	are used to measure temperature. Clouds Rainfall: how the condition of the ground varies with rainfall; rainbows. Thunderstorms: lightning and thunder, hail, safety during thunderstorms • Snow and snowflakes, blizzard. Wilburn and Orville Wright (made first aeroplane)				
2	Skills	I can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. I can find out how the shapes of solid objects	I can identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. I can identify and describe the basic structure of a variety of common flowering plants, including trees. I can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. I can identify and name a variety of common animals	I can ask simple questions and recognising that they can be answered in different Ways. I can observe closely, using simple equipment. I can perform simple tests. I can identify and classify using my observations and ideas to suggest answers to Questions. I can gather and record data to help in	I can notice that animals, including humans, have offspring which grow into adults. Can I find out about and describe the basic needs of animals, including humans, for survival (water, food and air) I can describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	I can observe and describe how seeds and bulbs grow into mature plants. I can find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	I can ask simple questions and recognising that they can be answered in different Ways. I can observe closely, using simple equipment. I can perform simple tests. I can identify and classify using my observations and ideas to suggest answers to Questions. I can gather and

		made from some materials can be changed by squashing, bending, twisting and stretching	that are carnivores, herbivores and omnivores. I can describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) I can identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	answering questions.			record data to help in answering questions.
	Knowledge	Basic concept of atoms. Names and common examples of three states of matter: Solid (for example, wood, rocks) Liquid (for example, water) o Gas (for example, steam) . Water as an example of changing states of matter of a single substance.	Herbivores: plant-eaters (for example, elephants, cows, deer) Carnivores: flesh-eaters (for example, lions, tigers) Omnivores: plant and animal eaters (for example, bears) Extinct animals (for example: dinosaurs	How to conduct a fair test. What are variables Which method is the best for a chosen experiment and why.	Skeletal system: skeleton, bones, skull. Muscular system: muscles. Digestive system: mouth, stomach. Circulatory system: heart and blood	How to conduct a fair test. What are variables Which method is the best for a chosen experiment and why.	The life cycle: birth, growth, reproduction, death Reproduction in plants and animals. From seed to seed with a plant. From egg to egg with a chicken From frog to frog. From butterfly to butterfly: metamorphosis
3	Skills	I can identify and describe the functions of different parts of flowering plants:	I can recognise that I need light in order to see things and that dark is the absence of Light. I can notice that light is	Can I compare and group together different kinds of rocks on the basis of their appearance and simple physical	Can I compare how things move on different surfaces? Can I notice that some forces need contact between two objects,	Can I identify that animals, including humans, need the right types and amount of nutrition, and that	Can I ask relevant questions and using different types of scientific enquiries to answer them? Can I set up simple

		roots, stem/trunk, leaves and flowers. I can explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. I can investigate the way in which water is transported within plants. I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	reflected from surfaces. I can recognise that light from the sun can be dangerous and that there are ways to protect my eyes. I can recognise that shadows are formed when the light from a light source is blocked by a solid object. I can find patterns in the way that the size of shadows changes.	properties? Can I describe in simple terms how fossils are formed when things that have lived are trapped within rock? Can I recognise that soils are made from rocks and organic matter?	but magnetic forces can act at a distance? Can I observe how magnets attract or repel each other and attract some materials and not others? Can I compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials? Can I describe magnets as having two poles? Can I predict whether two magnets will attract or repel each other, depending on which poles are facing?	they cannot make their own food; they get nutrition from what they eat? Can I identify that humans and some other animals have skeletons and muscles for support, protection and movement?	practical enquiries, comparative and fair tests? Can I make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers? Can I gather, record, classify and present data in a variety of ways to help in answering questions
	Knowledge	The life cycle: birth, growth, reproduction, death. Reproduction in plants and animals o	The speed of light: light travels at an amazingly high speed. Light travels in straight lines (as can be demonstrated by forming	Crust, mantle, core (outer core and inner core) Movement of tectonic plates Earthquakes o Faults,	Magnetism demonstrates that there are forces we cannot see that act upon objects. Most magnets contain iron Lodestones:	**THE MUSCULAR SYSTEM** Muscles o Involuntary and voluntary muscles B. **THE SKELETAL**	

		From seed to seed with a plant	shadows). Transparent and opaque objects Reflection o Mirrors: plane, concave, convex o Use of mirrors in telescopes and some microscopes	San Andreas fault Measuring intensity: seismograph and Richter scale. Tsunamis Volcanoes o Magma o Lava and lava flow Active, dormant and extinct o Famous volcanoes: Vesuvius, Krakatoa, Mount St. Helens	naturally occurring magnets Magnetic poles: north-seeking and south-seeking poles Magnetic field (strongest at the poles) Law of magnetic attraction: unlike poles attract, like poles repel. The Earth behaves as if it were a huge magnet: north and south magnetic poles (near, but not the same as, geographic North Pole and South Pole). Orienteering: use of a magnetised needle in a compass, which will always point to the north	**SYSTEM** Skeleton, bones, marrow Musculo-skeletal connection o Ligaments o Tendons, Achilles tendon	
4	Skills	I can recognise that living things can be grouped in a variety of ways. I can explore and use classification keys to help group, identify and name a variety of living things in my local and wider environment. I can recognise that environments can change and that this can sometimes pose dangers to living	I can describe the simple functions of the basic parts of the digestive system in humans. I can identify the different types of teeth in humans and their simple functions. I can construct and interpret a variety of food chains, identifying producers, predators and prey	I can identify common appliances that run on electricity. I can construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. I can identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a	I can compare and group materials together, according to whether they are solids, liquids or gases. I can observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) I can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	I can identify how sounds are made, associating some of them with something vibrating. I can recognise that vibrations from sounds travel through a medium to the ear. I can find patterns between the pitch of a sound and features of the object that produced it. I can find patterns between the volume of a sound and the	I can describe the simple functions of the basic parts of the digestive system in humans. I can identify the different types of teeth in humans and their simple functions. I can construct and interpret a variety of food chains, identifying producers, predators and prey

		things		complete loop with a battery. I can recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. I can recognise some common conductors and insulators, and associate metals with being good conductors.		strength of the vibrations that produced it. I can recognise that sounds get fainter as the distance from the sound source increases.	
	Knowledge	Recognise that living things can be grouped in a variety of ways . Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Recognise that environments can change and that this can sometimes pose dangers to living things	Describe the simple functions of the basic parts of the digestive system in humans - identify the different types of teeth in humans and their simple functions - construct and interpret a variety of food chains, identifying producers, predators and Prey.	Identify common appliances that run on electricity -construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers -identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery - recognise that a switch opens and closes	Compare and group materials together, according to whether they are solids, liquids or gases. observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	Identify how sounds are made, associating some of them with something vibrating - recognise that vibrations from sounds travel through a medium to the ear -find patterns between the pitch of a sound and features of the object that produced it - find patterns between the volume of a sound and the strength of the vibrations that produced it	Identify common appliances that run on electricity - construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers -identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery - recognise that a switch opens and closes a circuit

				a circuit and associate this with whether or not a lamp lights in a simple series circuit -recognise some common conductors and insulators, and associate metals with being good conductors		- recognise that sounds get fainter as the distance from the sound source increases	and associate this with whether or not a lamp lights in a simple series circuit - recognise some common conductors and insulators, and associate metals with being good conductors
5	Skills	I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. I can describe the life process of reproduction in some plants and animals.	I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. I can identify the effects of air resistance, water resistance and friction that act between moving surfaces. I can recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect	I can describe the changes as humans develop to old age.	I can compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. I can know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. I can use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering sieving and evaporating. I can give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals,wood and plastic. I can demonstrate that	I can describe the movement of the Earth, and other planets, relative to the Sun in the solar system. I can describe the movement of the Moon relative to the Earth. I can describe the Sun, Earth and Moon as approximately spherical bodies. I can use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	I can identify how sounds are made, associating some of them with something vibrating. I can recognise that vibrations from sounds travel through a medium to the ear. I can find patterns between the pitch of a sound and features of the object that produced it. I can find patterns between the volume of a sound and the strength of the vibrations that produced it. I can recognise that sounds get fainter as the distance from the sound source increases.

					dissolving, mixing and changes of state are reversible changes. I can explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning.		
	Knowledge	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird - describe the life process of reproduction in some plants and animals	Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object - identify the effects of air resistance, water resistance and friction, that act between moving surfaces - recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect	Describe the changes as humans develop to old age	compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution -use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating - give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and	Describe the movement of the Earth, and other planets, relative to the Sun in the solar system -describe the movement of the Moon relative to the Earth -describe the Sun, Earth and Moon as approximately spherical bodies - use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky	Identify how sounds are made, associating some of them with something vibrating - recognise that vibrations from sounds travel through a medium to the ear -find patterns between the pitch of a sound and features of the object that produced it - find patterns between the volume of a sound and the strength of the vibrations that produced it - recognise that sounds get fainter as the distance from the sound source increase

					plastic - demonstrate that dissolving, mixing and changes of state are reversible changes -explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda		
6	Skills	I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. I can identify the effects of air resistance, water resistance and friction that act between moving surfaces. I can recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect	I can explain that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. I can recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to my parents. I can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution	I can identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. I can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. I can describe the ways in which nutrients and water are transported within animals, including humans.	I can recognise that light appears to travel in straight lines. I can 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. I can explain that we see things because light travels from light sources to our eyes or from light	I can associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. I can compare and give reasons for variations in how components function, including the brightness of bulbs, the oudness of buzzers and the on/off position of switches. I can use recognised symbols	
	Knowledge		Recognise that living things	Identify and name the	Recognise that light appears	Associate the	

			have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago - recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents - identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution	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	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	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	