

SCIENCE Route Map 2022 -23

	EYFS	Year 1 and 2 Cycle A (2022-23)	Year 1 and 2 Cycle B	Year 3 and 4 Cycle B	Year 3 and 4 Cycle A (2022-23)	Year 5	Year 6
	AUTUMN 1						
	Developing working scientifically skills and unedifying enquiry types						
Key learning	Identify animals that live on the farm. Explain farmland and how it is used.	Skittles investigation Ask questions Observe closely over time – spy magnus Use stop watches to record time Use rulers to record colour spread Record data in a key			Static Electricity investigation	Rockets investigation	Rubber band cannons investigation
Working Scientifically Skills	Ask questions Observe closely	Skittles investigation –			Begin to show independence with selecting an investigation question, planning and setting up a fair test, recording data, choosing how to present findings. Investigation is scaffolded to offer children choices.	Begin to show independence with selecting an investigation question, planning and setting up a fair test, recording data, choosing how to present findings. Investigation is scaffolded to offer children choices.	Begin to show independence with selecting an investigation question, planning and setting up a fair test, recording data, choosing how to present findings. Investigation is scaffolded to offer children choices.
	Autumn 2						
		Seasonal change	Living things and their habitats	Rocks	Electricity	Properties and changes of materials	Evolution and inheritance
Key learning	Find out about crops and timings for planting. Understand seasons and planting.	4 seasons, weather, length of day (repeated each term with seasonal observations) And Plants – deciduous and evergreen, structure of a plant	Compare the differences between things that are living, dead, and things that have never been alive. Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. Identify and name a variety of plants and animals in their habitats,	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. Describe in simple terms how fossils are formed when things that have lived are trapped within rock. Recognise that soils are made from rocks and organic matter.	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	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	Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. Identify how animals and plants are adapted to suit their environment in different

			including micro-habitats. Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food		and associate this with whether or not a lamp lights in a simple series circuit.	solution. Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. Demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda	ways and that adaptation may lead to evolution.
Working Scientifically skills	Use books to find out – secondary research	Spy Magnus / Observing over time – rainfall over time Recording: comparing using standard and non-standard units to measure rainfall. Present findings: create a bar chart to present rainfall statistics. Captain Classify – group leaves and explore different criteria for classifying Present findings: Leaf rubbings to represent different classification groups Spy Magnus	Use secondary sources (Billy Bookhead): Read about food chains. Record: Present findings: Food chain diagram Classify (Captain Classify): classify animals in local environment. Record: Present findings: Observe (Spy Magnus) Draw and label diagrams of animals and plants	Classify and observe: different types of rocks Present findings: Detailed labelled diagrams using scientific vocabulary Use secondary sources: Research how fossils are formed. Recording: Present findings: Mary Anning diary recount of discoveries. Comparative test: How hard are different types of rocks? Record: Present findings:	Investigate a range of materials to identify conductors and insulators. Fair test Use a table to record data Present findings in a poster warning of materials to avoid during an electrical storm, or independent choice.	Investigate indicators for irreversible changes: Observations and pattern seeking Record: Present: written observations Investigate rates of dissolving: Fair test Record: Present findings: Investigate reversible changes: Secondary research: Scientist who've created new materials	Use models to demonstrate evolution (Finches) Present findings: letter to Darwin Secondary research: Compare Darwin and Alfred Wallace's theories. Present findings: How are different fossils formed? Enquiry type: observe Record: Present: poster advertising Mary Anning's findings (types of fossil)

		Record use weather symbols on a chart to record daily weather. Present: create a pictogram to record weekly weather Compare chart made in September to chart in December.				(Spencer Silver, Ruth Benerito) Choose a material for a particular purpose	
Key vocabulary		Different weather Seasons Day length, sunrise, sunset	Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, pond, woodland, under logs, in bushes etc	Rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb water, soil, fossil, marble, chalk, granite, sandstone, slate, soil, peat, sandy/chalk/clay soil	Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol	Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material	Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils
Key scientist			Charles Darwin	Mary Anning		Spencer Silver and Ruth Benerito	Charles Darwin and Alfred Wallace
Experience				Visit from Roy Shepherd/ Littlehampton museum fossil collection			Roy Shepherd and Littlehampton museum fossil collection
	SPRING 1						
		Every day materials	Uses of everyday materials	Light	States of Matter	Earth and space	Electricity
Key learning	Know the seasons are when autumn changes to winter. Know what happens in 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 simple physical properties of a variety of everyday materials. Compare and group together a variety of everyday materials on the basis of their simple physical properties.	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	We see objects because our eyes can sense light. Dark is the absence of light. Some objects, for example, the sun, light bulbs and candles are sources of light. Objects are easier to see if there is more light. Some surfaces reflect light. Objects are easier to see when there is less light if they are reflective. The light from the sun can damage our eyes and therefore we should not look directly at the sun and can protect our eyes by wearing sunglasses or sunhats in bright light. Shadows are	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.	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.	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.

				formed on a surface when an opaque or translucent object is between a light source and the surface and blocks some of the light. The size of the shadow depends on the position of the source, object and surface.			
Working Scientifically skills	Observe signs of winter around us and is plants. Explain what plants need to grow.	Captain Classify – group different materials according to properties using hula hoops. Child-led – children to select their own classification criteria Magnus Spy – which materials hold a new shape. Children make predictions. Recording: table comparing predictions to what children found out. Present findings: Poster advertising the best material for holding its shape	Captain Classify Group materials according to properties Select most suitable material Supergirl: Test absorbency of different materials. Supergirl: Test the flexibility of different materials	Pattern seeking Explore shiny/ mat surfaces in different levels of light. Explore shadows, length of shadows, direct and non-direct light source	How does an ice cube melt fastest? Fair testing conditions for melting an ice cube the fastest Recording: reading time, table Present findings: Use a thermometer to measure temperature of water – icy, room, warm (boiling demonstrated). Investigate the melting and freezing point of different materials (shampoo, ketchup, margarine, chocolate)	Use secondary sources to understand the movement of earth, moon and planets. Measure shadows cast by movement of the sun. Time zones.	Make circuits to solve particular problems, such as a quiet and a loud burglar alarm. Carry out fair tests exploring changes in circuits. Make circuits that can be controlled as part of a DT project
Key vocabulary		Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through	Wood, metal, plastic, glass, brick, rock, paper, cardboard. Opaque, transparent and translucent, reflective, non-reflective, flexible, rigid. Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching	Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous	Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle	Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, solar system, rotates, star, orbit, planets	Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage
Key scientist	Archimedes	Leo Baekeland		Ibn-Al-Haytham		Katherine Johnson, Galileo	Thomas Edison
Experience						Chichester planetarium	
SPRING 2							
				Forces	Sound	Forces	Light
Key Learning	Understand that animals and			Compare how things move on different surfaces.	Identify how sounds are made, associating some of	Explain that unsupported objects	Recognise that light appears to travel in

	humans have bones and what these do in our bodies. Understand how bones are made. Discuss extinct and endangered.			Notice that some forces need contact between two objects, but magnetic forces can act at a distance. Observe how magnets attract or repel each other and attract some materials and not others. Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet and identify some magnetic materials. Describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing	them with something vibrating. Recognise that vibrations from sounds travel through a medium to the ear. Find patterns between the pitch of a sound and features of the object that produced it. Find patterns between the volume of a sound and the strength of the vibrations that produced it. Recognise that sounds get fainter as the distance from the sound source increases	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.	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.
Working Scientifically Skills	Compare environment now and in dinosaur times. Group dinosaurs into categories			Investigate how different objects move on surfaces Which objects are attracted to magnets. Classify objects How strong are magnets – can they work through surfaces and water	String telephones/ gongs See sound vibrations in water and effect of altering pitch Sounds over distance, measure using data logger	Investigate friction, water and air resistance, gravity. Use secondary sources to investigate key scientists. Explore levers, pulleys and mechanisms	Explore how light travels in a straight line How light behaves - Shadow puppets, periscopes
Key vocabulary				Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole	Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation	Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears	As year 3 Light, plus straight lines, light rays
Key scientist				Isaac Newton	Alexander Graham Bell		
SUMMER 1							
		Animals inc. humans	Animals inc. humans	Animals inc. humans	Living things and their habitats	Living things and their habitats	Animals inc. humans
Key Learning	Know which materials float and sink.	Animals inc humans – types of animal, basic	Notice that animals, including humans, have offspring which grow into	Identify that animals, including humans, need the right types and	Describe the simple functions of the basic parts of the digestive	Describe the life process of	Identify and name the main parts of the human circulatory system, and

		structure, omnivore/ carnivore/ herbivore Identify and name a variety of common animals – reptiles, fish, amphibians, mammals and birds. Compare and describe the structure of different common animals. Identify and draw basic parts of the human body associated with senses.	adults. Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	amount of nutrition, and that they cannot make their own food – they get nutrition from what they eat. Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	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	reproduction in some plants.	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
Working Scientifically Skills	Compare the difference between solids and liquids	Spy Magnus: Make close observation of facial features. Draw face while looking in mirror and identify which features use senses. Spy Magnus Senses Walk – children record senses experiences from walking outside Recording: on a simple table Comparative test (Supergirl) Children compare height and length of feet – does a taller person have bigger feet? Captain Classify Group animals according to what they eat Record: labelled diagrams Present: make flip books		Classify food according to food groups. Explore food labels to identify nutrients Use secondary sources for learning about functions of different skeletons. Pattern seeing investigation – do people with longer legs run faster? Do people with bigger hands catch balls better?	Explore the human digestive system – bread and orange juice. Classify teeth according to different types of food and link to type of animal (not in 2022). Secondary research - Identify parts of food chain within a habitat.	Labelled diagram Observations of growing spider plantlets over time	Carry out a range of pulse rate investigations: fair test – effect of different activities on my pulse rate pattern seeking – exploring which groups of people may have higher or lower resting pulse rates observation over time - how long does it take my pulse rate to return to my resting pulse rate (recovery rate) pattern seeking – exploring recovery rate for different groups of people. Use secondary sources: Research the negative effects of drugs (e.g. tobacco) and the benefits of a healthy diet and regular exercise.
Key vocab		Common animals Body Parts Senses Omnivore, carnivore, herbivore		Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine	Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain	Asexual, plantlets, runners, bulbs, cuttings	Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle
Key scientist							

Experience		Animal experience	Animal experience		Visit from dentist	Butterflies and chicks	Visit from sports coach
SUMMER 2							
		Plants	Plants	Plants	Animals inc humans	Animals inc. humans (inc. Living things)	Living things and their habitats
Key Learning	Link animals to habitats. Identify different materials and know which materials are recyclable Identify all the seasons and the differences between them	Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of a variety of common flowering plants, including trees	Observe and describe how seeds and bulbs grow into mature plants. Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	Identify and describe the functions of different parts of flowering plants: roots; stem/trunk; leaves; and flowers. Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. Investigate the way in which water is transported within plants. Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	Recognise that living things can be grouped in a variety of ways. Explore different classification keys. Identify and classify living things in the local environment. Recognise that environments can change and that this can pose a threat to living things.	Describe the changes as humans develop to old age. Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics.
Working Scientifically Skills	Compare and contrast different habitats. Compare different types of land. Compare different seasons.	Spy Magnus Closely observe basic structure of a plant Recording: labelled diagram Spy Magnus Children plant wild flowers in tyre to observe common flowers growing Record and present: take photos and describe the changes over the weeks	Secondary sources to research when and how to grow plants Observe and measure growth	Observe effect of celery in coloured water. Observe effect of different conditions on growing plants. Classify seeds according to dispersal	Classify animals based on their features. Fieldwork to explore human impact on natural environment Use secondary sources to investigate human impact on the environment(positive and negative). Present: formal letter to prime minister	Use secondary resources – life cycles – mammal and amphibians Pattern seeing – size of animal and gestation/ life span First hand observation of life cycles – butterflies and chicks	Use secondary sources to find out about Carl Linnaeus classification Use Venn diagrams and Carroll diagrams to classify species. First hand observations of characteristics
Key vocabulary		Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud. Names of trees, garden and wild flowering plants in the local area	light, shade, sun, warm, cool, water, grow, healthy	Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal)	Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate	Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis,	Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering, non-flowering
Key scientist					David Attenborough	Jane Goodall	Carl Linnaeus