The Federation of the Church Schools of Shalfleet and Yarmouth

Foundation Plans, Progression and Coverage

SCIENCE	Links to EYFS	Key Stage 1		Lower Key Stage 2		Upper Key Stage 2	
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Knowledge	Plants BIOLOGY - Can plant seeds and care for growing plants. - Understand the basic features of a simple plant lifecycle. - Can name basic parts of a plant e.g. leaf, petal. **Animals including humans BIOLOGY** - Children can explore the natural world around them. - They can describe what they see, feel and hear when outside. - They can recognise environments which are different to the one they live in. - They can talk about simple similarities and differences between living things. - They can make simple observations about animals and explain why some things occur.	**Plants BIOLOGY** - Can name trees and other plants they see regularly. - Can describe key features of the trees and plants e.g. shapes of leaves/colour of the flower/blossom. - Can point out trees which lost their leaves and those who keep them all year (deciduous and evergreen). - Can point to and name parts of a plant. - Can use simple charts to sort. - Can use photos to talk about how plants change **Animals including humans BIOLOGY** - Can name a range of animals which includes animals from each of the vertebrate groups. - Can describe the key features of named animals. - Can label key features on a picture/diagram. - Can write descriptively about an animal. (write a 'What am I' riddle). - Can describe what a range of animals eat. - Can compare and classify animals. **Everyday Materials CHEMISTRY** - Can label a picture/diagram of an object made from different materials. - Can describe the properties of materials.	**Living Things and their Habitats BIOLOGY** - Find a range of items which are dead, living. - Can name plants/animals which live in different habitats and micro habitat. - Can talk about the features of the animal/plant and how they are suited to the habitat. - Can talk about what the animal eats and construct a food chain. **Plants BIOLOGY** - Can describe how plants; grown from seeds and bulbs have developed over time. - Can identify plants that grew well in different conditions. - Can spot similarities and differences between bulbs and seeds. - Can nurture seeds and bulbs into mature plants identifying the different requirements of different plants. **Animals, including humans BIOLOGY** - Can sequence the stages of a baby. Observe these changes. - Can describe how animals change as they get older. - Develops understanding of how insects change (more	**Plants BIOLOGY** - Can explain the function of the parts of a flowering plant. - Can describe the life cycle of flowering plants, including pollination, seed formation, seed dispersal and germination. - Can give different methods of pollination and seed dispersal, including examples. - Can explain observations made during investigations. - Can look at features of seeds to decide on method of dispersal. - Can draw and label a diagram of their created flowering plant to show its parts and their role and method of pollination and seed dispersal. - **Animals, including humans BIOLOGY** - Can name the nutrients found in food and state that to be healthy we need to eat the right types of food with the correct amount of these nutrients. - Name some bones that make up the skeleton giving examples that support, help them move or provide protection. - Can describe how muscles and joints help them to move.	**Living Things and their Habitats BIOLOGY** - Can name living things in a range of habitats, giving key features that helped identify them. - Can give examples of how an environment may change both naturally and due to human impact. - Can use classification keys to identify unknown plants and animals. **Animals, including humans BIOLOGY** - Can sequence the main parts of the digestive system and draw the main parts of the digestive system onto a human outline. – - Can describe what happens in each part of the digestive system. - Can point to three different types of teeth in their mouth and talk about what each is used for. - Demonstrate journey of food through body. - Make a dental record. - Can explain teeth in animals and if they are carnivores, herbivores or omnivores.	**Living Things and their Habitats BIOLOGY** - Can describe the lifecycles of mammals, amphibians and insects using diagrams and describe similarities and differences between them - Can dissect and label parts of flowering plant including male and female structures. - Record findings as an annotated illustration of a flowering plant. - Research and explain the life cycle and reproduction of a plant using scientific language. **Animals, including humans BIOLOGY** - Can explain the changes that takes place in boys and girls during puberty. - Can explain how a baby changes physically as it grows and also what it is able to do. **Everyday Materials CHEMISTRY** - Can explain what dissolving is, giving examples.	**Living Things and their Habitats BIOLOGY** - Can give examples of animals in the five vertebrate groups and some of the invertebrate groups incl key characteristics. - Can give examples of flowering and non-flowering plants. - Can use classification keys to identify unknown plants and animals. – - Can create classification keys. - Can give a number of characteristics that explain why an animal belongs to a particular group. **Evolution and inheritance BIOLOGY** - Can explain the process of evolution. - Can give examples of how plants and animals are suited to their environment. - Can give examples of how an animal or plant has evolved over time e.g. penguin, peppered moth. - Give examples of things that lived millions of years ago and the fossil evidence to support this. **Animals, including humans BIOLOGY** - Can draw a diagram of the circulatory system, label

	- They can explore basic lifecycles of animals. **Living Things and their Habitats** - Be able to explore the natural world and make observations. - Recognise animal habitats. - Understand how to look after animals and the environment including habitats. - Begin to explore where they live and compare to other places in the world e.g. weather, climate. **Everyday Materials** **CHEMISTRY** - They can talk about simple similarities and differences between two materials and how materials change in terms of shape, size and texture. - They can describe materials using basic scientific words. - They can explore how things work. - They can group and classify materials using their properties **Seasonal Changes** **PHYSICS** - Can describe the weather outside and suggest what they might wear	- Can sort materials using their properties. - Can test evidence to answer a question. **Seasonal Changes** **PHYSICS** - Can name four seasons and identify when in the year they occur. - Can observe and describe weather in different seasons. - Can describe days being longer in summer and shorter in winter. - Present data in tables charts and compare seasons.	than a butterfly) through lifecycle diagrams. - Can explain what humans and other animals need to survive- (e.g. planning a trip to the moon or desert Island). - Can describe how to keep clean and healthy. - Has a good understanding of the food plate and understands 'a healthy balanced diet' - Understands the effect of exercise on the body **Everyday Materials** **CHEMISTRY** - Can name an object, say what material it is made from, identify properties and make a link between property and use. - Whilst changing a shape of an object can describe the actions used. - Can use suitable vocabulary, simple tests relevant to properties, to describe similarities and differences.	- Classify food groups (high/low nutrients), answer q's about nutrients in food, use data to look for patterns. - Give similarities and differences between skeletons. **Rocks** **CHEMISTRY** - Can name some types of rock and give physical features of each. - Can explain how a fossil is formed. - Can explain that soils are made from rocks and also contain living/dead matter. - Classify rocks in a range of ways using scientific vocabulary. - Test properties of rocks. - Show understanding of how fossils were formed, can identify plant/animal matter in soil, test water retention of soils. **Light** - To be able to recognise that they need light in order to see things and that dark is the absence of light - To be able to notice that light is reflected from surfaces - To be able to recognise that light from the sun can be dangerous and that there are ways to protect their eyes - To be able to recognise that shadows are formed when the light from a light source is blocked by a solid object - To be able to find patterns in the way that the size of shadows change. **Forces**	**States of matter** **CHEMISTRY** - Can name properties of solids, liquids and gases. - Can give everyday examples of melting and freezing. - Can give everyday examples of evaporation and condensation. - Can describe the water cycle. - Can measure temperatures using a thermometer. **Sound** - To be able to identify how sounds are made, associating some of them with something vibrating - To be able to recognise that vibrations from sounds travel through a medium to the ear - To be able to find patterns between the pitch of a sound and features of the object that produced it - To be able to find patterns between the volume of a sound and the strength of the vibrations that produced it - To be able to recognise that sounds get fainter as the distance from the sound source increases. **Electricity** - Can name the components in a circuit. - Can make an electric circuit. - Can control a circuit using a switch. - Can name some metals that are conductors. - Can name materials that are insulators.	- Can name equipment used for filtering and sieving. - Can use knowledge of liquids, gases and solids to suggest how materials can be recovered from solutions or mixtures by evaporation, filtering or sieving. - Can describe simple reversible and non-reversible changes to materials, giving examples. - Can create chart/table grouping materials using properties. **Earth and Space** **PHYSICS** - Can show using diagrams the movement of the Earth and moon. - Can explain the rotation of the Earth and how this causes night and day. - Can explain evidence gathered about the position of shadows in terms of movement of the Earth. - Can name a range of objects found within our solar system **Forces** **PHYSICS** - Can demonstrate the effect of gravity acting on an unsupported object. - Can give examples of friction, water resistance and air resistance. - Can give examples of when it is beneficial to have	the parts and annotate it to show what the parts do. - Can explain the positive and negative effects on diet, exercise, drugs and lifestyle on the body. **Light** **PHYSICS** - Can describe with diagrams how light travels in straight lines, either from sources or reflected from other objects into our eyes. - Can describe with diagrams how light travels in straight lines past translucent or opaque objects to form a shadow of the same shape. **Forces** **PHYSICS** - Linked to Electricity - children will begin to understand that the battery provides the push force around a circuit **Electricity** **PHYSICS** - Explain how a circuit operates to achieve particular operations, such as control the light for a torch with different brightnesses or make a motor go faster or slower - Make circuits to solve particular problems such as a quiet and a loud burglar alarm - Carry out fair tests exploring changes in circuits

	and what they might see. - Can comment on the environment e.g. the leaves have fallen off the tree, there is a puddle. - Can understand the effect of changing seasons on the natural world around them. **Forces** **PHYSICS** - Play with a range of toys of varying sizes made of different materials and fit them together in different ways such as twisting, pushing, slotting or magnetism. - Can manipulate playdough in different ways. - **Electricity** **PHYSICS** - Play with a range of electrical toys, they may also be able to name and identify electrical appliances around the classroom			**PHYSICS** - Give examples of forces in everyday life. - Give examples of objects moving differently on different surfaces. - Name a range of magnets and show how the poles attract and repel. - Can draw diagrams using arrows to show the attraction and repulsion between the poles of magnets. - Can use results to describe how objects move on different surfaces. - Can use results to make predictions. - Can use some classification to know some metals are not magnetic. - Use test data to rank magnets.		high or low friction, water resistance, and air resistance. - Can demonstrate how pulleys, levers and gears work.	
Skills (Investigations) - To run as a thread throughout all scientific work.	- Enquiry skills. - Questioning skills – asking and responding to questions posed. - Exploration and observational skills – using first hand experience and secondary sources to explore	- 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 questions.		- 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		- 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	

	and gather information to answer to question.			- 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.		- 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.	
Vocabulary	**Plants:** plant, leaf, stem, flower, grow, rain, sun, water, soil, seed **Animals including humans**: animal, fish, head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, heart **Living Things and their Habitats:** habitat, alive, dead, moving, still, inside, outside, place, live, grass, sea, wood, house, school, meadow. **Forces**: Push, pull, twist, stretch, turn, open, lift, squeeze, pinch, flick, tap **Everyday Materials:** Wet, dry, shiny, dull, bendy, stiff, squashy, lumpy, hard, soft,	Working scientifically – question, answer, observe, observing, equipment, identify, classify, sort, diagram, chart, map, data, compare, contrast, describe, biology, chemistry, physics, group, record. **Plants** blossom, petal, fruit, berry, root, trunk, branch, stem, bark, stalk, bud. Names of trees in local area, garden and wild flowering plants. **Animals including humans**: reptile, amphibian, mammal, omnivore, carnivore, herbivore, all senses **Everyday materials**: Object, material, wood, plastic, stone, rock glass, metal, water, rock, brick, paper, fabric, foil, elastic, card, cardboard, rubber, wool, clay, stretchy, floppy, waterproof, absorbent, breaks/tears, see through, not see through. **Seasonal changes:** Weather, seasons (winter, summer, spring, autumn) sunrise, sunset, Day length	Working scientifically – as Year 1. **Plants** water, light, shade, warm, cool, healthy. **Animals including humans:** offspring, adults, nutrition, eggs, reproduce, survival, food, air exercise, hygiene. **Living Things and their Habitats**: living, never been alive, suited, suitable, basic need, food, food chain, shelter, feed. Names of local habitats e.g. pond, woodland, forest, cliffs, beach, downs. Names of micro-habitats e.g. under logs, in bushes etc. **Everyday materials:** suitable, unsuitable, use, useful, rigid, flexible, transparent, opaque.	Working scientifically – Research – relevant, scientific enquiry, comparative and fair test, systematic, careful observation, accurate, measurements. Equipment – thermometer, data logger, Data – gather, record, classify, present. Record – drawings, labelled diagrams, keys, bar charts, tables, oral and written explanations, conclusions, predictions, differences, similarities, changes, evidence, improve, secondary sources, guides, construct, interpret. **Plants** Photosynthesis, pollen, insect/wind pollination, seed formation, wind dispersal, animal dispersal, water dispersal, leaves, absorb, nutrients, reproduce, germination, stamen, style. **Animals including humans**: Nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, skeleton, bones, muscles, support, protect, skull, ribs, spine, joints. **Rocks:** Pebble, boulder, grain, crystals, layers, texture, absorb, fossil, marble, chalk, granite, sandstone, slate, peat, sandy/chalky/clay soil.	Working scientifically – as Year 3. **Living Things and their Habitats:** classification, classification keys, environment, human impact, positive, negative, migrate, hibernate. **Animals including humans:** digestive system, digestion, saliva, oesophagus, stomach, small intestine, large intestine, rectum, anus, incisor, canine. **States of matter**: solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle. **Sound**: vibrate, vibration, vibrating, air, medium, volume, pitch, faint, loudness, string, percussion, brass, insulate, woodwind, patterns, strength, distance, waves. **Electricity**: electrical, appliance, mains, plug, circuit, component, cell, battery, positive, negative, connect/connectors, loose connection, short circuit, crocodile clip, switch, buzzer, motor, conductor,	Working scientifically – Plan, variables, measurements, accuracy, precision, repeat readings, Record data – scientific diagrams, labels, classification keys, scatter graphs, bar graph and line graph, further comparative and fair test, casual relationships, degree of trust. Evidence – support, refute ideas or arguments, identify, classify and describe, patterns, systematic. **Living Things and their Habitats:** life processes, reproduction. **Plants** sexual and asexual prehistoric. **Animals including humans**: puberty, vocabulary linked to describe a range of sexual characteristics. **Properties and changes of materials:** thermal, electrical, insulator, conductor, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/not reversible, burning, rusting, new material. **Earth and Space:**	Working scientifically – as Year 5. **Living Things and their habitats:** vertebrates, invertebrates, flowering, non-flowering. **Animals including humans**: Pulse, rate, pumps, blood, blood vessel, transported, lungs, oxygen, carbon dioxide, cycle circulatory system, diet, drugs, lifestyle. **Evolution and inheritance**: offspring, sexual reproduction, vary, characteristics, adapted, inherited, species, Charles Darwin, palaeontology. **Light**: translucent, opaque, matt. **Electricity:** complete circuit, circuit diagram, circuit symbol, cell, voltage *NB Children do not need to understand what voltage is but will use volts and voltage to describe different batteries.*

	lumpy, wrinkly, smooth, rough. **Seasonal changes:** Snow, wind, rain, sun, day, night, stormy, cloudy, hot, cold, foggy.			Mary Anning. **Light**: reflection, dark, absence of light, dangerous, shadow, spectrum, natural, artificial, surface, blocked, light source, straight, protect, patterns **Forces:** Force, contact force, non-contact force, magnetic force, magnet, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, North pole, South pole.	insulator, metal, non-metal, symbol.	Earth, sun, moon, Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune, Pluto (dwarf planet), spherical, solar system, rotates, star, orbit, planets, axis, galaxy. Meteorite. Aristotle, Ptolemy, Galileo, Copernicus, Brahe, Alhazem. **Forces:** Gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears, Isaac Newton.	
Resources – Including link to Reading	- Outdoor classroom - Non-fiction and fiction books - Whole class internet use to research and find images - Pens and other recording materials - iPads for pictures - Reading labels and captions - Consumables - Visits	- Outdoor classroom - Animal pictures/models - Online research - Book research - Online videos - Posters - Outside visitors - Material samples - Everyday objects using curriculum specific materials - iPads for pictures - Magnifying glasses - Consumables - Visits	- Outdoor classroom - Animal pictures/models - Online research - Book research - Online videos - Posters - Outside visitors - Material samples - Everyday objects using curriculum specific materials - iPads for pictures - Magnifying glasses - Gardening equipment - Seeds and bulbs - Consumables - Visits	- Outdoor classroom - Seeds and bulbs - Plant diagrams - Animal pictures/models - Online research - Book research - Online videos - Posters - Outside visitors - iPads for pictures - Different rock samples - Torches - Mirrors - Magnets - Magnetic/non-magnetic objects - Everyday objects/materials using curriculum specific materials. - iPads for pictures - Skeleton model - Consumables - Dark tent - Visits	- Animal internal pictures/models - Teeth pictures/models - Online research - Book research - Online videos - Posters - Outside visitors - iPads for pictures - Musical instruments - iPads for pictures - Data logger - Apps relevant to sound and light capture - Thermometer - Examples of different liquids, gases and solids - Digital scales - Electrical circuit kit - Bulbs and batteries - Tape measure - Heating and cooling equipment - Consumables - Visits	- Lifecycle pictures - Outdoor classroom - Diagrams of reproduction - Online research - Book research - Online videos - Posters - Outside visitors - iPads for pictures - Data logger - Thermometer - Examples of different liquids, gases and solids - Digital scales - Electrical circuit kit - Bulbs and batteries - Tape measure - Heating and cooling equipment - Filter paper - Sieve - Solar system model - Space camp equipment - Torches - Lever - Pulleys - Gears - Water tray - Stop watch - Consumables - Visits	- Outdoor classroom - Pictures of humans, animals and micro-organisms - Animal organs for dissection - Scalpel - Model/pictures of the human circulatory system - Online research - Book research - Online videos - Posters - Outside visitors - iPads for pictures - Data logger - Digital scales - Electrical circuit kit - Bulbs and batteries - Tape measure - Torches - Mirrors - Stop watch - Consumables - Visits