BILSTON CHURCH OF ENGLAND PRIMARY

SCIENCE PROGRESSION OF KNOWLEDGE AND SKILLS

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Working Scientifically	-I can observe things closely using some simple equipment. -I can carry out investigations. -With some help, I can test out some ideas suggested to me. -I can measure in non-standard units e.g. hand span, unifix cubes etc. -I am beginning to collect evidence to try and answer a question in science. -I can share my findings in simple different ways e.g. talking about my work, drawing	-I can suggest how to find things out and with help make suggestions about collecting data to answer questions. -I can use simple texts and e-learning to find information. - I can use simple equipment and make observations about my learning. -I can observe and compare objects, living things and events. - I can describe my observations using scientific vocabulary and record them, using simple tables.	-I can ask relevant questions and using different types of scientific enquiries to answer them. -I can set up an investigation, understanding the need to carry out a fair test. -I can make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment. -I can gather, record, classify and present data in a variety of ways to	-I can set up simple practical enquiries, comparative and fair tests. -I can make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. -I can ask relevant questions and use different types of scientific enquiries to answer them. -I can gather, record, classify and present data in a	-I can plan different types of scientific enquiries to answer questions, including recognising and controlling variables when prompted. -I can take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when prompted. -I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and a range of graphs.	-I can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. -I can take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. -I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter

	pictures or completing pictograms. -I can gather and record information I have found out in different ways	-I can use my observations and ideas to suggest answers to questions. - I can gather and record data to help in answering questions. - I can say whether what happened was what I expected. - When prompted, I can say different ways that I could have done things.	help in answering questions. -I can record my findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. -I can report on findings from my investigations in a variety of ways. -I can make predications for my enquiries and investigations using my prior science knowledge. -I can use results to draw conclusions. -I can identify differences, similarities or changes related to simple scientific ideas and processes.	variety of ways to help in answering questions. -I can record my findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. -I can report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. -I can use my results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. -I can identify differences, similarities or changes related to	-I can use my test results to make predictions to set up further comparative and fair tests. -I can report and present my findings from enquiries, including conclusions, causal relationships and explanations of in a variety of ways. -I can identify scientific evidence that has been used to support my investigations	graphs, bar and line graphs. -I can use test results to make predictions to set up further comparative and fair tests. -I can report and present findings from my enquiries, and investigations including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. -I can identify scientific evidence that has been used to support or refute ideas or arguments in my scientific work.

			-I can use scientific evidence/ knowledge to answer questions or to support my findings in my work.	simple scientific ideas and processes. -I can use straightforward scientific evidence to answer questions or to support their findings.		
More able	Year 1 & Year 2		Year 3 & Year 4		Year 5 & Year 6	
	Can they give reasons for their answers? Can they discuss similarities and differences? Can they explain what they have found out using scientific vocabulary? Can they make accurate measurements? Can they say whether things happened as they expected and if not why not? Can they suggest more than one way of grouping animals and plants and explain their reasons? Can they use information from books and online information to find things out?		Can they explain their findings in different ways (display, presentation, writing)? Can they suggest improvements and predictions for further tests? Can they suggest how to improve their work if they did it again? Can they plan and carry out an investigation by controlling variables fairly and accurately? Can they use test results to make further predictions and set up further comparative tests? Can they use a graph or diagram to answer scientific questions? Can they use a range of variables to investigate?		Can they explore different ways to test an idea, choose the best way and give reasons? Can they explain, in simple terms, a scientific idea and what evidence supports it? Can they decide which units of measurement they need to use? Can they find a pattern from their data and explain what it shows? Can they link what they have found out to other science? Can they suggest how to improve their work and say why they think this? Can they choose the best way to answer a question and use information from different sources to plan an investigation? Can they plan which equipment they will need and use it effectively? Can they explain qualitative and quantitative data?	
	Question, answer, observe, observing equipment, identify, classify, sort, group record, diagram, chart, map, data,		Research, questions, enquiry, comparative & fair test, systematic, careful, observation		Plan, variables, measurements, display & presentation, evidence, support, refute ideas or	

Key Vocabulary	compare contrast, biology, chemistry, physics.		accurate measurements, classify, present record, drawings, labelled diagrams, charts, tables, oral & written explanations, differences, similarities, changes, evidence, improve secondary sources, equipment, thermometer, data logger, data gather, conclusion, predictions, guides, keys, interpret, construct.		arguments, accuracy, precision, repeat readings, scientific diagrams, labels, classification, keys, tables, scatter graphs, bar graphs, line graphs, patterns, systematic, quantitative measurements.	
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Biology Animals and Humans	1. identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. 2. identify and name a variety of common animals that are carnivores, herbivores and omnivores. 3. describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) 4. identify, name, draw and label the	1. notice that animals, including humans, have offspring which grow into adults. 2. find out about and describe the basic needs of animals, including humans, for survival (water, food and air) 3. describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	1. identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. 2. identify that humans and some other animals have skeletons and muscles for support, protection and movement.	1. describe the simple functions of the basic parts of the digestive system in humans. 2. identify the different types of teeth in humans and their simple functions 3. construct and interpret a variety of food chains, identifying producers, predators and prey.	1. describe the changes as humans develop to old age.	1. identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. 2. recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. 3. describe the ways in which nutrients and water are transported within animals, including humans.

	basic parts of the human body and say which part of the body is associated with each sense.					
Key Vocabulary	Common animals, fish, amphibians, reptiles, birds, mammals, carnivores, herbivores, omnivores, head, neck, arm, elbows, legs, knee, face, ears, eyes, hair, mouth, teeth.	Offspring, grow, adults, nutrition, reproduce, survival, water, food, air, exercise, hygiene, eggchicken-egg, eggcaterpillar-pupabutterfly, spawntadpole-frog, lambsheep, baby-toddlerchild-teenager-adult.	Nutrition, vitamins, minerals, fats, protein, carbohydrates, fibre, water, skeletons, support, protection, skull, brain, heart, lungs ribs, movement, joint, muscle, relax, diet, pull, contract.	Human, digestive system, mouth, tongue, mixes, moistens, saliva, teeth, incisor, cutting, slicing, canines, ripping, tearing, molars, chewing, grinding, oesophagus, transports, stomach, acid, enzymes, small intestine, vitamins, large intestines, compacts, carnivore, herbivore, brush, floss, food chain, sun producer, prey predator.	Human development, baby-toddler-childteenager-adult, puberty, gestation, length, mass, grows, grow, growing.	kidney, brains, lung, skeletal, skeleton, muscle, muscular, digest, digestion, digestive, human circulatory system, heart, blood, vessels, lifestyle, impact, digest, exercise, drugs, nutrients, water, damage, drugs substances, alcohol.
Biology Living Things and Their Habitats		1. explore and compare the differences between things that are living, dead, and things that have never been alive.		1. recognise that living things can be grouped in a variety of ways. 2. explore and use classification keys to help group, identify and name a	1. describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. 2. describe the life process of	1. describe how living things are classified into broad groups according to common observable characteristics and based on

		2. 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. 3. identify and name a variety of plants and animals in their habitats, including microhabitats. 4. 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.		variety of living things in their local and wider environment. 3. recognise that environments can change and that this can sometimes pose dangers to living things.	reproduction in some plants and animals.	similarities and differences, including micro-organisms, plants and animals. 2. give reasons for classifying plants and animals based on specific characteristics.
Key Vocabulary		Living, dead, never alive, habitats, micro-habitats, food chain, sun, grass, cow, human, alive, healthy, logs, leaf, litter, stony		Environment, flowering, non-flowering, plants, animals, vertebrate, danger, invertebrates, fish, amphibian, reptiles,	Life process of reproduction, plants, animals, life cycle, mammal, amphibian, insect, bird, prehistoric,	Micro-organisms, plants, animals, classification, classify animals, invertebrates, vertebrates, fish, mammals, reptiles,

		path, under bushes, shelter, seashore, woodland, ocean, rainforest, conditions, hot/warm/cold dry/damp/wet bright/shade/dark.		birds, mammals, human impact.	similarities, differences.	birds, mammals, various scientists e.g Carl Linnaeus.
Biology Plants Evolution and inheritance.	**Plants** 1. identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. 2. identify and describe the basic structure of a variety of common flowering plants, including trees.	**Plants** 1. observe and describe how seeds and bulbs grow into mature plants. 2. find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	**Plants** 1. identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. 2. 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. 3. investigate the way in which water is transported within plants. 4. explore the part that flowers play in the life cycle of flowering plants, including		**Revisit Plants**	**Evolution and inheritance.** 1. recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. 2. recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. 3. identify how animals and plants are adapted to suit their environment in different ways and that adaptation

			pollination, seed formation and seed dispersal.			may lead to evolution.
Key Vocabulary	Commons, wild plants, garden plants, deciduous, evergreen, trunk, branches, leaf, root, bud, leaves, flowers, blossom, petals, stem, fruit, vegetables, bulb, seeds.	Water, grow, suitable temperature, healthy, germination, reproduction.	**Structure** – flowering plants, roots, stem, trunk, leaves, flowers. **Function –** nutrition, support, reproduction, makes its own food. **Requirements for life & growth –** air, light, soil, water, nutrients from soil, room to grow, Flowers, pollination, seed formation, seed dispersal.			Living things, change, offspring, fossils, vary, non-identical, characteristics, variation, adaptation, inheritance, Charles Darwin, adapt, environment.
Chemistry Materials States of Matter Rocks	**Materials** 1. distinguish between an object and the material from which it is made. 2. identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. 3. describe the simple	**Materials** 1. identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. 2. find out how the shapes of solid	**Rocks** 1. compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. 2. describe in simple terms how fossils are formed when things that	**Changing State** 1. compare and group materials together, according to whether they are solids, liquids or gases. 2. observe that some materials change state when they are heated or cooled, and measure or	**Properties and changes of materials.** 1. compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and	

	physical properties of a variety of everyday materials. 4. compare and group together a variety of everyday materials on the basis of their simple physical properties.	objects made from some materials can be changed by squashing, bending, twisting and stretching.	have lived are trapped within rock. 3. recognise that soils are made from rocks and organic matter.	research the temperature at which this happens in degrees Celsius (°C). 3. identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	thermal), and response to magnets. 2. know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. 3. use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. 4. give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. 5. demonstrate that dissolving, mixing and changes of state are reversible changes. 6. 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.	
Key Vocabulary	Materials, wood, plastic, glass, metal, water, rock, properties, hard, soft, shiny, dull, rough, smooth, bendy, not bendy, waterproof, not waterproof, absorbent, not absorbent, brick, paper, fabrics, elastic, foil.	Wood, metal, metal, plastic, glass, brick, paper, cardboard, squashing, bending, squeezing, bending, twisting, stretching, rubber, waterproof.	Appearance, physical properties, hard, soft, shiny, dull, rough, smooth, absorbent, not absorbent, fossils, sedimentary rock, soils, rock, organic matter, uses, grains, crystal.	Solid, melt, freeze, liquid, evaporate, condense, gas, container, changing state, chocolate, butter, cream, heated, heat, cooled, cool, degrees, thermometer, water cycle, evaporate, condense, evaporation.	properties hardness solubility transparency electrical conductor thermal conductor response to magnets dissolve solution separate separating solids liquids gases evaporating reversible changes dissolving mixing evaporation filtering sieving melting irreversible new material burning rusting magnetism electricity chemists Spencer Silver Ruth Benerito quantitative measurements	

					conductivity insulation chemical.	
Physics Seasonal Changes Light Earth & Space Sound	**Seasonal Change** 1. observe changes across the 4 seasons. 2. observe and describe weather associated with the seasons and how day length varies.		**Light** 1. recognise that they need light in order to see things and that dark is the absence of light. 2. notice that light is reflected from surfaces. 3. recognise that light from the sun can be dangerous and that there are ways to protect their eyes. 4. recognise that shadows are formed when the light from a light source is blocked by an opaque object. 5. find patterns in the way that the size of shadows change.	**Sound** 1. identify how sounds are made, associating some of them with something vibrating. 2. recognise that vibrations from sounds travel through a medium to the ear. 3. find patterns between the pitch of a sound and features of the object that produced it. 4. find patterns between the volume of a sound and the strength of the vibrations that produced it. 5. recognise that sounds get fainter as the distance from the sound source increases.	**Earth & Space** 1. describe the movement of the Earth and other planets relative to the sun in the solar system. 2. describe the movement of the moon relative to the Earth. 3. describe the sun, Earth and moon as approximately spherical bodies. 4. use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	**Light** 1. recognise that light appears to travel in straight lines. 2. 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. 3. 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. 4. use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
Key	Season summer winter autumn spring day daytime,		light see dark reflect surface natural star Sun	vibrate vibration vibrating air medium ear hear	Earth, Sun, Moon, planets, star, solar system, Mercury,	light travels straight reflect reflection light source object

Vocabulary	weather wind rain snow hail sleet fog sun hot warm cold.		Moon shadow blocked solid artificial torch candle lamp sunlight dangerous protect eyes.	sound volume pitch faint fainter loud louder string percussion woodwind brass insulate.	Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto, dwarf planet, movement, rotate, orbit, axis, celestial, spherical, sphere, day, night, light, heat, eclipse, satellite, universe, solar, astronomer, Alhazen, Shadow clock, sundial.	shadows mirrors periscope rainbow filters.
Physics Forces & Magnets Electricity			**Forces & Magnets** 1.compare how things move on different surfaces 2. notice that some forces need contact between 2 objects, but magnetic forces can act at a distance. 3. observe how magnets attract or repel each other and attract some materials and not others. 4. compare and group together a variety of everyday materials on the basis of whether they are attracted	**Electricity** 1. identify common appliances that run on electricity. 2. construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. 3. 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.	**Forces & Magnets** 1. explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. 2. identify the effects of air resistance, water resistance and friction, that act between moving surfaces. 3. recognise that some mechanisms including levers, pulleys and gears allow a smaller	**Electricity** 1. associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. 2. 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. 3. use recognised symbols when representing a

			to a magnet, and identify some magnetic materials. 5. describe magnets as having 2 poles. 6. predict whether 2 magnets will attract or repel each other, depending on which poles are facing.	4. recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. 5. recognise some common conductors and insulators, and associate metals with being good conductors.	force to have a greater effect.	simple circuit in a diagram.
Key Vocabulary			force push pull open surface magnet magnetic attract repel magnetic poles North South.	air resistance water resistance friction surface force effect move accelerate decelerate stop change direction brake mechanism pulley gear spring theory of gravitation Galileo Galilei Isaac Newton.	air resistance water resistance friction surface force effect move accelerate decelerate stop change direction brake mechanism pulley gear spring theory of gravitation Galileo Galilei Isaac Newton, gravity.	Voltage, brightness, volume, switches, danger, series circuit, electrical safety, circuit, diagram, switch, bulb, buzzer, motor, symbols, resistance, resister.