St. Mary's Catholic Primary School **Content Progression - Science**

CONTENT COVERAGE	EYFS	KS1	LKS2	UKS2
A1	**LIVING THINGS - HUMANS** Learning about basic parts of the body. Labelling pictures of the body. Human growth – babies to adults Five senses – sensory experiments and scavenger hunts A healthy lifestyle – food and exercise Farm to fork **Key Vocabulary:** Senses, body, arm, leg, head, tummy, foot, hand, head, skeleton, healthy, diet, exercise, grow, baby, adult, change	**PLANTS** Identifying and naming wild plants – wild plant hunt Identifying and naming garden plants – drawing a garden Identifying and classifying deciduous and evergreen trees by their leaves Identifying and describing basic structure of plants – making and labelling plant pictures Planting and observing growth of seeds and bulbs Comparative tests – what do plants need to grow? Observe and describe how seeds and bulbs grow to understand plant life cycles Find out and describe what plants need to grow – including comparative tests **Key Vocabulary:** Wild plants, garden plants, weeds, deciduous, evergreen, roots, stem, leaves, flowers, petals, fruit, seed, bulb, germination, sprout, shoot, seed dispersal, sunlight, water, temperature, nutrition	**FOOD AND NUTRITION** Identify that they cannot make their own food – they get nutrition from what they eat Compare how humans and plants obtain food Identify that animals including humans need the right types of nutrition – examine food and nutrient groups Construct and interpret a variety of food chains Identify producers, predators and prey using food chains and understanding the role of different plants and animals within them Group animals according to their diets – similarities and differences Identify that humans and some other animals have skeletons – investigate skeleton types Identify parts of the skeleton – name bones Investigate the function of skeleton types Examine how muscles work – set up simple practical enquiries and record findings **Key Vocabulary:** Healthy, nutrients, energy, saturated fats, unsaturated fats, vertebrate, invertebrate, muscles, tendons, joints,	**CIRCULATORY SYSTEM AND HEALTHY LIFESTYLE** Identify and name parts of the human circulatory system Describe functions of the heart, blood and blood vessels Investigate how different parts of the circulatory system work Describe transportation of nutrients and water in plants and animals Recognise the impact of diet and exercise Plan scientific enquiries to answer questions including controlling variables Categorise different forms of exercise Record data and results - classification keys, scatter graphs, tables, bar and line graphs Recognise the impact of drugs on the way their bodies function (in the context of drugs and alcohol) Identify scientific evidence that has been used to support or refute ideas or arguments in the context of changing attitudes towards smoking **Key Vocabulary:** Circulatory system, heart, blood vessels, oxygenated blood, deoxygenated blood, drug,

			herbivore, carnivore, omnivore, producer, predator, prey **TEETH AND THE DIGESTIVE SYSTEM** Describe, identify and explain simple functions of parts of the digestive system in humans Use straightforward scientific evidence to answer questions about the digestive system Identify different types of teeth in humans and their simple functions Identify differences, similarities or changes related to simple scientific ideas and processes by comparing human animal teeth Set up simple practical enquiries, comparative and fair tests – investigate what causes tooth decay. Observe the changes that occur – use the results to draw simple conclusions, make predictions and present findings. **Key Vocabulary:** Digest, oesophagus, stomach, small intestine, large intestine, rectum, teeth, mouth, tongue, incisor, canine, premolar, molar	alcohol, nutrients, plasma, platelets, red blood cells, white blood cells, exercise, transport, healthy, pump, arteries, capillaries, veins
A2	**INVESTIGATIONS** Toy freeze Pull Back Car Toy Ping Pong Ball Float Float or Sink Waterproof (Bath toys) Slides and Friction Balloon Powered Car Friction Train	**EVERYDAY MATERIALS** Identifying and naming everyday materials Naming an object and distinguishing the material it's made from Compare and group together objects based on the properties	**SOUND** Identify how sounds are made – identify and explain sound sources around school Perform a dramatisation of how sounds travel Find patterns between the volume of a sound and the	**CLASSIFICATION** Sort and classify animals into similar groups to make a plan for a zoo Using the internet to classify and name common animals Design a creature with a specific set of characteristics

	Boat Size and Strength Toys down the ramp **Key Vocabulary:** Frozen, melt, float, sink, push, pull, go, stop, fast, slow, waterproof, wet, strong, down, up	of the materials they are made from Identify and compare the suitability of a variety of everyday materials Umbrella investigation – what is the best material for an umbrella Investigating how the shapes of solid objects made from some materials can be changed - recycling Finding out about people who have developed new materials such as John McAdam **Key Vocabulary:** Object, material, hard, soft, stretchy, shiny, dull, rough, smooth, bendy, not bendy, waterproof, not waterproof, absorbent, not absorbent, transparent, opaque, materials, suitability, properties, John McAdam, John Dunlop, Charles Macintosh, Macadamisation	strength of the vibrations that produced it Recognise that vibrations travel through a medium the ear – explore how high and low sounds are created Find patterns between the pitch of a sound and the object that created it – explore musical instruments and explain how they change pitch String telephone – recognise that sounds get fainter as the distance from the sound source increases. Explore how sounds change over distance Investigate the best material for absorbing sound Make a musical instrument and explain how it works **Key Vocabulary:** Vibration, sound wave, volume, amplitude, pitch, ear, particles, distance, soundproof, absorb sound, vacuum, eardrum **LIGHT** Recognise that we need light in order to see things and that dark is the absence of light - 'feely bag' investigation Notice that light is reflected from surfaces by choosing the most reflective material for a new book bag & playing mirror games Recognise that light from the sun can be dangerous and that there are ways to protect our	Set up a mould investigation to investigate what makes mould grow Design, make and describe a microorganism using characteristics I have learnt Create a field guide to the habitat around the school. **Key Vocabulary:** classify, sort, group, similarities, differences, compare, Carl Linnaeus, Linnaean, classification, standard, domain, kingdom, phylum, class, order, family, genus, species, vertebrates, invertebrates, insects, arachnids, annelids, molluscs, crustaceans and echinoderms, mammals, birds, fish, reptiles, amphibians, microorganism, fungus, bacteria, virus, microscopic, mould, cell, eukaryote, nucleus, DNA, flowering, non-flowering. **EVOLUTION AND INHERITANCE** Sort characteristics cards into whether they are inherited or acquired Matching animals and plants to their adaptive traits Activity using different sized bull clips to pick up seeds Using photographs to explain the similarities and differences between fossils and their living relative

			eyes - design and advertise a pair of sunglasses or a sun hat Recognise that shadows are formed when the light from a light source is blocked by a solid object - investigate the best material for curtains for a baby's bedroom Find patterns in the way that the size of shadows change by investigating what happens when you change the distance between the object and the light source **Key Vocabulary:** Light, light source, dark, reflection, reflect, reflective, ray, pupil, retina, shadow, opaque, translucent, transparent	Compare modern humans with Homo Neanderthalensis, and Australopithecus Afarensis Children research plants and animals that are the result of selective and cross breeding. **Key Vocabulary:** Inheritance, animals, plants, humans, parent, offspring, similarities, differences, characteristics, variation, adaptation, environment, habitat, DNA, genes, adaptive traits, mutation, replication, accidental, evolution, theory of evolution, fossil, fossil records, evidence, complete, incomplete, ancestor, common ancestor, traits, human, evolution, adaptation, apes, mammals, homo sapiens, family, genus, species, taxonomy. human intervention, selective breeding, cross breeding, environment, inherited traits, genetic, genes, modification
A3	**LIVING THINGS - ANIMALS** Animals and their babies – farms, observing caterpillars and tadpoles Habitats – animal homes, comparing polar and desert animals, polar regions science experiment. How do polar bears stay warm? Why do bears hibernate?	**LIVING THINGS & THEIR HABITATS** Exploring and comparing the differences between things that are living, dead and have never been alive – how do you know? Identify and name a variety of plants and animals in their habitats – mapping a habitat and its inhabitants	**PLANTS** Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers by labelling the parts of a plant. Explore the requirements of plants for life and growth by investigating what plants need to grow well.	**LIGHT** Make own model of how we see things using yellow wool to represent the light beams and present findings to the class as if presenting a TV programme Recorded on ipads Investigate the angles of incidence and reflection - draw lines to show how light is

	Minibeasts – bug hunts, observational drawings (features of different insects) **Key Vocabulary:** egg, hatch, caterpillar, cocoon / chrysalis, butterfly, frogspawn, tadpole, legs, tail, frog, swim, jump, adult, parent, baby, habitat, home, cold, hot, dry, wet, warm, sleep, eat, insect, bug, legs, wings	Identify, classify and sort 'objects' into living, dead and never alive Microhabitats – minibeasts World habitats – explore why different animals / plants are suited to different habitats - adaptation Explore how plants and animals depend on each other in different habitats Food chains – describe how animals obtain their food from plants and other animals, using the idea of a simple food chain **Key Vocabulary:** Life processes, living, dead, never living, food chain, food sources, habitat, microhabitat, depend, survive	Record findings by observing plant growth – present findings to the class including oral and written explanations Investigate the way water is transported within plants by observing the transport of food colouring through a flower stem. Explore the part that flowers play in the life cycle of flowering plants – pollination and fertilisation Order and describe the stages of the life cycle of a flowering plant **Key Vocabulary:** Roots, stem, leaves, flowers, nutrients, evaporation, fertilisation, petal, stamen, carpel (pistil), sepal, pollination, pollinator, germination, seed dispersal **LIVING THINGS AND THEIR HABITATS** Recognise that living things can be grouped in a variety of ways by sorting them into a range of groups Gather, record, classify and present data in a variety of ways to help in answering questions by using a range of methods to sort and group living things Explore and use classification keys to help group, identify and name a variety of living things (including vertebrates and invertebrates) in their local and wider environment	reflected in mirrors to enable us to see things Make own periscopes Set up investigations to see the effect of refraction Shine a torch through prisms to investigate spectrum of colours Investigate the colour of sweets when viewed through different colour filters Use coloured cellophane and pens to write secret messages Create a short play dramatising the disagreement between Newton and Hooke **Key Vocabulary:** light source, primary light source, secondary light source, reflection, travel, straight line, waves, ray, beam, wave, energy, vacuum, reflection, angle, incidence, normal, periscope, refraction, shadows, refract, spectrum, wavelength, colour, prism, visible, transparent, translucent, rainbow, filter, reflect, absorb, shadow, opaque, translucent, size, distance, tilt, cast **HUMANS – GROWTH** Describe changes as humans develop to old age - timeline showing stages of human growth and development Describe the development of babies in their first year Record data and results in the context of the growth of babies

			Identify differences, similarities or changes related to simple scientific ideas and processes by identifying vertebrates by their similarities and differences Create classification keys Use scientific evidence to answer questions by explaining how they have identified an invertebrate Gather, record, classify and present data in a variety of ways to help in answering questions by creating tables and keys showing the characteristics of living things Recognise that environments can change and that this can sometimes pose dangers to living things by learning about environmental dangers and endangered species Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions by writing about and orally presenting findings from research. **Key Vocabulary:** Organism, Variation, classification, vertebrates, invertebrates, reptile, bird, mammal, amphibian, fish, global, local, characteristic, key, habitat, environment, wildlife, endangered, extinct, conservation	in their first year (height and weight) Compare changes that take place to boys and girls during puberty Report, present and analyse findings from enquiries - gestation periods of other animals and comparing gestation periods / life expectancy of animals **Key Vocabulary:** prenatal, infancy, childhood, adolescence, early adulthood, middle adulthood, late adulthood

St. Mary's Catholic Primary School — Content Progression - Science

B1	**LIVING THINGS - HUMANS** Learning about basic parts of the body. Labelling pictures of the body. Human growth – babies to adults Five senses – sensory experiments and scavenger hunts A healthy lifestyle – food and exercise Farm to fork **Key Vocabulary:** Senses, body, arm, leg, head, tummy, foot, hand, head, skeleton, healthy, diet, exercise, grow, baby, adult, change	**SEASONAL CHANGES** Observe and describe how day length changes (Autumn to Winter) Observe how trees change across the seasons Discuss how our clothing and weather changes in different seasons Gather and record data to answer questions about the weather – temperature, rainfall, and wind direction Seasonal walks around the local area Winter animals **Key Vocabulary:** Seasons, spring, summer, autumn, winter, weather, daylight, **HUMAN BODY** Identify, label and name basic parts of the human body Say which part of the body is associated with each sense – drawing activities that use the sensory organs Sense detectives – simple tests to investigate the five senses Gather and record data to help answer questions and to solve a puzzle **Key Vocabulary:** Senses, sight, hearing, touch, taste, smell, ear, nose, eyes, head, teeth, mouth, shoulder,	**WHAT DO SCIENTISTS DO?** Find out about men and women who introduced new plants to our gardens Explore how non-native plants have been discovered, transported and introduced Identify changes related to scientific ideas by describing Marie Curie's research into x-rays Research George Washington Carver Explore William Smith's principle of fossil succession Find out about Inge Lehmann's discovery of the Earth's solid core and how this creates igneous rocks Identify changes related to scientific ideas by finding out about inventions from all over the world Explore Gerald Durrell's conservation work in Madagascar Research Alexander Graham Bell's invention of the telephone Compare and group together materials according to whether they are solids, gases or liquids by exploring the discovery of oxygen Identify changes related to scientific ideas and processes by exploring Thomas Edison's work with electricity **Key Vocabulary:** Discovery, William Smith, Joseph Banks, Tom Hart Dyke, Marie Curie, Nobel Prize, X-Ray,	**EARTH AND SPACE** Describe the Sun, Earth and Moon as approximately spherical bodies by understanding how this knowledge has been attained. Identify scientific evidence that has been used to support or refute ideas or arguments in the context of how ideas changed from a flat earth view. Describe the movement of the Earth, and other planets, relative to the Sun in the solar system by learning the order of the planets and how they move in the solar system. Describe the movement of the Earth, and other planets, relative to the Sun in the solar system by examining the geocentric and heliocentric theories. Identify scientific evidence that has been used to support or refute ideas or arguments in the context of the shift from heliocentric models of the solar system to geocentric models. Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky by examining why the sun appears to move and the arguments for the Earth's rotation. Identify scientific evidence that has been used to support or refute ideas or arguments in the context of the evidence for the Earth's rotation.

		elbow, hand, fingers, thumb, leg, knee, foot, toes	Inge Lehmann, Andre Marie-Ampere, George Washington Carver, Gerald Durrell, Alexander Graham Bell, oxygen, telephone, Lord Kelvin, Thomas Edison **STATES OF MATTER** Compare and group together materials based on their state of matter Investigate gases and their uses Observe that some materials change state when they are heated or cooled Measure / research the temperature at which this occurs in degrees Celsius Explore how water can change its state to a solid, liquid or gas Investigate the effect of temperature on drying washing Identify evaporation and condensation in the water cycle – create a model of the water cycle **Key Vocabulary:** States of matter, solids, liquids, gases, water vapour, melt, freeze, evaporate, condense, precipitation	Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky by predicting night and day in different places on Earth. Report on and present findings from enquiries, including conclusions, in oral and written forms such as displays and other presentations in the context of investigating night and day. Describe the movement of the Moon relative to the Earth by explaining how the Moon orbits the Earth. **Key Vocabulary:** Sun, star, moon, planet, sphere, spherical bodies, satellite, orbit, rotate, axis, geocentric model, heliocentric model, astronomer (Copernicus, Kepler, Galileo) **FORCES** Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object by identifying forces acting on objects. Identify the effects of air resistance, water resistance and friction by identifying forces acting on objects. Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object by measuring

				the force of gravity pulling on objects. Identify the effects of air resistance by investigating the best parachute to slow a person down. Identify the effects of water resistance by creating and racing streamlined boats. I can identify the effects of friction by investigating brakes. Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect by exploring and designing a simple mechanism. **Key Vocabulary:** Forces, gravity, Earth's gravitational pull, weight, mass, friction, air resistance, water resistance, buoyancy, streamlined, mechanism, Isaac Newton, pulley, levers, cogs
B2	**INVESTIGATIONS** Toy freeze Pull Back Car Toy Ping Pong Ball Float Float or Sink Waterproof (Bath toys) Slides and Friction Balloon Powered Car Friction Train Boat Size and Strength Toys down the ramp **Key Vocabulary:**	**ANIMALS INCLUDING HUMANS - GROUPING** Identify and name a variety of common animals including fish amphibians, reptiles, birds and mammals Grouping and sorting animals Describing and comparing the structure of a variety of common animals Identify and name a variety of common animals that are carnivores, omnivores and herbivores	**ROCKS** Compare different types of rock Understand the difference between natural and man-made rocks Group together different types of rock (natural) – based on their simple physical properties Describe in simple terms how fossils are formed Compare fossils to the animals they belong to Research Mary Anning Recognise and explain how soil is formed	**PROPERTIES AND CHANGES OF MATERIALS** Compare and group together everyday materials on the basis of their properties, including their hardness, transparency and response to magnets by sorting and classifying materials according to their properties. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic by

	Frozen, melt, float, sink, push, pull, go, stop, fast, slow, waterproof, wet, strong, down, up	Identify and classify by sorting animals into categories **Key Vocabulary:** Amphibians, birds, fish, mammals, reptiles, carnivore, herbivore, omnivore	Investigate soil profiles and report on findings **Key Vocabulary:** Igneous rock, sedimentary rock, metamorphic rock, magma, lava, sediment, permeable, impermeable, fossilisation, palaeontology, erosion	investigating thermal conductors and insulators. Compare and group together everyday materials on the basis of their thermal conductivity by investigating thermal conductors and insulators. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic by investigating the best electrical conductors. Compare and group together everyday materials on the basis of their electrical conductivity by investigating the best electrical conductors. Know that some materials will dissolve in liquid to form a solution by investigating dissolving. Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating by separating different mixtures. Demonstrate that dissolving, mixing and changes of state are reversible changes by separating different mixtures. Describe how to recover a substance from a solution by separating different mixtures. Compare and group together everyday materials on the basis of their solubility by investigating dissolving.

				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 by identifying and observing irreversible chemical changes. **Key Vocabulary:** Materials, solids, liquids, gases, melting, freezing, evaporating, condensing, conductor, insulator, transparency
B3	**LIVING THINGS - ANIMALS** Animals and their babies – farms, observing caterpillars and tadpoles Habitats – animal homes, comparing polar and desert animals, polar regions science experiment. How do polar bears stay warm? Why do bears hibernate? Minibeasts – bug hunts, observational drawings (features of different insects) **Key Vocabulary:** egg, hatch, caterpillar, cocoon / chrysalis, butterfly, frogspawn, tadpole, legs, tail, frog, swim, jump, adult, parent, baby, habitat, home, cold, hot, dry, wet, warm, sleep, eat, insect, bug, legs, wings	**ANIMALS INCLUDING HUMANS – GROWTH AND BASIC NEEDS** Animal babies – notice that animals including humans, have offspring which grow into adults by describing the changes to animals as they grow Identify and classify - matching animals and their babies Investigate how humans grow and change. Do children get faster as they get older? Find out about and describe the basic needs of animals, including humans, for survival Identify how animals meet their basic needs Generate questions about a pet and research the answers Describe the importance for humans of eating the right amounts of different types of food – explore food groups	**ELECTRICITY** Research and prepare a presentation on how electricity is produced Common appliances – identify those that do and don't use electricity, the different types of electricity and electrical safety Construct simple series circuits – identify and name basic parts Identify whether a lamp will or will not light in a simple series circuit Use data loggers and thermometers to take accurate measurements Recognise some common conductors and insulators – associate metals as good conductors Test different materials to establish conductivity Create circuits containing switches Report on investigation findings	**ELECTRICITY** Identify scientific evidence that has been used to support or refute ideas or arguments in the context of the major discoveries made by scientists in the field of electricity Use recognised symbols when representing a simple circuit in a diagram by observing & explaining the effect of different volts in a circuit Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit by observing and explaining the effect of different volts in a 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

		Suggest improvements to their own diet and designing healthy meals Describe the importance for humans of exercise – find out why humans need to exercise Gather and record data – how does exercise affect the body? Describe the importance for humans of good hygiene – learn about good hygiene habits Observe closely, by using simple equipment, their hands and drawing what they see. **Key Vocabulary:** Adult, develop, life cycle, offspring, reproduce, young, live young, dehydrate, diet, disease, energy, exercise, germs, heart rate, hygiene, nutrition, pulse	**Key Vocabulary:** Electricity, generate, renewable, non-renewable, appliances, battery, circuit, electrons **FORCES AND MAGNETS** Identify that some forces need contact between two objects Investigate how things move on different surfaces Notice that magnetic forces can act at a distance – investigate magnetic and non magnetic materials Observe / investigate how magnets attract and repel each other – make a compass for a treasure hunt Make, play and evaluate a magnetic game **Key Vocabulary:** Forces, friction, surface, magnet, magnetic, magnetic field, poles, repel, attract	Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary by investigating the relationship between wire length and the brightness of the bulbs or the loudness of the buzzers Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs Report on and present findings from enquiries, including conclusions, casual relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations by conducting an investigation, presenting and reporting findings on the effect of wire length on bulb brightness or the loudness of buzzers Use test results to make predictions to set up further comparative and fair tests by planning and conducting a further investigation **Key Vocabulary:** Circuit, symbol, call / battery, current, amps, voltage, resistance, electrons **LIFE CYCLES AND LIFE PROCESSES** Describe the life process of reproduction in some plants and

				animals by exploring sexual reproduction in plants Describe the life cycle of a mammal by exploring the life cycles of mammals in different habitats Describe the life process of reproduction in some plants and animals by describing sexual reproduction in mammals Describe the life process of reproduction in some plants and animals by exploring Jane Goodall's work with chimpanzees Describe the differences in the life cycles of an amphibian and an insect by exploring complete and incomplete metamorphosis Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird by describing and comparing different life cycles. **Key Vocabulary:** Asexual reproduction, fertilise, gestation, life cycle, metamorphosis, pollination, reproduction, sexual reproduction, mammal, amphibian, insect, bird, plants Jane Goodall (work with chimpanzees)