Sherwood Junior School Science Progression Map

	By the end of Year 3	By the end of Year 4	By the end of Year 5	By the end of Year 6
Working scientifically	**Children can…** • Record findings using tables, drawings and bar charts • Draw simple conclusions from results • Ask relevant questions and use different types of scientific enquiry to answer them • Gather, record, classify and present data in a variety of ways to help in answering questions • Report on findings from enquiries, including oral and written explanations • Use straightforward scientific evidence to answer questions or to support their findings	**Children can…** • Use results make predictions for new values, suggest improvements and raise further questions • Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • Set up simple practical enquiries, comparative & fair tests • Record findings using simple scientific language, labelled diagrams and keys • Report on findings from enquiries, including displays or presentations of results and conclusions • Identify differences, similarities or changes related to simple scientific ideas and processes	**Children can…** • Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • Take measurements, using a range of scientific equipment, with increasing accuracy and precision • Record data and results using scientific diagrams and labels, tables, bar and line graphs • Use test results to make predictions to set up further comparative and fair tests • Identify scientific evidence that has been used to support or refute ideas or arguments	**Children can…** • Record data and results using classification keys and scatter graphs • To report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results in oral and written forms (eg displays and other presentations)
Plants	**Children know…** • The names of and can describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers • The requirements of plants for life and growth and how they vary from plant to plant • The way in which water is transported within plants • The part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal			
Animals, including humans	**Children know…** • 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. • That humans and some other animals have skeletons and muscles for support, protection and movement	**Children know…** • The simple functions of the basic parts of the digestive system in humans eg mouth, tongue, teeth, oesophagus, stomach and small & large intestine • The different types of teeth in humans and their functions. • How to construct and interpret a variety of food chains, identifying producers, predators & prey.	**Children know…** • The changes as humans develop to old age	**Children know…** • The main parts of the human circulatory system • The functions of the heart, blood vessels and blood • The impact of diet, exercise, drugs & lifestyle on the way their bodies function • The ways in which nutrients and water are transported within animals including humans

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	By the end of Year 3	By the end of Year 4	By the end of Year 5	By the end of Year 6
Living things and their habitats		**Children know…** • A variety of ways in which living things can be grouped • How to use classification keys to help group, identify and name a variety of living things in their local and wider environment • That environments can change and that this can sometimes pose dangers to living things	**Children know…** • The differences in the life cycles of a mammal, an amphibian, an insect and a bird • The life cycle of reproduction in some plants and animals	**Children know…** • How living things are classified into broad groups according to common characteristics, based on similarities & differences, including micro-organisms, plants & animals • The reasons for classifying plants and animals based on specific characteristics
Rocks	**Children know…** • -That different kinds of rocks can be grouped and compared on the basis of their appearance and simple physical properties • In simple terms how fossils are formed when things that have lived are trapped within a rock • That soils are made from rocks and organic matter			
Light	**Children know…** • That we need light in order to see things & that dark is absence of light • That light is reflected from surfaces • that shadows are formed when light from a source is blocked by an opaque object • There are patterns in the way the size of shadows change • That light from the Sun can be dangerous and how to protect eyes			**Children know…**- • That light appears to travel in straight lines • That objects are seen because they give out or reflect light into eye (using the idea that light appears to travel in straight lines to 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 • Why shadows have the same shape as the object that cast them (using the idea that light travels in straight lines to explain)
Forces and magnets	**Children know…** • How things move on different surfaces and can compare them • That some forces need contact between 2 objects, but magnetic forces can act at a distance • That magnets attract or repel & attract some materials and not others • How to compare and group together a variety of everyday materials on the basis of whether they are attracted to magnets and identify some magnetic materials • That magnets as having 2 poles • How to predict whether two magnets will attract or repel, depending on which way the poles are facing			

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	By the end of Year 3	By the end of Year 4	By the end of Year 5	By the end of Year 6
States of matter		**Children know…** • How to compare and group materials together, according to whether they are solids, liquids or gases. • That some materials change state when they are heated or cooled, measure or research the temperature at which this happens in ˚C • The part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature		
Sound		**Children know…** • How sounds are made, associating with something vibrating • That vibrations from sounds travel through a medium to the ear • How to identify patterns in the pitch of a sound made by different objects • There are patterns between volume of a sound and strength of vibrations that produced it. • That sound gets fainter over distance		
Electricity		**Children know…** • Appliances that run on electricity • How to construct a simple series circuit • The basic parts of a simple series circuit, including cells, wires, bulbs, switches & buzzers • Whether a lamp will light in a simple series circuit, based on whether it is part of a complete loop with a battery • That a switch opens and closes a circuit & associate this with a lamp lighting • Some common conductors and insulators and associate metals with being good conductors		**Children know…** • The number and voltage of the cells used in the circuit is associated with the brightness of a lamp or volume of buzzer • The reasons for variations in how components function, including the brightness of bulbs, loudness of buzzers & position of switches and can compare them • The recognised symbols when representing a simple circuit in a diagram and can use them

	By the end of Year 3	By the end of Year 4	By the end of Year 5	By the end of Year 6
Properties and changes of materials			**Children know…** • How to compare and group everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical & thermal) & response to magnets • That some materials will dissolve in liquid to form a solution & describe how to recover a substance from a solution • How mixtures might be separated, including through filtering, sieving and evaporating, using their knowledge of solids, liquids and gases • The particular uses of everyday materials, wood and plastic and can give reasons, based on evidence from comparative and fair tests, • That dissolving, mixing and changes of state are reversible changes • That some changes result in new materials, and that this kind of change is not normally reversible, including changes associated with burning & the action of acid on bicarbonate of soda	
Earth and space			**Children know…** • The movement of Earth and other planets relative to the Sun in the solar system • The movement of the Moon relative to Earth • That the Earth, Sun and Moon are approximately spherical • How to use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky	
Forces			**Children know…-** • That unsupported objects fall towards the Earth because of gravity acting between Earth and the falling object • The effects of air resistance, water resistance and friction, that act between moving surfaces • That some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect	

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	By the end of Year 3	By the end of Year 4	By the end of Year 5	By the end of Year 6
Evolution and inheritance				**Children know…** • That living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago • That living things produce offspring of the same kind, but normally they vary and are not identical to their parents • How animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution
Key Vocabulary	prediction, dependent variable, independent variable, fair test, conclusion anchor, nutrients, transport, carbon dioxide, evaporate, stamen, carpel, pollen, stigma, ovary, dispersal, pollination, fertilisation, life cycle, reproduction carbohydrates, proteins, fats, water, fibre, vitamins, minerals, sugars, Eatwell Guide, vertebrates, invertebrates, skeleton, exoskeleton, muscles, contract, loosen extinction, igneous, metamorphic, sedimentary, molten rock, crust, tectonic plates, permeable, impermeable, durable, archaeologist, fossil, weathering, organic matter light source, dark, reflect, illuminate, mirror, rays, beam, UV light, UV rating, pupil, retina, shadow, opaque, translucent, block, transparent force, push, pull, friction, magnetic, attract, repel, magnetic field, non- magnetic, north, south, pole	thermometer, data logger current, energy, power station, appliance, cells, wires, bulbs, buzzers, simple series circuit, crocodile clips, insulator, conductor solid, liquid, gas, thermometer, freezing, melting, particle, atoms, boiling point, melting point, evaporation, degrees Celsius, water cycle, precipitation, surface run off, condensation digestion, excretion, anus, duodenum, small & large intestine, stomach, rectum, oesophagus, tongue, saliva, bile, enzymes, incisors canines, molars, predator, prey, producer, consumer, primary, secondary, tertiary kingdom, classification key, species, climate change, extinction, pollution vibration, volume, travel, wave, high/ low pitch, transmit	line graph, relationship respiration, sensitivity, reproduce, gestation, uterus, womb, fertilise, foetus, metamorphosis, pupa, lava, chrysalis sperm, egg, puberty, hormones natural, synthetic, soluble, insoluble, suspension, filter, sieve, thermal, reversible, irreversible constant, gravity, acceleration, Newton, force meter, air resistance, vacuum, terminal velocity, water resistance, buoyancy, fulcrum solar system, dwarf planet (Pluto), orbits, rotate, planets (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune), horizon, ellipse, curve, gravitational pull	Scatter graph, classification key micro- organism, Linnaean, bacteria inheritance, biological parent, evolve, adaptation, mutation, variation, evolution, genetic modifications, selective & cross breeding circulatory system, oxygen, veins, arteries, capillaries, drugs, alcohol, smoking, disease image, beam, absorption, wave, angle of incidence and reflection, periscope, refraction, spectrum, tilt positive and negative terminals, voltage