Whole School National Curriculum Objective Progression Map

Science Vocabulary Progression Map

	Year Three	Year Four	Year 5	Year 6
Animals including Humans				
Plants				
Living Things and Their Habitats				
Evolution and Inheritance				
Forces	Forces and Magnets		Forces	
Light				
Sound				
Earth and Space				
Electricity				
Materials	Rocks	States of Matter	Properties and Changes of Materials	

Animals Including Humans National Curriculum Objectives			
Year 3	**Year 4**	**Year 5**	**Year 6**
Pupils should be taught to: • 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; • identify that humans and some other animals have skeletons and muscles for support, protection and movement.	**Pupils should be taught to:** • describe the simple functions of the basic parts of the digestive 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.	**Pupils should be taught to:** • describe the changes as humans develop to old age.	**Pupils should be taught to:** • identify and name the main parts of the human circulatory system, and 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.
Vocabulary Progression			
Year 3	**Year 4**	**Year 5**	**Year 6**
• <u>Food groups and nutrients:</u> fibre, fats (saturated and unsaturated), vitamins, minerals. • <u>Skeletons and muscles:</u> skeleton, muscles, tendons, joints, protection, support,	• <u>Digestive system:</u> digest, digestion, tongue, teeth, saliva, salivary glands, oesophagus, stomach, liver, pancreas, gall bladder, small intestine, duodenum, large	• <u>Process of reproduction:</u> gestation, asexual reproduction, sexual reproduction, sperm, egg, cells, clone. • <u>Changes and life cycle:</u> embryo, foetus, uterus,	• <u>Circulatory system:</u> circulation, heart, pulse, heartbeat, heart rate, lungs, breathing, blood vessels, blood, pump, transported, oxygenated blood, deoxygenated blood, oxygen, arteries, veins, capillaries,

organs, voluntary muscles, involuntary muscles, biceps, triceps, contract, relax, bone, cartilage, shell, vertebrate, invertebrate, endoskeleton, exoskeleton, hydrostatic skeleton. • Names of human bones: e.g. skull, spine, backbone, vertebral column, ribcage, pelvis, clavicle, scapula, humerus, ulna, pelvis, radius, femur, tibia, fibula. • Other: energy. Previously introduced vocabulary: movement.	intestine, rectum, anus, faeces, organ. • Types of teeth and dental care: molar, premolar, incisor, canine, wisdom teeth, tooth decay, plaque, enamel, baby (milk) teeth. • Food chains and animal diets: decomposer, food web. Previously introduced vocabulary: producer, consumer, prey, predator, excretion, habitat.	prenatal, adolescence, puberty, menstruation, adulthood, menopause, life expectancy, old age, hormones, sweat. • Changing body parts: e.g. breasts, penis, larynx, ovaries, genitalia, pubic hair. Previously introduced vocabulary: reproduction, reproduce, types of animals and animal groups, fertilisation.	chambers, plasma, platelets, white blood cells, red blood cells. • Lifestyle: drug, alcohol, smoking, disease, calorie, energy input, energy output. • Other: water transportation, nutrient transportation, waste products. Previously introduced vocabulary: carbon dioxide.

Plants National Curriculum Objectives			
Year 3	**Year 4**	**Year 5**	**Year 6**
Pupils should be taught to: **Pupils should be taught to:** • 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. •	•		•
Vocabulary Progression			

Year 3	Year 4	Year 5	Year 6
• <u>Water transportation:</u> transport, evaporation, evaporate, nutrients, absorb, anchor. • <u>Life cycle of flowering plants:</u> pollination (insect/wind), pollen, nectar, pollinator, seed formation, seed dispersal (animal/wind/water), reproduce, fertilisation, fertilise, stamen, anther, filament, carpel (pistil), stigma, style, ovary, ovule, sepal, carbon dioxide. Previously introduced vocabulary: life cycle.			

Living Things and Their Habitats National Curriculum Objectives			
Year 3	**Year 4**	**Year 5**	**Year 6**
	Pupils should be taught to: • recognise that living things can be grouped in a variety of ways; • explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment; • recognise that environments can change and that this can sometimes pose dangers to living things.	**Pupils should be taught to:** • describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird; • describe the life process of reproduction in some plants and animals.	**Pupils should be taught to:** • 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.
Vocabulary Progression			
Year 3	**Year 4**	**Year 5**	**Year 6**
	• Living things: organisms, specimen, species.	• Reproduction: asexual reproduction, sexual reproduction, gestation, metamorphosis, gametes, tuber, runners/side branches,	• Classifying: Carl Linnaeus, Linnaean system, flowering and non-flowering plants, variation.

	• Grouping living things: classification, classification keys, classify, characteristics. • Names of invertebrate animals: snails and slugs, worms, spiders, insects. • Invertebrate body parts: e.g. wing case, abdomen, thorax, antenna, segments, mandible, proboscis, prolegs. • Environmental changes: environment, environmental dangers, adapt, natural changes, climate change, deforestation, pollution, urbanisation, invasive species, endangered species, extinct. Previously introduced vocabulary: carbon dioxide, fish, bird, mammal, amphibian, reptile, skeleton, bone, vertebrate, invertebrate, backbone, names for animal body parts, names of common plants, photosynthesis.	plantlet, cuttings, embryo, adolescent, penis, vagina, egg, pregnancy, gestation. Previously introduced vocabulary: life cycle, pollination, offspring, fertilise, fertilisation, sepal, filament, anther, stamen, pollen, petal, stigma, style, ovary, carpel, ovule, stem, bulb, roots, mammal, adult, baby, sperm, cells, live young.	• Microorganisms: bacteria, single-celled, microbes, microscopic, virus, fungi, fungus, mould, antibiotic, yeast, ferment, microscope, decompose.

National Curriculum Objectives Evolution and Inheritance			
Year 3	**Year 4**	**Year 5**	**Year 6**
	•		**Pupils should be taught to:** • 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 ways and that adaptation may lead to evolution.
Vocabulary Progression			
Year 3	**Year 4**	**Year 5**	**Year 6**
			• Evolution and inheritance: evolve, adaptation, inherit, natural

			selection, adaptive traits, inherited traits, mutations, theory of evolution, ancestors, biological parent, chromosomes, genes, Charles Darwin. • <u>Other:</u> selective breeding, artificial selection, breed, cross breeding, genetically modified food, cloning, DNA. Previously introduced vocabulary: classification, offspring, characteristics, habitat, environment, adapt, variations, human, fossil, suited, cells, names of different habitats, names of animals and their body parts, species, sedimentary rock, lava, igneous rock, metamorphic rock, magma, heat, fossilisation.

National Curriculum Objectives Forces			
Year 3	**Year 4**	**Year 5**	**Year 6**
Forces and Magnets **Pupils should be taught to:** • compare how things move on different surfaces; • notice that some forces need contact between 2 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 2 poles; • predict whether 2 magnets will attract or repel each	•	Forces **Pupils should be taught to:** • explain that unsupported objects 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.	• .

other, depending on which poles are facing.			
Vocabulary Progression			
Year 3	**Year 4**	**Year 5**	**Year 6**
• How things move: move, movement, surface, distance, strength. • Types of forces: push, pull, contact force, non-contact force, friction. • Magnets: magnetic, magnetic field, magnetic force, bar magnet, horseshoe magnet, ring magnet, magnetic poles (north pole, south pole), attract, repel, compass. • Magnetic and non-magnetic materials: e.g. iron, nickel, cobalt. Previously introduced vocabulary: metal, names of materials.		• Types of forces: air resistance, water resistance, buoyancy, upthrust, Earth's gravitational pull, gravity, opposing forces, driving force. • Mechanisms: levers, pulleys, gears/cogs. • Measurements: weight, mass, kilograms (kg), Newtons (N), scales, speed, fast, slow. • Other: streamlined, Earth. Previously introduced vocabulary: air, heat, moon.	

National Curriculum Objectives Light			
Year 3	**Year 4**	**Year 5**	**Year 6**
Pupils should be taught to: • recognise that they need light in order to see things and that dark is the absence of light; • notice that light is reflected from surfaces; • recognise that light from the sun can be dangerous and that there are ways to protect their eyes; • recognise that shadows are formed when the light from a light source is blocked by an opaque object; • find patterns in the way that the size of shadows change. •	•		**Pupils should be taught to:** • recognise that light appears to travel in 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. •
Vocabulary Progression			
Year 3	**Year 4**	**Year 5**	**Year 6**
• <u>Light and seeing:</u> dark, absence of light, light source,			• <u>Reflection:</u> periscope.

illuminate, visible, shadow, translucent, energy, block. • Light sources: e.g. candle, torch, fire, lantern, lightning. • Reflective light: reflect, reflection, surface, ray, scatter, reverse, beam, angle, mirror, moon. • Sun safety: dangerous, glare, damage, UV light, UV rating, sunglasses, direct. Previously introduced vocabulary: opaque, transparent, sunlight, sun.			• Seeing light: visible spectrum, prism. (Extension if time allows) • How light travels: light waves, wavelength, straight line, refraction. Previously introduced vocabulary: names and properties of materials, absorb.

National Curriculum Objectives Sound			
Year 3	**Year 4**	**Year 5**	**Year 6**
	Pupils should be taught to: • identify how sounds are made, associating some of 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.		•
Vocabulary Progression			
Year 3	**Year 4**	**Year 5**	**Year 6**
	• Parts of the ear: eardrum, auditory nerve, ear canal cochlea, pinna, anvil		

	• <u>Making sound:</u> vibration, vocal cords, particles. frequency • <u>Measuring sound:</u> pitch, volume, amplitude, amplify sound wave, quiet, loud, high, low, travel, distance. decibels • <u>Other:</u> soundproof, absorb sound.		

National Curriculum Objectives Earth and Space			
Year 3	**Year 4**	**Year 5**	**Year 6**
	•	**Pupils should be taught to:** • 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.	•
Vocabulary Progression			
Year 3	**Year 4**	**Year 5**	**Year 6**
		• Solar system: star, planet. • Names of planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Neptune, Uranus. • Shape: spherical bodies, sphere.	

		• Movement: rotate, axis, orbit, satellite. • Theories: geocentric model, heliocentric model, astronomer. • Day length: sunrise, sunset, midday, time zone. Previously introduced vocabulary: Sun, moon, shadow, day, night, heat, light, reflect.	

National Curriculum Objectives Electricity			
Year 3	**Year 4**	**Year 5**	**Year 6**
	Pupils should be taught to: • 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 and associate this with whether or not a lamp lights in a simple series circuit; • recognise some common conductors and insulators, and associate metals with being good conductors.		**Pupils should be taught to:** • 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.
Vocabulary Progression			

Year 3	Year 4	Year 5	Year 6
	• Electricity: mains-powered, battery-powered, mains electricity, plug, appliances, devices. • Circuits: circuit, simple series circuit, complete circuit, incomplete circuit. • Circuit parts: bulb, cell, wire, buzzer, switch, motor, battery. • Materials: electrical conductor, electrical insulator. • Other: safety. Previously introduced vocabulary: names of materials.		• Flow and measure of electricity: voltage, amps, resistance, electrons, volts (V), current. • Circuits: symbol, circuit diagram, component, function, filament. • Variations: dimmer, brighter, louder, quieter. • Types of electricity: natural electricity, human-made electricity, solar panels, power station. • Other: positive, negative.

National Curriculum Objectives Materials			
Year 3 Rocks **Pupils should be taught to:** • 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.	**Year 4** States of Matter **Pupils should be taught to:** • 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.	**Year 5** Properties and Changes of Materials **Pupils should be taught to:** • 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 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	**Year 6**

		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.	
Vocabulary Progression			
Year 3	**Year 4**	**Year 5**	**Year 6**
• Types of rock: sedimentary rock, igneous rock, metamorphic rock. • Properties of rocks: permeable, semi-permeable, impermeable, durable. • Names of rocks: e.g. marble, chalk, granite, sandstone, slate. • Formation of rocks and fossils: natural, human-made, magma, lava, molten rock, sediment, erosion,	• States of matter: solids, liquids, gases, particles. • State change: evaporate, condense, melt, freeze, heat, cool, melting point, freezing point, boiling point, water vapour. • Water cycle: precipitation, evaporation, condensation, ground run-off, collection, underground water, bodies of water (sea, river, stream), water droplets, hail. • Other: atmosphere.	• Properties of materials: thermal conductor/insulator, magnetism, electrical resistance, transparency. • Mixtures and solutions: dissolving, substance, soluble, insoluble. • Changes of materials: reversible change, physical change, irreversible change, chemical change, burning, new material, product. • Separating: sieving, filtering, magnetic attraction.	

fossilisation, layers, bone, fossil. • Soil: sandy, chalky, clay, peaty, loamy, topsoil, subsoil, bedrock, mineral, organic matter, compost. • Other: palaeontology. Previously introduced vocabulary: soil, water, air.	Previously introduced vocabulary: temperature, rain, cloud, snow, wind, sun, hot, cold, absorb, carbon dioxide.	Previously introduced vocabulary: electrical conductor/insulator, bulb, translucent.	

Progression of Vocabulary

Working Scientifically

Year 3 and 4	Year 5 and 6
accurate	accuracy and precision
bar chart	bar graphs
chart	causal relationship
classify	continuous variable
comparative test	degree of trust
conclusion (What have we found out?)	dependent variable
control variable	hazard
criteria	hypothesis
data	independent variable
develop	justify
diagram	line graphs
evaluate	mean
evidence	random errors
explanation	refute
key	repeat results
independent variable	scatter graphs
making a test fair	systematic variable
management	support
method	variables (what do we change, what do we keep the same, how and what are we measuring?)
observations	valid
plan (What will we do?)	
practical enquiry	

prediction (What do you think will happen?) primary sources questioning reasoning relationships results (What happened?) secondary sources standard units table What do we change, what do we keep the same, what are we measuring?	