



Northwood Community Primary School Science Progression of Knowledge

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Working Scientifically	<ol style="list-style-type: none"> 1. asking simple questions and recognising that they can be answered in different ways 2. observing closely, using simple equipment 3. performing simple tests 4. identifying and classifying 5. using their observations and ideas to suggest answers to questions 6. gathering and recording data to help in answering questions 	<ol style="list-style-type: none"> 1. asking relevant questions and using different types of scientific enquiries to answer them 2. setting up simple practical enquiries, comparative and fair tests 3. making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers 4. gathering, recording, classifying and presenting data in a variety of ways to help in answering questions 5. recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables 6. reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions 7. using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions 8. identifying differences, similarities or changes related to simple scientific ideas and processes 9. using straightforward scientific evidence to answer questions or to support their findings. 	<ol style="list-style-type: none"> 1. asking relevant questions and using different types of scientific enquiries to answer them 2. setting up simple practical enquiries, comparative and fair tests 3. making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers 4. gathering, recording, classifying and presenting data in a variety of ways to help in answering questions 5. recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables 6. reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions 7. using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions 8. identifying differences, similarities or changes related to simple scientific ideas and processes 9. using straightforward scientific evidence to answer questions or to support their findings. 	<ol style="list-style-type: none"> 1. planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary 2. taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate 3. recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs 4. using test results to make predictions to set up further comparative and fair tests 5. reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations 6. identifying scientific evidence that has been used to support or refute ideas or arguments 	<ol style="list-style-type: none"> 1. planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary 2. taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate 3. recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs 4. using test results to make predictions to set up further comparative and fair tests 5. reporting and presenting findings 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written forms such as displays and other presentations 6. identifying scientific evidence that has been used to support or refute ideas or arguments

	Y1	Y2	Y3	Y4	Y5	Y6
Most Able	<p>Can they give reasons for their answers?</p> <p>Can they discuss similarities and differences?</p> <p>Can they explain what they have found out using scientific vocabulary?</p> <p>Can they make accurate measurements?</p> <p>Can they say whether things happened as they expected and if not why not?</p> <p>Can they suggest more than one way of grouping animals and plants and explain their reasons?</p> <p>Can they use information from books and online information to find things out?</p>	<p>Can they explain their findings in different ways (display, presentation, writing)?</p> <p>Can they suggest improvements and predictions for further tests?</p> <p>Can they suggest how to improve their work if they did it again?</p> <p>Can they plan and carry out an investigation by controlling variables fairly and accurately?</p> <p>Can they use test results to make further predictions and set up further comparative tests?</p> <p>Can they use a graph or diagram to answer scientific questions?</p> <p>Can they use a range of variables to investigate?</p>	<p>Can they explore different ways to test an idea, choose the best way and give reasons?</p> <p>Can they explain, in simple terms, a scientific idea and what evidence supports it?</p> <p>Can they decide which units of measurement they need to use?</p> <p>Can they find a pattern from their data and explain what it shows?</p> <p>Can they link what they have found out to other science?</p> <p>Can they suggest how to improve their work and say why they think this?</p> <p>Can they choose the best way to answer a question and use information from different sources to plan an investigation?</p> <p>Can they plan which equipment they will need and use it effectively?</p> <p>Can they explain qualitative and quantitative data?</p>			
Vocabulary	<p>Question, answer ,observe, observing equipment, identify, classify, sort, group record, diagram, chart, map, data, compare contrast, biology, chemistry, physics</p>	<p>Research, questions, enquiry, comparative & fair test, systematic, careful, observation 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</p>	<p>Plan, variables, measurements, display & presentation, evidence, support, refute ideas or arguments, accuracy, precision, repeat readings, scientific diagrams, labels, classification, keys, tables, scatter graphs, bar graphs, line graphs, patterns, systematic, quantitative measurements</p>			
Biology Animals and humans	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. notice that animals, including humans, have offspring which grow into adults 2. find out about and describe the basic needs 	<ol style="list-style-type: none"> 1. identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. describe the changes as humans develop to old age 	<ol style="list-style-type: none"> 1. identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood

	Y1	Y2	Y3	Y4	Y5	Y6
	<p>that are carnivores, herbivores and omnivores</p> <p>3. describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)</p> <p>4. identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense</p>	<p>of animals, including humans, for survival (water, food and air)</p> <p>3. describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</p>	<p>nutrition from what they eat</p> <p>2. identify that humans and some other animals have skeletons and muscles for support, protection and movement</p>	<p>their simple functions</p> <p>3. construct and interpret a variety of food chains, identifying producers, predators and prey</p>		<p>vessels and blood</p> <p>2. recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>3. describe the ways in which nutrients and water are transported within animals, including humans</p>
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, egg-chicken-egg, egg-caterpillar-pupa-butterfly, spawn-tadpole-frog, lamb-sheep, baby-toddler-child-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-child-teenager-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		<p>1. explore and compare the differences between things that are living,</p>		<p>1. recognise that living things can be grouped in a variety of ways</p>	<p>1. describe the differences in the life cycles of a mammal, an</p>	<p>1. describe how living things are classified into broad groups according to</p>

	Y1	Y2	Y3	Y4	Y5	Y6
Living things in their habitats		<p>dead, and things that have never been alive</p> <p>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</p> <p>3. identify and name a variety of plants and animals in their habitats, including microhabitats</p> <p>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</p>		<p>2. explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</p> <p>3. recognise that environments can change and that this can sometimes pose dangers to living things</p>	<p>amphibian, an insect and a bird</p> <p>2. describe the life process of reproduction in some plants and animals</p>	<p>common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals</p> <p>2. give reasons for classifying plants and animals based on specific characteristics</p>
Vocabulary		<p>living dead never alive habitats micro-habitats food food chain sun</p>		<p>Environment, flowering, non-flowering, plants, animals, vertebrate,</p>	<p>Life process of reproduction, plants, animals, life cycle,</p>	<p>Micro-organisms, plants, animals, classification, classify animals,</p>

	Y1	Y2	Y3	Y4	Y5	Y6
		grass cow human alive healthy logs leaf litter stony path under bushes shelter seashore woodland ocean rainforest conditions hot/warm/cold dry/damp/wet bright/shade/dark		danger, invertebrates, fish, amphibian, reptiles, birds, mammals, human impact,	mammal, amphibian, insect, bird, prehistoric, similarities, differences	invertebrates, vertebrates, fish, mammals, reptiles, birds, mammals, various scientists e.g Carl Linnaeus
Biology Plants Evolution & 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 pollination, seed		Revisit Plants	Evolution & 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 may

	Y1	Y2	Y3	Y4	Y5	Y6
			formation and seed dispersal			lead to evolution
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 physical properties of a variety of everyday materials 4. compare and group together a	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 objects made from some materials can be changed by squashing, bending,	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 have lived are trapped within rock 3. recognise that soils are made from rocks and organic matter	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 research the temperature at which this happens in degrees Celsius (°C)	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 thermal), and response to magnets 2. know that some materials will dissolve in liquid to form a solution, and	

Y1

variety of everyday materials on the basis of their simple physical properties

Y2

twisting and stretching

Y3

3. identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature

Y4

Y5

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

Y6

	Y1	Y2	Y3	Y4	Y5	Y6
					bicarbonate of soda	
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	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	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	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

	Y1	Y2	Y3	Y4	Y5	Y6
			<p>formed when the light from a light source is blocked by an opaque object</p> <p>5. find patterns in the way that the size of shadows change</p>	<p>the object that produced it</p> <p>4. find patterns between the volume of a sound and the strength of the vibrations that produced it</p> <p>5. recognise that sounds get fainter as the distance from the sound source increases</p>	<p>night and the apparent movement of the sun across the sky</p>	<p>our eyes or from light sources to objects and then to our eyes</p> <p>4. use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</p>
Vocabulary	<p>season summer winter autumn spring day daytime, weather wind rain snow hail sleet fog sun hot warm cold</p>		<p>light see dark reflect surface natural star Sun Moon shadow blocked solid artificial torch candle lamp sunlight dangerous protect eyes</p>	<p>vibrate vibration vibrating air medium ear hear sound volume pitch faint fainter loud louder string percussion woodwind brass insulate</p>	<p>Earth, Sun, Moon, planets, star, solar system, Mercury, 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</p>	<p>light travels straight reflect reflection light source object shadows mirrors periscope rainbow filters</p>
Physics Forces & magnets Electricity			<p>1. Forces & Magnets compare how things move on different surfaces</p> <p>2. notice that some forces need contact between 2 objects, but magnetic forces can</p>	<p>Electricity</p> <p>1. identify common appliances that run on electricity</p> <p>2. construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p>	<p>Forces & Magnets</p> <p>1. explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>2. identify the effects of air resistance, water</p>	<p>Electricity</p> <p>1. associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p> <p>2. compare and give reasons for variations in how</p>

	Y1	Y2	Y3	Y4	Y5	Y6
			<p>act at a distance</p> <p>3. observe how magnets attract or repel each other and attract some materials and not others</p> <p>4. 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</p> <p>5. describe magnets as having 2 poles</p> <ul style="list-style-type: none"> predict whether 2 magnets will attract or repel each other, depending on which poles are facing 	<p>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</p> <p>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</p> <p>5. recognise some common conductors and insulators, and associate metals with being good conductors</p>	<p>resistance and friction, that act between moving surfaces</p> <p>3. recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</p>	<p>components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches</p> <p>3. use recognised symbols when representing a simple circuit in a diagram</p>
Vocabulary			<p>force push pull open surface magnet magnetic attract repel magnetic poles North South</p>	<p>air resistance water resistance friction surface force effect move accelerate decelerate stop change direction</p>	<p>air resistance water resistance friction surface force effect move accelerate decelerate stop change direction brake</p>	<p>Voltage, brightness, volume, switches, danger, series circuit, electrical safety, circuit</p>

Y1

Y2

Y3

Y4

Y5

Y6

				brake mechanism pulley gear spring theory of gravitation Galileo Galilei Isaac Newton	mechanism pulley gear spring theory of gravitation Galileo Galilei Isaac Newton, gravity	diagram, switch, bulb, buzzer, motor, symbols
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