



Walton on the Hill Primary School

 **Belong** · **Learn** · **Shine**

Science Curriculum Map – KS2

Intent and Implementation

At Walton on the Hill Primary School, our science curriculum ignites curiosity, deepens knowledge, and empowers children to think and work like scientists. Through a coherent and carefully sequenced programme, pupils revisit and extend core concepts in biology, chemistry, and physics, building knowledge cumulatively from concrete experiences to abstract understanding.

Our teaching emphasises enquiry, collaboration, and vocabulary development. Pupils learn not just *what* scientists have discovered, but *how* scientific knowledge is built through investigation, reasoning, and evidence. Each unit connects learning across topics and key stages, supporting pupils to apply prior understanding in new contexts.

Our science curriculum reflects our school motto — *Belong · Learn · Shine* — by ensuring that every child feels confident to explore, question, and make sense of the world around them, developing both knowledge and a lifelong sense of scientific curiosity.

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 **Belong** · **Learn** · **Shine**

YEAR 3

Half Term	National Curriculum Strand	Topic	Substantive Knowledge	Disciplinary Knowledge (Working Scientifically)	Key Vocabulary	Revisited / Linked Learning	Cross-Curricular Links
Autumn 1	Biology	Plants	Functions of parts of plants; requirements for life and growth; water transportation; life cycle of flowering plants.	Set up simple comparative tests (light/water); make observations over time; measure growth accurately.	roots, stem, leaves, flowers, pollination, germination, nutrients	Builds on KS1 "Plants" – extends understanding to functions and life cycles.	Outdoor learning, geography (habitats).
Autumn 2	Chemistry	Rocks	Compare and group rocks based on appearance and properties; understand fossil formation; recognise soils.	Observe closely using hand lenses; classify materials; record findings in tables.	sedimentary, igneous, metamorphic, fossil, permeable, erosion	Links to geography: Earth structure and natural resources.	Geography (Earth layers); art (fossil impressions).
Spring 1	Physics	Light	Recognise that light is needed to see; that darkness is absence of light; reflection; shadows.	Investigate how shadows change; measure and record data; predict outcomes.	reflection, opaque, translucent, transparent, source, shadow	Links to Y6 "Light" (shadow length, straight-line travel).	DT (shadow puppets); art (light and shade).
Spring 2	Physics	Forces and Magnets	Compare how objects move; notice magnetic attraction/repulsion;	Test for magnet strength; fair tests using force meters;	force, friction, magnetism, attract, repel,	Revisits "pushes and pulls" from KS1; prepares for Y5 "Forces".	DT (moving mechanisms).

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Half Term	National Curriculum Strand	Topic	Substantive Knowledge	Disciplinary Knowledge (Working Scientifically)	Key Vocabulary	Revisited / Linked Learning	Cross-Curricular Links
			identify magnetic materials.	communicate findings.	pole, magnetic field		
Summer 1	Biology	Animals including Humans	Skeletons and muscles; nutrition and food groups; basic digestion.	Identify and classify; use diagrams and secondary sources; measure pulse rates.	skeleton, muscles, joints, nutrients, carbohydrates, protein	Builds on KS1 "Humans and Animals"; leads to Y4 digestion.	PE (movement and muscles).
Summer 2	Cross-topic	Review and Consolidation	Consolidate key vocabulary, conduct revision enquiries.	Plan and carry out comparative tests; evaluate reliability.	predict, evidence, observe, measure, fair test	Reinforces working scientifically skills.	Computing (data handling).

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YEAR 4

Half Term	National Curriculum Strand	Topic	Substantive Knowledge	Disciplinary Knowledge (Working Scientifically)	Key Vocabulary	Revisited / Linked Learning	Cross-Curricular Links
Autumn 1	Chemistry	States of Matter	Compare solids, liquids, gases; understand changes of state; water cycle.	Measure temperature; record using tables/graphs; observe evaporation.	solid, liquid, gas, evaporation, condensation, temperature	Builds from Y2 "Materials"; leads to Y5 "Changes of Materials".	Geography (water cycle).
Autumn 2	Physics	Sound	Identify how sounds are made; vibrations; pitch and volume; sound through materials.	Use data loggers; create fair tests to measure pitch and volume.	vibration, pitch, volume, amplitude, frequency	Builds on Y3 "Light"; prepares for Y6 "Electricity" (sound circuits).	Music (instruments); DT (soundproofing).
Spring 1	Biology	Animals including Humans	Digestive system; teeth and their functions; food chains.	Construct and interpret food chains; classify types of teeth; use secondary research.	digestion, saliva, enzymes, predator, prey, molar, incisor	Builds on Y3 nutrition; links to Y5 "Life Cycles".	PSHE (healthy eating); DT (nutrition).
Spring 2	Physics	Electricity	Construct simple circuits; identify conductors/insulators; circuit symbols.	Build and test circuits; record diagrams; use predictions.	circuit, battery, bulb, switch, conductor, insulator	Prepares for Y6 "Electricity" (complex circuits).	DT (lighthouses, torches).

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Half Term	National Curriculum Strand	Topic	Substantive Knowledge	Disciplinary Knowledge (Working Scientifically)	Key Vocabulary	Revisited / Linked Learning	Cross-Curricular Links
Summer 1	Biology	Living Things and Habitats	Classify living things; use keys; recognise environments.	Create classification keys; observe changes in habitats.	classification, environment, habitat, species, key	Revisits KS1 "Habitats"; leads to Y6 "Classification".	Geography (biomes); outdoor learning.
Summer 2	Review	Scientific Enquiry Focus	Mini-projects reinforcing skills.	Select appropriate enquiry types; present and interpret data.	data, variable, accuracy, conclusion	Reinforces all Y4 content.	Computing (data handling).

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YEAR 5

Half Term	National Curriculum Strand	Topic	Substantive Knowledge	Disciplinary Knowledge (Working Scientifically)	Key Vocabulary	Revisited / Linked Learning	Cross-Curricular Links
Autumn 1	Physics	Earth and Space	Movement of Earth, Moon, and planets; night and day; heliocentric model.	Model and demonstrate planetary orbits; record data; use secondary sources.	orbit, rotation, axis, orbit, solar system, gravity	Links to Y3 "Light" and Y5 "Forces".	Geography (Earth and space); computing (data).
Autumn 2	Physics	Forces	Gravity, air and water resistance, friction, mechanisms like levers and pulleys.	Plan fair tests; measure forces; represent results graphically.	gravity, friction, resistance, mechanism, lever, pulley	Builds from Y3 "Forces and Magnets"; prepares for KS3.	DT (moving models).
Spring 1	Biology	Living Things and Life Cycles	Reproduction in plants and animals; life cycles; changes in humans.	Observe over time; dissect plants; record life cycles.	reproduction, pollination, metamorphosis, life cycle	Links to Y3 "Plants" and Y4 "Animals".	PSHE (puberty); outdoor learning.
Spring 2	Chemistry	Properties and Changes of Materials	Compare and group materials; dissolving, reversible/irreversible changes.	Carry out dissolving investigations; filter, sieve, evaporate.	dissolve, reversible, irreversible, solution, reaction	Builds on Y4 "States of Matter".	DT (cooking); geography (materials).

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Half Term	National Curriculum Strand	Topic	Substantive Knowledge	Disciplinary Knowledge (Working Scientifically)	Key Vocabulary	Revisited / Linked Learning	Cross-Curricular Links
Summer 1	Biology	Animals including Humans	Stages of human development; puberty and changes; gestation in animals.	Record data; compare developmental timelines; use research.	gestation, puberty, development, hormone	Revisits Y4 digestion; prepares for KS3 biology.	PSHE (relationships and health).
Summer 2	Review	Science in Action	Applying scientific knowledge to real-world problems.	Plan independent investigations; evaluate reliability.	hypothesis, data, evaluate, variable	Consolidates KS2 scientific skills.	Computing (presentations).

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YEAR 6

Half Term	National Curriculum Strand	Topic	Substantive Knowledge	Disciplinary Knowledge (Working Scientifically)	Key Vocabulary	Revisited / Linked Learning	Cross-Curricular Links
Autumn 1	Biology	Animals including Humans	Circulatory system; heart, blood, and transport; exercise and health.	Design and carry out comparative tests; measure pulse; present data.	heart, veins, arteries, oxygen, nutrients, circulation	Builds on Y3 nutrition and Y5 development.	PE (fitness); PSHE (health).
Autumn 2	Biology	Evolution and Inheritance	Variation, adaptation, fossils, inheritance, natural selection.	Use evidence; create timelines; research scientists (Darwin, Wallace).	evolution, inheritance, variation, adaptation	Links to Y3 "Rocks" (fossils); extends biological understanding.	History (Darwin/Victorian era).
Spring 1	Physics	Light	Light travels in straight lines; reflection and refraction; how we see.	Investigate reflection/refraction; model ray diagrams.	reflection, refraction, prism, spectrum	Revisits Y3 "Light" in greater depth.	Art (light and shadow); computing (light simulation).
Spring 2	Physics	Electricity	Components and circuit symbols; varying voltage; comparing brightness.	Plan fair tests; record using circuit diagrams; evaluate reliability.	voltage, current, series, parallel, component	Builds on Y4 "Electricity".	DT (electronic projects).

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Half Term	National Curriculum Strand	Topic	Substantive Knowledge	Disciplinary Knowledge (Working Scientifically)	Key Vocabulary	Revisited / Linked Learning	Cross-Curricular Links
Summer 1	Biology	Classification	Classify living things; micro-organisms; keys and branching diagrams.	Create classification systems; observe samples under magnification.	microorganism, fungi, bacteria, classification	Builds on Y4 "Living Things".	Computing (databases); geography (biomes).
Summer 2	Review	STEM Projects	Consolidation and transition projects.	Combine multiple enquiry types; communicate findings effectively.	enquiry, hypothesis, fair test, data	Consolidates KS2 science.	Cross-curricular STEM focus.

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WORKING SCIENTIFICALLY PROGRESSION of Disciplinary Knowledge (Years 3–6)

Skill	Year 3	Year 4	Year 5	Year 6
Asking Questions	Ask relevant questions using observations.	Pose questions to test variables.	Plan investigations independently.	Formulate hypotheses and justify them.
Planning Enquiries	Suggest practical enquiries to answer questions.	Decide on variables to change and measure.	Identify controls and repeat for reliability.	Design investigations considering accuracy and validity.
Measuring & Observing	Use simple tools and standard units.	Use thermometers, stopwatches, data loggers.	Choose appropriate equipment.	Use precision instruments and justify choice.
Recording Data	Record in tables and simple bar charts.	Use classification keys and graphs.	Record data systematically, including line graphs.	Select appropriate formats (scatter graphs, tables).
Analysing & Concluding	Identify patterns and describe findings.	Draw conclusions linked to evidence.	Explain conclusions using data.	Evaluate results, discussing reliability and anomalies.
Evaluating & Communicating	Use scientific language in reports.	Present findings verbally or graphically.	Use evidence to justify ideas.	Communicate using formal scientific reports.

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