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Northern Ireland Curriculum 2028

An entitlement to excellence and equity

Key Stage 2

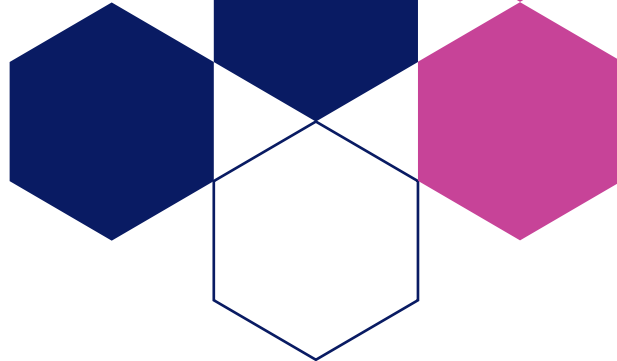


Purpose of document

This document brings together the learning entitlements for each subject area within Key Stage 2. This is intended to provide practitioners (namely Key Stage 2 practitioners) with clarity on the subject content at this specific phase of education.

The document should not be read in isolation but seen as a part of the wider curriculum framework setting the foundations for future learning at Key Stage 3.

All that is contained are the learning entitlements. The subject vision statements and the explanation of the subject categories are within the subject framework documents. Both the subject vision statements and the subject categories should be read in conjunction with this document.



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Art and design

Key Stage statement

Art and design in Key Stage 2 builds on pupils' growing knowledge, confidence and technical control, offering them greater opportunities to develop and refine skills and make creative choices. At this stage, pupils learn to observe in more detail, experiment more deliberately and use drawing, painting, sculpture, collage, textiles, photography and digital tools to communicate ideas with clarity. Their deepening knowledge of the elements of art, which include how artists can use tone, form and space to construct and develop compositions, allows a more sophisticated analysis of the work of others, which in turn informs their own work. Their increasing knowledge allows greater insight into the work of artists, designers and craftspeople from different times and cultures, which shapes and strengthens their own practice.

The making of art

Mark-making and drawing

Pupils should learn to:

- use different materials, varying the pressure of application to create marks, lines, shapes, patterns and detail on different backgrounds
- use different grades of pencil to:
 - show tone, form, texture and detail through mark-making, including hatching and cross-hatching
 - shade, to show form, light and shadow
- layer and blend materials such as charcoal, chalk and soft pastels
- layer oil pastels, learning how to work from dark to light
- use line and shape to simplify objects into basic shapes, using knowledge of foreground, middle ground and background to draw objects at an appropriate scale
- use single-point perspective and the basic proportions of the face and head

Painting

Pupils should learn to:

- select different types of brush, tools, paint types and surfaces to achieve a particular effect
- paint on a variety of scales
- mix and use tints and shades of primary and secondary colours and explore the use of complementary colours and expressive brushstrokes (e.g. varying brush hold, paint texture and density such as washes and impasto)
- mix different tones and learn how to match colours for a purpose (e.g. skin tones; diffuse colours to show distance; using a limited palette)
- paint on wet, damp and dry paper and add wax resist, to create an intended effect
- use tints and shades to suggest three-dimensional objects

3-D media

Pupils should learn to:

- manipulate, add to, impress/engrave and make forms from clay (e.g. making a pot by pinching or coiling) by using techniques such as scoring, applying slip and smoothing
- manipulate paper and card (e.g. by coiling, curling, scoring, folding and bending) and use wire and papier mâché to create three-dimensional structures
- select appropriate three-dimensional materials which are best suited to their sculptural design

Printing

Pupils should learn to:

- select and adapt materials to make block prints (e.g. by incising materials such as clay or polystyrene) and make a monoprint (e.g. by painting and taking a print from a water-resistant surface)
- print on different grounds and use printing to create patterns (e.g. by using tessellation)

Collage and textiles

Pupils should learn to:

- identify and name fabrics (e.g. felt, cotton, wool and polyester) and add colour to fabrics (e.g. by using fabric pens or by processes such as dyeing)
- select and use appropriate paper, fabrics and yarn to create a collage to a desired design
- cut fabric, thread a needle and use stitches (e.g. cross stitch, back stitch and blanket stitch) to join and decorate fabric
- weave using materials such as wool and add woven elements to their compositions

Photography

Pupils should learn to:

- take photographs considering composition (e.g. by using a simple viewfinder; exploring viewpoint and distance; using principles such as balance and focal point)
- use digital tools to crop, rotate and adjust their work

The creative processes of art

Pupils should learn to:

- use sketchbooks to:
 - draw, make notes and collect information from observation
 - analyse and annotate information
 - practise techniques
 - experiment
 - explore, generate and refine ideas
 - plan and develop projects over time from a range of starting points
 - evaluate their work
- use subject-specific vocabulary to discuss and select appropriate materials and techniques that will best suit their ideas (e.g. discussing tints and shades to portray a rough sea)
- evaluate and develop their work as they progress, modifying ideas and adapting work in response to self-evaluation and peer-feedback

The elements of art

Pupils should learn:

- about the elements of art (colour, line, shape, tone, form, space, texture and pattern)
- to use subject-specific vocabulary to describe the elements when discussing their own work and that of other artists (e.g. in the use of oil pastels, acrylic paint and complementary colours in Rachel Jones's *lick your teeth, they so clutch* to indicate a textured surface; in the work of El Anatsui who creates highly textured sculptural forms using discarded, recycled materials)
- to identify warm and cool colours, tints and shades, complementary and analogous colours on a colour wheel, in objects and in works of art
- that artists can use lines in specific ways (e.g. to show the edges of shapes in Ellsworth Kelly's plant drawings; tone and form in Rembrandt van Rijn's *Self-Portrait, Staring*; the illusion of texture in Anselm Kiefer's paintings)
- about tone and form and how these can be used in works of art (e.g. George Stubbs used different tones of brown in his painting *Whistlejacket* to show the form of a horse; J.M.W. Turner used lighter, more diffuse colours in the background of *Bonneville, Savoy, with Mont Blanc* to indicate distance; F.E. McWilliam's use of three-dimensional sculptural form)
- that artists can create the illusion of space in two dimensions using perspective, foreground, middle ground and background
- about composition or design in relation to a work of art (e.g. Edvard Munch uses swirling lines and complementary colours to create a composition/design which indicates an uneasy, restless feeling; asymmetrical design and idealised nature portrayed in traditional Chinese brush painting)

The history of art

Pupils should learn:

- about art, craft and design in different styles, from different cultures and time periods, including examples from traditional, modern and contemporary genres, and how different social, cultural and historical contexts influence artists', designers' and craftmakers' work (e.g. key art and design movements, such as the Renaissance, Impressionism, Cubism and the Arts and Crafts Movement; comparing classical and Gothic architecture; Islamic decorative design; the Benin Bronzes; story telling in the paintings installations of Lubaina Himid)

- to identify and discuss a number of key artworks and artists and make links between their own work and that of others
- that people can work in art, craft and design in different roles, including curators, scholars and critics
- that art, craft and design can be made for different purposes, including:
 - recreating reality
 - showing beauty
 - depicting a story or an event
 - evoking or showing an emotion
 - demonstrating a political or religious idea



Digital technology

Key Stage statement

In Key Stage 2, digital technology evolves into the study of interactivity and system logic. This stage focuses on the abstraction of information, where pupils understand how data is structured using fields, records and logical operators. It emphasises an iterative design cycle: pupils plan, prototype and refine artifacts to meet specific criteria, whether through 3-D modelling, simulations, website or app design.

Robotics demonstrate how programmes manipulate the physical world via sensors. As pupils explore the digital world, they develop understanding of information integrity, mastering search queries and AI prompts. They apply these skills to plan tasks using collaborative workspaces to organise information and solve logistical problems. Pupils learn that the internet is a global network of devices and that the World Wide Web is a service that runs on it.

By managing their digital footprint and practising sustainable behaviours, pupils develop a mature perspective on the environmental impact of technology, ensuring the digital worlds they build are inclusive, secure and purposeful.

Computing and digital systems

Pupils should learn that:

- effective digital solutions are developed through a cycle of design and evaluation, where projects are built to meet a specification and tested against success criteria
- abstraction reduces complexity by directing attention to the essential features of a system
- algorithms are refined using sequence, selection and iteration through block-based and text-based coding environments
- verification and testing are structured approaches to identify errors when developing algorithms and code
- a robotic system (e.g. microcontrollers or robots) uses input sensors to detect changes in its environment and processes the data using programmed logic to solve a practical problem
- organising data (fields, records, rows and columns) allows information to be searched and filtered accurately using logical operators (AND, OR, NOT)

- software is the set of instructions required to make hardware function
- digital work can be stored on a remote computer (e.g. a school server or in the cloud) and shared with specific people by controlling who can access it
- the internet is a global network of interconnected devices that transmits data using agreed rules (protocols) and the World Wide Web is a service that runs on the internet

Digital creation and communication

Pupils should learn:

- to organise and enhance digital content for a specific purpose and audience using features of word processing tools, including alignment, font styles and list structures
- to use presentation software to organise digital content into ordered slides, combining text, images and other media to communicate information to an audience
- that digital products and assets are evaluated and refined through an iterative design process (plan, create, test, improve) to ensure the final product is functional and intuitively designed
- that AI tools generate outputs based on the prompts they are given, and that refining prompts with clear language and detail can influence the quality of the results
- that digital assets are stored in specific file formats (optimised for documents, images, audio or video) and that choosing the correct format and location for a specific purpose ensures the data remains accessible and functional
- that secure online platforms provide moderated spaces where users can communicate and use tools (e.g. editing and commenting) to collaborate and develop shared documents

Digital ethics and responsibility

Pupils should learn:

- that a digital footprint is a persistent, growing record of personal online activity and data
- to recognise the importance of data privacy in protecting personal identity
- that games, websites, apps, and social media platforms have age restrictions, and that these are designed to protect users from content or interactions that may be inappropriate for their age
- about sustainable digital behaviours, including: managing files efficiently, using shared folders, logging out, shutting down devices, and adopting energy-saving practices to reduce environmental impact



English and drama

Key Stage statement

At Key Stage 2, pupils consolidate fluency and begin to exercise greater control as readers, speakers and writers, building on what they have learned in earlier key stages. Pupils learn to recognise, analyse and exploit patterns across sound, structure and form in progressively more challenging contexts. Pupils consolidate word-level accuracy and fluency so that decoding and transcription support, rather than hinder, comprehension and composition.

While continue to apply and practise code knowledge, the emphasis on pattern expands to learning how pattern operates within and across texts to shape meaning. Pupils encounter longer, more demanding texts and are expected to sustain attention, infer meaning and notice how language shapes ideas. Pupils learn that stories shape meaning through form, purpose and development over time. They learn how narrative structures, genres and character construction are used deliberately by writers to explore ideas, themes and consequences. In their own writing, they produce more extended pieces with clear paragraphing and logical organisation. Narrative structure becomes intentional rather than incidental. Openings establish context, events develop coherently, and endings resolve or reflect. Argument develops through a clear progression: from stating claims, to supporting them with evidence and explanation, to structuring extended arguments and considering alternative viewpoints.

Pupils begin to notice that language often works by comparison and association. They discover that writers choose images and figurative expressions carefully to shape meaning, create mood and develop theme. They move beyond spotting techniques to understanding how and why they are used. With guidance and practice, they start to experiment with figurative language themselves, using it thoughtfully and purposefully across sentences and whole texts. Drawing on their widening experience of texts and knowledge of grammar, pupils write more varied and purposeful sentences. Pupils learn to use coordination and subordination to clarify relationships, to manipulate clause order for emphasis, and to select precise vocabulary to shape tone and meaning.

By the end of Key Stage 2, pupils will have developed the ability to organise ideas, sustain a line of thought and make deliberate grammatical and structural choices to achieve a particular effect. Their increasingly wide reading from particular historical, cultural and literary traditions enhances their enjoyment of reading and their intentional playfulness in writing. They use contextual knowledge to interpret meaning, perspective and purpose, and to make sense of increasing textual complexity.

Pattern

Sound and spoken language patterns

Pupils should learn:

- to recognise rhythmic and sound patterning in poetry, including repetition, variation and contrast (e.g. the strong steady beat mirroring flowing water in *The River* by Valerie Bloom)
- to notice how sound patterning (repetition, alliteration, rhyme, onomatopoeia, rhythm through sentence structure) contributes to mood, emphasis and effect
- how sound patterning can mark key moments or shifts within a poem or text
- how sound patterning can contribute to a speaker's or narrator's voice (e.g. how repetition creates emphasis and evokes voice in *Windrush Child* by John Agard)
- to select and use sound patterning deliberately to emphasise ideas or feelings in their own writing
- that sound patterning can also be used in prose for emphasis or effect

Word reading and transcription

Pupils should learn to:

- apply spelling patterns accurately, including morphology, etymology and homophones
- read unfamiliar words accurately and fluently by consolidating decoding strategies, including syllabification and morphological analysis
- apply knowledge of morphology and etymology to infer the meaning of unfamiliar words
- sustain handwriting with consistent letter size, spacing and increasing fluency so that transcription does not impede composition
- read texts with sufficient fluency (automaticity, accuracy and prosody) to support comprehension and interpretation (e.g. when reading texts appropriate for Key Stage 2, show appropriate phrasing and expression which may be further developed in subsequent readings)

Text patterns and meaning

Pupils should learn:

- to identify structural patterns within texts, including paragraphing, topic sentences and the development of supporting detail

- how key words, pronouns and connectives signal relationships between ideas and support inference
- to analyse narrative structure, including shifts in pace, viewpoint and focus (e.g. shifts in viewpoint between storyteller and immediate third-person narrative in *Podkin One-Ear* by Kieran Larwood; the story-within-story structure helps pupils identify framing devices and narrative interruptions in *Clockwork* by Philip Pullman)
- how text structure supports coherence and retrieval of information
- to recognise patterns across texts, including recurring structures, techniques and conventions (e.g. the survival narrative with recurring problem-solving structure in *The Explorer* by Katherine Rundell; the quest structure with repeated tests and symbolic encounters in the *Firework-Maker's Daughter* by Philip Pullman)
- how authors use varieties of English, including dialect and register, to shape character and meaning
- to write multi-paragraph texts with logical sequencing, clear topic sentences and coherent links between ideas

Story

Pupils should:

- read and discuss myths, legends and longer narratives (e.g. episodes from *The Odyssey*, the legend of King Arthur, Maui, tales from *The Arabian Nights*, or the story of Cú Chulainn)
- read stories with varied plot types, narrative structures (including non-linear), themes and settings, including historical and geographical settings studied in history and geography

Pupils should learn:

- that stories are shaped by form and purpose, not just events
- about narrative perspective, setting and mood, including recognising whether a story is told in first or third person (e.g. a first-person narration such as *Diary of a Killer Cat* by Anne Fine; the mysterious, magical, slightly unsettling setting of *Leon and the Place Between* by Angela McAllister)
- to make deliberate choices about first or third person when writing
- that some stories use non-linear structures and to discuss the effects of such choices in familiar stories that have been read in full (e.g. *Tom's Midnight Garden* by Philippa Pearce blends past and present; *Holes* by Louis Sachar has interwoven timelines, delayed revelation)

- to identify and discuss narrative structure, including opening, conflict, complication, climax and resolution, and to explain how structure shapes meaning
- about the role of foreshadowing in narrative structure (e.g. the mysterious locked garden and references to illness at the start of *The Secret Garden* by Frances Hodgson Burnett; the early hints about Stanley's 'family curse' in *Holes*; the warnings about Dust and prophecy in *Northern Lights* by Philip Pullman; the unsettling clues about the narrator's guilt in *The Tell-Tale Heart* by Edgar Allan Poe) and how such details prepare the reader for later revelations, shape expectations and build tension across the narrative
- about common plot types, including quest, rags to riches, coming of age and overcoming the monster
- about themes as underlying ideas developed through narrative rather than explicitly stated
- to analyse character as a constructed element, shaped through description, action, speech and thought
- to explain how characters change over the course of a narrative
- to compare and contrast characters, settings or events using specific evidence from the text
- to plan, draft, revise, edit and publish narrative writing
- to make deliberate choices about setting, character and structure for specific purposes
- about genres and their conventions and how these shape reader expectations
- about the structure and features of playscripts and how they differ from narrative texts

Argument

Pupils should learn:

- to make clear claims supported by reasons
- how to use material from a text as evidence to support a claim, showing the link between quotation and argument rather than simply describing what happens
- to construct paragraphs that develop an argument, including a clear point, supporting evidence and explanation
- to organise arguments using logical structure, including introductions, sequenced paragraphs and conclusions

- to summarise key ideas from texts, by selecting the most important information and clearly identifying:
 - *what* happens
 - *who* is involved
 - *when* and *where* events take place
 - *why* they occur
 - *how* they unfold
 - to participate in structured discussion and debate by listening, responding and justifying ideas with evidence
 - to consider audience and purpose when choosing content, structure and language (e.g. adjusting tone for a formal speech, organising information clearly in a report, or creating suspense in a narrative opening)
 - to write short analytical and persuasive texts using appropriate tone and formality
 - that viewpoints are expressed through evidence and reasoning, not personal assertion or emotion
 - to use rhetorical devices selectively and purposefully to shape a reader's response, introduced through models and examples, using some of the following:
 - imperative verbs to convey urgency
 - rhetorical questions (e.g. Have you ever considered the impact of...?)
 - facts or statistics
 - emotive language to elicit sympathy, anger or concern (e.g. fragile habitats destroyed, families left devastated)
 - hyperbole
 - the second person to address the audience directly
 - the passive voice to highlight actions (e.g. beaches have been spoilt by plastic pollution; disabled people have been ignored and marginalised by inaccessible buildings)
 - to compare texts by purpose and structure, explaining how authors organise ideas to achieve effects
 - to consider the implications of source, purpose and perspective in a text (e.g. distinguishing between a balanced news report, a campaigning article or a sponsored post)
 - that information comes from different sources and that some sources are more trustworthy than others
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- to distinguish between statements of fact and opinion
- to construct counterarguments by acknowledging and responding to alternative viewpoints
- to build cohesion within and across paragraphs by using deliberate repetition of key terms, appropriate conjunctions to link clauses, and conjunctive adverbs such as however, therefore and meanwhile to clarify relationships between ideas and guide the reader through an argument
- to proofread and redraft writing to improve clarity, accuracy and effectiveness
- to explain and justify choices made in their own writing

Metaphor

Pupils should learn:

- to identify and use simile and metaphor to create comparison
- to recognise personification (e.g. in phrases such as ‘the wind whispered through the trees’ or ‘the city never sleeps’) and to understand anthropomorphism as an extended form of this (e.g. when animals think and speak as humans do in stories such as *Charlotte’s Web* by E B White or *The Wind in the Willows* by Kenneth Grahame)
- how figurative language shapes meaning and influences a reader (e.g. how describing war as ‘a monster devouring its young’ creates fear and condemnation, or how calling hope ‘a fragile flame’ suggests both comfort and vulnerability)
- to identify and use hyperbole and idiom as forms of figurative language
- to identify an extended metaphor across sentences or paragraphs
- how writers use setting, including weather and place, metaphorically to reflect mood or ideas
- that symbols carry shared or culturally recognised meanings (e.g. a dove representing peace, a crown symbolising authority, a storm suggesting conflict, or light and darkness evoking hope and danger)
- that motifs are recurrent symbols or images that appear repeatedly across a text, drawing attention to important themes (e.g. the repeated image of the locked garden and growing plants in *The Secret Garden* to reflect healing and renewal; the constant references to digging and buried treasure in *Holes* to explore fate and justice; the motif of dreams and aspiration in Martin Luther King Jr’s speech *I Have a Dream* to reinforce hope and equality; or the recurring descriptions of the sea in *Treasure Island* by Robert Louis Stevenson to evoke danger, freedom and adventure)

Grammar

Pupils should learn to:

- recognise and correct sentence fragments and run-ons
- combine sentences using coordination and subordination to shape meaning (e.g. 'Stanley dug all day, but he still found nothing' to show contrast; 'Although the garden was locked, Mary felt drawn to it' to foreground tension; 'When the bell rang, the boys ran towards the beach' to clarify time and sequence)
- write and manipulate simple, compound and complex sentences with control
- vary sentence openings, including independent clause and dependent clause openers, for effect
- use relative clauses to add detail within sentences (e.g. 'The boy who found the key kept it hidden'; 'The island, which lay shrouded in mist, seemed unreachable'; 'The speech that inspired the crowd still echoes today')
- use appositive phrases and embedded clauses to clarify or expand meaning (e.g. 'Mary Lennox, a lonely and neglected child, arrives at Misselthwaite Manor'; 'Jim Hawkins, the innkeeper's son, overhears a dangerous secret'; 'Stanley, who believes he is cursed, begins to question his fate')
- control tense consistently across a text and to change tense deliberately for purpose
- choose pronouns carefully to maintain reference and avoid repetition
- use modality to soften, intensify or qualify meaning (e.g. 'The garden might be unlocked' to suggest possibility; 'He must return before nightfall' to convey obligation; 'The island could be dangerous' to signal uncertainty; 'We should act now' to express recommendation)
- create expanded noun phrases using adjectives, nouns and prepositional phrases
- use punctuation to clarify relationships between ideas, including commas, colons, semicolons and hyphens
- punctuate dialogue accurately in texts with multiple speakers, including flexible placement of reporting clauses
- use apostrophes accurately for possession and contraction, including singular and plural forms
- indicate parenthesis using commas, dashes or brackets
- build cohesion within and across paragraphs using conjunctions, discourse markers and repetition
- use grammatical terminology accurately to explain choices and effects

Context

Pupils should learn:

- about the cultural and historical settings, traditions, values and circumstances in which texts were produced (e.g. Ireland at the height of the Great Famine in *Under the Hawthorn Tree* by Marita Conlon-McKenna; the First World War in poems such as *In Flanders Fields* by John McCrae)
- examples of ways in which historical and cultural context influence viewpoint, perspective and representation within texts (e.g. how the experience of famine shapes the children's perspective in *Under the Hawthorn Tree*; how early twentieth-century imperial attitudes inform ideas about adventure in *Treasure Island*; or how the struggle for civil rights shapes the voice and urgency of *I Have a Dream*)
- about the purposes of texts and how this affects their form, language and structure
- that different text types convey meaning in different ways, for example myth, legend, historical narrative and explanatory texts
- about features of texts that increase complexity, including archaic language, non-linear structures, complex narrators and resistant texts
- to link texts through shared themes, stories and ideas across time and cultures (e.g. comparing different journeys in *Treasure Island* and *The Odyssey*; exploring themes of injustice in *Under the Hawthorn Tree* and *I Have a Dream*; or tracing ideas about loyalty and betrayal in *Treasure Island* and *The Outsiders* by S E Hinton)
- to compare texts from different periods or cultures, explaining similarities and differences in perspective and purpose
- to write factual and historical texts that demonstrate understanding of context, audience and purpose

Key Stage statement (drama)

In Key Stage 2, pupils see drama more explicitly as a disciplined art form. Building on their Key Stage 1 knowledge of the purposes of drama, they now learn that drama is created through deliberate choices in performance, rehearsal and collaboration. They develop greater control, precision and intention in performance, alongside a growing understanding of established forms, structures and contexts. Practical work is increasingly shaped by rehearsal, reflection and interpretation, and pupils begin to use shared theatrical language to describe, analyse and evaluate drama.

Making drama

Pupils should learn how to:

- devise drama using improvisation and scripting, shaping work through rehearsal, refinement and feedback
- communicate meaning through voice, movement, gesture, pause and mime, understanding that acting involves representing someone other than oneself
- inhabit roles in order to create characters, exploring motivation, purpose and change across a performance
- develop performance control through movement and voice work, using these skills to affect an audience
- use stage space, including entrances, exits, positioning and key stage areas (e.g. upstage, downstage, wings and apron)
- perform poetry individually and chorally, attending to rhythm, voice and collective meaning

Pupils should learn:

- that effective performance results from interpretation, rehearsal and collaboration

Different forms and genres

Pupils should learn:

- to rehearse and perform scripted plays
- how to work effectively from a script, including following stage directions and understanding scripts as texts written for performance
- that plays are structured through scenes, acts, characters and dramatic development

Audience

Pupils should learn:

- to perform for a range of audiences and in different contexts
- the conventions of being an audience in classrooms, schools and theatres
- how performance, design and technical elements communicate meaning
- to reflect on and respond to live and recorded performances

Dramaturgy

Pupils should learn:

- that scripts function as blueprints for performance rather than finished products
- about the difference between live and recorded performance



Geography

Key Stage statement

In Key Stage 2, pupils develop the breadth and depth of their geographical knowledge by building their locational frameworks and extending their knowledge of human and physical characteristics of geographically diverse places at local, national and global scales. Diverse places for study within and beyond Europe should be selected for their value in developing knowledge of geographical processes and interconnections. Pupils use this knowledge to explore how physical features, climate, ecosystems, economic activity and population shape places and influence people's lives. Pupils learn how human and physical processes interact to create change over time.

Using their growing knowledge of environmental systems, migration, resource use and trade, pupils learn how the places that they study are connected. They learn how decisions made locally and globally can influence the future of such places. Through geographical enquiry, pupils use maps, digital technologies, including GIS, and fieldwork, to collect, analyse and communicate geographical information. In these ways, pupils develop their geographical skills and understanding of the interconnected nature of people, places and environments.

Place knowledge

Pupils should learn:

- the names and location of the counties of Northern Ireland
- the human and physical characteristics of selected places in rural, urban, coastal and inland areas of Northern Ireland and the British Isles,
- the names and locations of major cities and key physical features (e.g. mountain ranges, major rivers) of countries studied
- the names and locations of the major lines of latitude and longitude
- key human and physical characteristics of two contrasting areas of comparable size, one within the British Isles and one outside Europe
- that places are experienced and valued differently by different people and groups
- that decisions made today shape a place's future, and that local characteristics are connected to wider global systems including climate and trade

Pupils should:

- describe particular places using geographical vocabulary, including agriculture, coast/coastal, cultivation, economic activity, ecosystem, environment, estuary, habitat, hill, industry, infrastructure, land use, mountain, peak, plain, river mouth, settlement, summit, tourism, trade, transport network, valley, vegetation

Human and physical geographical knowledge

Pupils should learn:

- about the role of rivers in the simple water cycle, applying the basic vocabulary of the water cycle, including precipitation, groundwater, run-off¹
- simple river and coastal processes, including erosion, transportation and deposition, and examples of the landforms they create (e.g. beach, cliff, V-shaped valley, waterfall)
- the basic structure of the Earth and that the movement of tectonic plates produces hazards such as earthquakes and volcanic eruptions
- about two world climate zones and their associated biomes
- about living and non-living parts of an ecosystem, how they interact and how people affect them
- the difference between climate and weather, how weather is measured and tracked over time to identify patterns that inform daily life
- about the natural greenhouse effect, how human activities enhance it and how this contributes to recent climate change; the impacts of climate change on people and the environment; and some of the ways individuals and organisations address it
- about sustainability and sustainable development in different geographical contexts and applied to at least one local and one global geographical issue (e.g. resource use, tourism and transport)
- about the demography of Northern Ireland and British Isles, including:
 - population density, population distribution and population change
 - the factors affecting these population characteristics in Northern Ireland and the British Isles
- about agriculture and food production, including:
 - the different types of farming, including arable, pastoral and mixed
 - how food is produced, processed and transported

¹ Some of the vocabulary necessary for learning about the water cycle is taught in Key Stage 2 science, where changes of physical state in heating and cooling are addressed, namely evaporation and condensation.

- about the changing characteristics of rural and urban areas in Northern Ireland and one contrasting place outside Europe, including:
 - economic activity
 - the impact of economic activity (e.g. growth of cities, diversification of rural economies through tourism)
- about migration between places, including interactions between people, communities and environments
- about globalisation and its impact on people, economies and the environment in Northern Ireland and on one contrasting place outside Europe
- about renewable and non-renewable resources, including:
 - how people use them for energy, materials and everyday life
 - why these resources need management
 - the impact of using these resources on people and the environment

Geographical skills, enquiry and fieldwork

Pupils should learn:

- that geographers ask questions about:
 - past, present and future change in places and environments
 - diversity across places, spaces and environments
 - interactions within and between places and human and physical environments
- how the process of geographical enquiry works, including asking simple geographical questions, collecting and analysing data from fieldwork and/or secondary sources, and communicating findings

Pupils should learn to:

- use maps (e.g. atlases, Ordnance Survey maps) and digital maps, including GIS in order to:
 - locate places studied
 - identify human and physical features (e.g. forest, reservoir) and describe their relative positions (e.g. the valley lies northeast of the reservoir; an area of cultivation lies southeast of the river; the industrial estate is southwest of the motorway)
 - display spatially located data

- describe places and their locations by using:
 - eight-point compass directions
 - four-figure grid references
 - one method of showing height (e.g. contours or spot height)
 - map symbols
- identify human and physical features studied, using:
 - ground level photographs
 - aerial and satellite imagery

Pupils should:

- undertake fieldwork in their local area, gaining supported practice in:
 - considering the scope and geographical purpose of a given geographical question (e.g. is it about change over time? patterns of diversity? interaction between human and physical environments?)
 - planning (e.g. choosing appropriate data and data collection methods to answer a specific geographical question)
 - carrying out data collection in the field, using an appropriate method (e.g. sketching and annotating part of river; counting pedestrians or traffic at different points in the day; making a simple land-use map; surveying fellow pupils using simple questions about a local place)
 - interpreting the results of data collection (e.g. analysing results of a traffic count; comparing results across sites or times; describing trends in survey responses such as common opinions about a place)
 - communicating findings (e.g. using maps and graphs, together with annotations and written explanations)



History

Key Stage statement

In Key Stage 2 pupils begin to flesh out the broad chronological framework that they gained in Key Stage 1. Building on their Key Stage 1 study of the Stone Age, pupils develop a coherent understanding of the key characteristics and developments of the Bronze and Iron Ages, including in Britain and Ireland. By studying contrasting examples of civilizations, pupils spot resonances that enable them to discern patterns of change and continuity over time, as well as similarities and differences in governments, societies, cultures and economies. Through these civilizations, pupils accumulate a rich array of examples with which to furnish their understanding of historical concepts such as empire, government, ritual, culture, democracy and hierarchy. World civilizations provide context for corresponding developments in Britain and Ireland, while also helping pupils to see connections between Britain and Ireland and wider worlds, forged through conquest, migration, culture, religion, travel and trade.

By the end of the key stage, pupils will have extended their Key Stage 1 knowledge of sources with new examples of sources afforded by the study of ancient civilizations and the early medieval period. Pupils also learn about the ways in which historians and archaeologists search for, interrogate and use sources to construct knowledge about the past. They learn about some of the challenges and opportunities that sources from these periods present.

Substantive knowledge

The first cities and civilizations

By studying and comparing two or more of Egypt, Mesopotamia, the Indus Valley civilization and the Yellow River Valley civilization, pupils should learn about:

- causes and consequences, including climate and environment, of the farming revolution in the ancient world
- where, how and why the first cities grew (e.g. Uruk, Ur, Harappa, Memphis, Zhengzhou)
- how people lived, worked and were governed (e.g. evidence of the vast workforce that constructed the Stone Cone Temple in Uruk; living, farming and water management around the River Nile)
- religious beliefs and practices (e.g. the earliest stories about interactions of deities, rulers and monsters, such as the Epic of Gilgamesh; Egyptian beliefs about death)

- culture, art and symbolism, including writing, monumental buildings, prestige and ceremonial objects (e.g. ziggurats, pyramids, stelae, temples, clay tablets, oracle bones, domestic tools, bronze vessels, pottery, jewellery and figurines)
- travel, trade and warfare (e.g. evidence of trade between Mesopotamia and the Indus Valley)
- how and why these civilizations declined

Britain and Ireland during the Bronze and Iron Ages, c.2500 BCE to c.400 CE

Pupils should learn about Britain and Ireland during the Bronze and Iron Ages through a blend of overview and depth, integrating aspects of the following:

- how people lived, worked and were governed in Bronze Age Ireland, including the development of túatha, and the development and impact of metalworking
- Celtic peoples in Britain and Ireland, including:
 - migration and settlement
 - how peoples lived, worked and were governed
 - their religious beliefs and practices, including sacred landscapes (e.g. pools and caves, votive offerings)
 - languages and alphabet; law and culture
- a local study of a Bronze Age or Celtic site (e.g. Corrstown village, Navan Fort, Belfast Hills, Rathlin Island, Drumena Cashel)

Iron Age empires: Greece and Rome, c.800 BCE to c.400 CE

Pupils should learn about ancient Greece and Rome through a blend of overview and depth, integrating aspects of the following:

- contrasting types of government in the Greek city states (e.g. Sparta, Athens)
- philosophy and religion, art and culture in ancient Greece
- cultural and military encounters between ancient Greece and wider worlds (e.g. trade between empires; the Greco-Persian wars; the influence of Egyptian religion and art; Greek trade with peoples of the African continent)
- stories to illustrate major changes in Rome's government, from monarchy to republic to empire (e.g. 'Tarquin the Proud'; how Julius Caesar gained power; the Emperor Augustus)
- the expansion of the Roman empire (e.g. Punic Wars), including the Roman conquest of Britain

- how people lived and worked in the Roman world (e.g. shops and street life; food; entertainment; the baths; Roman gods and worship; domestic life)
- Christianity in the Roman Empire, the division of the Roman Empire into eastern and western halves, and the decline of the western Roman Empire

Changes in knowledge, ideas and beliefs in Europe and the wider world, c.300 CE to c.1100 CE

Pupils should learn about changes in knowledge, ideas, and beliefs in Europe and the wider world through a blend of overview and depth, integrating aspects of the following:

- the spread and development of Christian practices and institutions in western Europe, including:
 - the organisation of the church into parishes
 - the establishment of the papacy
 - the cult of saints and development of pilgrimage
- the arrival and impact of Christianity in Ireland, including the role of Saint Patrick
- monasteries and cathedral schools as centres of knowledge and learning in western Europe (e.g. Cluny, Clonmacnoise, Iona, Canterbury, Bangor Abbey)
- how conquest, travel and trade contributed to the spread of knowledge within and between different parts of the world, including trade along the Silk Roads and how Muslim cities became centres of knowledge and learning

Migrations and settlement in Britain and Ireland c.400 CE to c.1100 CE

Pupils should learn about migrations and settlement in Britain and Ireland by Angles, Saxons, Jutes, Vikings and Normans through a blend of overview and depth, integrating aspects of the following:

- contrasting patterns of migration and settlement (e.g. Gildas's and Bede's accounts of the arrival of Germanic-speaking tribes; Viking raids up the rivers Boyne, Liffey and Shannon and on monastic houses such as Lindisfarne and Bangor Abbey; Viking longphorts and their development into Irish towns; the Norman conquest of England) and mixing of cultures (e.g. Irish Celtic, Anglo-Saxon and Greek influences on the Lindisfarne Gospels; Saxon, Norse and Norman influences on the development of English)
- everyday life (e.g. everyday objects and tools found at Ballinderry Crannog; Anglo-Saxon village of West Stow; the use of wood in Viking houses, ships and furniture)
- responses to migrant groups (e.g. Aethelflaed's defence of Chester from the Dublin Vikings; Brian Boru's victory over the Vikings at the Battle of Clontarf; Hereward the Wake's rebellion against the Normans)

- forms of government (e.g. the formation of Anglo-Saxon kingdoms; the Viking Kingdom of Dublin; the creation of the Danelaw; William the Conqueror's exertion of control through castle-building and the Domesday survey and book)
- trade and craftsmanship, and connections to the wider world (e.g. connections between Dublin and York; the emergence of Dublin as an important slaving port; Anglo-Saxon ship burial at Sutton Hoo; finds at Tintagel Castle from north Africa, southern Spain, France, Greece and Asia Minor; how St Augustine's mission reconnected Britain with Rome and European monasteries)

A theme or local study that extends in time beyond 1100 CE

Pupils should learn about:

- a theme that illuminates change over time, such as:
 - political power (e.g. empires, rulers, rebels)
 - society and culture (e.g. domestic life, migration, leisure pursuits, cities through time)
 - changes in technology (e.g. ships, farming and the landscape)

OR

- an aspect of local history after 1100 CE (e.g. castles; the Great Famine; the linen industry; Belfast shipyards and the Titanic; life in a Victorian town; migrant communities in Belfast in the nineteenth century)

Disciplinary knowledge

Pupils should learn:

- to use time conventions to talk about the past and the passing of time
- to situate the periods, places, developments, events and individuals they study within their growing chronological framework and to identify connections, contrasts and trends over time
- to draw on relevant substantive knowledge to answer contrasting types of historical question, including questions about cause, consequence, change and continuity, similarity and difference, and evidential issues
- about the most common types of sources from periods studied, including:
 - material culture (e.g. manufacture, use and meaning of tools, weapons, pottery, ornaments, domestic objects, artefacts for writing such as clay tablets, papyrus, parchment)
 - buildings (e.g. ziggurats, temples, evidence of settlements)

- written sources (e.g. Egyptian hieroglyphics, Greek literature, Roman graffiti, early medieval hagiographies, chronicles)
- art, sacred and ceremonial objects (e.g. cave paintings, mosaics, reliquaries, regalia)
- about particular puzzles, opportunities and challenges that sources from the period have presented to archaeologists and historians, including:
 - difficulties of translation and interpretation (e.g. the Rosetta Stone; symbols on the Indus Valley seals; interpreting medieval miracle books)
 - scarcity of source material
 - difficulties in accessing the lives and perspectives of ordinary people
- to make inferences from linked pairs and groups of sources
- about different ways in which the past gets interpreted and represented in subsequent accounts



Mathematics

Key Stage statement

In Key Stage 2, pupils develop the breadth and depth of their mathematical knowledge. Numbers grow larger and more varied, methods become more efficient, and mathematics begins to reveal its capacity to model and make sense of the world. Pupils are helped to see through complexity to identify what matters.

In number and algebra, pupils work fluently across all four operations, including with multi-digit numbers and using formal written methods. They develop a thorough understanding of fractions, decimals and percentages, and the relationships between them. Pupils begin early algebraic thinking: exploring sequences, using symbols to represent unknowns, and reasoning about functions.

In geometry and measure, pupils work with a wider range of 2-D and 3-D shapes, including complex polygons and composite figures. They calculate perimeter and area, encounter volume, and develop skill with measurement across multiple units.

In probability and statistics, pupils collect, represent and interpret increasingly complex data sets using bar charts, line graphs, frequency tables and pie charts. They calculate the mean and range, compare data sets, and begin to consider bias and fairness in data collection.

Number and algebra

Integers

Primary 5

Pupils should learn:

- the notation used for square and cube numbers

Pupils should learn to:

- read and write numbers to 10,000 in numerals and words
- compare, order and estimate numbers up to 10,000
- identify and represent numbers to 10,000 using objects and pictorial representations
- count forwards and backwards within 10,000 using increments of 10, 25, 50, 100, 1000
- partition numbers up to 10,000 into thousands, hundreds, tens and units/ones

- identify the value of each digit in a number up to 10,000
- compare and order positive and negative numbers

Primary 6

Pupils should learn:

- the prime numbers below 30
- the square numbers up to 144 and their corresponding roots

Pupils should learn to:

- read and write numbers to 100,000 in numerals and words
- compare, order and estimate numbers up to 100,000
- identify and represent numbers to 100,000 using objects and pictorial representations
- count forwards and backwards within 100,000 using increments of 10, 25, 50, 100, 1000, 10,000
- partition numbers up to 100,000 into tens of thousands, thousands, hundreds, tens and units/ones
- identify the value of each digit in a number up to 100,000
- count forwards and backwards across zero to include negative numbers
- identify factors and multiples of whole numbers (e.g. list the factors of 60, or list the first ten multiples of 13)
- identify common factors in two numbers up to 100

Primary 7

Pupils should learn:

- the cube numbers up to 125 and their corresponding roots

Pupils should learn to:

- read and write numbers to 10,000,000 in numerals and words
- compare, order and estimate numbers up to 10,000,000
- identify and represent numbers to 10,000,000 using objects and pictorial representations

- count forwards and backwards within 10,000,000 using increments of powers of 10
- partition numbers up to 10,000,000 into hundreds of thousands, tens of thousands, thousands, hundreds, tens and units/ones
- identify the value of each digit in a number up to 10,000,000
- identify the lowest common multiple in a set of two or more numbers up to 12
- identify the highest common factor in a set of two or more numbers under 100
- identify whether a number within 100 is prime or composite
- use negative numbers in real-life contexts, such as temperature and money, including calculating the difference between two numbers where at least one is negative

Integers (Operations)

Primary 5

Pupils should learn:

- multiplying and dividing by 1 have the same effect on the calculation

Pupils will learn to:

- add and subtract any numbers up to 10,000, choosing efficient mental strategies or formal written methods
- recall and use multiplication and division facts up to 12×12
- multiply numbers of up to two digits by 10 and one-digit numbers by multiples of 10
- multiply any number by a one-digit number using the formal written method
- divide two-digit numbers by numbers up to 12 with remainders using division facts (e.g. $\frac{43}{6} = 7 \text{ r } 1$ and $7\frac{1}{6}$)
- divide any multiple of ten up to 10,000 by 10
- use inverse operations to check answers to calculations

Primary 6

Pupils should learn:

- that multiplication and division occur before addition and subtraction in the order of operation

Pupils should learn to:

- mentally multiply any number by a power of ten, or any two-digit number by a single digit using partitioning or factors (e.g. 21×7)
- mentally divide any multiple of ten by a power of ten where the solution is an integer
- multiply any number by a one-digit number, or a two-digit by two-digit number using the formal written method
- divide up to four-digit numbers by one-digit numbers choosing efficient mental strategies or the formal written method, interpreting remainders depending on context

Primary 7

Pupils should learn:

- that calculations contained inside brackets happen first in the order of operations

Pupils should learn to:

- multiply up to four-digit numbers by two-digit numbers using the formal written method
- divide any number by an integer up to and including 12 using a formal written method, including calculations leading to a remainder or terminating decimals
- add, subtract, multiply and divide choosing efficient mental strategies where appropriate

Rounding and estimation

Primary 5

Pupils should learn:

- the significance of the digit 5 when rounding

Pupils should learn to:

- round any number up to 10,000 to any power of 10
- round any number of up to one decimal place to the nearest unit

Primary 6

Pupils should learn to:

- round any whole number below 100,000 to any power of 10
- round any number of up to three decimal places to a given number of decimal places (including to the nearest unit)

Primary 7

Pupils should learn to:

- round any number to a required degree of accuracy, and use this to check a result is reasonable

Fractions

Primary 5

Pupils should learn:

- the denominator is the divisor when finding fractions of amounts

Pupils should learn to:

- express a given fraction as an equivalent fraction, including writing a fraction in its simplest form
- find a fraction of an amount using a bar model (e.g. $\frac{1}{8}$ of 24, $\frac{4}{5}$ of 20, $\frac{2}{3}$ of 9)
- find a fraction of an amount using mental methods (e.g. $\frac{3}{20}$ of 60, $\frac{9}{40}$ of 160)
- given a fraction of an integer amount, find the value of the whole (e.g. $\frac{2}{3}$ of a number = 10, what is the number?)
- compare and order fractions where one denominator is a multiple of the other
- add and subtract fractions (including fractions greater than one) with the same denominator using a number line, a bar model, and a formal written method

Primary 6

Pupils should learn:

- the calculation to find a fraction of an amount can be written with a multiplication symbol

Pupils should learn to:

- write and connect the decimal representation and fraction representation of tenths, and hundredths and thousandths
- recognise and convert between a mixed number and an improper fraction and vice versa
- compare and order unlike fractions, including fractions greater than one
- add and subtract fractions (including fractions greater than one) where one denominator is a multiple of the other using a number line, a bar model, and a formal written method

Primary 7

Pupils should learn to:

- add and subtract fractions with the same or different denominators using a formal written method ($\frac{6}{7} - \frac{2}{7}$, $\frac{1}{2} + \frac{3}{8}$, $\frac{11}{15} - \frac{3}{4}$), including fractions greater than one

Decimals**Primary 5**

Pupils should learn:

- a tenth is a whole divided by 10 equal parts and can be written as a decimal

Pupils should learn to:

- read, write, order and compare decimals with one decimal place
- identify, recognise, write and represent on a number line any number of tenths, writing decimal equivalents as fractions and vice versa
- add and subtract numbers with one decimal place
- mentally multiply numbers with one decimal place by 10 or 100 and divide numbers by 10 or 100 including where the solution is a decimal with one decimal place

Primary 6

Pupils should learn:

- a hundredth is a whole divided by 100 equal parts, and a thousandth is a whole divided by 1000 equal parts. These can be written as decimals
- the place value of each successive decimal place is ten times smaller than the previous decimal place

Pupils should learn to:

- partition decimals (less than 1 and greater than 1) into tenths, hundredths and thousandths
- read, write, order and compare decimals with the same or a different number of decimal places (including decimal greater than 1) up to three decimal places
- identify, recognise, write and represent on a number line any number of tenths and hundredths

- add and subtract numbers with up to three decimal places
- mentally multiply and divide integers and decimals by powers of ten, including where the solution is a decimal (up to three decimal places)

Primary 7

Pupils should learn to:

- multiply decimals with up to three decimal places by whole numbers using the formal written method of long multiplication
- divide decimals with up to three decimal places by a single-digit integer using a formal written method, where the solution is an integer or terminating decimal

Percentages

Primary 6

Pupils should learn:

- a percentage is a fraction where the denominator is 100, and that 100% means the whole
- the per cent symbol (%) is related to 'number of parts per hundred'

Pupils should learn to:

- find benchmark percentages (10%, 25% and 50%) of quantities

Primary 7

Pupils should learn:

- percentages are commutative (25% of 40 is the same as 40% of 25)

Pupils should learn to:

- find 1%, 5% and 20% of quantities
- use benchmark percentages to derive other percentages (e.g. by recombining or scaling including using a double number line)
- given a percentage of an amount, find the value of the whole (where the percentage is a benchmark or suitably favourable number)

Equivalences

Primary 5

Pupils should learn:

- the decimal equivalent of $\frac{1}{2}$ and fractions with the denominator 10

Primary 6

Pupils should learn:

- the following common equivalences:

Fraction	Decimal	Percentage
$\frac{1}{1}$	1	100%
$\frac{1}{2}$	0.5	50%
$\frac{1}{4}$	0.25	25%
$\frac{3}{4}$	0.75	75%
$\frac{1}{10}$	0.1	10%
$\frac{1}{100}$	0.01	1%

Pupils should learn to:

- convert between, compare, and order fractions, decimals and percentages using the common equivalencies and facts derived from these
- write any number up to three decimal places as a fraction, and any fraction where the denominator is 10, 100 or 1000 as a decimal

Primary 7

Pupils should learn:

- the following common equivalences:

Fraction	Decimal	Percentage
$\frac{1}{3}$	0.33333...	33%
$\frac{1}{5}$	0.2	20%

Pupils should learn to:

- convert between a decimal (up to three decimal places) and a percentage (up to one decimal place), and convert either of these into a fraction

Sequences

Primary 5

Pupils should learn to:

- recognise, complete, continue and create a repeating pattern involving an increasing or decreasing constant amount, where the amount is a fraction or decimal (to one decimal place)

Primary 6

Pupils should learn to:

- generate or continue a numerical sequence for a given term-to-term rule (up to two-step rules using simple operations, including triangular numbers)

Primary 7

Pupils should learn to:

- identify a one-step term-to-term rule for a given numerical sequence and represent this using words, pictorial symbols, or as a function machine

Algebraic representation

Primary 7

Pupils should learn to:

- use simple formulae expressed in words
- generalise number relationships using words or pictorial symbols

Functions and graphs

Primary 6

Pupils should learn to:

- represent a one- or two-step rule as a function machine and use this to calculate both inputs and outputs
- plot a simple line graph using the positive-positive coordinate quadrant to represent change over time

Primary 7

Pupils should learn to:

- use a linear graph for conversions between two variables

Equations and inequalities

Primary 5

Pupils should learn:

- the equals sign can be thought of as a balanced scale

Primary 6

Pupils should learn to:

- apply the same operation to both sides of the equals sign
- use inequality symbols in equations with operations on both sides of the symbol

Ratio

Primary 7

Pupils should learn:

- introductory language for ratio (e.g. 'part' and 'whole' and 'part-to-part' descriptions within worded problems)

Pupils should learn to:

- find parts and wholes in worded problems, without using ratio notation

Geometry and measure

Measurement

Primary 5

Pupils should learn:

- equivalents of length, mass and capacity (e.g. 1 km = 1000 m)

Pupils should learn to:

- estimate length, mass and capacity in real life, choosing appropriate units
- convert between cm and mm by multiplying or dividing by 10, including decimals to one decimal place

- read scales of any increment when measuring length/mass/capacity
- convert between units of time (hours to minutes, minutes to seconds, years to months, weeks to days) and between analogue and 12- and 24-hour clocks
- calculate the time that has elapsed between two given points in time, where the elapsed time is a multiple of 10 minutes
- interpret scales on maps and drawings

Primary 6

Pupils should learn to:

- convert between different metric units by multiplying or dividing by powers of 10
- compare and order metric measures where conversion may be necessary
- calculate the time that has elapsed between two given points in time
- solve money problems including calculating change where money is written in decimal notation

Primary 7

Pupils should learn:

- approximate equivalences between:
 - inches and centimetres
 - miles and kilometres
 - pints and litres
 - pounds and kilograms

Pupils should learn to:

- compare and order mixed measures (e.g. hours and days, pints and litres)
- convert between metric and imperial units, either using known approximations or where the conversion factor is given
- convert between currencies where an exchange rate is given
- read a timetable

Geometry

Primary 5

Pupils should learn:

- acute angles are less than 1 right angle
- obtuse angles are between 1 and 2 right angles
- reflex angles are greater than 2 right angles

Pupils should learn to:

- identify all the lines of symmetry in a 2-D shape, regardless of orientation
- complete a partial drawing of a 2-D shape using a given line of symmetry
- identify whether a given angle is acute, obtuse or reflex
- identify, describe and compare the following shapes:
 - triangles: equilateral triangle, isosceles triangle, scalene
 - quadrilaterals: parallelogram, rhombus, trapezia, kite
- identify and define parallel and perpendicular lines (including vertical and horizontal lines); draw parallel and perpendicular lines on a grid

Primary 6

Pupils should learn:

- the angle sum of a triangle is 180 degrees
- a regular polygon has equal sides and equal angles

Pupils should learn to:

- estimate angles to the nearest ten degrees
- use a ruler to draw lines to the nearest millimetre
- measure and draw angles to the nearest two degrees
- identify and distinguish between regular and irregular polygons
- identify and state the number of lines of symmetry and order of rotational symmetry for a regular polygon
- calculate unknown angles in triangles

Primary 7

Pupils should learn:

- congruent shapes are exactly the same size and shape
- the following angle rules:
 - angles on a straight line sum to 180 degrees
 - angles at a point sum to 360 degrees
 - vertically opposite angles are equal

Pupils should learn to:

- identify and sketch 3-D shapes using their properties (e.g. cubes, cuboids, triangular prism, cylinder, cone, pyramid [square-based, triangular-based])
- identify spheres and hemispheres
- accurately draw 2-D shapes using given dimensions and angles
- find missing angles using known angle rules

Perimeter, area and volume

Primary 5

Pupils should learn:

- different shapes can have the same perimeter or the same area
- shapes with the same perimeter do not necessarily have the same area (and vice versa)

Pupils should learn to:

- find the perimeter of rectangles by counting squares
- find the area of rectangles by counting squares
- explain the relationship between rows, columns, and total area in a rectangle

Primary 6

Pupils should learn:

- the perimeter of a rectangle can be calculated as double the length plus double the width
- the area of a rectangle can be calculated by multiplying length by width

Pupils should learn to:

- find the perimeter of rectangles
- find the area of rectangles
- estimate and compare area of shapes (including square centimetres, and square metres)

Primary 7

Pupils should learn to:

- calculate the area of triangles and parallelograms
- recognise volume as the amount of 3-D space an object occupies, explaining how changes to length, width or height impact the volume
- measure volume by counting equal-sized 3-D units (e.g. counting cubes used to fill a box)
- find the volume of rectangular prisms by counting layers and units within each layer, including using cubic centimetres or cubic metres

Coordinate geometry

Primary 6

Pupils should learn to:

- identify and plot x and y coordinates on the first quadrant of the cartesian plane
- construct 2-D shapes by plotting coordinates on the first quadrant of the cartesian plane
- describe movements on a coordinate grid – left, right, up, down

Primary 7

Pupils should learn to:

- translate simple shapes in the first quadrant of the cartesian plane
- interpret and construct grid maps to show positions and movement, using alphanumeric references, directional language and eight compass points

Probability and statistics

Using data

Primary 5

Pupils should learn:

- the conventions used when creating visual representations, including alignment, labels, and scale

Pupils should learn to:

- represent and interpret data using frequency tables
- interpret data from charts and graphs and use this to make comparisons or calculations (e.g. sums of and differences between categories)

Primary 6

Pupils should learn to:

- represent and interpret data using grouped frequency tables
- represent and interpret time-series data using line graphs, including identifying if the data shows a trend
- interpret and complete tables, including timetables

Primary 7

Pupils should learn:

- suitable representations for different types of data, and the justifications for this
- the mean is found by dividing the total of all the values by the number of values in a given set
- the range is found by subtracting the lowest value from the highest value in a given set

Pupils should learn to:

- interpret pie charts (e.g. comparing the relative sizes of segments)
- compare two or more data sets by comparing charts that represent them
- identify and state the mode for a frequency table, and the modal interval for a grouped frequency table

- summarise and compare data sets using the mean and range
- generate and investigate hypotheses using data (e.g. 'boys in our class are taller than girls'), including considering issues of bias

Data collection

Primary 5

Pupils should learn to:

- collect time-series data

Primary 6

Pupils should learn to:

- collect continuous numerical data from their immediate environment (e.g. how tall classmates are)
- collect bivariate data from their immediate environment (e.g. height and arm length of classmates)
- consider the most appropriate categories or class intervals to use for data collection
- use rounding, where appropriate, when collecting data (e.g. recorded lengths being rounded to nearest cm, 12.7 cm = 13 cm)

Primary 7

Pupils should learn to:

- generate hypotheses about their environment, consider what data should be collected to test the hypothesis, and consider how to collect this data fairly

Probability

Primary 7

Pupils should learn to:

- describe real-world events as: impossible, unlikely, even-chance, likely or certain

Pupils should learn to:

- represent the likelihood of real-world events on a line from 0–1, impossible to certain



Music

Key Stage statement

At Key Stage 2 pupils' understanding of the core musical elements will expand to encompass more nuanced musical concepts and devices. Pupils will learn to sing in simple parts, and play simple tuned instruments with greater control, confidence and accuracy, using musical notation and by ear. Through listening to and performing longer musical pieces, they will gain an understanding of how music moves through real time and learn about common musical structures. Pupils will move beyond performing and composing simple tunes to adding and creating layers of sound, exploring melody and accompaniment and developing their understanding of texture. Pupils will learn how measured sounds and silences are represented in staff notation and will be encouraged to notate sounds using a small range of notes and rests. Encountering a broader range of musical styles, pupils will begin to learn how musical traditions evolve in time and place.

Communicating through music

Singing and playing

Pupils should learn to:

- sing a range of songs in unison, round or two-part harmony with increasing pitch accuracy, including notes that are higher and lower than in earlier stages, (e.g. partner songs such as 'It's a long way to Tipperary' or 'Pack up your troubles'; simple rounds such as 'Catch a Falling Star' or 'Frere Jacques' use longer controlled breaths, sustaining musical lines through phrases)
- combine posture and breath preparation in creating a sustained sound
- perform a well-known folk song or traditional melody, vocally or on an instrument (e.g. 'I'll Tell Me Ma')
- create sound on percussion instruments with appropriate technique (e.g. striking a xylophone lightly to allow it to resonate)
- play simple song accompaniments on untuned or tuned percussion instruments
- play short melodies with a minimum of four pitches (e.g. 'Hot Cross Buns', 'Jack and Jill', the chorus of 'Jingle Bells')
- increase control over dynamics and articulation in creating musical phrases

Representing and reproducing sound

Pupils should learn to:

- recognise pitches on the treble clef (Lines: E-G-B-D-F Spaces: F-A-C-E)
- recognise music containing semibreves, minims, crotchets and pairs of quavers
- learn music by ear, building up the music they can reproduce aurally to complete 2 or 4 bar phrases

Listening, responding and describing

Pupils should learn to:

- communicate using musical language to describe the sounds that they hear and the feelings they evoke as detailed below:
 - **articulation:** smooth or detached
 - **dynamics:** whether sound is loud (forte), quiet (piano), getting louder (crescendo) or getting quieter (diminuendo)
 - **mood:** whether the music is upbeat/happy, more sad-sounding and whether it changes
 - **pitch:** whether sound is high, low, ascending and descending
 - **tempo:** whether the music is fast, slow, getting faster or getting slower
 - **timbre/instrumentation:**
 - folk instruments from the musical traditions of Ireland
 - the main orchestral families: strings, woodwind, brass and percussion
 - the difference between acoustic and digital instruments

Pattern

Rhythm

Pupils should learn:

- to play short rhythmic patterns from staff notation (e.g. two crotchets and four quavers)
- to combine these short patterns into full phrases (e.g. pairing two or four patterns in a row)
- to improvise a rhythmic pattern over a steady beat and the effect of using short notes or long notes

Melody

Pupils should learn:

- that melodies can move by step or by leap
- that melodic phrases can end on the home note (tonic), creating the effect of a feeling of closure (e.g. 'Twinkle, Twinkle, Little Star', 'Amazing Grace')
- to recognise the question-and-answer pairs in melodic phrases (e.g. 'Who Will Buy?' from the musical *Oliver*)
- to create melodic phrases in question-and-answer pairs, drawing inspiration from repertoire learnt in the curriculum

Texture

Pupils should learn:

- that a melody which can be sung with a staggered start, creating multiple layers, is called a round or canon
- that these layers are called 'parts'
- to combine melodic and rhythmic layers to create a melody and accompaniment texture (e.g. using a sung melody with live untuned percussion accompaniment; by recording a melody using digital technology and adding rhythmic layers)

Structure

Pupils should learn:

- that musical structure, or form, is created using repeated sections, for example verse and chorus
- to use repeated sections in their own creative work (e.g. reprising a tune or chorus in a simple composition; creating and repeating a pattern using a musical programme on a digital device)

Place and purpose

Pupils should learn:

- about place, purpose and people when playing, creating and listening (e.g. 'Amazing Grace' has an extraordinary history both in its provenance and through its countless arrangements and performances; Irish jigs/reels and Ulster Scots marches/dances form an important aspect of the local cultural fabric; *Peter and the Wolf* by Prokofiev uses narrative and characterisation to introduce central instruments of the orchestra)
- to recognise common musical genres (e.g. popular music, jazz, classical music and musical theatre)



Physical Education (PE)

Key Stage statement

Key Stage 2 builds on the increasing fluency and control of movement gained in Key Stage 1 and further refines technical accuracy and tactical awareness to enable pupils to participate with increased consistency and intention. Pupils consolidate and refine fundamental movement skills within a small range of activity-specific contexts, combining and adapting them with greater efficiency and effectiveness across increasingly demanding contexts.

Pupils deepen their knowledge of the roles and responsibilities within contrasting individual and team-based activities to enable them to proactively and reactively respond to increasingly strategic play. They support their safe and healthy participation by building secure knowledge of how the musculoskeletal and cardiorespiratory systems work. Pupils will transition from general physical activity to sport-specific movements, equipping them with the knowledge to improve the quality of their participation and sustain engagement.

Physical movement

Pupils should learn to:

- select and apply accurate techniques when throwing, striking or kicking based on distance, time target and/or pressure
- adjust linked movement patterns (e.g. speed, direction, pathway, level) in response to unpredictable changes in task, environment, space or others
- exploit space when attacking or creating movement opportunities
- control objects with parts of the body (e.g. hands, feet) while stationary and on the move
- track moving objects and people accurately to anticipate and initiate a response (e.g. catch, block, trap)
- sequence and perform dance and gymnastics actions that match the context (e.g. floor to apparatus, individual, pair and small group) to a stimulus (e.g. music, picture)

Conventions

Pupils should learn:

- to communicate ideas and narratives through dance and gymnastics by selecting and combining movement actions within different space and time demands

- similarities and differences in rules and objectives across related activities
- to demonstrate with increasing competence and confidence different roles within activities (e.g. attacker, defender)
- simple attacking and defensive principles (e.g. marking, supporting, evading or creating space)
- how following rules and conventions across a range of activities promotes safety, fairness, respect and enjoyment
- to interpret and use basic officiating rules and signals fairly
- to use clear verbal and non-verbal communication during games, practices and group tasks in competitive and non-competitive contexts
- to anticipate simple outcomes of decisions and adjust decisions during play to improve effectiveness
- to transfer simple tactics between similar activities (e.g. creating space in different games)

Physical health

Pupils should learn:

- how different types, durations and intensities of physical activity affect individual participation
- the main components of the musculoskeletal and cardiorespiratory systems and to explain how they work together to support movement and sustain activity
- how regular participation in physical activity can support physical, mental and social health and wellbeing
- that fitness is specific and how different activities contribute to fitness (e.g. running for stamina, stretching for flexibility)
- safe techniques, behaviours and potential risks associated with different activities and environments, the physiological purpose of warm-ups and cool-downs in preparing and recovering the body
- simple hydration and rest strategies before, during and after activity
- practical strategies to manage emotions during performance (e.g. staying focused, trying again, accepting outcomes)
- different types of goals and how to use feedback to identify whether goals have been achieved

Swimming and water safety

Pupils should learn:

- to swim using a recognised stroke – arm action, leg action, body position and breathing
flotation – treading water, star float and rotating from front to back, sculling
- basic pool rules and safety in and around water
- to recognise danger (e.g. signs and flags, on beaches, lakes and waterways)
- the HELP position in a life jacket or with tow float
- safe water entry – sit and slide in, push and glide – on front and back in streamlined stretched position



Personal, Social, Civic and Careers (PSCC)

Key Stage statement

Key Stage 2 builds a vocabulary with which pupils can think and communicate about themselves, others and society with increasing precision. They learn that thoughts, emotions and actions influence one another; that the brain develops through practice; and that habits form through repetition. Pupils examine rules, equity and fairness, recognise visible and invisible differences and consider how systems can create or reduce inequality. Through learning about careers, pupils broaden their horizons and connect interests and values to pathways. Pupils are introduced to basic planning, budgeting and safe, responsible participation online. Study at this stage focuses on developing coherent knowledge across the categories so that learning accumulates over time.

Self and learning

Psychology of behaviour and learning

Pupils should learn:

- that thoughts, emotions and actions influence one another and that people can develop different ways of responding to experiences over time
- that thoughts are not always facts and to notice and question unhelpful thoughts about themselves or their learning (e.g. asking 'what is the evidence for this' or 'is there another way to think about this?')
- that the brain changes with learning by forming new connections
- that habits and routines form through cues and repetition and can transform learning and behaviour
- that motivation and reward systems in the brain influence effort and persistence for better and for worse
- that we can only take in a limited amount of new information at once, but that by building wide knowledge in long-term memory we make sense of new material more quickly; it helps our brains see patterns by making links with what we already know

- that practice remains important, even after we think we have mastered a skill, and that retrieving knowledge learned in a previous lesson, term or year, is an example of such practice
- to reflect on experiences, goals and strategies and that such reflection helps us to understand what works well and how to make better learning and life decisions
- about transitions (e.g. primary to post-primary), about associated challenges and opportunities, about strategies to manage these effectively and that the challenges of transition can bring opportunity for growth

Health and wellbeing science

Pupils should learn:

- that a balanced diet, regular physical activity and positive routines support physical and mental health
- that some situations are unsafe, that people seek help when needed and how to use the UK emergency number
- how to apply safety knowledge in real-life contexts (e.g. road safety, bystander awareness and social safety)
- how to give basic first aid for minor injuries (e.g. dealing with cuts and nose bleeds)
- about age-appropriate risks from medicines and household substances that can be harmful if misused and about other potential hazards in the home
- about some of the basic differences between male and female bodies, the physical, emotional and social changes of puberty and that these changes happen at different times for different people
- what menstruation is, that menstruation is a normal part of development and how menstrual hygiene can be managed with confidence
- how to give or withhold consent about their own bodies and about the importance of respecting other people's boundaries
- how correct use of medicines and vaccinations supports health and wellbeing
- about some of the risks and effects of legal and illegal drugs, smoking and alcohol use, including the law around age requirements
- about reasons why age restrictions exist online, including safety, privacy, advertising, inappropriate content and communication with strangers

Relationships and society

Social understanding

Pupils should learn:

- that conflict is a natural part of social life and can arise from differences in values or competing needs
- that if rules are not keeping people safe or ensuring fair treatment, there are appropriate and inappropriate ways for individuals and groups to respond
- how to identify and respond appropriately both to visible differences and to differences that are not immediately visible (e.g. beliefs, experiences, disabilities)
- how to recognise a wide range of emotions in others, including those not explicitly expressed, such as those expressed using body language
- that friendships change over time, how to make new friends, how to manage conflict, including jealousy and that resorting to violence is never right
- how to identify healthy and unhealthy behaviours in friendships and how to seek help or advice when any relationship feels unhappy or unsafe
- how group pressure can influence decisions in social situations and how to make safe choices that reflect their own values and boundaries
- that some adults are in romantic relationships, that these relationships involve care and commitment
- how to stay safe online, including protecting personal information and recognising pressure to share images
- about different forms of abuse, including domestic and online abuse and grooming, and how to recognise, avoid and report them
- that all human beings, irrespective of their beliefs or behaviours, should be treated with dignity
- that kindness, respect and responsibility matter online and offline and that anonymity online does not remove responsibility for behaviour towards others
- that online actions such as cyberbullying can have consequences in school, at home and sometimes under the law

Citizenship and civic understanding

Pupils should learn:

- about basic democratic concepts, including freedom, equality, representation and the rule of law
- why laws exist, how they are made, why they are important for a healthy democracy and why respecting the rule of law benefits everyone
- about caring for the environment as a shared responsibility, including looking after local natural spaces, reducing waste and thinking about how our actions affect the wider world
- about how individuals, communities and charitable organisations can help others who are less fortunate, both locally and globally, including through volunteering and charitable giving and practices such as fair and ethical trade
- that human rights apply to everyone, regardless of background or identity

Ethics and moral reasoning

Pupils should learn:

- how to distinguish between factual, conceptual and ethical questions
- to evaluate moral choices by considering consequences for those affected, the rules or duties involved and values and the kind of character the choices reflect
- to consider how their own choices affect others in real-life situations
- that thoughtful people sometimes reach different conclusions about what is right
- to practise respectful disagreement constructively and carefully, using reasoning and evidence
- to identify simple examples of bias or errors in reasoning, including jumping to conclusions, only listening to one side, or attacking the person instead of the argument
- what a stereotype is and how some stereotypes, including some gender stereotypes, can be unfair or inaccurate

Careers and futures

Careers and future pathways

Pupils should learn:

- that some jobs are unfamiliar, so pupils need to explore jobs they might not hear about in everyday life (e.g. roles which might be beyond the experiences of adults in their family or community)
- that understanding personal values, interests, skills and personality traits can help inform different pathways into work
- about basic personal career planning skills, including goal setting, planning steps and reflecting on progress
- that digital competence is necessary for employability
- that online behaviour creates a digital footprint which can have implications for employability

Financial competence

Pupils should learn:

- how to solve everyday money problems such as calculating change, comparing prices, budgeting for a small purchase and working out the cost of items in real- life scenarios
- that people make financial choices (e.g. to spend, to save for future needs, to give money away) and compare costs when planning purchases
- that people who cannot work receive money paid for from working people via the tax and benefit systems
- that some games and apps include options to buy extra items, features or rewards using real money and they should ask an adult before doing so

Enterprise and life skills

Pupils should learn:

- that some people create their own jobs, i.e. self-employment in a wide variety of sectors
- how entrepreneurs contribute to the local community



Science

Key Stage Statement

At Key Stage 2 pupils build on their prior learning to gain a greater depth of understanding of concepts, structures and the nature of scientific enquiry. Key ideas from Key Stage 1, such as the nature of matter and living things, are built on with greater nuance and depth. The models used to explain scientific phenomena are more conceptual and abstract than those encountered in Key Stage 1, with this key stage equipping pupils with the knowledge, skills and conceptual understanding that will best support them to access future learning in Key Stage 3 (when they will engage in the three natural sciences as separate disciplines for the first time). Building on Key Stage 1, pupils continue to explore and grow their understanding of the way in which science is conducted and the role of science in society.

Life sciences

The structure and function of organisms

Pupils should learn:

- that the common processes in all living organisms are growth, nutrition, movement, obtaining energy from food, reproduction, excretion and sensitivity
- that many living organisms require oxygen and produce carbon dioxide in the process of getting energy from their food
- that plants by contrast are 'self-feeding' organisms which use resources from their environment (water, carbon dioxide, sunlight) to make food and oxygen via the process of photosynthesis
- how water is transported in plants, limited to the direction (soil > root > stem > leaf)
- about the basic structure and function of the human respiratory system (including and limited to lungs, trachea, bronchi, diaphragm, ribcage) and circulatory system (including and limited to heart, blood vessels, blood), linking these to life processes (e.g. obtaining and transporting oxygen and nutrients around the body)
- that microscopic examination of organisms shows that all living things are composed of units called cells

Growth, reproduction and variation

Pupils should learn:

- that reproduction is a characteristic process of living things, producing offspring of the same kind
- about the structure and function of parts of an insect-pollinated flower and the life cycle of flowering plants: flower production > pollination > fruit formation > seed dispersal > growth
- that reproduction in humans and other animals occurs between a male and a female and that fertilisation can be external (e.g. in amphibians) or internal (e.g. in mammals)
- the basic names of male and female reproductive organs needed to understand puberty (ovaries, testes, uterus)
- that organisms are adapted to their habitats and that fossils can provide information about organisms which lived on the Earth millions of years ago
- that organisms can be grouped based on their similarities and differences, including groups within a larger group, to include plants (flowering and non-flowering), animals (insects, fish, amphibians, reptiles, birds, mammals), fungi (moulds and mushrooms), and bacteria

Interdependence of organisms

Pupils should learn:

- about food chains of different lengths (including longer marine food chains) and that plants are producers and animals are consumers
- that in addition to feeding relationships, there are many examples of the interdependence of organisms (e.g. pollination by insects, seed dispersal by vertebrates, oxygen production by plants)
- different types of microbes (e.g. bacteria and viruses) exist and can impact human health and that vaccination helps the body recognise and remove them, and reduces transmission
- the term 'biodiversity', limited to species biodiversity and habitat biodiversity (the variety of species within a habitat and the variety of habitats in a particular area, e.g. a garden, a country)
- about ways in which human activities can change habitats and how these can positively (e.g. afforestation for carbon capture) or negatively (e.g. deforestation, air and water pollution) impact upon both species biodiversity and habitat biodiversity

Physical sciences

Matter and materials

Pupils should learn:

- that all materials are made of tiny units called particles (e.g. iron, carbon dioxide); in solids they are tightly packed in a fixed structure and can only vibrate in place, in liquids they can move around each other whilst still touching and in gases they are far apart and move freely
- that mass is the amount of matter in an object and is measured in grams (g) and kilograms (kg)
- that heating a material makes its particles move (or vibrate, if solid) faster and can cause a change from solid to liquid to gas
- the changes of physical state that occur due to heating and cooling (melting, boiling, evaporating, condensing, freezing) and how these apply to the water cycle and rock formation
- that heat is transferred through materials and to categorise materials as thermal conductors or insulators
- about types of changes that can be reversed (e.g. melting, freezing) and types of change that cannot be reversed (e.g. rotting, cooking)

Forces and motion

Pupils should learn that:

- energy is needed for things to happen. It can be stored in different ways, including in moving objects, in warm objects, in stretched or squashed objects, and in raised objects
- energy can be transferred between different stores, but it cannot be created or destroyed (it is always conserved)
- energy is measured in Joules (J)
- forces can exert pushes, pulls or twists and are measured in Newtons (N)
- forces can speed objects up, slow them down or change their direction (including resistive forces of friction)
- air resistance and water resistance are types of friction and are contact forces that oppose the movement of objects

Electricity and magnetism

Pupils should learn:

- that electricity flows through complete circuits and not through incomplete circuits
- to build simple circuits with common components (battery, switch, bulb, buzzer)
- that electricity provides the energy required for changes in components (e.g. bulb lighting, buzzer sounding, motor acting)
- that electric current is the flow (movement) of electricity and that series circuits have only one path for the current to flow around
- that electrical conductors allow electric current to pass through them and electrical insulators do not
- the difference between renewable and non-renewable sources of electricity and know some examples of each

Light, sound and waves

Pupils should learn:

- that light can transfer energy from one place to another and that when light is absorbed, the energy can be stored in different ways, for example by warming objects (thermal energy)
- to observe and compare how shadows change depending on the relative orientation and distance between an object and a light source
- that mirrors reflect light to show an image of an object and to experience reflection of a light ray using a plane mirror and multi-mirror arrangements (e.g. simple periscope)
- to observe that white light (including sunlight) is made up of a spectrum of colours that can be split when passing through transparent materials (e.g. prism, raindrops)
- that sound waves can travel through solid, liquids and gases

Earth and space

Pupils should learn that:

- the planets are arranged in order of increasing distance from the Sun and can be named in that sequence.
- the Earth spins on its axis once every day, causing night and day and making the Sun appear to rise in the east, move across the sky and set in the west

- a year is how long it takes the Earth to orbit the Sun and that the Moon orbits the Earth about once a month
- that the seasons are caused by the tilt of the Earth's axis towards or away from the Sun at different times of the year
- the Sun provides the majority of energy on Earth (directly and indirectly)
- our planet has an atmosphere, made up of gases, that is held by gravity. It contains the oxygen we breathe, traps heat and protects us from harmful sun rays and from meteors that burn up in it
- there are millions of solar systems in our galaxy (the Milky Way) and that the universe contains many galaxies
- humans can learn about Earth from space (e.g. about Earth's weather from cameras and measuring devices on satellites and the International Space Station)
- humans can learn about space by observing from Earth, or going into space itself (e.g. to enable close-up images of planets and clearer images of outer space unaffected by our atmosphere)

Nature, practices and norms of science

Nature of science and scientific knowledge

Pupils should learn:

- that a range of approaches are used in science to understand the world around us, to include:
 - fair and comparative tests
 - observation, identification and classification
 - looking for and recording patterns
 - making things
 - using secondary sources of data
- that measurements should be repeated to check if the results are the same, or similar (and know why differences might arise)
- that in science we make predictions and test them, using evidence from enquiries to support or disprove hypotheses
- that science is never complete and that theories are updated if new evidence emerges

- that science is a collaborative field and that the findings of science belong to everyone
- about local and international scientists and their contributions to the world

Investigating scientific questions

Pupils should learn how to:

- ask relevant scientific questions and identify different scientific approaches to investigate these
- plan and conduct observational enquires (on living and non-living objects of study from this key stage)
- plan and conduct comparative investigations and fair tests (in both the physical and life sciences), including:
 - how to identify variables
 - how to independently select and use appropriate scientific apparatus
 - how to identify risks and suggest safety measures when working scientifically
 - how to make observations and use a range of equipment to record a variety of simple measurements using standard units (including: length, area, capacity, mass, temperature)
 - how to use appropriate approaches to gather and record data in a variety of formats (e.g. numerical, tables, tally charts, sketches, maps)

Analysis, interpretation and communication

Pupils should learn how to:

- identify links, patterns and relationships from data and make predictions for further outcomes
- use appropriate approaches to present scientific data (e.g. diagrams, line graphs, bar charts)
- make appropriate conclusions on findings from investigations, reporting and presenting these in oral or written form and suggest improvements for further investigations
- use relevant scientific facts and evidence to support or challenge claims



Technology and design

Key Stage statement

In Key Stage 2, pupils develop broader knowledge of the technological and designed world. They extend their technological-conceptual knowledge by exploring a wider range of material properties, system types and structural principles, they learn how these influence function, performance and suitability. Their technological-procedural knowledge becomes more refined as they work with increasing accuracy, plan sequences of making, and use a broader range of tools, techniques and basic manufacturing processes to produce components and assemblies that fit, align and function reliably.

Pupils' design-conceptual knowledge becomes more sophisticated. They learn that design decisions involve competing needs and constraints, and that evidence and knowledge are used to justify choices. Their design-procedural knowledge grows through more systematic approaches to generating, modelling, comparing and refining ideas, supported by clearer design criteria and evidence gathered from testing. Across Key Stage 2, the strands integrate more deliberately: understanding informs making, making reveals limitations, testing provides feedback, and design reasoning drives purposeful refinement. This coherent interplay helps pupils develop growing independence, confidence and enjoyment in producing more considered, responsible and well-reasoned design solutions.

Technological-conceptual knowledge

Materials

Pupils should learn:

- the physical and functional properties (e.g. elasticity, hardness, thermal insulation, conductivity, corrosion resistance, sustainability) of some commonly used materials and how these influence selection for certain functions in different contexts (e.g. weather exposure, wear and tear)
- some broad classifications of material type, including origin (e.g. natural, synthetic, recycled) and structure (e.g. manufactured boards, metals and plastics)
- how each type of material affects function and sustainability

Structures

Pupils should learn:

- that forces act on structures and that shape, form and reinforcement influence strength and stability (e.g. frames, shells, triangulation)
- about examples of rural and urban buildings in Northern Ireland where deliberate use of shape, form and reinforcement are visible (e.g. the roof structures of barns on farms – trusses, beams and triangle shapes; the triangles evident in dockside cranes; round towers such as Antrim Round Tower)
- about examples of shapes in nature which have been used as inspiration for stable or interlocking shapes (e.g. the hexagons of Giant’s Causeway) and how they’ve been used (e.g. the honeycomb structures hidden inside wings, doors and panels in aircraft; hexagonal designs in Northern Ireland in public places, such as hexagonal paving in Belfast or architectural facades; hexagonal designs used on farms, such as lightweight shed panels, ventilated flooring, fencing mesh or storage systems)
- about examples of stable structures from periods studied in history (pyramids in ancient Egypt; ziggurats in ancient Mesopotamia)

Systems

Pupils should learn that:

- systems can be described as input–process–output
- different system types (e.g. mechanical, electrical, digital) use components (e.g. wheels, levers, switches, and simple programmable devices) to control movement or behaviour (e.g. gears change speed; circuits change light or sound)
- systems follow planned sequences (e.g. turning one gear causes another to turn; pulling a lever causes something to lift)

Technological-procedural knowledge

Tools and equipment

Pupils should learn to:

- follow basic safe working practices (e.g. using tools with care, maintaining safe distances, keeping workspaces organised) and understand why these routines keep themselves and others safe

- select and use a range of common hand tools and simple equipment (e.g. junior hack saw, coping saw, bench hook, hand file) with growing accuracy and control, with guidance to match tools to intended tasks

Planning, making and testing

Pupils should learn to:

- plan sequences for making their designs
- measure and mark out accurately to ensure parts fit correctly
- cut, shape (e.g. file, bend, layer materials) and join (e.g. nuts and bolts, screws or glued) different materials with care, adjusting their working processes to ensure the finished product functions as intended or required
- name and apply reinforcement techniques (e.g. folding, layering or basic triangulation) to secure modifications, such as improving the strength or stability of structures
- assemble components so that the system or product functions as required

Design-conceptual knowledge

Design intentions and users

Pupils should learn:

- that the term 'design criteria' describes the kinds of things that designers think about when creating solutions, including function, sustainability, user needs, aesthetics, values such as inclusion (e.g. Sam Farber's kitchen tools used the design criteria of user needs, inclusion and function, when he designed thick, soft handles for his wife who had arthritis; the attention to aesthetics, beliefs about God, natural light and requirements of space in the deliberate artistry and craftsmanship of medieval cathedral architects and stone masons)
- examples of how designs have evolved over time because of social, environmental or technological factors (e.g. Bronze Age peoples in ancient Mesopotamia found that they could make better tools and weapons by combining copper and tin to make a stronger metal – bronze; the Romans perfected the arch to meet the needs of a growing empire as seen in aqueducts, bridges and large public buildings; the evolution of the penny farthing into the modern safety bicycle; attaching lids to disposable bottles has arisen from awareness of environmental impact of more efficient recycling)

Design reasoning and judgement, including consequences

Pupils should learn:

- that designers work with constraints and so must prioritise, balance purposes and/or make compromises in their designs (e.g. a bag design which needed to be strong yet light; a bridge adapted to allow water traffic underneath; a foldaway chair strong enough to support weight but light and compact enough to carry)
- about solutions to design problems which have emerged from adaptations and accretions of existing designs (e.g. how the architects of Córdoba’s first mosque solved the problem of supporting the roof without walls or heavy pillars: the use of Roman and Visigothic arches sitting on top of each other)
- about intended and unintended impacts of designs on people, society and the natural world (e.g. the mobile phone has transformed accessible communication but may isolate people from those around them; a new playground feature may improve play for some but make an area too crowded for others; using more packaging protects a product but creates extra waste)

Design-procedural knowledge

Design contexts and needs

Pupils learn to:

- develop a design which takes account of constraints and user needs (e.g. design a toy suitable for a young child from specified materials available; design a wooden nesting box for a particular size of bird)

Research and evidence

Pupils should learn to:

- interpret and prioritise what they learn from users and existing products, helping them define needs and create design criteria (e.g. when designing a torch, pupils notice from users that it must be easy to hold and from existing torches that a protective casing is needed, helping them decide which features matter most; pupils conduct a survey with a group of adults about what they do and don’t like about a desk lamp, pupils then develop the design criteria for a new desk lamp)

Design communication

Pupils should learn to:

- indicate measurements and materials on their sketches and models

Idea generation, development and testing

Pupils should learn to:

- use strategies to generate a range of possible ideas (e.g. seeking inspiration from designers and makers throughout history, from other parts of the world or from nature; studying existing models; combining existing ideas; analysing and improving existing solutions)
- refine or modify their ideas in response to testing them against the design criteria (e.g. where appropriate adding features, improving shapes, adjusting sizes, trying different materials)
- test parts, materials and simple prototypes during development to see whether they meet the design criteria (e.g. testing strength, movement, fit or stability)



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