Core Curriculum Content

Introduction

It is a DfE requirement that maintained schools should publish the content of their school curriculum in each academic year, for every subject on their website. https://www.gov.uk/guidance/what-maintained-schools-must-publish-online

Due to copyright reasons, we cannot allow the full Chris Quigley Essentials Curriculum to be published on school websites. However, to save schools time, and to give clarity, we have created this document for schools using the Chris Quigley Essentials Curriculum to use on their websites in line with DfE requirements.


Milestone 1

By the end of Year 1 pupils should have a basic grasp of all of this content. By the end of Year 2 pupils should have an advancing understanding of this content, whilst some will have a deep understanding.

Reading Years 1 and 2

In Years 1 and 2 pupils:

- Apply phonic knowledge and skills as the route to decode words.
- Respond speedily with the correct sound to graphemes (letters or groups of letters) for all 40+ phonemes, including, where applicable, alternative sounds for graphemes.
- Read accurately by blending sounds in unfamiliar words containing GPCs that have been taught.
- Read common exception words, noting unusual correspondences between spelling and sound and where these occur in the word.
- Read words containing taught GPCs and –s, –es, –ing, –ed, –er and –est endings.
- Read other words of more than one syllable that contain taught GPCs.
- Read words with contractions (for example, I'm, I'll, we'll) and understand that the apostrophe represents the omitted letter(s).
- Read aloud accurately books that are consistent with phonic knowledge and that do not require other strategies to work out words.
- Re-read these books to build up fluency and confidence in word reading.
- Read accurately by blending the sounds in words that contain the graphemes taught so far, especially recognising alternative sounds for graphemes.
- Read accurately words of two or more syllables that contain the same graphemes as above.
- Read words containing common suffixes.
- Read most words quickly and accurately, without overt sounding and blending, when they have been frequently encountered.
- Read aloud books closely matched to their improving phonic knowledge, sounding out unfamiliar words accurately, automatically and without undue hesitation.
- Re-read books to build up fluency and confidence in word reading.
- Discuss events.
- Predict events.
- Link reading to own experiences and other books.
- Join in with stories or poems.
- Check that reading makes sense and self-correct.
- Infer what characters are like from actions.
- Ask and answer questions about texts.
- Discuss favourite words and phrases.
- Listen to and discuss a wide range of texts.
- Recognise and join in with (including role-play) recurring language.
- Explain and discuss understanding of texts.
- Discuss the significance of the title and events.
- Make inferences on the basis of what is being said and done.

Writing Years 1 and 2

In Years 1 and 2 pupils:

- Say first and then write to tell others about ideas.
- Write for a variety of purposes.
- Plan by talking about ideas and writing notes.
- Use some of the characteristic features of the type of writing used.
- Write, review and improve.
- Use well-chosen adjectives to add detail.
- Use names of people, places and things.
- Use well-chosen adjectives.
- Use nouns and pronouns for variety.
- Use adverbs for extra detail.
- Re-read writing to check it makes sense.
- Use the correct tenses.
- Organise writing in line with its purpose.
- Write about more than one idea.
- Group related information.
- Write so that other people can understand the meaning of sentences.
- Sequence sentences to form clear narratives.
- Convey ideas sentence by sentence.
- Join sentences with conjunctions and connectives.
- Vary the way sentences begin.
- Sit correctly and hold a pencil correctly.
- Begin to form lower-case letters correctly.
- Form capital letters.
- Form digits 0-9.
- Understand letters that are formed in similar ways.
- Form lower-case letters of a consistent size.
- Begin to join some letters.
- Write capital letters and digits of consistent size.
- Use spacing between words that reflects the size of the letters.
- Spell words containing 40+ learned phonemes.
- Spell common exception words (the, said, one, two and the days of the week).
- Name letters of the alphabet in order.
- Use letter names to describe spellings of words.
- Add prefixes and suffixes, learning the rule for adding s and es as a plural marker for nouns, and the third person singular marker for verbs (I drink - he drinks).
- Use the prefix un.
- Use suffixes where no change to the spelling of the root word is needed: helping, helped, helper, eating, quicker, quickest.
- Use spelling rules.
- Write simple sentences dictated by the teacher.
- Spell by segmenting words into phonemes and represent them with the correct graphemes.

- Learn some new ways to represent phonemes.
- Spell common exception words correctly.
- Spell contraction words correctly (can't, don't).
- Add suffixes to spell longer words (-ment, -ness, -ful and -less).
- Use the possessive apostrophe. (singular) (for example, the girl's book)
- Distinguish between homophones and near-homophones.
- Leave spaces between words.
- Use the word 'and' to join words and sentences.
- Begin to punctuate using a capital letter for the name of people, places, the days of the week and I.
- Use both familiar and new punctuation correctly, including full stops, capital letters, exclamation marks, question marks, commas for lists and apostrophes for contracted forms.
- Use sentences with different forms: statement, question, exclamation and command.
- Use extended noun phrases to describe and specify (e.g. the blue butterfly).
- Use subordination (when, if, that or because).
- Use coordination (or, and, but).
- Use some features of standard written English.
- Use the present and past tenses correctly, including the progressive form.
- Discuss writing with the teacher and other pupils.
- Use and understand grammatical terminology in discussing writing: word, sentence, letter, capital letter, full stop, punctuation, singular, plural, question mark, exclamation mark.
- Use and understand grammatical terminology in discussing writing: verb, tense (past, present), adjective, noun, suffix, apostrophe, comma.
- Read aloud writing clearly enough to be heard by peers and the teacher.
- Read aloud writing with some intonation.

Communication Years 1 and 2

In Years 1 and 2 pupils:

- Sift information and focus on the important points.
- Seek clarification when a message is not clear.
- Understand instructions with more than one point.
- Use subject specific vocabulary to explain and describe.
- Suggest words or phrases appropriate to the topic being discussed.
- Identify homophones.
- Speak in a way that is clear and easy to understand.
- Demonstrate good phonic knowledge by clearly pronouncing the sounds within words.
- Identify syllables within words.
- Ensure stories have a setting, plot and a sequence of events.
- Recount experiences with interesting detail.
- Predict events in a story.
- Give just enough detail to keep the audience engaged.
- Take turns to talk, listening carefully to the contributions of others.
- Vary language between formal and informal according to the situation.
- Add humour to a discussion or debate where appropriate.

Mathematics Years 1 and 2

In Years 1 and 2 pupils:

- Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number.
- Count, read and write numbers to 100 in numerals.
- Given a number, identify one more and one less.
- Count in steps of 2, 3, 5 and 10 from 0 or 1 and in tens from any number, forward and backward.
- Identify, represent and estimate numbers using different representations, including the number line.
- Read and write numbers initially from 1 to 20 and then to at least 100 in numerals and in words.
- Use the language of: equal to, more than, less than (fewer), most and least.
- Compare and order numbers from 0 up to 100; use <, > and = signs.
- Recognise the place value of each digit in a two-digit number (tens, ones).
- Use place value and number facts to solve problems.
- Solve one-step problems with addition and subtraction:
- Using concrete objects and pictorial representations including those involving numbers, quantities and measures.
- Using the addition (+), subtraction (-) and equals (=) signs.
- Applying their increasing knowledge of mental and written methods.
- Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:
- One-digit and two-digit numbers to 20, including zero.
- A two-digit number and ones.
- A two-digit number and tens.
- Two two-digit numbers.
- Adding three one-digit numbers.
- Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.
- Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.
- Represent and use number bonds and related subtraction facts within 20.
- Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100.
- Solve one-step (two-step at greater depth) problems involving multiplication and division.
- Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) signs.
- Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.
- Solve problems involving multiplication and division using mental methods.
- Use known multiplication facts to check the accuracy of calculations.

- Recognise, find and name a half as one of two equal parts of an object, shape or quantity.
- Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.
- Recognise, find, name and write fractions 1/2, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity.
- Recognise the equivalence of 2/4 and 1/2.
- Write simple fractions for example, 1/2 of 6 = 3.
- Recognise and name common 2D and 3D shapes.
- Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line.
- Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces.
- Identify 2-D shapes on the surface of 3-D shapes.
- Compare and sort common 2-D and 3-D shapes and everyday objects.
- Describe position, direction and movement, including whole, half, quarter and three-quarter turns.
- Order and arrange combinations of mathematical objects in patterns and sequences.
- Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise).
- Compare, describe and solve practical problems for:
  - lengths and heights
  - mass/weight
  - capacity and volume
  - time.
  - Measure and begin to record:
  - lengths and heights
  - mass/weight
  - capacity and volume
  - time (hours, minutes, seconds).
- Recognise and know the value of different denominations of coins and notes.
- Sequence events in chronological order using language.
- Recognise and use language relating to dates, including days of the week, weeks, months and years.
- Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.
- Use standard units to estimate and measure length/height (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels.
- Compare and order lengths, mass, volume/capacity and record the results using >, < and =.
- Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value.

- Find different combinations of coins that equal the same amounts of money.
- Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.
- Compare and sequence intervals of time.
- Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times.
- Know the number of minutes in an hour and the number of hours in a day.
- Interpret and construct simple pictograms, tally charts, block diagrams and simple tables.
- Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.
- Ask and answer questions about totalling and comparing categorical data.
- Solve addition and subtraction problems involving missing numbers.

Science Years 1 and 2

In Years 1 and 2 pupils:

- Ask simple questions.
- Observe closely, using simple equipment.
- Perform simple tests.
- Identify and classify.
- Use observations and ideas to suggest answers to questions.
- Gather and record data to help in answering questions.
- Identify and name a variety of common plants, including garden plants, wild plants and trees and those classified as deciduous and evergreen.
- Identify and describe the basic structure of a variety of common flowering plants, including roots, stem/trunk, leaves and flowers.
- Observe and describe how seeds and bulbs grow into mature plants.
- Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.
- Identify and name a variety of common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates.
- Identify and name a variety of common animals that are carnivores, herbivores and omnivores.
- Describe and compare the structure of a variety of common animals (birds, fish, amphibians, reptiles, mammals and invertebrates, including pets).
- Identify name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.
- Notice that animals, including humans, have offspring which grow into adults.
- Investigate and describe the basic needs of animals, including humans, for survival (water, food and air).
- Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene.
- Explore and compare the differences between things that are living, that are dead and that have never been alive.
- Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants and how they depend on each other.
- Identify and name a variety of plants and animals in their habitats, including micro-habitats.
- Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.
- Identify how humans resemble their parents in many features.
- Distinguish between an object and the material from which it is made.
- Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock.
- Describe the simple physical properties of a variety of everyday materials.
- Compare and group together a variety of everyday materials on the basis of their simple physical properties.

- Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.
- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock, and paper/cardboard for particular uses.
- Notice and describe how things move, using simple comparisons such as faster and slower.
- Compare how different things move.
- Observe and name a variety of sources of light, including electric lights, flames and the Sun, explaining that we see things because light travels from them to our eyes.
- Observe and name a variety of sources of sound, noticing that we hear with our ears.
- Identify common appliances that run on electricity.
- Construct a simple series electrical circuit.
- Observe the apparent movement of the Sun during the day.
- Observe changes across the four seasons.
- Observe and describe weather associated with the seasons and how day length varies.


Milestone 2

By the end of Year 3 pupils should have a basic grasp of all of this content.
By the end of Year 4 pupils should have an advancing understanding of this content, whilst some will have a deep understanding.

Reading Years 3 and 4

In Years 3 and 4 pupils:

- Apply a growing knowledge of root words, prefixes and suffixes (etymology and morphology).
- Read further exception words, noting the spellings.
- Draw inferences from reading.
- Predict from details stated and implied.
- Recall and summarise main ideas.
- Discuss words and phrases that capture the imagination.
- Retrieve and record information from non-fiction, using titles, headings, sub-headings and indexes.
- Prepare poems and plays to read aloud with expression, volume, tone and intonation.
- Identify recurring themes and elements of different stories (e.g. good triumphing over evil).
- Recognise some different forms of poetry.
- Explain and discuss understanding of reading, maintaining focus on the topic.
- Draw inferences such as inferring characters' feelings, thoughts and motives from their actions, and justifying inferences with evidence.
- Predict what might happen from details stated and implied.
- Identify main ideas drawn from more than one paragraph and summarise these.
- Identify how language, structure and presentation contribute to meaning.
- Ask questions to improve understanding of a text.

Writing Years 3 and 4

In Years 3 and 4 pupils:

- Write for a wide range of purposes using the main features identified in reading.
- Use techniques used by authors to create characters and settings.
- Compose and rehearse sentences orally.
- Plan, write, edit and improve.
- Create characters, settings and plots.
- Use alliteration effectively.
- Use similes effectively.
- Use a range of descriptions phrases including some collective nouns.
- Use organisational devices such as headings and sub headings.
- Use the perfect form of verbs to mark relationships of time and cause.
- Use connectives that signal time, shift attention, inject suspense and shift the setting.
- Organise paragraphs around a theme.
- Sequence paragraphs.
- Use a mixture of simple, compound and complex sentences.
- Write sentences that include: conjunctions, adverbs, direct speech, punctuated correctly, clauses and adverbial phrases.
- Join letters, deciding which letters are best left un-joined.
- Make handwriting legible by ensuring downstrokes of letters are parallel and letters are spaced appropriately.
- Use prefixes and suffixes and understand how to add them.
- Spell further homophones.
- Spell correctly often misspelt words.
- Write sentences dictated by the teacher.
- Show an awareness of how writing differs from spoken language by: extending sentences using clauses and connectives such as when, if, because and although; choosing nouns and pronouns appropriately; using conjunctions, adverbs and prepositions to express time and cause.
- Using adverbials.
- Use and understand grammatical terminology when discussing writing and reading: **Year 3** - word family, conjunction, adverb, preposition, direct, speech, inverted commas (or 'speech marks'), prefix, consonant, vowel, clause, subordinate clause. **Year 4** - pronoun, possessive pronoun, adverbial.
- Read aloud writing to a group or whole class, using appropriate intonation.

Communication Years 3 and 4

In Years 3 and 4 pupils:

- Engage in discussions, making relevant points.
- Ask for specific additional information to clarify.
- Understand the meaning of some phrases beyond the literal interpretation.
- Use time, size and other measurements to quantify.
- Use interesting adjectives, adverbial phrases and extended noun phrases in discussion.
- Use vocabulary that is appropriate to the topic being discussed or the audience that is listening.
- Use verbs with irregular endings.
- Use a mixture of sentence lengths to add interest to discussions and explanations.
- Use intonation to emphasise grammar and punctuation when reading aloud.
- Bring stories to life with expression and intonation.
- Read the audience to know when to add detail and when to leave it out.
- Make relevant comments or ask questions in a discussion or a debate.
- Seek clarification by actively seeking to understand others' points of view.
- Respectfully challenge opinions or points, offering an alternative.

Mathematics Years 3 and 4

In Years 3 and 4 pupils:

- Count in multiples of 2 to 9, 25, 50, 100 and 1000.
- Find 1000 more or less than a given number.
- Count backwards through zero to include negative numbers.
- Identify, represent and estimate numbers using different representations.
- Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.
- Order and compare numbers beyond 1000.
- Recognise the place value of each digit in a four-digit number. (thousands, hundreds, tens, and ones)
- Round any number to the nearest 10, 100 or 1000.
- Solve number and practical problems with increasingly large positive numbers.
- Solve two-step addition and subtraction problems in contexts, deciding which operations and methods to use and why.
- Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.
- Add and subtract numbers mentally, including:
  - A three-digit number and ones.
  - A three-digit number and tens.
  - A three-digit number and hundreds.
- Estimate and use inverse operations to check answers to a calculation.
- Solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction.
- Solve problems involving multiplying and dividing, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems (such as n objects are connected to m objects).
- Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.
- Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers.
- Recognise and use factor pairs and commutativity in mental calculations.
- Recognise and use the inverse relationship between multiplication and division and use this to check calculations and solve missing number problems.
- Recall multiplication and division facts for multiplication tables up to 12 × 12.
- Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.
- Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators.
- Round decimals with one decimal place to the nearest whole number.
- Compare numbers with the same number of decimal places up to two decimal places.

- Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10.
- Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.
- Compare and order unit fractions and fractions with the same denominators.
- Recognise and show, using diagrams, families of common equivalent fractions.
- Recognise and write decimal equivalents of any number of tenths or hundredths.
- Recognise and write decimal equivalents to 1/4, 1/2, 3/4.
- Add and subtract fractions with the same denominator within one whole.
- Solve problems involving increasingly harder fractions.
- Calculate quantities and fractions to divide quantities (including non-unit fractions where the answer is a whole number).
- Add and subtract fractions with the same denominator.
- Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths.
- Solve simple measure and money problems involving fractions and decimals to two decimal places.
- Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them.
- Recognise angles as a property of shape or a description of a turn.
- Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle.
- Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.
- Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.
- Identify acute and obtuse angles and compare and order angles up to two right angles by size.
- Identify lines of symmetry in 2-D shapes presented in different orientations.
- Complete a simple symmetric figure with respect to a specific line of symmetry.
- Recognise angles as a property of shape and as an amount of rotation.
- Identify right angles, recognise that 2 right angles make a half turn and 4 make a whole turn.
- Identify angles that are greater than a right angle.
- Describe positions on a 2-D grid as coordinates in the first quadrant.
- Describe movements between positions as translations of a given unit to the left/right and up/down.
- Plot specified points and draw sides to complete a given polygon.
- Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).
- Measure the perimeter of simple 2-D shapes.
- Add and subtract amounts of money to give change. (£ and p)
- Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks.

- Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use appropriate vocabulary.
- Know the number of seconds in a minute and the number of days in each month, year and leap year.
- Compare durations of events.
- Convert between different units of measure. (for example, kilometre to metre; hour to minute)
- Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres.
- Find the area of rectilinear shapes by counting squares.
- Estimate, compare and calculate different measures, including money in pounds and pence.
- Read, write and convert time between analogue and digital 12- and 24-hour clocks.
- Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.
- Interpret and present data using bar charts, pictograms and tables.
- Solve one-step and two-step questions (for example, ‘How many more?’ and ‘How many fewer?’) using information presented in scaled bar charts, pictograms and tables.
- Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.
- Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.
- Solve addition and subtraction, multiplication and division problems that involve missing numbers.

Science Years 3 and 4

In Years 3 and 4 pupils:

- Ask relevant questions.
- Set up simple, practical enquiries and comparative and fair tests.
- Make accurate measurements using standard units, using a range of equipment, e.g. thermometers and data loggers.
- Gather, record, classify and present data in a variety of ways to help in answering questions.
- Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables.
- Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
- Use results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests.
- Identify differences, similarities or changes related to simple, scientific ideas and processes.
- Use straightforward, scientific evidence to answer questions or to support their findings.
- Identify and describe the functions of different parts of flowering plants: roots, stem, leaves and flowers.
- Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant.
- Investigate the way in which water is transported within plants.
- Explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.
- Identify that animals, including humans, need the right types and amounts of nutrition, that they cannot make their own food and they get nutrition from what they eat.
- Construct and interpret a variety of food chains, identifying producers, predators and prey.
- Identify that humans and some animals have skeletons and muscles for support, protection and movement.
- Describe the simple functions of the basic parts of the digestive system in humans.
- Identify the different types of teeth in humans and their simple functions.
- Recognise that living things can be grouped in a variety of ways.
- Explore and use classification keys.
- Recognise that environments can change and that this can sometimes pose dangers to specific habitats.
- Identify how plants and animals, including humans, resemble their parents in many features.
- Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.

- Identify how animals and plants are suited to and adapt to their environment in different ways.

Rocks and Soils
- Compare and group together different kinds of rocks on the basis of their simple, physical properties.
- Relate the simple physical properties of some rocks to their formation (igneous or sedimentary).
- Describe in simple terms how fossils are formed when things that have lived are trapped within sedimentary rock.
- Recognise that soils are made from rocks and organic matter.

States of Matter
- Compare and group materials together, according to whether they are solids, liquids or gases.
- Observe that some materials change state when they are heated or cooled, and measure the temperature at which this happens in degrees Celsius (°C), building on their teaching in mathematics.
- Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.
- Compare how things move on different surfaces.
- Notice that some forces need contact between two objects, but magnetic forces can act at a distance.
- Observe how magnets attract or repel each other and attract some materials and not others.
- Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.
- Describe magnets as having two poles.
- Predict whether two magnets will attract or repel each other, depending on which poles are facing.
- Recognise that they need light in order to see things and that dark is the absence of light.
- Notice that light is reflected from surfaces.
- Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.
- Recognise that shadows are formed when the light from a light source is blocked by a solid object.
- Find patterns in the way that the size of shadows change. Identify how sounds are made, associating some of them with something vibrating.
- Recognise that vibrations from sounds travel through a medium to the ear.
- Identify common appliances that run on electricity.
- Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.
- Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery.

- Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.
- Recognise some common conductors and insulators, and associate metals with being good conductors.
- Describe the movement of the Earth relative to the Sun in the solar system.
- Describe the movement of the Moon relative to the Earth.


Milestone 3

By the end of Year 5 pupils should have a basic grasp of all of this content.
By the end of Year 6 pupils should have an advancing understanding of this content, whilst some will have a deep understanding.

Reading Years 5 and 6

In Years 5 and 6 pupils:

- Apply knowledge of root words, prefixes and suffixes.
- Read age-appropriate books with confidence and fluency (including whole novels).
- (Note: this should be through normal reading rather than direct teaching.)
- Recommend books to peers, giving reasons for choices.
- Identify and discuss themes and conventions in and across a wide range of writing.
- Make comparisons within and across books.
- Learn a wide range of poetry by heart.
- Prepare poems and plays to read aloud and to perform, showing understanding through intonation, tone and volume so that the meaning is clear to an audience.
- Check that the book makes sense, discussing understanding and exploring the meaning of words in context.
- Ask questions to improve understanding.
- Draw inferences such as inferring characters' feelings, thoughts and motives from their actions, and justifying inferences with evidence.
- Predict what might happen from details stated and implied.
- Summarise the main ideas drawn from more than one paragraph, identifying key details that support the main ideas.
- Identify how language, structure and presentation contribute to meaning.
- Discuss and evaluate how authors use language, including figurative language, considering the impact on the reader.
- Retrieve and record information from non-fiction.
- Participate in discussion about books, taking turns and listening and responding to what others say.
- Distinguish between statements of fact and opinion.
- Provide reasoned justifications for views.

Writing Years 5 and 6

In Years 5 and 6 pupils:

- Identify the audience for writing.
- Choose the appropriate form of writing using the main features identified in reading.
- Note, develop and research ideas.
- Plan, draft, write, edit and improve.
- Use the techniques that authors use to create characters, settings and plots.
- Create vivid images by using alliteration, similes, metaphors and personification.
- Interweave descriptions of characters, settings and atmosphere with dialogue.
- Guide the reader by using a range of organisational devices, including a range of connectives.
- Choose effective grammar and punctuation.
- Ensure correct use of tenses throughout a piece of writing.
- Write paragraphs that give the reader a sense of clarity.
- Write paragraphs that make sense if read alone.
- Write cohesively at length.
- Write sentences that include:
    - relative clauses
    - modal verbs
    - relative pronouns
    - brackets
    - parenthesis
    - a mixture of active and passive voice
    - a clear subject and object
    - hyphens, colons and semi colons
    - bullet points.
- Write fluently and legibly with a personal style.
- Use prefixes appropriately.
- Spell some words with silent letters (knight, psalm and solemn).
- Distinguish between homophones and other words that are often confused.
- Use knowledge of morphology and etymology in spelling and understand that some words need to be learned specifically.
- Use dictionaries to check spelling and meaning of words.
- Use the first three or four letters of a word to look up the meaning or spelling of words in a dictionary.
- Use a thesaurus.
- Spell the vast majority of words correctly.

- Develop understanding of writing concepts by:
  - Recognising vocabulary and structures that are appropriate for formal speech and writing, including subjunctive forms.
  - Using passive verbs to affect the presentation of information in a sentence.
  - Using the perfect form of verbs to mark relationships of time and cause.
  - Using expanded noun phrases to convey complicated information concisely.
  - Using modal verbs or adverbs to indicate degrees of possibility.
  - Using relative clauses beginning with who, which, where, when, whose, that or with an implied (i.e. omitted) relative pronoun.
- Indicate grammatical and other features by:
  - Using commas to clarify meaning or avoid ambiguity in writing.
  - Using hyphens to avoid ambiguity.
  - Using brackets, dashes or commas to indicate parenthesis.
  - Using semi-colons, colons or dashes to mark boundaries between independent clauses.
  - Using a colon to introduce a list.
  - Punctuating bullet points consistently.
- Use and understand grammatical terminology when discussing writing and reading:

Year 5

- relative clause, modal verb, relative pronoun, parenthesis, bracket, dash, determiner, cohesion, ambiguity.

Year 6

- active and passive voice, subject and object, hyphen, synonym, colon, semi-colon, bullet points.

- Perform compositions, using appropriate intonation and volume.

Communication Years 5 and 6

In Years 5 and 6 pupils:

- Understand how to answer questions that require more than a yes/no or single sentence response.
- Recognise and explain some idioms.
- Understand irony (when it is obvious).
- Use adventurous and sophisticated vocabulary.
- Explain the meaning of words, offering alternatives.
- Use a wide range of phrases that include determiners, modifiers and other techniques to add extra interest and clarity.
- Vary the length and structure of sentences.
- Ask questions and make suggestions to take an active part in discussions.
- Comment on the grammatical structure of a range of spoken and written accounts.
- Narrate detailed and exciting stories.
- Use the conventions and structure appropriate to the type of story being told.
- Interweave action, character descriptions, settings and dialogue.
- Negotiate and compromise by offering alternatives.
- Debate, using relevant details to support points.
- Offer alternative explanations when others don't understand.

Mathematics Years 5 and 6

In Years 5 and 6 pupils:

- Read numbers up to 10 000 000.
- Use negative numbers in context and calculate intervals across zero.
- Write numbers up to 10 000 000
- Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.
- Order and compare numbers up to 10 000 000.
- Round any whole number to a required degree of accuracy.
- Determine the value of each digit in any number.
- Solve number and practical problems.
- Solve multi-step addition and subtraction problems in contexts, deciding which operations and methods to use and why.
- Add and subtract whole numbers with more than 4 digits, including using formal written methods. (columnar addition and subtraction)
- Add and subtract numbers mentally with increasingly large numbers.
- Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.
- Add and subtract negative integers.
- Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.
- Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.
- Use knowledge of the order of operations to carry out calculations involving the four operations.
- Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.
- Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context.
- Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context.
- Perform mental calculations, including with mixed operations and large numbers.
- Estimate and use inverse operations and rounding to check answers to a calculation.
- Identify common factors, common multiples and prime numbers.
- Establish whether a number up to 100 is prime and recall prime numbers up to 19.
- Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.
- Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3).

- Solve problems involving multiplication and division including using knowledge of factors and multiples, squares and cubes.
- Compare and order fractions whose denominators are all multiples of the same number.
- Compare and order fractions, including fractions > 1.
- Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number.
- Round decimals with two decimal places to the nearest whole number and to one decimal place.
- Read, write, order and compare numbers with up to three decimal places.
- Identify the value of each digit in numbers given to three decimal places.
- Solve problems involving number up to three decimal places.
- Recognise the percent symbol (%) and understand that percent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal.
- Compare and order fractions whose denominators are all multiples of the same number.
- Compare and order fractions, including fractions > 1.
- Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number.
- Round decimals with two decimal places to the nearest whole number and to one decimal place.
- Read, write, order and compare numbers with up to three decimal places.
- Identify the value of each digit in numbers given to three decimal places.
- Solve problems involving number up to three decimal places.
- Recognise the percent symbol (%) and understand that percent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal.
- Add and subtract fractions with the same denominator and denominators that are multiples of the same number.
- Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.
- Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.
- Multiply simple pairs of proper fractions, writing the answer in its simplest form.
- Solve problems which require knowing percentage and decimal equivalents of, 1/2, 1/4, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25.
- Divide proper fractions by whole numbers.
- Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places.

Ratio and proportion

- Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.
- Solve problems involving the calculation of percentages and the use of percentages for comparison.

- Solve problems involving similar shapes where the scale factor is known or can be found.
- Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.
- Identify 3-D shapes, including cubes and other cuboids, from 2-D representations.
- Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.
- Draw given angles, and measure them in degrees (°).
- Identify:
  - Angles at a point and one whole turn (total 360°).
  - Angles at a point on a straight line and a turn (total 180°).
  - Other multiples of 90°.
- Use the properties of rectangles to deduce related facts and find missing lengths and angles.
- Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.
- Draw 2-D shapes using given dimensions and angles.
- Recognise, describe and build simple 3-D shapes, including making nets.
- Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons.
- Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.
- Recognise angles where they meet at a point, are on a straight line, or are vertically opposite and find missing angles.
- Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.
- Describe positions on the full coordinate grid. (all four quadrants)
- Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.
- Convert between different units of metric measure.
- Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.
- Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres.
- Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes.
- Estimate volume and capacity.
- Solve problems involving converting between units of time.
- Use all four operations to solve problems involving measure (for example, length, mass, volume, money) using decimal notation, including scaling.
- Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate.
- Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation up to three decimal places.

- Convert between miles and kilometres.
- Recognise that shapes with the same areas can have different perimeters and vice versa.
- Recognise when it is possible to use formulae for area and volume of shapes.
- Calculate the area of parallelograms and triangles.
- Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units.
- Solve comparison, sum and difference problems using information presented in a line graph.
- Complete, read and interpret information in tables, including timetables.
- Interpret and construct pie charts and line graphs and use these to solve problems.
- Calculate and interpret the mean as an average.
- Use simple formulae.
- Generate and describe linear number sequences.
- Express missing number problems algebraically.
- Find pairs of numbers that satisfy an equation with two unknowns.
- Enumerate possibilities of combinations of two variables.

Science Years 5 and 6

In Years 5 and 6 pupils:

- Plan enquiries, including recognising and controlling variables where necessary.
- Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work.
- Take measurements, using a range of scientific equipment, with increasing accuracy and precision.
- Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models.
- Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions.
- Present findings in written form, displays and other presentations.
- Use test results to make predictions to set up further comparative and fair tests.
- Use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments.
- Relate knowledge of plants to studies of evolution and inheritance.
- Relate knowledge of plants to studies of all living things.
- Describe the changes as humans develop to old age.
- Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.
- Recognise the importance of diet, exercise, drugs and lifestyle on the way the human body functions.
- Describe the ways in which nutrients and water are transported within animals, including humans.
- Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.
- Describe the life process of reproduction in some plants and animals.
- Describe how living things are classified into broad groups according to common observable characteristics.
- Give reasons for classifying plants and animals based on specific characteristics.
- Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.
- Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.
- Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
- Compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, conductivity (electrical and thermal), and response to magnets.
- Understand how some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.
- Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.

- Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.
- Demonstrate that dissolving, mixing and changes of state are reversible changes.
- Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning, oxidisation and the action of acid on bicarbonate of soda.

Magnets
- Describe magnets as having two poles.
- Predict whether two magnets will attract or repel each other, depending on which poles are facing.

Forces
- Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.
- Identify the effect of drag forces, such as air resistance, water resistance and friction that act between moving surfaces.
- Describe, in terms of drag forces, why moving objects that are not driven tend to slow down.
- Understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs.
- Understand that some mechanisms including levers, pulleys and gears, allow a smaller force to have a greater effect.
- Understand that light appears to travel in straight lines.
- Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eyes.
- Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them, and to predict the size of shadows when the position of the light source changes.
- Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.
- Find patterns between the pitch of a sound and features of the object that produced it.
- Find patterns between the volume of a sound and the strength of the vibrations that produced it.
- Recognise that sounds get fainter as the distance from the sound source increases.
- Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.
- Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.
- Use recognised symbols when representing a simple circuit in a diagram.
- Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.
- Describe the movement of the Moon relative to the Earth.

- Describe the Sun, Earth and Moon as approximately spherical bodies.
- Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.