Cambridge Primary English
Curriculum outline for 2015, 2016 and 2017

Cambridge Primary combines a world-class curriculum with high-quality support for teachers and integrated assessment. The curriculum is dedicated to helping schools develop learners who are confident, responsible, reflective, innovative and engaged. Cambridge Primary has curriculum frameworks for English (including English as a Second Language), Mathematics and Science which have been designed to engage learners in an active and creative learning journey.

The curriculum frameworks for each subject for Cambridge Primary are organised into six stages. They reflect the teaching target for each year group and provide comprehensive learning objectives.

For Cambridge Primary English, the curriculum is presented in five content areas or 'strands'. These are further subdivided into 'substrands'. The framework promotes an enquiry-based approach to learning to develop thinking skills and encourage intellectual engagement. The five strands and substrands are:

Phonics, spelling and vocabulary

Grammar and punctuation
- Reading
- Writing

Reading
- Fiction and poetry
- Non-fiction

Writing
- Fiction
- Non-fiction
- Presentation

Speaking and listening

The curriculum aims to enable learners to communicate confidently and effectively and to develop critical skills in order to respond to a range of information, media and texts with enjoyment and understanding.

Learners who follow this framework will develop a first-language competency in English based on a curriculum designed to be successful in any culture and to promote cross-cultural understanding. The Cambridge Primary English curriculum framework provides a solid foundation on which the later stages of education can be built.

Cambridge Primary offers an optional testing structure to assess learner performance and report progress for both learners and parents. These assessments provide an international benchmark that enables teachers to identify learner strengths and weaknesses within individuals and class groups and develop further teaching and learning support using the information from the test results.

Cambridge Primary Progression Tests are available to schools registered for Cambridge Primary for stages 3–6. These tests are marked by teachers and come with full mark schemes and marking guidance. At the end of Cambridge Primary, schools can also offer Cambridge Primary Checkpoint, a diagnostic test which offers comprehensive feedback at the end of the Cambridge Primary stage.

On the following pages, you will find some examples from the Phonics, spelling and vocabulary strand for stages 1, 3 and 5 of the Cambridge Primary English curriculum.

Stage 1

Strand: Phonics, spelling and vocabulary

- Hear, read and write initial letter sounds

- Know the name and most common sound associated with every letter in the English alphabet

- Identify separate sounds (phonemes) within words, which may be represented by more than one letter, e.g. 'th', 'ch', 'sh'

- Use knowledge of sounds to read and write single-syllable words with short vowels

- Blend to read, and segment to spell, words with final and initial adjacent consonants, e.g. b-l, n-d

- Begin to learn common spellings of long vowel phonemes, e.g. 'ee', 'ai', 'oo'

- Use knowledge of sounds to write simple regular words, and to attempt other words

- Spell familiar common words accurately, drawing on sight vocabulary

- Use rhyme and relate this to spelling patterns

- Recognise common word endings, e.g. -s, -ed and -ing.

Stage 3

Strand: Phonics, spelling and vocabulary

- Use effective strategies to tackle blending unfamiliar words to read, including sounding out, separating into syllables, using analogy, identifying known suffixes and prefixes, using context

- Use and spell compound words

- Know irregular forms of common verbs

- Use effective strategies to tackle segmenting unfamiliar words to spell, including segmenting into individual sounds, separating into syllables, using analogy, identifying known suffixes and prefixes, applying known spelling rules, visual memory, mnemonics

- Learn rules for adding -ing, -ed, -s to verbs

- Extend earlier work on prefixes and suffixes

- Explore words that have the same spelling but different meanings (homonyms), e.g. form, wave.

Stage 5

Strand: Phonics, spelling and vocabulary

- Investigate the spelling of word-final unstressed vowels, e.g. the unstressed 'er' at the end of butter and unstressed 'ee' at the end of city

- Recognise a range of less common letter strings in words which may be pronounced differently

- Spell and make correct use of possessive pronouns, e.g. their, theirs, my, mine

- Identify 'silent' vowels in polysyllabic words, e.g. library, interest

- Use effective strategies for learning new spellings and misspelt words

- Learn spelling rules for words ending in -e and -y, e.g. take/taking, try/tries

- Know rules for doubling consonants and investigate patterns in the use of single and double consonants, e.g. -full/-ful

- Investigate spelling patterns for pluralisation, e.g. -s/-es, -y/-ies, -f/-ves

- Extend earlier work on prefixes and suffixes, recognising that different spelling rules apply for suffixes which begin with vowels and those that begin with consonants

- Investigate ways of creating opposites, e.g. un-, im- and comparatives, e.g. -er, -est

- Revise grammatical homophones, e.g. they're, their, there

- Use dictionaries efficiently and carry out ICT spell checks

- Identify unfamiliar words, explore definitions and use new words in context

- Extend understanding of the use of adverbs to qualify verbs, e.g. in dialogue

- Use a thesaurus to extend vocabulary and choice of words

- Collect synonyms and opposites and investigate shades of meaning

- Use known spellings to work out the spelling of related words

- Identify word roots and derivations to support spelling and vocabulary, e.g. sign, signal, signature

- Investigate the origin and appropriate use of idiomatic phrases.

How can I access the full curriculum framework?

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Cambridge Primary Mathematics
Curriculum outline

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The curriculum frameworks for each subject for Cambridge Primary are organised into six stages. They reflect the teaching target for each year group and provide comprehensive learning objectives. For Cambridge Primary Mathematics, the curriculum is presented in five content areas or 'strands'. These are further subdivided into 'substrands'. The strands and substrands are:

Number
- Numbers and the number system
- Calculation – Mental strategies, Addition and subtraction, Multiplication and division

Geometry
- Shapes and geometric reasoning
- Position and movement

Measure
- Money (until stage 3)
- Length, mass and capacity
- Time
- Area and perimeter (from stage 4)

Handling data
- Organising, categorising and representing data
- Probability (from stage 5)

Problem solving
- Using techniques and skills in solving mathematical problems
- Using understanding and strategies in solving problems (from stage 4)

The first four content areas are all underpinned by **Problem solving**, which describes using techniques and skills and the application of understanding and strategies in solving problems. Mental strategies are also a key part of the **Number** content. This curriculum focuses on principles, patterns, systems, functions and relationships so that learners can apply their mathematical knowledge

The Cambridge Primary Mathematics curriculum framework provides a solid foundation upon which the later stages of education can be built.

Cambridge Primary offers an optional testing structure to assess learner performance and report progress for both learners and parents. These assessments provide an international benchmark that enables teachers to identify learner strengths and weaknesses for individuals and class groups and develop further teaching and learning support using the information from the test results.

Cambridge Primary Progression Tests are available to schools registered for Cambridge Primary for stages 3–6. These tests are marked by teachers and come with full mark schemes and marking guidance. At the end of Cambridge Primary, schools can also offer Cambridge Primary Checkpoint, a diagnostic test which offers comprehensive feedback at the end of the Cambridge Primary stage.

and develop a holistic understanding of the subject. On the following pages, you will find some examples from the Number strand and the substrands for stages 1, 3 and 5 of the Cambridge Primary Mathematics curriculum.

Stage 1

Strand: Number
Substrand: Numbers and the number system

- Recite numbers in order (forwards from 1 to 100, backwards from 20 to 0)
- Read and write numerals from 0 to 20
- Count objects up to 20, recognising conservation of number
- Count on in tens from zero or a single-digit number to 100 or just over
- Count on in twos, beginning to recognise odd/even numbers to 20 as 'every other number'
- Begin partitioning two-digit numbers into tens and ones and reverse
- Within the range 0 to 30, say the number that is 1 or 10 more or less than any given number
- Use more or less to compare two numbers, and give a number which lies between them
- Order numbers to at least 20, positioning on a number line; use ordinal numbers
- Use the = sign to represent equality
- Give a sensible estimate of some objects that can be checked by counting, e.g. to 30
- Find halves of small numbers and shapes by folding, and recognise which shapes are halved.

Strand: Number
Substrand: Calculation
Mental strategies
- Know all number pairs to 10 and record the related addition/subtraction facts
- Begin to know number pairs to 6, 7, 8, 9 and 10
- Add more than two small numbers, spotting pairs to 10, e.g. 4 + 3 + 6 = 10 + 3
- Begin using pairs to 10 to bridge 10 when adding/subtracting, e.g. 8 + 3, add 2, then 1
- Know doubles to at least double 5
- Find near doubles using doubles already known, e.g. 5 + 6
- Begin to recognise multiples of 2 and 10.

Addition and subtraction
- Understand addition as counting on and combining two sets; record related addition sentences
- Understand subtraction as counting back and 'take away'; record related subtraction sentences
- Understand difference as 'how many more to make?'
- Add/subtract a single-digit number by counting on/back
- Find two more or less than a number to 20, recording the jumps on a number line
- Relate counting on and back in tens to finding 10 more/less than a number (< 100)
- Begin to use the +, – and = signs to record calculations in number sentences
- Understand that changing the order of addition does not change the total
- Add a pair of numbers by putting the larger number first and counting on
- Recognise the use of a sign such as □ to represent an unknown, e.g. 6 + □ = 10
- Begin to add single and two-digit numbers.

Multiplication and division
- Double any single-digit number
- Find halves of even numbers of objects up to 10
- Try to share numbers to 10 to find which are even and which are odd
- Share objects into two equal groups in a context.

Stage 3

Strand: Number

Substrand: Numbers and the number system

- Recite numbers 100 to 200 and beyond

- Read and write numbers to at least 1000

- Count on and back in ones, tens and hundreds from two- and three-digit numbers

- Count on and back in steps of 2, 3, 4 and 5 to at least 50

- Understand what each digit represents in three-digit numbers and partition into hundreds, tens and units

- Find 1, 10, 100 more/less than two- and three-digit numbers

- Multiply two-digit numbers by 10 and understand the effect

- Round two-digit numbers to the nearest 10 and round three-digit numbers to the nearest 100

- Place a three-digit number on a number line marked off in multiples of 100

- Place a three-digit number on a number line marked off in multiples of 10

- Compare three-digit numbers, use < and > signs, and find a number in between

- Order two- and three-digit numbers

- Give a sensible estimate of a number as a range (e.g. 30 to 50) by grouping in tens

- Find half of odd and even numbers to 40, using notation such as $13\frac{1}{2}$

- Understand and use fraction notation, recognising that fractions are several parts of one whole, e.g. $\frac{3}{4}$ is three quarters and ⅔ is two thirds

- Recognise equivalence between $\frac{1}{2}$, $\frac{2}{4}$, $\frac{4}{8}$, $\frac{5}{10}$ using diagrams

- Recognise simple mixed fractions, e.g. $1\frac{1}{2}$ and $2\frac{1}{4}$

- Order simple or mixed fractions on a number line, e.g. using the knowledge that $\frac{1}{2}$ comes half way between $\frac{1}{4}$ and $\frac{3}{4}$, and that $1\frac{1}{2}$ comes half way between 1 and 2

- Begin to relate finding fractions to division

- Find halves, thirds, quarters and tenths of shapes and numbers (whole number answers).

Stage 3 continued

Strand: Number
Substrand: Calculation
Mental strategies

- Know addition and subtraction facts for all numbers to 20

- Know the following addition and subtraction facts:
  – multiples of 100 with a total of 1000
  – multiples of 5 with a total of 100

- Know multiplication/division facts for 2×, 3×, 5× and 10× tables

- Begin to know 4× table

- Recognise two- and three-digit multiples of 2, 5 and 10

- Work out quickly the doubles of numbers 1 to 20 and derive the related halves

- Work out quickly the doubles of multiples of 5 (< 100) and derive the related halves

- Work out quickly the doubles of multiples of 50 to 500.

Addition and subtraction

- Add and subtract 10 and multiples of 10 to and from two- and three-digit numbers

- Add 100 and multiples of 100 to three-digit numbers

- Use the = sign to represent equality, e.g. 75 + 25 = 95 + 5

- Add several small numbers

- Find complements to 100, solving number equations such as 78 + □ = 100

- Add and subtract pairs of two-digit numbers

- Add three-digit and two-digit numbers using notes to support

- Re-order an addition to help with the calculation, e.g. 41 + 54, by adding 40 to 54, then 1

- Add/subtract single-digit numbers to/from three-digit numbers

- Find 20, 30, … 90, 100, 200, 300 more/less than three-digit numbers.

Multiplication and division

- Understand the relationship between halving and doubling

- Understand the effect of multiplying two-digit numbers by 10

- Multiply single-digit numbers and divide two-digit numbers by 2, 3, 4, 5, 6, 9 and 10

- Multiply teens numbers by 3 and 5

- Begin to divide two-digit numbers just beyond 10× tables, e.g. 60 ÷ 5, 33 ÷ 3

- Understand that division can leave a remainder (initially as 'some left over')

- Understand and apply the idea that multiplication is commutative

- Understand the relationship between multiplication and division and write connected facts.

Stage 5

Strand: Number
Substrand: Numbers and the number system

- Count on and back in steps of constant size, extending beyond zero

- Know what each digit represents in five- and six-digit numbers

- Partition any number up to one million into thousands, hundreds, tens and units

- Use decimal notation for tenths and hundredths and understand what each digit represents

- Multiply and divide any number from 1 to 10 000 by 10 or 100 and understand the effect

- Round four-digit numbers to the nearest 10, 100 or 1000

- Round a number with one or two decimal places to the nearest whole number

- Order and compare numbers up to a million using the > and < signs

- Order and compare negative and positive numbers on a number line and temperature scale

- Calculate a rise or fall in temperature

- Order numbers with one or two decimal places and compare using the > and < signs

- Recognise and extend number sequences.

- Recognise odd and even numbers and multiples of 5, 10, 25, 50 and 100 up to 1000

- Make general statements about sums, differences and multiples of odd and even numbers.

- Recognise equivalence between: $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{1}{8}$; $\frac{1}{3}$ and $\frac{1}{6}$; $\frac{1}{5}$ and $\frac{1}{10}$

- Recognise equivalence between the decimal and fraction forms of halves, tenths and hundredths and use this to help order fractions, e.g. 0.6 is more than 50 per cent and less than $\frac{7}{10}$

- Change an improper fraction to a mixed number, e.g. $\frac{7}{4}$ to $1\frac{3}{4}$; order mixed numbers and place between whole numbers on a number line

- Relate finding fractions to division and use to find simple fractions of quantities

- Understand percentage as the number of parts in every 100 and find simple percentages of quantities

- Express halves, tenths and hundredths as percentages

- Use fractions to describe and estimate a simple proportion, e.g. $\frac{1}{5}$ of the beads are yellow

- Use ratio to solve problems, e.g. to adapt a recipe for 6 people to one for 3 or 12 people.

Strand: Number
Substrand: Calculation
Mental strategies

- Know by heart pairs of one-place decimals with a total of 1, e.g. 0.8 + 0.2

- Derive quickly pairs of decimals with a total of 10, and with a total of 1

- Know multiplication and division facts for the 2× to 10× tables

- Know and apply tests of divisibility by 2, 5, 10 and 100

- Recognise multiples of 6, 7, 8 and 9 up to the 10th multiple

- Know squares of all numbers to 10 × 10

- Find factors of two-digit numbers

- Count on or back in thousands, hundreds, tens and ones to add or subtract

- Add or subtract near multiples of 10 or 100, e.g. 4387 – 299

Stage 5 continued

- Use appropriate strategies to add or subtract pairs of two- and three-digit numbers and numbers with one decimal place, using jottings where necessary

- Calculate differences between near multiples of 1000, e.g. 5026 – 4998, or near multiples of 1, e.g. 3.2 – 2.6

- Multiply multiples of 10 to 90, and multiples of 100 to 900, by a single-digit number

- Multiply by 19 or 21 by multiplying by 20 and adjusting

- Multiply by 25 by multiplying by 100 and dividing by 4

- Use factors to multiply, e.g. multiply by 3, then double to multiply by 6

- Double any number up to 100 and halve even numbers to 200, and use this to double and halve numbers with one or two decimal places, e.g. double 3.4 and half of 8.6

- Double multiples of 10 to 1000 and multiples of 100 to 10 000, e.g. double 360 or double 3600, and derive the corresponding halves.

Addition and subtraction

- Find the total of more than three two- or three-digit numbers using a written method

- Add or subtract any pair of three- and/or four-digit numbers, with the same number of decimal places, including amounts of money.

Multiplication and division

- Multiply or divide three-digit numbers by single-digit numbers

- Multiply two-digit numbers by two-digit numbers

- Multiply two-digit numbers with one decimal place by single-digit numbers, e.g. 3.6×7

- Divide three-digit numbers by single-digit numbers, including those with a remainder (answers no greater than 30)

- Start expressing remainders as a fraction of the divisor when dividing two-digit numbers by single-digit numbers

- Decide whether to group (using multiplication facts and multiples of the divisor) or to share (halving and quartering) to solve divisions

- Decide whether to round an answer up or down after division, depending on the context

- Begin to use brackets to order operations and understand the relationship between the four operations and how the laws of arithmetic apply to multiplication.

How can I access the full curriculum framework?

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Cambridge Primary Science
Curriculum outline

Cambridge Primary combines a world-class curriculum with high-quality support for teachers and integrated assessment. The curriculum is dedicated to helping schools develop learners who are confident, responsible, reflective, innovative and engaged. Cambridge Primary has curriculum frameworks for English (including English as a Second Language), Mathematics and Science which have been designed to engage learners in an active and creative learning journey.

The curriculum frameworks for each subject for Cambridge Primary are organised into six stages. They reflect the teaching target for each year group and provide comprehensive learning objectives. For Cambridge Primary Science, the curriculum is presented in four content areas or 'strands'. These are further subdivided into 'substrands'. The four strands and substrands are:

Scientific enquiry
- Ideas and evidence
- Plan investigative work
- Obtain and present evidence
- Consider evidence and approach

Biology
- Plants
- Living things in their environment (from stage 2)
- Humans and animals

Chemistry
- Material properties
- Material changes (from stage 2)
- States of matter (from stage 4)

Physics
- Forces (forces and motion from stage 3)
- Light and dark (from stage 2)
- Electricity (from stage 2, Electricity and magnetism from stage 4)
- The Earth and beyond (from stage 2)
- Sound

Scientific enquiry is about considering ideas, evaluating evidence, planning investigative work and recording and analysing data. The **Scientific enquiry** objectives underpin **Biology**, **Chemistry** and **Physics**, which are focused on developing confidence and interest in scientific knowledge. Environmental awareness and some history of science are also incorporated.

The Cambridge Primary Science curriculum framework provides a solid foundation upon which the later stages of education can be built.

Cambridge Primary offers an optional testing structure to assess learner performance and report progress for both learners and parents. These assessments provide an international benchmark that enables teachers to identify learner strengths and weaknesses within individuals and class groups and develop further teaching and learning support using the information from the test results.

Cambridge Primary Progression Tests are available to schools registered for Cambridge Primary for stages 3–6. These tests are marked by teachers and come with full mark schemes and marking guidance. At the end of Cambridge Primary, schools can also offer Cambridge Primary Checkpoint, a diagnostic test which offers comprehensive feedback at the end of the Cambridge Primary stage.

On the following pages, you will find some examples from the Biology strand and the substrands for stages 1, 3, 5 and 6 of the Cambridge Primary Science curriculum.

Stage 1

Strand: Biology

Substrand: Plants

- Know that plants are living things
- Know that there are living things and things that have never been alive
- Explore ways that different animals and plants inhabit local environments
- Name the major parts of a plant, looking at real plants and models
- Know that plants need light and water to grow
- Explore how seeds grow into flowering plants.

Substrand: Humans and animals

- Recognise the similarities and differences between each other
- Recognise and name the main external parts of the body
- Know about the need for a healthy diet, including the right types of food and water
- Explore how senses enable humans and animals to be aware of the world around them
- Know that humans and animals produce offspring which grow into adults.

Stage 3

Strand: Biology

Substrand: Plants

- Know that plants have roots, leaves, stems and flowers
- Explain observations that plants need water and light to grow
- Know that water is taken in through the roots and transported through the stem
- Know that plants need healthy roots, leaves and stems to grow well
- Know that plant growth is affected by temperature.

Substrand: Humans and animals

- Know life processes common to humans and animals include nutrition (water and food), movement, growth and reproduction
- Describe differences between living and non-living things using knowledge of life processes
- Explore and research exercise and the adequate, varied diet needed to keep healthy
- Know that some foods can be damaging to health, e.g. very sweet and fatty foods
- Explore human senses and the ways we use them to learn about our world
- Sort living things into groups, using simple features and describe rationale for groupings.

▶

Stage 5

Strand: Biology
Substrand: Plants

- Know that plants need energy from light for growth

- Know that plants reproduce

- Observe how seeds can be dispersed in a variety of ways

- Investigate how seeds need water and warmth for germination, but not light

- Know that insects pollinate some flowers

- Observe that plants produce flowers which have male and female organs; seeds are formed when pollen from the male organ fertilises the ovum (female)

- Recognise that flowering plants have a life cycle including pollination, fertilisation, seed production, seed dispersal and germination.

Stage 6

Strand: Biology
Substrand: Humans and animals

- Use scientific names for some major organs of body systems

- Identify the position of major organs in the body

- Describe the main functions of the major organs of the body

- Explain how the functions of the major organs are essential.

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Cambridge Secondary 1 English
Curriculum outline for 2015, 2016 and 2017

Cambridge Secondary 1 combines a world-class curriculum with high-quality support for teachers and integrated assessment. The curriculum is dedicated to helping schools develop learners who are confident, responsible, reflective, innovative and engaged. Cambridge Secondary 1 develops skills and understanding in English (including English as a second language), Mathematics and Science for learners typically aged 11–14.

The curriculum frameworks for each subject for Cambridge Secondary 1 are organised into three stages corresponding to the first three years of secondary education. They reflect the teaching target for each year group and provide comprehensive learning objectives.

For Cambridge Secondary 1 English, the curriculum promotes an enquiry-based approach to learning to develop thinking skills and encourage intellectual engagement. The curriculum is presented in five content areas or 'strands'. These are further divided into 'substrands'. The five strands and substrands are:

Phonics, spelling and vocabulary

Grammar and punctuation

- Reading
- Writing

Reading

- Fiction and poetry
- Non-fiction

Writing

- Fiction and poetry
- Non-fiction

Speaking and listening

The curriculum encourages learners to be confident, creative and intellectually engaged, capable of applying their skills to respond to a range of information, media and text with enjoyment and understanding. Learners who follow this framework will develop a first language competency in English based on a curriculum designed to be successful in any culture and to promote cross-cultural understanding. The Cambridge Secondary 1 English curriculum framework provides a solid foundation on which the later stages of education can be built.

Cambridge Secondary 1 Progression Tests are available to schools registered for Cambridge Secondary for stages 7-9. These tests are marked by teachers and come with full mark schemes and marking guidance. At the end of Cambridge Secondary 1, schools can also offer Cambridge Checkpoint, a diagnostic test which offers comprehensive feedback at the end of the Cambridge Secondary 1 stage.

On the following pages, you will find some examples from the Phonics, spelling and vocabulary strand for stages 7 and 9 of the Cambridge Secondary 1 English curriculum.

Stage 7

Strand: Phonics, spelling and vocabulary

- Spell correctly most words used.

- Increase knowledge of word families, roots, derivations, morphology and regular spelling patterns.

- Use a dictionary and thesaurus effectively to further develop vocabulary.

- Learn a range of vocabulary appropriate to their needs, and use words precisely in speech and writing to clarify and extend meaning and to interest their audience.

- Learn to use the terms 'image', 'simile', 'metaphor', 'onomatopoeia', 'setting' and 'genre'.

Stage 9

Strand: : Phonics, spelling and vocabulary

- Spell correctly throughout a substantial text including ambitious or complex polysyllabic words.

- Continue to be aware of spelling errors and correct them.

- Continue to extend range of language and use it appropriately.

- Show some appreciation of how the writer's language choices contribute to the overall effect on the reader, e.g. demonstrating the effectiveness of imagery in contrasting texts or arguing that the use of highly emotive language in an advertisement is/is not counterproductive in its effect on an audience.

- Shape and affect the reader's response through conscious choices and in planned ways by selecting ambitiously from a wide and varied vocabulary for a range of tasks, purposes and readers.

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Cambridge Secondary 1 Mathematics
Curriculum outline

Cambridge Secondary 1 combines a world-class curriculum with high-quality support for teachers and integrated assessment. The curriculum is dedicated to helping schools develop learners who are confident, responsible, reflective, innovative and engaged. Cambridge Secondary 1 develops skills and understanding in English (including English as a Second Language), Mathematics and Science for learners typically aged 11–14.

The curriculum frameworks for each subject for Cambridge Secondary 1 are organised into three stages corresponding to the first three years of secondary education. They reflect the teaching target for each year group and provide comprehensive learning objectives. For Cambridge Secondary 1 Mathematics, the curriculum is presented in six content areas or 'strands'. These are further divided into 'substrands'. The six strands and substrands are:

Number
- Integers, powers and roots
- Place value, ordering and rounding
- Fractions, decimals, percentages, ratio and proportion
- Calculation

Algebra
- Expressions, equations and formulae
- Sequences, functions and graphs

Geometry
- Shapes and geometric reasoning
- Position and movement

Measure
- Length, mass and capacity
- Times and rates of change
- Area, perimeter and volume

Handling data
- Planning and collecting data
- Processing and presenting data
- Interpreting and discussing results
- Probability

Problem solving
- Using techniques and skills in solving mathematical problems
- Using understanding and strategies in solving problems.
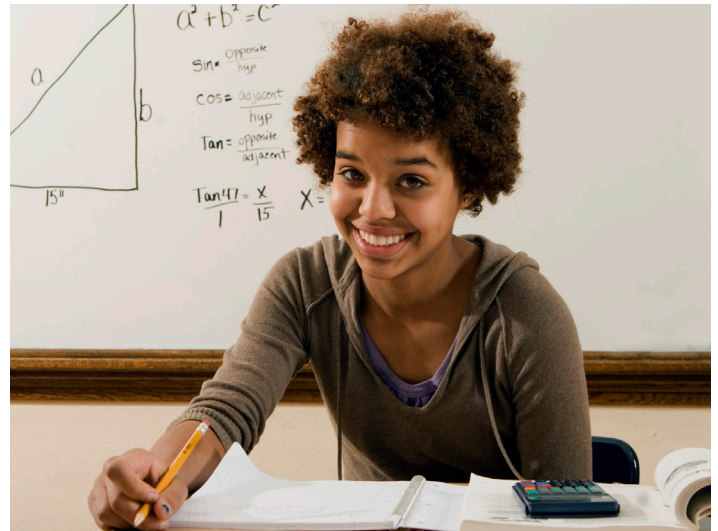
The first five content areas are all underpinned by *Problem solving*, which provides a structure for the application of mathematical skills. Mental strategies are also a key part of the *Number* content. Together, these two areas form a progressive step preparing students for entry onto IGCSE level courses. This curriculum focuses on principles, patterns, systems, functions and relationships so that learners can apply their mathematical knowledge and develop a holistic understanding of the subject.

The Cambridge Secondary 1 Mathematics curriculum framework provides a solid foundation on which the later stages of education can be built.

Cambridge Secondary 1 Progression Tests are available to schools registered for Cambridge Secondary for stages 7-9. These tests are marked by teachers and come with full mark schemes and marking guidance. At the end of Cambridge Secondary 1, schools can also offer Cambridge Checkpoint, a diagnostic test which offers comprehensive feedback at the end of the Cambridge Secondary 1 stage.

On the following pages, you will find some examples from the Number strand and substrands.

Stage 7

Strand: Number

Integers, powers and roots

- Recognise negative numbers as positions on a number line, and in order, add and subtract positive and negative integers in context.

- Recognise multiples, factors, common factors, primes (all less than 100), making use of simple tests of divisibility; find the lowest common multiple in simple cases; use the 'sieve' for generating primes developed by Eratosthenes.

- Recognise squares of whole numbers to at least 20 x 20 and the corresponding square roots; use the notation 7^2 and $\sqrt{49}$

Place value, ordering and rounding

- Interpret decimal notation and place value; multiply and divide whole numbers and decimals by 10, 100 or 1000.

- Order decimals including measurements, changing these to the same units.

- Round whole numbers to the nearest 10,100 or 1000 and decimals, including measurements, to the nearest whole number or one decimal place.

Fractions, decimals, percentages, ratio and proportion

- Recognise the equivalence of simple fractions, decimals and percentages.

- Simplify fractions by cancelling common factors and identify equivalent fractions; change an improper fraction to a mixed number, and vice versa; convert terminating decimals to fractions, e.g. $0.23 = \frac{23}{100}$

- Compare two fractions by using diagrams, or by using a calculator to convert the factions to decimals e.g. $\frac{3}{5}$ or $\frac{13}{20}$

- Add and subtract two simple fractions, e.g. $\frac{1}{8} + \frac{9}{8}$, $\frac{11}{12} - \frac{5}{6}$; find fractions of quantities (whole number answers); multiply a fraction by an integer.

- Understand percentage as the number parts in every 100; use fractions and percentages to describe parts of shapes, quantities and measures.

- Calculate simple percentages of quantities (whole number answers) and express a smaller quantity as a fraction or percentage of a larger one.

- Use percentages to represent and compare different quantities.

- Use ration notation, simplify ratios and divide a quantity into two parts in a given ratio.

- Recognise the relationship between ratio and proportion.

- Use direct proportion in context; solve simple problems involving ratio and direct proportion.

Calculation

Mental strategies

- Consolidate the rapid recall of number facts, including positive integer complements to 100, multiplication facts to 10 x 10 and associated division facts.

- Use known facts and place value to multiply and divide two-digit numbers by a single-digit number, e.g. 45 x 6, 96 ÷ 6.

- Know and apply tests of divisibility by 2, 3, 5, 6, 8, 9, 10 and 100.

- Use known facts and place value to multiply simple decimals by one-digit numbers, e.g. 0.8 x 6.

- Calculate simple fractions and percentages of quantities, e.g. one quarter or 64, 20% of 50kg.

- Use the laws of arithmetic and inverse operations to simplify calculations with whole numbers and decimals.

- Use the order of operations, including brackets, to work out simple calculations.

Addition and subtraction

- Add and subtract integers and decimals, including numbers with different numbers of decimal places.

Multiplication and division

- Multiply and divide decimals with one and/or two places by single-digit numbers, e.g. 13.7 x 8, 4.35 ÷ 5.

- Know that in any division where the dividend is not a multiple of the divisor there will be a remainder, e.g. 157 ÷ 25 = 6 remainder 7. The remainder can be expressed as a fraction of the divisor, e.g. $157 \div 25 = 6 \frac{7}{25}$

- Know when to round up or down after division when the context requires a whole-number answer.

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Stage 9

Strand: Number

Integers, powers and roots

- Add, subtract, multiply and divide directed numbers.

- Estimate square roots and cube roots.

- Use positive, negative and zero indices and the index laws for multiplication and division of positive integer powers.

Place value, ordering and rounding

- Recognise the equivalence of 0.1, $\frac{1}{10}$ and 10^{-1}; multiply and divide whole numbers and decimals by 10 to the power of any positive or negative integer.

- Round numbers to a given number of decimal places or significant figures; use to give solutions to problems with an appropriate degree of accuracy.

- Use the order of operations, including brackets and powers.

Fractions, decimals, percentages, ratio and proportion

- Consolidate writing a fraction in its simplest form by cancelling common factors.

- Add, subtract, multiply and divide fractions, interpreting division as a multiplicative inverse, and cancelling common factors before multiplying or dividing.

- Solve problems involving percentage changes, choosing the correct numbers to take as 100% or as a whole, including simple problems involving personal or household finance, e.g. simple interest, discount, profit, loss and tax.

- Recognise when fractions or percentages are needed to compare different quantities

- Compare two rations; interpret and use ration in a range of contexts.

- Recognise when two quantities are directly proportional; solve problems involving proportionality, e.g. converting between different currencies.

Calculation

Mental strategies

- Extend mental methods of calculation, working with decimals, fractions, percentages and factors, using jottings where appropriate.

- Solve word problems mentally.

- Consolidate use of the rules of arithmetic and inverse operations to simplify calculations.

Multiplication and division

- Multiply by decimals, understanding where to position the decimal point by considering equivalent calculations; divide by decimals by transforming to division by an integer.

- Recognise the effects of multiplying and dividing by numbers between 0 and 1.

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Cambridge Secondary 1 Science
Curriculum outline

Cambridge Secondary 1 combines a world-class curriculum with high-quality support for teachers and integrated assessment. The curriculum is dedicated to helping schools develop learners who are confident, responsible, reflective, innovative and engaged. Cambridge Secondary 1 develops skills and understanding in English (including English as a second language), Mathematics and Science for learners typically aged 11–14.

The curriculum frameworks for each subject for Cambridge Secondary 1 are organised into three stages corresponding to the first three years of secondary education. They reflect the teaching target for each year group and provide comprehensive learning objectives.

For Cambridge Secondary 1 Science, the curriculum is presented in four content areas or 'strands'. These are further divided into 'substrands'. The four strands and substrands are:

Strand: Scientific enquiry

- Ideas and evidence
- Plan investigative work
- Obtain and present evidence
- Consider evidence and approach

Strand: Biology

- Plants
- Humans as organisms
- Cells and organisms
- Living things in their environment
- Variation and classification

Strand: Chemistry

- States of matter
- Material properties
- Material changes
- The Earth

Strand: Physics

- Forces and motion
- Energy
- The Earth and beyond.

The Scientific enquiry objectives underpin Biology, Chemistry and Physics, which are focused on developing confidence and interest in scientific knowledge. Environmental awareness and some history of science are also incorporated. The Cambridge Secondary 1 Science curriculum framework provides a solid foundation for further stages of education such as Cambridge IGCSE.

Cambridge Secondary 1 Progression Tests are available to schools registered for Cambridge Secondary for stages 7–9. These tests are marked by teachers and come with full mark schemes and marking guidance. At the end of Cambridge Secondary 1, schools can also offer Cambridge Checkpoint, a diagnostic test which offers comprehensive feedback at the end of the Cambridge Secondary 1 stage.

On the following pages, you will find some examples from the Biology strand and substrands for stages 7 and 9 of the Cambridge Secondary 1 Science curriculum.

Stage 7

Strand: Biology

Plants

- Recognise the positions, and know the functions of the major organs of flowering plants, e.g. root, stem, leaf.

Humans as organisms

- Explore the role of the skeleton and joints and the principle of antagonistic muscles.
- Recognise the positions and know the functions of the major organ systems of the human body. Secondary sources can be used.
- Research the work of scientists studying the human body.

Cells and organisms

- Identify the seven characteristics of living things and relate these to a wide range of organisms in the local and wider environment.
- Know about the role of micro-organisms in the breakdown of organic matter, food production and disease, including the work of Louis Pasteur.
- Identify the structures present in plant and animal cells as seen with a simple light microscope and/or a computer microscope.

- Compare the structure of plant and animal cells.
- Relate the structure of some common cells to their functions. Secondary sources can be used.
- Understand that cells can be grouped together to form tissues, organs and organisms.

Living things in their environment

- Describe how organisms are adapted to their habitat, drawing on locally occurring examples. Secondary sources can be used.
- Draw and model simple food chains.
- Discuss positive and negative influence of humans on the environment, e.g. the effect on food chains, pollution and ozone depletion.
- Discuss a range of energy sources and distinguish between renewable and non-renewable resources. Secondary sources can be used.

Variation and classification

- Understand what is meant by a species.
- Investigate variation within a species. Secondary sources can be used.
- Classify animals and plants into major groups, using some locally occurring examples.

Stage 9

Strand: Biology

Plants

- Define and describe photosynthesis, and use the word equation.
- Understand the importance of water and mineral salts to plant growth.
- Understand sexual reproduction in flowering plants, including pollination, fertilisation, seed formation and dispersal.

Living things in their environment

- Explain the ways in which living things are adapted to their habitats. Secondary sources can be used.
- Research the work of scientists studying the natural world. Secondary sources can be used.
- Explain and model food chains, food webs and energy flow.
- Explain the role of decomposers.
- Describe factors affecting the size of populations.
- Describe and investigate some effects of human influences on the environment.

Variation and classification

- Use and construct keys to identify plans and animals.
- Understand that organisms inherit characteristics from their parents through genetic material that is carried in cell nuclei.
- Describe how selective breeding can lead to new varieties.
- Discuss the work of Darwin in developing the scientific theory of natural selection.
- Understand percentage as the number parts in every 100; use fractions and percentages to describe parts of shapes, quantities and measures.
- Calculate simple percentages of quantities (whole number answers) and express a smaller quantity as a fraction or percentage of a larger one.
- Use percentages to represent and compare different quantities.

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