

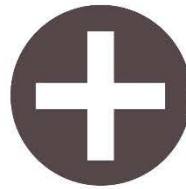
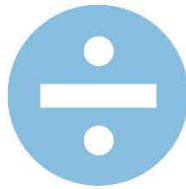
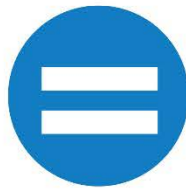


Curriculum Framework

Cambridge Primary

Mathematics 0096

Published in September 2020 for first teaching in September 2021.
Cambridge Primary Progression Tests will be available from 2022.
Cambridge Primary Checkpoint tests will be available from 2023.



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1 Why choose this Curriculum Framework?

Key benefits

Cambridge Primary Mathematics encourages lifelong enthusiasm for analytical and rational thinking. Learners develop a holistic understanding of the subject, focusing on principles, patterns, systems, functions and relationships. Cambridge Primary Mathematics learners become mathematically competent and fluent in computation which they can apply to everyday situations.

A unique feature of Cambridge Primary Mathematics is Thinking and Working Mathematically. The process of thinking and working mathematically encourages learners to talk with others, challenge ideas and to provide evidence that validates conjectures and solutions. When learners are thinking and working mathematically they actively seek to make sense of ideas and build connections between different facts, procedures and concepts. This supports higher order thinking that assists learners in viewing the world in a mathematical way.

We have structured the *Cambridge Primary Mathematics Curriculum Framework* to support clear progression of mathematics knowledge and skills within and across the primary stages. Learners will systematically develop their mathematical skills in Number, Geometry and Measure, and Statistics and Probability. They recognise the interconnections of mathematical concepts.

The Number strand is the foundation of the primary mathematics curriculum. Learners explore the five principles of counting and develop number fluency, demonstrating flexibility, efficiency and accuracy in the computational strategies that they choose. Learners develop knowledge and skills in the Number strand that they can apply in the other strands of mathematics and in their own lives.

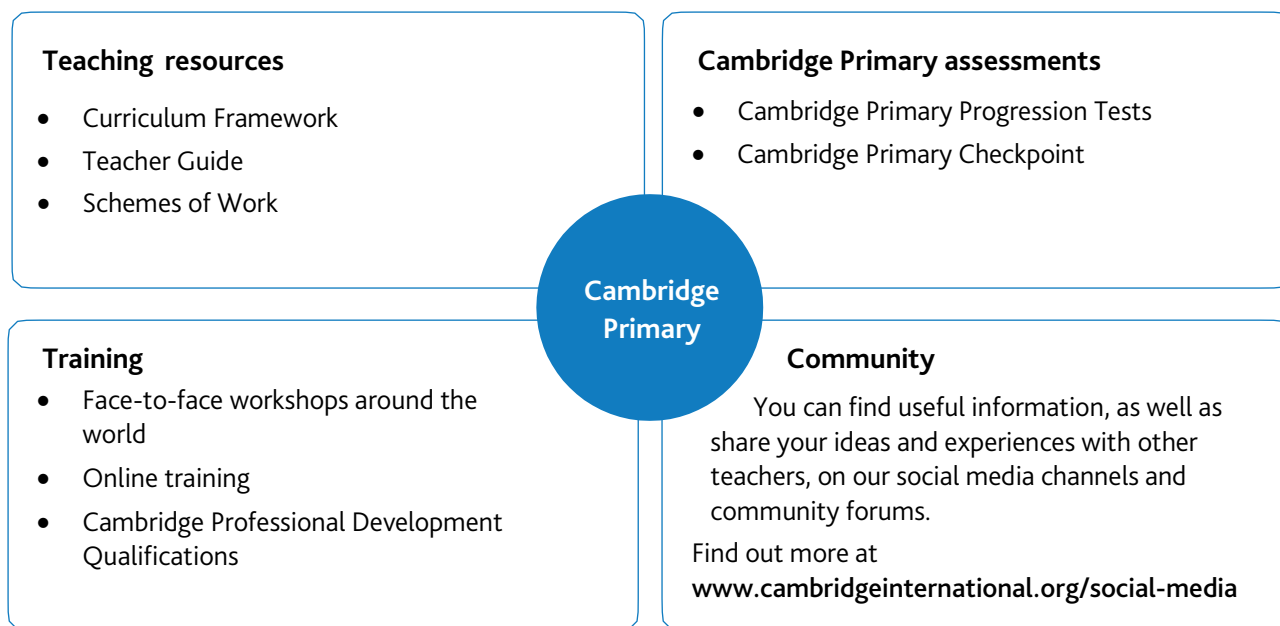
The Geometry and Measure strand learners develop spatial awareness and explore various contexts in which they must apply number skills. They explore the size, shape and position of geometrical shapes, as well as how to measure attributes of objects, allowing them to visualise real-life problems.

Within the Statistics and Probability strand there is emphasis on the statistical enquiry cycle which learners follow to conduct simple statistics investigations. Learners focus on the interpretation of statistics as this is an important skill that allows them to understand the data they encounter in their everyday lives.

Supporting teachers

We provide a wide range of practical resources, detailed guidance, innovative training and professional development so that you can give your learners the best possible experience of Cambridge Primary Mathematics.

You will find most of these resources on the Cambridge Primary support site (<https://primary.cambridgeinternational.org>). Ask the Cambridge coordinator or exams officer in your school if you do not already have a log-in for this support site.



Progression through the Cambridge Pathway

We have designed Cambridge Primary Mathematics to support learners to develop the skills required for success in their primary education and to progress to the next stage of the Cambridge Pathway. The *Curriculum Framework* is typically for learners aged 5 to 11, but it may be appropriate to use it for slightly different ages to suit your context.

You can download more information on progression from the Cambridge Primary support site.

Teaching time

For guidance, this *Curriculum Framework* is based on learners having 4 to 5 hours of Mathematics per week (or about 120 to 150 hours per stage). Your actual number of teaching hours may vary according to your context.

Assessment

We provide assessments designed to complement this *Curriculum Framework* for Stages 3 to 6. You can find more information on assessing Cambridge Primary Mathematics on the Cambridge Primary support site.

2 Curriculum overview

Aims

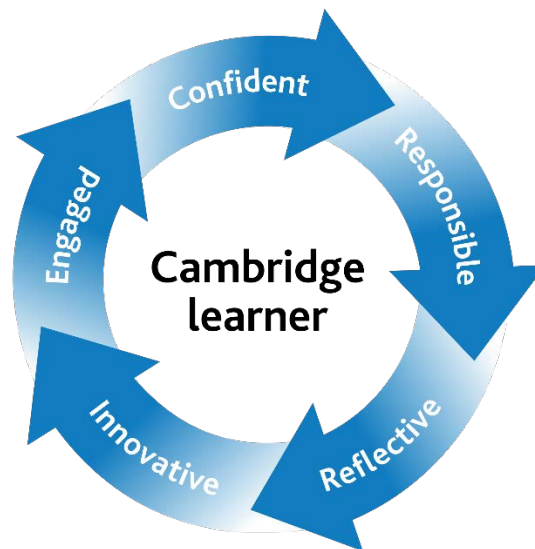
Following the Cambridge Primary programme helps learners to lay the foundations for lifelong learning, including:

- curiosity about the world around them and enthusiasm for learning
- knowledge, understanding and skills that can be applied in and across subjects
- effective and confident communication skills, including in English
- understanding of their personal and local context, as well as having global awareness.

In Cambridge Primary Mathematics, learners:

- engage in creative mathematical thinking to generate elegant solutions
- improve numerical fluency and knowledge of key mathematical concepts to make sense of numbers, patterns, shapes, measurements and data
- develop a variety of mathematical skills, strategies and a way of thinking that will enable them to describe the world around them and play an active role in modern society
- communicate solutions and ideas logically in spoken and written language using appropriate mathematical symbols, diagrams and representations
- understand that technology provides a powerful way of communicating mathematics, one which is particularly important in an increasingly technological and digital world.

The Cambridge approach encourages learners to be:



Cambridge Primary Mathematics supports learners to become:

Responsible – They understand how principles of mathematics can be applied to real life problems in a responsible way.

Innovative – They solve new and unfamiliar problems using innovative mathematical thinking. They can select their own preferred mathematical strategies and can suggest alternative routes to develop efficient solutions.

Confident – They are confident and enthusiastic mathematical practitioners, able to use appropriate techniques without hesitation, uncertainty or fear. They are keen to ask mathematical questions in a structured, systematic, critical and analytical way. They are able to present their findings and defend their strategies and solutions as well as critique and improve solutions of others.

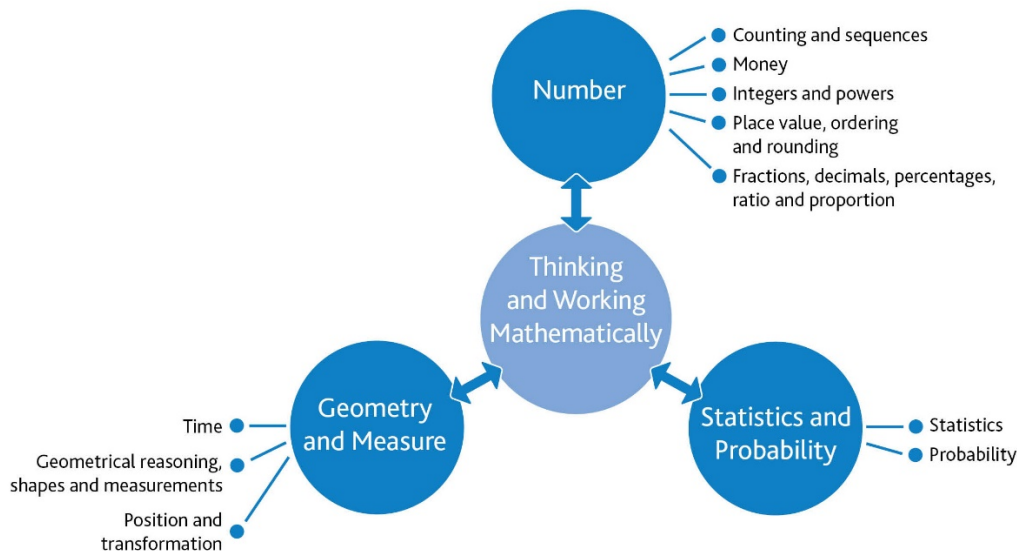
Engaged – They are curious and engage intellectually to deepen their mathematical understanding. They are able to use mathematics to participate constructively in society and the economy by making informed mathematical choices.

Reflective – They reflect on the process of thinking and working mathematically as well as mastering mathematics concepts. They are keen to make conjectures by asking sophisticated questions and develop higher order thinking skills.

Overview of the strands

This *Curriculum Framework* provides a comprehensive set of learning objectives for Cambridge Primary Mathematics. These give a structure for teaching and learning and a reference against which learners' attainment and skills development can be checked.

We have divided the learning objectives into three main areas called 'strands' which run through every primary mathematics stage: Number, Geometry and Measure, and Statistics and Probability. Each strand is divided into 'sub-strands' and these sub-strands are listed in the diagram below.



Thinking and Working Mathematically is not an independent strand, instead it is embedded within and across the other curriculum strands. Thinking and Working Mathematically brings awareness to learners' mathematical actions and assists them in finding elegant mathematical solutions. You can find out more about Thinking and Working Mathematically in the *Overview of teaching approaches* section below.

The *Curriculum Framework* has been designed to provide balanced coverage of mathematics skills and knowledge at the primary level. Although the *Curriculum Framework* is divided into strands, they are interrelated and should be taught in conjunction with each other (see also Section 4 Teaching and learning in Cambridge Primary Mathematics). In particular, the Thinking and Working Mathematically characteristics should be integrated into the teaching of the other strands.

Below is a brief description of each strand:

Number

Learners are introduced to numbers and their properties through counting objects in order to understand how numbers are represented and the quantities they represent. Learners identify patterns and sequences of objects and numbers to facilitate early algebraic thinking.

As learners develop number sense and recognise number relationships, they understand the importance of place value, fractions and the calculation process. Learners develop confidence in calculating by learning to estimate first, calculate mentally and use written strategies before using a calculator to check their solutions. They explore the laws of arithmetic and order of operations and how they assist in simplifying calculations.

From Stage 4 learners are introduced to percentages, equivalence and negative numbers and in Stage 5 to decimal numbers, order of operations, ratio and proportion.

Geometry and Measure

Learners investigate geometrical relations in two and three dimensions and use mathematical language to describe geometrical properties of shapes. They identify horizontal, vertical and diagonal lines of symmetry as well as reflective and rotational symmetry.

Learners also explore position and directions to describe and interpret movement in terms of cardinal and ordinal points as well as exploring the relative position of coordinates. From Stage 5, they use their knowledge of 2D shapes and coordinates to plot points to form lines and translate shapes.

When exploring the concept of measure, learners develop understanding of different systems of measurement (length, mass, capacity, temperature and time). They use their skills of estimation before physically measuring and calculating answers to mathematical questions. Learners investigate the relationships between length, area and perimeter by firstly exploring 2D shapes and then compound shapes.

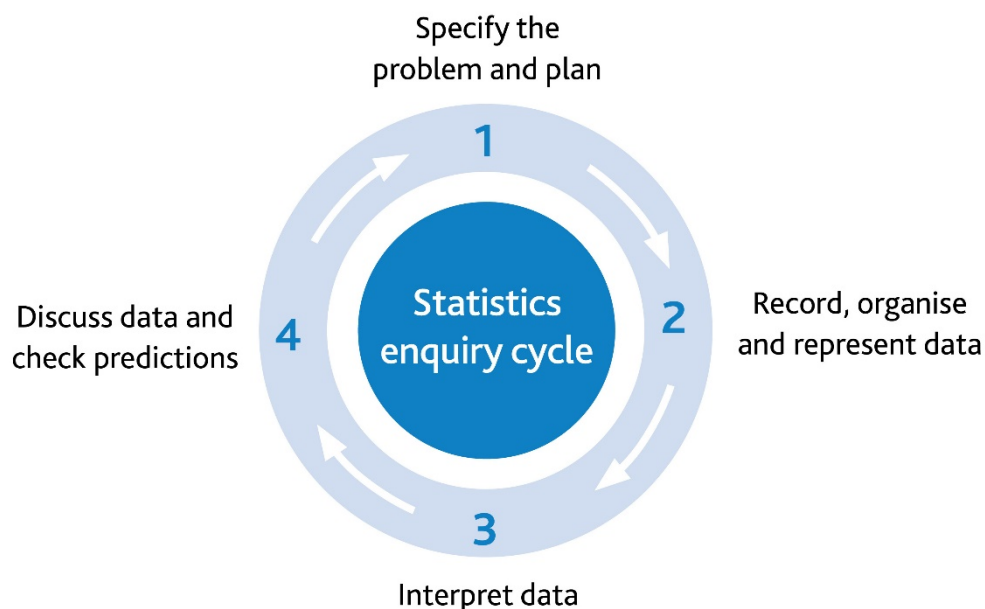
Through this strand, learners should understand the difference between drawing and sketching. When learners *draw* lines and shapes they should use equipment such as rulers and set squares to ensure accuracy of the properties. When learners *sketch* lines and shapes they understand that it is representative only and may not be precise.

Statistics and Probability

Learners will plan and conduct investigations, identify similarities and variations within and between data sets to answer statistical and non-statistical questions. They will discuss their conclusions and consider the sources of variation.

This strand emphasises statistical thinking so that learners can understand and articulate the need for data, the importance of data production and the existence of variability. Information in the real world is often communicated using data graphics so learners interpret data that is represented in charts, tables, diagrams and graphs.

Learners conduct simple statistics investigations as part of a four-part statistical enquiry cycle:



When exploring the concept of probability, learners use language associated with patterns, randomness, chance, likelihood and probability. They recognise the difference between probabilities that are modelled through experiments using a small and large number of trials and describe the results.

Overview of teaching approaches

Cambridge advocates an active learning approach where teaching and learning is student-centred so that it aligns with the experiences and needs of individuals. Learners are encouraged to work both individually and collaboratively to find solutions to mathematical problems.

The three-step teaching approach – concrete, representational, abstract (CRA) is developed in all primary stages of learning. Learners should firstly use objects to support them in understanding a new concept. In the next step learners transform the concrete model to a pictorial representation of the same concept. Finally, learners are shown how the pictorial representations relate to conventional mathematics symbols and notations.

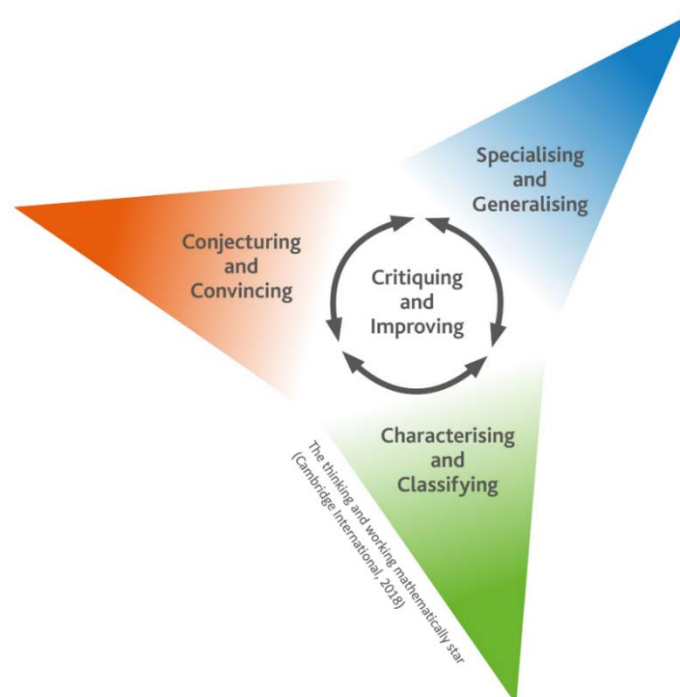
Thinking and Working Mathematically

Thinking and Working Mathematically supports the mathematical concepts and skills in all strands of the Cambridge Primary Mathematics curriculum. When learners are thinking and working mathematically they actively engage with their learning of mathematics, seeking to make sense of ideas and building connections between different facts, procedures and concepts. This differs from learners who simply follow instructions and carry out processes that they have been shown how to do, without appreciating why they work or what the results mean. Thinking and Working Mathematically can be stimulated by inconsistencies, patterns or particular representations, and can be improved through practice, reflection and questioning.

Thinking and Working Mathematically comprises eight characteristics that are presented in four pairs:

- Specialising and Generalising
- Conjecturing and Convincing
- Characterising and Classifying
- Critiquing and Improving.

The four pairs of characteristics are represented in the Thinking and Working Mathematically Star.



The characteristics are intertwined and are interdependent, and a high-quality mathematics task may draw on one or more of them.

Thinking and Working Mathematically should not be taught as a separate special activity but instead it should be embedded throughout the curriculum.

The eight Thinking and Working Mathematically characteristics provide the language required to make decisions about what mathematical knowledge, procedures and strategies might be used in order to gain a deeper understanding of mathematical questions.

Thinking and Working Mathematically characteristic	Definition
Specialising	Choosing <i>an example</i> and checking to see if it satisfies or does not satisfy specific mathematical criteria
Generalising	Recognising an underlying pattern by identifying <i>many</i> examples that satisfy the same mathematical criteria
Conjecturing	Forming mathematical questions or ideas
Convincing	Presenting evidence to <i>justify or challenge</i> a mathematical idea or solution
Characterising	Identifying and describing the mathematical properties of an object
Classifying	Organising objects into groups according to their mathematical properties
Critiquing	Comparing and evaluating mathematical ideas, representations or solutions to identify advantages and disadvantages
Improving	Refining mathematical ideas or representations to develop a more effective approach or solution

All of the characteristics that form Thinking and Working Mathematically are based on extensive research by Professor John Mason.

Mental strategies are important skills of mathematics and are at the core of developing learners' mathematical understanding. However, this curriculum does not require learners to follow or practise specific strategies. Allowing greater flexibility in teaching mental strategies means learners can view mental strategies as a more personal and a less formal choice. Learners then have greater ownership over which mental strategies they chose to develop in order to achieve a deeper conceptual understanding of mathematics.

You can find more information and ideas for teaching and learning activities in the *Cambridge Primary Mathematics Teacher Guide* and *Schemes of Work* available on the Primary support site (<https://primary.cambridgeinternational.org>).

The *Teacher Guide* will support you to plan and deliver lessons using effective teaching and learning approaches.

The *Scheme of Work* for each stage of Cambridge Primary Mathematics contains:

- suggested units showing how the learning objectives in the *Curriculum Framework* can be grouped and ordered
- at least one suggested teaching activity for each learning objective
- a list of subject-specific language that will be useful for your learners
- common misconceptions
- sample lesson plans
- links to relevant NRICH activities to enrich learners' mathematical experiences, <https://nrich.maths.org/>

You do not need to use the ideas in the *Schemes of Work* to teach Cambridge Primary Mathematics. They are designed to indicate the types of activities you might use, and the intended depth and breadth of each learning objective. These activities are not designed to fill all the teaching time for each primary stage. You should use other activities with a similar level of difficulty, for example, those from endorsed resources.

We work with a range of publishers to provide high-quality endorsed resources to support our *Curriculum Frameworks*. In order to provide choice for Cambridge International Schools, we encourage publishers to develop resources with varying approaches. There is no requirement for endorsed textbooks to follow the teaching order suggested in the Cambridge Primary *Schemes of Work*. If a resource is endorsed, you can be confident that all the learning objectives are covered.

3 Learning objectives by stage

Overview of learning objectives

Separate learning objectives are provided for the mathematics content in each of the primary Stages 1 to 6. There is also guidance on the prior experience of mathematics that learners should encounter before starting on the Stage 1 learning objectives. It may be appropriate to introduce this framework at slightly different ages to suit your particular circumstances.

All the learning objectives in each stage provide clear progression from the previous stage and to the subsequent stage.

The characteristics for Thinking and Working Mathematically apply to all of the primary stages. You can find out more about these characteristics on the next page.

Learning objective codes

Each learning objective has a unique code, e.g. **1Nc.05**. These codes appear in the *Schemes of Work, Teacher Guide* and other Cambridge Primary resources. Each learning objective code includes:

- the stage number, e.g. **1**
- a reporting code that appears in the feedback reports for tests and reflects the sub-strand titles, e.g. **Nc** (see below)
- a number reflecting the order of the learning objectives in the sub-strand for the stage, e.g. **05** is the fifth learning objective.

You can see the stages in which these recurring learning objectives occur in the progression information on the Cambridge Primary support site <https://primary.cambridgeinternational.org>

Thinking and Working Mathematically

TWM	Specialising
	Generalising
	Conjecturing
	Convincing
	Characterising
	Classifying
	Critiquing
	Improving

Number

Nc	Counting and sequences
Nf	Fractions, decimals, percentages, ratio and proportion
Ni	Integers and powers
Nm	Money
Np	Place value, ordering and rounding

Geometry and Measure

- Gp Position and transformation
- Gg Geometrical reasoning, shapes and measurements
- Gt Time

Statistics and Probability

- Sp Probability
- Ss Statistics

Prior experience for Stage 1

The following prior experience in Mathematics is expected of all learners before starting Stage 1:

Develop Mathematical Language

Number

- Develop number awareness verbally
 - counting from 1 saying which number comes next and which number comes before
 - as a class, chant numbers forwards and backwards
 - singing songs that include numbers.
- Recognise numbers from 1 to 10
 - numbers around the school, at home or in the community
 - counting objects
 - counting things that cannot be touched e.g. sounds made using a drum
 - 'touch-counting' a set of objects (understand that the last number counted gives its name to the whole counted set)
 - one to one correspondence
 - share objects into two equal groups in a play context.
- Recording numbers
 - mark-making to represent the number of toys in a collection
 - attempts at creating symbols to represent numbers.
- Use beads or counters to make repeating colour patterns
 - say what colour would come next in their own or others' patterns.

Geometry and Measure

- Name and sort commonly found at school or home
 - 2D shapes
 - 3D shapes.
- Use everyday language of direction and distance to describe movements of objects or self.
- Compare lengths or mass of objects using words such as longer, shorter, taller, bigger, smaller, lighter, heavier etc.
- Name units of time
 - days of the week
 - yesterday, today, tomorrow
 - morning, evening.

Statistics and Probability

- Represent and interpret data using pictorial representations or concrete materials.

If your learners attended kindergarten, they may achieve some of the Stage 1 learning objectives before starting Stage 1. In this case, you should adapt your Stage 1 teaching appropriately.

Thinking and Working Mathematically

We would expect early years learners to think and work mathematically by exploring mathematical ideas using language and strategies that are personal to them.

Stage 1

Thinking and Working Mathematically

- **TWM.01** Specialising
- **TWM.02** Generalising
- **TWM.03** Conjecturing
- **TWM.04** Convincing
- **TWM.05** Characterising
- **TWM.06** Classifying
- **TWM.07** Critiquing
- **TWM.08** Improving

Number

Counting and sequences

- **1Nc.01** Count objects from 0 to 20, recognising conservation of number and one-to-one correspondence.
- **1Nc.02** Recognise the number of objects presented in familiar patterns up to 10, without counting.
- **1Nc.03** Estimate the number of objects or people (up to 20), and check by counting.
- **1Nc.04** Count on in ones, twos or tens, and count back in ones and tens, starting from any number (from 0 to 20).
- **1Nc.05** Understand even and odd numbers as 'every other number' when counting (from 0 to 20).
- **1Nc.06** Use familiar language to describe sequences of objects.

Integers and powers

- **1Ni.01** Recite, read and write number names and whole numbers (from 0 to 20).
- **1Ni.02** Understand addition as:
 - counting on
 - combining two sets.
- **1Ni.03** Understand subtraction as:
 - counting back
 - take away
 - difference.
- **1Ni.04** Recognise complements of 10.
- **1Ni.05** Estimate, add and subtract whole numbers (where the answer is from 0 to 20).
- **1Ni.06** Know doubles up to double 10.

Money

- **1Nm.01** Recognise money used in local currency.

Place value, ordering and rounding

- **1Np.01** Understand that zero represents none of something.
- **1Np.02** Compose, decompose and regroup numbers from 10 to 20.
- **1Np.03** Understand the relative size of quantities to compare and order numbers from 0 to 20.
- **1Np.04** Recognise and use ordinal numbers from 1st to 10th.

Fractions, decimals, percentages, ratio and proportion

- **1Nf.01** Understand that an object or shape can be split into two equal parts or two unequal parts.
- **1Nf.02** Understand that a half can describe one of two equal parts of a quantity or set of objects.
- **1Nf.03** Understand that a half can act as an operator (whole number answers).
- **1Nf.04** Understand and visualise that halves can be combined to make wholes.

Geometry and Measure**Time**

- **1Gt.01** Use familiar language to describe units of time.
- **1Gt.02** Know the days of the week and the months of the year.
- **1Gt.03** Recognise time to the hour and half hour.

Geometrical reasoning, shapes and measurements

- **1Gg.01** Identify, describe and sort 2D shapes by their characteristics or properties, including reference to number of sides and whether the sides are curved or straight.
- **1Gg.02** Use familiar language to describe length, including long, longer, longest, thin, thinner, thinnest, short, shorter, shortest, tall, taller and tallest.
- **1Gg.03** Identify, describe and sort 3D shapes by their properties, including reference to the number of faces, edges and whether faces are flat or curved.
- **1Gg.04** Use familiar language to describe mass, including heavy, light, less and more.
- **1Gg.05** Use familiar language to describe capacity, including full, empty, less and more.
- **1Gg.06** Differentiate between 2D and 3D shapes.
- **1Gg.07** Identify when a shape looks identical as it rotates.
- **1Gg.08** Explore instruments that have numbered scales, and select the most appropriate instrument to measure length, mass, capacity and temperature.

Position and transformation

- **1Gp.01** Use familiar language to describe position and direction.

Statistics and Probability**Statistics**

- **1Ss.01** Answer non-statistical questions (categorical data).
- **1Ss.02** Record, organise and represent categorical data using:
 - practical resources and drawings
 - lists and tables
 - Venn and Carroll diagrams
 - block graphs and pictograms.
- **1Ss.03** Describe data, using familiar language including reference to more, less, most or least to answer non-statistical questions and discuss conclusions.

Stage 2

Thinking and Working Mathematically

- **TWM.01** Specialising
- **TWM.02** Generalising
- **TWM.03** Conjecturing
- **TWM.04** Convincing
- **TWM.05** Characterising
- **TWM.06** Classifying
- **TWM.07** Critiquing
- **TWM.08** Improving

Number

Counting and sequences

- **2Nc.01** Count objects from 0 to 100.
- **2Nc.02** Recognise the number of objects presented in unfamiliar patterns up to 10, without counting.
- **2Nc.03** Estimate the number of objects or people (up to 100).
- **2Nc.04** Count on and count back in ones, twos, fives or tens, starting from any number (from 0 to 100).
- **2Nc.05** Recognise the characteristics of even and odd numbers (from 0 to 100).
- **2Nc.06** Recognise, describe and extend numerical sequences (from 0 to 100).

Integers and powers

- **2Ni.01** Recite, read and write number names and whole numbers (from 0 to 100).
- **2Ni.02** Understand and explain the relationship between addition and subtraction.
- **2Ni.03** Recognise complements of 20 and complements of multiples of 10 (up to 100).
- **2Ni.04** Estimate, add and subtract whole numbers with up to two digits (no regrouping of ones or tens).
- **2Ni.05** Understand multiplication as:
 - repeated addition
 - an array.
- **2Ni.06** Understand division as:
 - sharing (number of items per group)
 - grouping (number of groups).
- **2Ni.07** Know 1, 2, 5 and 10 times tables.

Money

- **2Nm.01** Recognise value and money notation used in local currency.
- **2Nm.02** Compare values of different combinations of coins or notes.

Place value, ordering and rounding

- **2Np.01** Understand and explain that the value of each digit in a 2-digit number is determined by its position in that number, recognising zero as a place holder.
- **2Np.02** Compose, decompose and regroup 2-digit numbers, using tens and ones.
- **2Np.03** Understand the relative size of quantities to compare and order 2-digit numbers.
- **2Np.04** Recognise and use ordinal numbers.
- **2Np.05** Round 2-digit numbers to the nearest 10.

Fractions, decimals, percentages, ratio and proportion

- **2Nf.01** Understand that an object or shape can be split into four equal parts or four unequal parts.
- **2Nf.02** Understand that a quarter can describe one of four equal parts of a quantity or set of objects.
- **2Nf.03** Understand that one half and one quarter can be interpreted as division.
- **2Nf.04** Understand that fractions (half, quarter and three-quarters) can act as operators.
- **2Nf.05** Recognise the relative size of $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ and 1, and the equivalence of $\frac{1}{2}$ and $\frac{2}{4}$, and $\frac{2}{2}$, $\frac{4}{4}$ and 1.
- **2Nf.06** Understand and visualise that wholes, halves and quarters can be combined to create new fractions.

Geometry and Measure**Time**

- **2Gt.01** Order and compare units of time (seconds, minutes, hours, days, weeks, months and years).
- **2Gt.02** Read and record time to five minutes in digital notation (12-hour) and on analogue clocks.
- **2Gt.03** Interpret and use the information in calendars.

Geometrical reasoning, shapes and measurements

- **2Gg.01** Identify, describe, sort, name and sketch 2D shapes by their properties, including reference to regular polygons, number of sides and vertices. Recognise these shapes in different positions and orientations.
- **2Gg.02** Understand that a circle has a centre and any point on the boundary is at the same distance from the centre.
- **2Gg.03** Understand that length is a fixed distance between two points. Estimate and measure lengths using non-standard or standard units.
- **2Gg.04** Draw and measure lines, using standard units.
- **2Gg.05** Identify, describe, sort and name 3D shapes by their properties, including reference to number and shapes of faces, edges and vertices.
- **2Gg.06** Understand that mass is the quantity of matter in an object. Estimate and measure familiar objects using non-standard or standard units.
- **2Gg.07** Understand that capacity is the maximum amount that an object can contain. Estimate and measure the capacity of familiar objects using non-standard or standard units.
- **2Gg.08** Identify 2D and 3D shapes in familiar objects.
- **2Gg.09** Identify a horizontal or vertical line of symmetry on 2D shapes and patterns.
- **2Gg.10** Predict and check how many times a shape looks identical as it completes a full turn.
- **2Gg.11** Understand that an angle is a description of a turn, including reference to the terms whole, half and quarter turns, both clockwise and anticlockwise.
- **2Gg.12** Understand a measuring scale as a continuous number line where intermediate points have value.

Position and transformation

- **2Gp.01** Use knowledge of position and direction to describe movement.
- **2Gp.02** Sketch the reflection of a 2D shape in a vertical mirror line, including where the mirror line is the edge of the shape.

Statistics and Probability

Statistics

- **2Ss.01** Conduct an investigation to answer non-statistical and statistical questions (categorical data).
- **2Ss.02** Record, organise and represent categorical data. Choose and explain which representation to use in a given situation:
 - lists and tables
 - Venn and Carroll diagrams
 - tally charts
 - block graphs and pictograms.
- **2Ss.03** Describe data, identifying similarities and variations to answer non-statistical and statistical questions and discuss conclusions.

Probability

- **2Sp.01** Use familiar language associated with patterns and randomness, including regular pattern and random pattern.
- **2Sp.02** Conduct chance experiments with two outcomes, and present and describe the results.

Stage 3

Thinking and Working Mathematically

- **TWM.01** Specialising
- **TWM.02** Generalising
- **TWM.03** Conjecturing
- **TWM.04** Convincing
- **TWM.05** Characterising
- **TWM.06** Classifying
- **TWM.07** Critiquing
- **TWM.08** Improving

Number

Counting and sequences

- **3Nc.01** Estimate the number of objects or people (up to 1000).
- **3Nc.02** Count on and count back in steps of constant size: 1-digit numbers, tens or hundreds, starting from any number (from 0 to 1000).
- **3Nc.03** Use knowledge of even and odd numbers up to 10 to recognise and sort numbers.
- **3Nc.04** Recognise the use of an object to represent an unknown quantity in addition and subtraction calculations.
- **3Nc.05** Recognise and extend linear sequences, and describe the term-to-term rule.
- **3Nc.06** Extend spatial patterns formed from adding and subtracting a constant.

Integers and powers

- **3Ni.01** Recite, read and write number names and whole numbers (from 0 to 1000).
- **3Ni.02** Understand the commutative and associative properties of addition, and use these to simplify calculations.
- **3Ni.03** Recognise complements of 100 and complements of multiples of 10 or 100 (up to 1000).
- **3Ni.04** Estimate, add and subtract whole numbers with up to three digits (regrouping of ones or tens).
- **3Ni.05** Understand and explain the relationship between multiplication and division.
- **3Ni.06** Understand and explain the commutative and distributive properties of multiplication, and use these to simplify calculations.
- **3Ni.07** Know 1, 2, 3, 4, 5, 6, 8, 9 and 10 times tables.
- **3Ni.08** Estimate and multiply whole numbers up to 100 by 2, 3, 4 and 5.
- **3Ni.09** Estimate and divide whole numbers up to 100 by 2, 3, 4 and 5.
- **3Ni.10** Recognise multiples of 2, 5 and 10 (up to 1000).

Money

- **3Nm.01** Interpret money notation for currencies that use a decimal point.
- **3Nm.02** Add and subtract amounts of money to give change.

Place value, ordering and rounding

- **3Np.01** Understand and explain that the value of each digit is determined by its position in that number (up to 3-digit numbers).
- **3Np.02** Use knowledge of place value to multiply whole numbers by 10.
- **3Np.03** Compose, decompose and regroup 3-digit numbers, using hundreds, tens and ones.
- **3Np.04** Understand the relative size of quantities to compare and order 3-digit positive numbers, using the symbols =, > and <.
- **3Np.05** Round 3-digit numbers to the nearest 10 or 100.

Fractions, decimals, percentages, ratio and proportion

- **3Nf.01** Understand and explain that fractions are several equal parts of an object or shape and all the parts, taken together, equal one whole.
- **3Nf.02** Understand that the relationship between the whole and the parts depends on the relative size of each, regardless of their shape or orientation.
- **3Nf.03** Understand and explain that fractions can describe equal parts of a quantity or set of objects.
- **3Nf.04** Understand that a fraction can be represented as a division of the numerator by the denominator (half, quarter and three-quarters).
- **3Nf.05** Understand that fractions (half, quarter, three-quarters, third and tenth) can act as operators.
- **3Nf.06** Recognise that two fractions can have an equivalent value (halves, quarters, fifths and tenths).
- **3Nf.07** Estimate, add and subtract fractions with the same denominator (within one whole).
- **3Nf.08** Use knowledge of equivalence to compare and order unit fractions and fractions with the same denominator, using the symbols =, > and <.

Geometry and Measure**Time**

- **3Gt.01** Choose the appropriate unit of time for familiar activities.
- **3Gt.02** Read and record time accurately in digital notation (12-hour) and on analogue clocks.
- **3Gt.03** Interpret and use the information in timetables (12-hour clock).
- **3Gt.04** Understand the difference between a time and a time interval. Find time intervals between the same units in days, weeks, months and years.

Geometrical reasoning, shapes and measurements

- **3Gg.01** Identify, describe, classify, name and sketch 2D shapes by their properties. Differentiate between regular and irregular polygons.
- **3Gg.02** Estimate and measure lengths in centimetres (cm), metres (m) and kilometres (km). Understand the relationship between units.
- **3Gg.03** Understand that perimeter is the total distance around a 2D shape and can be calculated by adding lengths, and area is how much space a 2D shape occupies within its boundary.
- **3Gg.04** Draw lines, rectangles and squares. Estimate, measure and calculate the perimeter of a shape, using appropriate metric units, and area on a square grid.
- **3Gg.05** Identify, describe, sort, name and sketch 3D shapes by their properties.
- **3Gg.06** Estimate and measure the mass of objects in grams (g) and kilograms (kg). Understand the relationship between units.
- **3Gg.07** Estimate and measure capacity in millilitres (ml) and litres (l), and understand their relationships.
- **3Gg.08** Recognise pictures, drawings and diagrams of 3D shapes.
- **3Gg.09** Identify both horizontal and vertical lines of symmetry on 2D shapes and patterns.
- **3Gg.10** Compare angles with a right angle. Recognise that a straight line is equivalent to two right angles or a half turn.
- **3Gg.11** Use instruments that measure length, mass, capacity and temperature.

Position and transformation

- **3Gp.01** Interpret and create descriptions of position, direction and movement, including reference to cardinal points.
- **3Gp.02** Sketch the reflection of a 2D shape in a horizontal or vertical mirror line, including where the mirror line is the edge of the shape.

Statistics and Probability

Statistics

- **3Ss.01** Conduct an investigation to answer non-statistical and statistical questions (categorical and discrete data).
- **3Ss.02** Record, organise and represent categorical and discrete data. Choose and explain which representation to use in a given situation:
 - Venn and Carroll diagrams
 - tally charts and frequency tables
 - pictograms and bar charts.
- **3Ss.03** Interpret data, identifying similarities and variations, within data sets, to answer non-statistical and statistical questions and discuss conclusions.

Probability

- **3Sp.01** Use familiar language associated with chance to describe events, including 'it will happen', 'it will not happen', 'it might happen'.
- **3Sp.02** Conduct chance experiments, and present and describe the results.

Stage 4

Thinking and Working Mathematically

- **TWM.01** Specialising
- **TWM.02** Generalising
- **TWM.03** Conjecturing
- **TWM.04** Convincing
- **TWM.05** Characterising
- **TWM.06** Classifying
- **TWM.07** Critiquing
- **TWM.08** Improving

Number

Counting and sequences

- **4Nc.01** Count on and count back in steps of constant size: 1-digit numbers, tens, hundreds or thousands, starting from any number, and extending beyond zero to include negative numbers.
- **4Nc.02** Recognise and explain generalisations when adding and subtracting combinations of even and odd numbers.
- **4Nc.03** Recognise the use of objects, shapes or symbols to represent unknown quantities in addition and subtraction calculations.
- **4Nc.04** Recognise and extend linear and non-linear sequences, and describe the term-to-term rule.
- **4Nc.05** Recognise and extend the spatial pattern of square numbers.

Integers and powers

- **4Ni.01** Read and write number names and whole numbers greater than 1000 and less than 0.
- **4Ni.02** Estimate, add and subtract whole numbers with up to three digits.
- **4Ni.03** Understand the associative property of multiplication, and use this to simplify calculations.
- **4Ni.04** Know all times tables from 1 to 10.
- **4Ni.05** Estimate and multiply whole numbers up to 1000 by 1-digit whole numbers.
- **4Ni.06** Estimate and divide whole numbers up to 100 by 1-digit whole numbers.
- **4Ni.07** Understand the relationship between multiples and factors.
- **4Ni.08** Use knowledge of factors and multiples to understand tests of divisibility by 2, 5, 10, 25, 50 and 100.

Place value, ordering and rounding

- **4Np.01** Understand and explain that the value of each digit in numbers is determined by its position in that number.
- **4Np.02** Use knowledge of place value to multiply and divide whole numbers by 10 and 100.
- **4Np.03** Compose, decompose and regroup whole numbers.
- **4Np.04** Understand the relative size of quantities to compare and order positive and negative numbers, using the symbols =, > and <.
- **4Np.05** Round numbers to the nearest 10, 100, 1000, 10 000 or 100 000.

Fractions, decimals, percentages, ratio and proportion

- **4Nf.01** Understand that the more parts a whole is divided into, the smaller the parts become.
- **4Nf.02** Understand that a fraction can be represented as a division of the numerator by the denominator (unit fractions and three-quarters).
- **4Nf.03** Understand that unit fractions can act as operators.
- **4Nf.04** Recognise that two proper fractions can have an equivalent value.
- **4Nf.05** Estimate, add and subtract fractions with the same denominator.
- **4Nf.06** Understand percentage as the number of parts in each hundred, and use the percentage symbol (%).
- **4Nf.07** Use knowledge of equivalence to compare and order proper fractions, using the symbols =, > and <.

Geometry and Measure**Time**

- **4Gt.01** Understand the direct relationship between units of time, and convert between them.
- **4Gt.02** Read and record time accurately in digital notation (12- and 24-hour) and on analogue clocks.
- **4Gt.03** Interpret and use the information in timetables (12- and 24-hour clock).
- **4Gt.04** Find time intervals between different units:
 - days, weeks, months and years
 - seconds, minutes and hours that do not bridge through 60.

Geometrical reasoning, shapes and measurements

- **4Gg.01** Investigate what shapes can be made if two or more shapes are combined, and analyse their properties, including reference to tessellation.
- **4Gg.02** Estimate and measure perimeter and area of 2D shapes, understanding that two areas can be added together to calculate the area of a compound shape.
- **4Gg.03** Draw rectangles and squares on square grids, and measure their perimeter and area. Derive and use formulae to calculate areas and perimeters of rectangles and squares.
- **4Gg.04** Estimate the area of irregular shapes on a square grid (whole and part squares).
- **4Gg.05** Identify 2D faces of 3D shapes, and describe their properties.
- **4Gg.06** Match nets to their corresponding 3D shapes.
- **4Gg.07** Identify all horizontal, vertical and diagonal lines of symmetry on 2D shapes and patterns.
- **4Gg.08** Estimate, compare and classify angles, using geometric vocabulary including acute, right and obtuse.
- **4Gg.09** Use knowledge of fractions to read and interpret a measuring scale.

Position and transformation

- **4Gp.01** Interpret and create descriptions of position, direction and movement, including reference to cardinal and ordinal points, and their notations.
- **4Gp.02** Understand that position can be described using coordinate notation. Read and plot coordinates in the first quadrant (with the aid of a grid).
- **4Gp.03** Reflect 2D shapes in a horizontal or vertical mirror line, including where the mirror line is the edge of the shape, on square grids.

Statistics and Probability

Statistics

- **4Ss.01** Plan and conduct an investigation to answer statistical questions, considering what data to collect (categorical and discrete data).
- **4Ss.02** Record, organise and represent categorical and discrete data. Choose and explain which representation to use in a given situation:
 - Venn and Carroll diagrams
 - tally charts and frequency tables
 - pictograms and bar charts
 - dot plots (one dot per count).
- **4Ss.03** Interpret data, identifying similarities and variations, within and between data sets, to answer statistical questions. Discuss conclusions, considering the sources of variation.

Probability

- **4Sp.01** Use language associated with chance to describe familiar events, including reference to maybe, likely, certain, impossible.
- **4Sp.02** Conduct chance experiments, using small and large numbers of trials, and present and describe the results using the language of probability.

Stage 5

Thinking and Working Mathematically

- **TWM.01** Specialising
- **TWM.02** Generalising
- **TWM.03** Conjecturing
- **TWM.04** Convincing
- **TWM.05** Characterising
- **TWM.06** Classifying
- **TWM.07** Critiquing
- **TWM.08** Improving

Number

Counting and sequences

- **5Nc.01** Count on and count back in steps of constant size, and extend beyond zero to include negative numbers.
- **5Nc.02** Recognise the use of objects, shapes or symbols to represent two unknown quantities in addition and subtraction calculations.
- **5Nc.03** Use the relationship between repeated addition of a constant and multiplication to find any term of a linear sequence.
- **5Nc.04** Recognise and extend the spatial pattern of square and triangular numbers.

Integers and powers

- **5Ni.01** Estimate, add and subtract integers, including where one integer is negative.
- **5Ni.02** Understand which law of arithmetic to apply to simplify calculations.
- **5Ni.03** Understand that the four operations follow a particular order.
- **5Ni.04** Estimate and multiply whole numbers up to 1000 by 1-digit or 2-digit whole numbers.
- **5Ni.05** Estimate and divide whole numbers up to 1000 by 1-digit whole numbers.
- **5Ni.06** Understand and explain the difference between prime and composite numbers.
- **5Ni.07** Use knowledge of factors and multiples to understand tests of divisibility by 4 and 8.
- **5Ni.08** Use knowledge of multiplication to recognise square numbers (from 1 to 100).

Place value, ordering and rounding

- **5Np.01** Understand and explain the value of each digit in decimals (tenths and hundredths).
- **5Np.02** Use knowledge of place value to multiply and divide whole numbers by 10, 100 and 1000.
- **5Np.03** Use knowledge of place value to multiply and divide decimals by 10 and 100.
- **5Np.04** Compose, decompose and regroup numbers, including decimals (tenths and hundredths).
- **5Np.05** Round numbers with one decimal place to the nearest whole number.

Fractions, decimals, percentages, ratio and proportion

- **5Nf.01** Understand that a fraction can be represented as a division of the numerator by the denominator (unit fractions, three-quarters, tenths and hundredths).
- **5Nf.02** Understand that proper fractions can act as operators.
- **5Nf.03** Recognise that improper fractions and mixed numbers can have an equivalent value.
- **5Nf.04** Recognise that proper fractions, decimals (one decimal place) and percentages can have equivalent values.
- **5Nf.05** Estimate, add and subtract fractions with the same denominator and denominators that are multiples of each other.
- **5Nf.06** Estimate, multiply and divide unit fractions by a whole number.

- **5Nf.07** Recognise percentages of shapes, and write percentages as a fraction with denominator 100.
- **5Nf.08** Understand the relative size of quantities to compare and order numbers with one decimal place, proper fractions with the same denominator and percentages, using the symbols =, > and <.
- **5Nf.09** Estimate, add and subtract numbers with the same number of decimal places.
- **5Nf.10** Estimate and multiply numbers with one decimal place by 1-digit whole numbers.
- **5Nf.11** Understand that:
 - a proportion compares part to whole
 - a ratio compares part to part of two or more quantities.

Geometry and Measure

Time

- **5Gt.01** Understand time intervals less than one second.
- **5Gt.02** Compare times between time zones in digital notation (12- and 24-hour) and on analogue clocks.
- **5Gt.03** Find time intervals in seconds, minutes and hours that bridge through 60.
- **5Gt.04** Recognise that a time interval can be expressed as a decimal, or in mixed units.

Geometrical reasoning, shapes and measurements

- **5Gg.01** Identify, describe, classify and sketch isosceles, equilateral or scalene triangles, including reference to angles and symmetrical properties.
- **5Gg.02** Estimate and measure perimeter and area of 2D shapes, understanding that shapes with the same perimeter can have different areas and vice versa.
- **5Gg.03** Draw compound shapes that can be divided into rectangles and squares. Estimate, measure and calculate their perimeter and area.
- **5Gg.04** Identify, describe and sketch 3D shapes in different orientations.
- **5Gg.05** Identify and sketch different nets for a cube.
- **5Gg.06** Use knowledge of reflective symmetry to identify and complete symmetrical patterns.
- **5Gg.07** Estimate, compare and classify angles, using geometric vocabulary including acute, right, obtuse and reflex.
- **5Gg.08** Know that the sum of the angles on a straight line is 180° , and use this to calculate missing angles on a straight line.

Position and transformation

- **5Gp.01** Compare the relative position of coordinates (with or without the aid of a grid).
- **5Gp.02** Use knowledge of 2D shapes and coordinates to plot points to form lines and shapes in the first quadrant (with the aid of a grid).
- **5Gp.03** Translate 2D shapes, identifying the corresponding points between the original and the translated image, on square grids.
- **5Gp.04** Reflect 2D shapes in both horizontal and vertical mirror lines to create patterns on square grids.

Statistics and Probability

Statistics

- **5Ss.01** Plan and conduct an investigation to answer a set of related statistical questions, considering what data to collect (categorical, discrete and continuous data).
- **5Ss.02** Record, organise and represent categorical, discrete and continuous data. Choose and explain which representation to use in a given situation:
 - Venn and Carroll diagrams
 - tally charts and frequency tables
 - bar charts
 - waffle diagrams
 - frequency diagrams for continuous data
 - line graphs
 - dot plots (one dot per data point).
- **5Ss.03** Understand that the mode and median are ways to describe and summarise data sets. Find and interpret the mode and the median, and consider their appropriateness for the context.
- **5Ss.04** Interpret data, identifying patterns, within and between data sets, to answer statistical questions. Discuss conclusions, considering the sources of variation.

Probability

- **5Sp.01** Use the language associated with likelihood to describe and compare likelihood and risk of familiar events, including those with equally likely outcomes.
- **5Sp.02** Recognise that some outcomes are equally likely to happen and some outcomes are more (or less) likely to happen, when doing practical activities.
- **5Sp.03** Conduct chance experiments or simulations, using small and large numbers of trials, and present and describe the results using the language of probability.

Stage 6

Thinking and Working Mathematically

- **TWM.01** Specialising
- **TWM.02** Generalising
- **TWM.03** Conjecturing
- **TWM.04** Convincing
- **TWM.05** Characterising
- **TWM.06** Classifying
- **TWM.07** Critiquing
- **TWM.08** Improving

Number

Counting and sequences

- **6Nc.01** Count on and count back in steps of constant size, including fractions and decimals, and extend beyond zero to include negative numbers.
- **6Nc.02** Recognise the use of letters to represent quantities that vary in addition and subtraction calculations.
- **6Nc.03** Use the relationship between repeated addition of a constant and multiplication to find and use a position-to-term rule.
- **6Nc.04** Use knowledge of square numbers to generate terms in a sequence, given its position.

Integers and powers

- **6Ni.01** Estimate, add and subtract integers.
- **6Ni.02** Use knowledge of laws of arithmetic and order of operations to simplify calculations.
- **6Ni.03** Understand that brackets can be used to alter the order of operations.
- **6Ni.04** Estimate and multiply whole numbers up to 10 000 by 1-digit or 2-digit whole numbers.
- **6Ni.05** Estimate and divide whole numbers up to 1000 by 1-digit or 2-digit whole numbers.
- **6Ni.06** Understand common multiples and common factors.
- **6Ni.07** Use knowledge of factors and multiples to understand tests of divisibility by 3, 6 and 9.
- **6Ni.08** Use knowledge of multiplication and square numbers to recognise cube numbers (from 1 to 125).

Place value, ordering and rounding

- **6Np.01** Understand and explain the value of each digit in decimals (tenths, hundredths and thousandths).
- **6Np.02** Use knowledge of place value to multiply and divide whole numbers and decimals by 10, 100 and 1000.
- **6Np.03** Compose, decompose and regroup numbers, including decimals (tenths, hundredths and thousandths).
- **6Np.04** Round numbers with two decimal places to the nearest tenth or whole number.

Fractions, decimals, percentages, ratio and proportion

- **6Nf.01** Understand that a fraction can be represented as a division of the numerator by the denominator (proper and improper fractions).
- **6Nf.02** Understand that proper and improper fractions can act as operators.
- **6Nf.03** Use knowledge of equivalence to write fractions in their simplest form.
- **6Nf.04** Recognise that fractions, decimals (one or two decimal places) and percentages can have equivalent values.
- **6Nf.05** Estimate, add and subtract fractions with different denominators.
- **6Nf.06** Estimate, multiply and divide proper fractions by whole numbers.
- **6Nf.07** Recognise percentages (1%, and multiples of 5% up to 100%) of shapes and whole numbers.

- **6Nf.08** Understand the relative size of quantities to compare and order numbers with one or two decimal places, proper fractions with different denominators and percentages, using the symbols =, > and <.
- **6Nf.09** Estimate, add and subtract numbers with the same or different number of decimal places.
- **6Nf.10** Estimate and multiply numbers with one or two decimal places by 1-digit and 2-digit whole numbers.
- **6Nf.11** Estimate and divide numbers with one or two decimal places by whole numbers.
- **6Nf.12** Understand the relationship between two quantities when they are in direct proportion.
- **6Nf.13** Use knowledge of equivalence to understand and use equivalent ratios.

Geometry and Measure

Time

- **6Gt.01** Convert between time intervals expressed as a decimal and in mixed units.

Geometrical reasoning, shapes and measurements

- **6Gg.01** Identify, describe, classify and sketch quadrilaterals, including reference to angles, symmetrical properties, parallel sides and diagonals.
- **6Gg.02** Know the parts of a circle:
 - centre
 - radius
 - diameter
 - circumference.
- **6Gg.03** Use knowledge of area of rectangles to estimate and calculate the area of right-angled triangles.
- **6Gg.04** Identify, describe and sketch compound 3D shapes.
- **6Gg.05** Understand the difference between capacity and volume.
- **6Gg.06** Identify and sketch different nets for cubes, cuboids, prisms and pyramids.
- **6Gg.07** Understand the relationship between area of 2D shapes and surface area of 3D shapes.
- **6Gg.08** Identify rotational symmetry in familiar shapes, patterns or images with maximum order 4. Describe rotational symmetry as 'order x'.
- **6Gg.09** Classify, estimate, measure and draw angles.
- **6Gg.10** Know that the sum of the angles in a triangle is 180° , and use this to calculate missing angles in a triangle.
- **6Gg.11** Construct circles of a specified radius or diameter.

Position and transformation

- **6Gp.01** Read and plot coordinates including integers, fractions and decimals, in all four quadrants (with the aid of a grid).
- **6Gp.02** Use knowledge of 2D shapes and coordinates to plot points to form lines and shapes in all four quadrants.
- **6Gp.03** Translate 2D shapes, identifying the corresponding points between the original and the translated image, on coordinate grids.
- **6Gp.04** Reflect 2D shapes in a given mirror line (vertical, horizontal and diagonal), on square grids.
- **6Gp.05** Rotate shapes 90° around a vertex (clockwise or anticlockwise).

Statistics and Probability

Statistics

- **6Ss.01** Plan and conduct an investigation and make predictions for a set of related statistical questions, considering what data to collect (categorical, discrete and continuous data).
- **6Ss.02** Record, organise and represent categorical, discrete and continuous data. Choose and explain which representation to use in a given situation:
 - Venn and Carroll diagrams
 - tally charts and frequency tables
 - bar charts
 - waffle diagrams and pie charts
 - frequency diagrams for continuous data
 - line graphs
 - scatter graphs
 - dot plots.
- **6Ss.03** Understand that the mode, median, mean and range are ways to describe and summarise data sets. Find and interpret the mode (including bimodal data), median, mean and range, and consider their appropriateness for the context.
- **6Ss.04** Interpret data, identifying patterns, within and between data sets, to answer statistical questions. Discuss conclusions, considering the sources of variation, and check predictions.

Probability

- **6Sp.01** Use the language associated with probability and proportion to describe and compare possible outcomes.
- **6Sp.02** Identify when two events can happen at the same time and when they cannot, and know that the latter are called 'mutually exclusive'.
- **6Sp.03** Recognise that some probabilities can only be modelled through experiments using a large number of trials.
- **6Sp.04** Conduct chance experiments or simulations, using small and large numbers of trials. Predict, analyse and describe the frequency of outcomes using the language of probability.

4 Glossary

This glossary is provided to support your understanding of the content of this *Curriculum Framework*. The definitions are intended to be sufficient to guide an informed reader.

Bimodal – a set of data that has two modes. (Example: 1, 1, 5, 7, 8, 8 the two modes are 1 and 8.)

Bridge through 60 – a time interval that requires knowledge that there are 60 minutes in an hour.

Cardinal points – the four points on a compass: north (N), east (E), south (S), west (W).

Categorical data – data arising from measurements taken on a categorical (unordered discrete) variable. (Examples: pupils' favourite colours: red, blue, green, yellow.) See **Continuous data** and **Discrete data**.

Compose a number – using knowledge of the place value position of numbers to create a number. (Example $700 + 10 + 2 = 712$.) See **Decompose a number** and **Regroup a number**.

Complements of a number – this is the same as number bonds or number pairs. (Example: complements of 10 are 0 and 10, 1 and 9, 2 and 8 etc.)

Composite number – a positive integer that is not a prime number.

Conservation of number – the principle that a given quantity does not change when it is physically rearranged.

Continuous data – data arising from measurements taken on a continuous variable (example weight of food packets). Continuous data may be grouped into touching but non-overlapping categories. (Example height of pupils [x cm] can be grouped into $130 \leq x < 140$; $140 \leq x < 150$ etc.) See **Categorical data** and **Discrete data**.

Decompose a number – using knowledge of the place value position of numbers to break a number into sub-parts. (Example: $712 = 700 + 10 + 2$.) See **Compose a number** and **Regroup a number**.

Discrete data – data resulting from measurements taken on a discrete variable (Example number of peas in a pod). Discrete data may be grouped. (Example: After collecting data on the ages of students in the school, the data might be grouped into 'age of students 3 – 5, 6 – 8, 9 – 11' etc.) See **Categorical data** and **Continuous data**.

Draw – using mathematical instruments, such as rulers, pair of compasses and protractors, to accurately represent lines and shapes. See **Sketch**.

Integer – any positive or negative whole number and zero. (Example: ...-2, -1, 0, +1, +2...) See **Whole number**.

Laws of arithmetic – a group term including the associative law, commutative law and distributive law.

Learning objective – statements from the *Curriculum Framework* of the expectations of knowledge, understanding and skills that learners will develop; they provide a structure for teaching and learning, and a reference against which to check learners' attainment and skills development.

Mixed number – a whole number and a fractional part expressed as a common fraction. (Example: $3\frac{4}{5}$ is a mixed number.) Also known as a mixed fraction.

Non-statistical question – a question with a single answer. (Example: What is your favourite fruit?) See **Statistical question**.

Number name – one, two, three, four, five etc.

One-to-one correspondence – recognising that matching an object to its corresponding number and recognise that numbers are symbols that represent a quantity.

Ordinal point – points on a compass that are halfway between cardinal points, i.e. northeast (NE), southeast (SE), southwest (SW) and northwest (NW).

Proportion – a part to whole comparison. Example: Where £20 is shared between two people in the ratio 3 : 5, the first receives £7.50 which is $\frac{3}{8}$ of the whole £20. This is his proportion of the whole. See **Ratio**.

Ratio – a part to part comparison. The ratio of a to b is usually written a : b. (Example: In a recipe for pastry fat and flour are mixed in the ratio 1 : 2 which means that the fat used has half the mass of the flour.) See **Proportion**.

Regroup a number – expressing a number in different ways to assist with calculations. (Example: 712 can be expressed as 71 tens and 2 ones or 701 + 11 etc.) See **Compose a number** and **Decompose a number**.

Scheme of Work – support materials for each stage of Cambridge Primary Mathematics. Each *Scheme of Work* contains a suggested long-term plan, a medium-term plan with suggested teaching and learning activities and sample short-term (lesson) plans.

Sketch – illustrate lines and shapes without mathematical instruments so they be representative only and may not be precise. See **Draw**.

Statistical question – a question that will have variable answers. (Example: Which fruits do people in this class like?) See **Non-statistical question**.

Strand – a collection of learning objectives in the *Curriculum Framework* that forms an area of learning.

Teacher Guide – the document providing support in using the *Curriculum Framework* to plan and deliver lessons using effective teaching and learning approaches.

Translate a shape – moving a shape along a straight line whilst maintaining its size, shape and orientation (every vertex moves in the same direction by the same amount).

Whole number – positive whole numbers and zero. (Example: 0, 1, 2, 3 etc.) See **Integer**.

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