Mathematics in EYFS

Maths in the EYFS

The EYFS framework is structured very differently to the national curriculum as it is organised across seven areas of learning rather than subject areas. The aim of this document is to help subject leaders to understand how the skills taught across EYFS feed into national curriculum subjects.

This document demonstrates which statements from the 2020 Development Matters are prerequisite skills for mathematics within the national curriculum. The table below outlines the most relevant statements taken from the Early Learning Goals in the EYFS statutory framework and the Development Matters age ranges for Three and Four-Year-Olds and Reception to match the programme of study for mathematics.

The most relevant statements for mathematics are taken from the following areas of learning:

- Communication and Language
- Mathematics

Mathematical Vocabulary

Three and Four-Year-Olds	Communication and Language		• Use a wider range of vocabulary. • Understand 'why' questions, like: "why do you think the caterpillar is so fat?"
Reception	Communication and Language		• Learn new vocabulary. • Use new vocabulary throughout the day.
ELG	Communication and Language	Speaking	• Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary.

Number and Place Value

Counting

Three and Four-Year-Olds	Mathematics		• Recite numbers past 5. • Say one number name for each item in order: 1, 2, 3, 4, 5. • Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle').
Reception	Mathematics		• Count objects, actions and sounds. • Count beyond ten.
ELG	Mathematics	Numerical Patterns	• Verbally count beyond 20, recognising the pattern of the counting system.

Identifying, Representing and Estimating Numbers

Three and Four-Year-Olds	Mathematics	• Develop fast recognition of up to 3 objects, without having to count them individually ('subitising'). • Show 'finger numbers' up to 5. • Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5. • Experiment with their own symbols and marks as well as numerals.
Reception	Mathematics	• Subitise. • Link the number symbol (numeral) with its cardinal number value.

ELG	Mathematics	Number	• Subitise (recognising quantities without counting) up to 5.
Reading and Writing Numbers			
Three and Four-Year-Olds	Mathematics		• Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5. • Experiment with their own symbols and marks as well as numerals.
Reception	Mathematics		• Link the number symbol (numeral) with its cardinal number value.
Compare and Order Numbers			
Three and Four-Year-Olds	Mathematics		• Compare quantities using language: 'more than', 'fewer than'.
Reception	Mathematics		• Compare numbers.
ELG	Mathematics	Numerical Patterns	• Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.
Understanding Place Value			
Reception	Mathematics		• Understand the 'one more than/one less than' relationship between consecutive numbers. • Explore the composition of numbers to 10.
ELG	Mathematics	Number	• Have a deep understanding of numbers to 10, including the composition of each number.
Solve Problems			
Three and Four-Year-Olds	Mathematics		• Solve real world mathematical problems with numbers up to 5.

Addition and Subtraction			
Mental Calculations			
Reception	Mathematics		• Automatically recall number bonds for numbers 0-5 and some to 10.
ELG	Mathematics	Number	• Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.
Solve Problems			
ELG	Mathematics	Numerical Patterns	tterns within numbers up to 10, including evens and odds, double an be distributed evenly.

Measurement			
Describe, Measure, Compare and Solve (All Strands)			
Three and Four-Year-Olds	Mathematics		• Make comparisons between objects relating to size, length, weight and capacity.
Reception	Mathematics		• Compare length, weight and capacity.

Telling the Time		
Three and Four-Year-Olds	Mathematics	• Begin to describe a sequence of events, real or fictional, using words, such as 'first', 'then…'

Properties of Shapes		
Recognise 2D and 3D Shapes and their Properties		
Three and Four-Year-Olds	Mathematics	• Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners', 'straight', 'flat', 'round'. • Select shapes appropriately: flat surfaces for a building, a triangular pattern for a roof, etc. • Combine shapes to make new ones – an arch, a bigger triangle, etc.
Reception	Mathematics	• Select, rotate and manipulate shapes in order to develop spatial reasoning skills.
Compare and Classify Shapes		
Reception	Mathematics	• Compose and decompose shapes so that children can recognise a shape can have other shapes within it, just as numbers can.

Position and Direction		
Position, Direction and Movement		
Three and Four-Year-Olds	Mathematics	• Understand position through words alone – for example, "The bag is under the table," – with no pointing. • Describe a familiar route. • Discuss routes and locations, using words like 'in front of' and 'behind'.
Reception	Understanding the World	• Draw information from a simple map.
Patterns		
Three and Four-Year-Olds	Mathematics	• Talk about and identify the patterns around them. For example, stripes on clothes, designs on rugs and wallpaper. Use informal language like 'pointy', 'spotty', 'blobs', etc. • Extend and create ABAB patterns – stick, leaf, stick, leaf. • Notice and correct an error in a repeating pattern.
Reception	Mathematics	• Continue, copy and create repeating patterns.

Statistics		
Record, Present and Interpret Data		
Three and Four-Year-Olds	Mathematics	• Experiment with their own symbols and marks, as well as numerals.

Mathematics in Key Stage 1

The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the 4 operations, including with practical resources [for example, concrete objects and measuring tools].

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Number and Place Value

Counting

Year 1	Mathematics	• count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number • count, read and write numbers to 100 in numerals; count in multiples of 2s, 5s and 10s • given a number, identify 1 more and 1 less
Year 2	Mathematics	• count in steps of 2, 3, and 5 from 0, and in 10s from any number, forward and backward • recognise the place value of each digit in a two-digit number (10s, 1s)

Identifying, Representing and Estimating Numbers

Year 1	Mathematics	• identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least • read and write numbers from 1 to 20 in numerals and words
Year 2	Mathematics	• identify, represent and estimate numbers using different representations, including the number line • compare and order numbers from 0 up to 100; use <, > and = signs • read and write numbers to at least 100 in numerals and in words • use place value and number facts to solve problems

Number - Addition and Subtraction

Calculations

Year 1	Mathematics	• read, write and interpret mathematical statements involving addition (+), subtraction (−) and equals (=) signs • represent and use number bonds and related subtraction facts

Year	Subject	Strand	Objectives
			within 20
			• add and subtract one-digit and two-digit numbers to 20, including 0
Year 2	Mathematics	Number	• recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
			• add and subtract numbers using concrete objects, pictorial representations, and mentally, including:
			• a two-digit number and 1s
			• a two-digit number and 10s
			• 2 two-digit numbers
			• adding 3 one-digit numbers
			• show that addition of 2 numbers can be done in any order (commutative) and subtraction of 1 number from another cannot

Solve Problems

Year	Subject	Strand	Objectives
Year 1	Mathematics	Numerical Patterns	that involve addition and subtraction, using concrete objects and and missing number problems such as 7 = ? – 9
Year 2			• solve problems with addition and subtraction:
			• using concrete objects and pictorial representations, including those involving numbers, quantities and measures
			• applying their increasing knowledge of mental and written methods
			• Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems

Number – Multiplication and division

Calculation

Year	Subject	Objectives
Year 1	Mathematics	• solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher
Year 2	Mathematics	• recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
		• calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs
		• show that multiplication of 2 numbers can be done in any order (commutative) and division of 1 number by another cannot

Solve Problems

Year	Subject	Objectives
Year 1	Mathematics	• Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly.
Year 2		• solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts

Number - Fractions			
Mental Calculations			
Year 1	Mathematics		• recognise, find and name a half as 1 of 2 equal parts of an object, shape or quantity • recognise, find and name a quarter as 1 of 4 equal parts of an object, shape or quantity
Year 2	Mathematics	Number	• recognise, find, name and write fractions 1/3 , 1/4 , 2/4 and ¾ of a length, shape, set of objects or quantity. • write simple fractions, for example 1/2 of 6 = 3 and recognise the equivalence of 2/4 and 1/2.

Measurement			
Compare and describe			
Year 1	Mathematics		compare, describe and solve practical problems for: • lengths and heights [for example, long/short, longer/shorter, tall/short, double/half] • mass/weight [for example, heavy/light, heavier than, lighter than] • capacity and volume [for example, full/empty, more than, less than, half, half full, quarter] • time [for example, quicker, slower, earlier, later]
Year 2	Mathematics		• compare and order lengths, mass, volume/capacity and record the results using >, < and =
Measuring and calculating			
Year 1	Mathematics		Measure and begin to record the following: • lengths and heights • mass/weight • capacity and volume • time (hours, minutes, seconds) • recognise and know the value of different denominations of coins and notes
Year 2			• recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value • find different combinations of coins that equal the same amounts of money • solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change. • choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels
Telling the Time			
Year 1	Mathematics	Numerical Patterns	• sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] • recognise and use language relating to dates, including days of the week, weeks, months and years • tell the time to the hour and half past the hour and draw the hands on a clock face to show these times

Year 2			• compare and sequence intervals of time • tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times • know the number of minutes in an hour and the number of hours in a day

Geometry

Properties of shape

Year 1	Mathematics		• recognise and name common 2-D and 3-D shapes, including: • 2-D shapes [for example, rectangles (including squares), circles and triangles] • 3-D shapes [for example, cuboids (including cubes), pyramids and spheres]
Year 2	Mathematics	Number	• identify and describe the properties of 2-D shapes, including the number of sides, and line symmetry in a vertical line • identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces • identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] • compare and sort common 2-D and 3-D shapes and everyday object

Position and direction

Year 1	Mathematics	Numerical Patterns	• describe position, direction and movement, including whole, half, quarter and three-quarter turns
Year 2			• order and arrange combinations of mathematical objects in patterns and sequences • use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise)

Statistics

Analysing information

Year 2	Mathematics	• interpret and construct simple pictograms, tally charts, block diagrams and tables • ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity • ask-and-answer questions about totalling and comparing categorical data

Maths in Lower Key Stage 2

The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the 4 operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word-reading knowledge and their knowledge of spelling.

Number and Place Value

Counting

Year 3	Mathematics	• count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number • recognise the place value of each digit in a 3-digit number (100s, 10s, 1s) • compare and order numbers up to 1,000
Year 4	Mathematics	• count backwards through 0 to include negative numbers • count in multiples of 6, 7, 9, 25 and 1,000 • find 1,000 more or less than a given number

Identifying, Representing and Estimating Numbers

Year 3	Mathematics	• identify, represent and estimate numbers using different representations • read and write numbers up to 1,000 in numerals and in words • solve number problems and practical problems involving these ideas
Year 4	Mathematics	• recognise the place value of each digit in a four-digit number (1,000s, 100s, 10s, and 1s) • order and compare numbers beyond 1,000 • identify, represent and estimate numbers using different representations • round any number to the nearest 10, 100 or 1,000 • solve number and practical problems that involve all of the above and with increasingly large positive numbers • read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of 0 and place value

Number - Addition and Subtraction

Calculations

Year 3	Mathematics		• add and subtract numbers mentally, including: • a three-digit number and 1s • a three-digit number and 10s • a three-digit number and 100s • add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction.
Year 4	Mathematics	Number	• add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate

Solve Problems

Year 3	Mathematics	Numerical Patterns	• estimate the answer to a calculation and use inverse operations to check answers • solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction
Year 4	Mathematics	Numerical Patterns	• estimate and use inverse operations to check answers to a calculation • solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why

Number – Multiplication and division

Calculation

Year 3	Mathematics	• recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables • write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods
Year 4	Mathematics	• recall multiplication and division facts for multiplication tables up to 12 × 12 • use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers • recognise and use factor pairs and commutativity in mental calculations • multiply two-digit and three-digit numbers by a one-digit number using formal written layout

Solve Problems

Year 3	Mathematics	• solve problems, including missing number problems, involving multiplication and division.
Year 4	Mathematics	• solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by 1 digit.

Number - Fractions			
Recognising and making connections			
Year 3	Mathematics		• count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 • recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators • recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators • recognise and show, using diagrams, equivalent fractions with small denominators • add and subtract fractions with the same denominator within one whole • compare and order unit fractions, and fractions with the same denominators • solve problems that involve all of the above
Year 4	Mathematics	Decimals	• recognise and show, using diagrams, families of common equivalent fractions • count up and down in hundredths; recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10 • solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number • add and subtract fractions with the same denominator • recognise and write decimal equivalents of any number of tenths or hundreds • recognise and write decimal equivalents to 1/4 , 1/2 , 3/4 • find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths • round decimals with 1 decimal place to the nearest whole number • compare numbers with the same number of decimal places up to 2 decimal places • solve simple measure and money problems involving fractions and decimals to 2 decimal places

Measurement		
Compare and describe		
Year 3	Mathematics	• measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)
Year 4	Mathematics	• convert between different units of measure.
Measuring and calculating		
Year 3	Mathematics	• measure the perimeter of simple 2-D shapes. • add and subtract amounts of money to give change, using both £ and p in practical contexts.
Year 4	Mathematics	• measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres • find the area of rectilinear shapes by counting squares

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		• estimate, compare and calculate different measures, including money in pounds and pence

Telling the Time

Year 3	Mathematics	• tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks • estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight • know the number of seconds in a minute and the number of days in each month, year and leap year • compare durations of events
Year 4	Mathematics	• read, write and convert time between analogue and digital 12- and 24-hour clocks • solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days

Geometry

Properties of shape

Year 3	Mathematics	• draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them • recognise angles as a property of shape or a description of a turn • identify horizontal and vertical lines and pairs of perpendicular and parallel lines
Year 4	Mathematics	• compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes • identify acute and obtuse angles and compare and order angles up to 2 right angles by size • identify lines of symmetry in 2-D shapes presented in different orientations • complete a simple symmetric figure with respect to a specific line of symmetry

Position and direction

Year 3	Mathematics	• recognise that 2 right angles make a half-turn, 3 make three-quarters of a turn and 4 a complete turn; identify whether angles are greater than or less than a right angle. • recognise angles as a description of a turn.
Year 4	Mathematics	• describe positions on a 2-D grid as coordinates in the first quadrant. • describe movements between positions as translations of a given unit to the left/right and up/down. • plot specified points and draw sides to complete a given polygon.

Statistics

Analysing information

Year 3	Mathematics	• interpret and present data using bar charts, pictograms and tables • solve one-step and two-step questions [for example 'How many

		more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables
Year 4	Mathematics	• interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs • solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs

Maths in Upper Key Stage 2

The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of year 6, pupils should be fluent in written methods for all 4 operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

Number and Place Value

Counting

Year 5	Mathematics	• count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000 • interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through 0
Year 6	Mathematics	• All objectives are built upon, using the previous years objectives.

Identifying, Representing and Estimating Numbers

Year 5	Mathematics	• round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000 • read Roman numerals to 1,000 (M) and recognise years written in Roman numerals • read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit • solve number problems and practical problems
Year 6	Mathematics	• read, write, order and compare numbers up to 10,000,000 and determine the value of each digit • round any whole number to a required degree of accuracy • use negative numbers in context, and calculate intervals across 0 • solve number and practical problems that involve all of the above

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Number - Addition and Subtraction

Calculations

Year 5	Mathematics		• add and subtract whole numbers with more than 4 digits, including using formal written methods. • add and subtract numbers mentally with increasingly large numbers
Year 6	Mathematics	Number	• use their knowledge of the order of operations to carry out calculations involving the 4 operations. • perform mental calculations, including with mixed operations and large numbers

Solve Problems

Year 5	Mathematics	Numerical Patterns	• use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy • solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
Year 6			• solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why • solve problems involving addition and subtraction. • use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

Number – Multiplication and division

Calculation

Year 5	Mathematics	• identify multiples and factors, including finding all factor pairs of a number, and common factors of 2 numbers. • know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. • establish whether a number up to 100 is prime and recall prime numbers up to 19. • multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers. • multiply and divide numbers mentally, drawing upon known facts • divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context. • multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000 • recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})
Year 6	Mathematics	• identify common factors, common multiples and prime numbers. • multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication • divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context

			• divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context.
Solve Problems			
Year 5	Mathematics		• solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes. • solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. • solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.
Year 6	Mathematics		• solve problems involving multiplication and division. • use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

Number - Fractions			
Recognising and making connections			
Year 5	Mathematics		• compare and order fractions whose denominators are all multiples of the same number • identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths • recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, 2/5 + 4/5 = 6/5 = 1 1/5] • add and subtract fractions with the same denominator, and denominators that are multiples of the same number • multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams • read and write decimal numbers as fractions. • recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents • round decimals with 2 decimal places to the nearest whole number and to 1 decimal place • read, write, order and compare numbers with up to 3 decimal places • solve problems involving number up to 3 decimal places • recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per 100', and write percentages as a fraction with denominator 100, and as a decimal fraction • solve problems which require knowing percentage and decimal equivalents of ½, ¼, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25
Year 6	Mathematics	Decimals	• use common factors to simplify fractions; use common multiples to express fractions in the same denomination • compare and order fractions, including fractions >1 • add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions • multiply simple pairs of proper fractions, writing the answer in its

			simplest form
			· divide proper fractions by whole numbers
			· associate a fraction with division and calculate decimal fraction equivalents for a simple fraction
			· identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places
			· multiply one-digit numbers with up to 2 decimal places by whole numbers
			· use written division methods in cases where the answer has up to 2 decimal places
			· solve problems which require answers to be rounded to specified degrees of accuracy
			· recall and use equivalences between simple fractions, decimals and percentages, including in different contexts

Measurement

Compare and describe

Year 5	Mathematics	· convert between different units of metric measure [for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre]
		· understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints
		· estimate volume and capacity
Year 6	Mathematics	· use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to 3 decimal places
		· convert between miles and kilometres.

Measuring and calculating

Year 5	Mathematics	· measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres
		· calculate and compare the area of rectangles (including squares), including using standard units, square centimetres (cm²) and square metres (m²), and estimate the area of irregular shapes.
		· use all four operations to solve problems involving measure
Year 6	Mathematics	· recognise that shapes with the same areas can have different perimeters and vice versa
		· recognise when it is possible to use formulae for area and volume of shapes
		· calculate the area of parallelograms and triangles
		· calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other unit
		· solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 decimal places where appropriate

Telling the Time

Year 5	Mathematics	• solve problems involving converting between units of time
Year 6	Mathematics	• solve problems involving converting between units of time.

Geometry

Properties of shape

Year 5	Mathematics	• identify 3-D shapes, including cubes and other cuboids, from 2-D representations • know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles • draw given angles, and measure them in degrees (°) • identify: • angles at a point and 1 whole turn (total 360°) • angles at a point on a straight line and half a turn (total 180°) • other multiples of 90° • use the properties of rectangles to deduce related facts and find missing lengths and angles • distinguish between regular and irregular polygons based on reasoning about equal sides and angles
Year 6	Mathematics	• draw 2-D shapes using given dimensions and angles • recognise, describe and build simple 3-D shapes, including making nets • compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons • illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius • recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles

Position and direction

Year 5	Mathematics	• identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed
Year 6	Mathematics	• describe positions on the full coordinate grid (all 4 quadrants) • draw and translate simple shapes on the coordinate plane, and reflect them in the axes

Statistics

Analysing information

Year 5	Mathematics	• solve comparison, sum and difference problems using information presented in a line graph • complete, read and interpret information in tables, including timetables

| Year 6 | Mathematics | • interpret and construct pie charts and line graphs and use these to solve problems |
| | | • calculate and interpret the mean as an average |

Ratio and proportion

Identifying relationships

Year 6	Mathematics	• solve problems involving the relative sizes of 2 quantities where missing values can be found by using integer multiplication and division facts
		• solve problems involving the calculation of percentages [for example, of measures and such as 15% of 360] and the use of percentages for comparison
		• solve problems involving similar shapes where the scale factor is known or can be found
		• solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

Algebra

Representing variables.

Year 6	Mathematics	• use simple formulae
		• generate and describe linear number sequences
		• express missing number problems algebraically
		• find pairs of numbers that satisfy an equation with 2 unknowns
		• enumerate possibilities of combinations of 2 variables