



Mathematics Progressive Skills Document

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics and a sense of enjoyment and curiosity about the subject.

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains but pupils should make rich connections across mathematical ideas to develop core mathematical skills, fluency and applying mathematical reasoning and competence in solving increasingly sophisticated problems.

The national curriculum for mathematics aims to ensure that all pupils; become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately; reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language; can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Within maths, pupils will develop a deep understanding of Key Concepts and Second Order Concepts. These key concepts have been carefully considered and identified as the core knowledge and skills required to successfully achieve in maths. The key concepts are revisited and developed as the pupils move through the school to ensure their knowledge and skills are firmly embedded within their long term memory. These key concepts compliment work carried out across the school in line with the Aspiration Curriculum. The expectation is that, by the end of primary school, children will know and understand these key concepts and will give them a solid foundation ready to enter the maths curriculum at KS3.

In addition to the key concepts, the subject leaders have identified subject specific second order concepts. These can be used across all aspects of a subject to organise the substantive knowledge and skills taught.

Key Concepts :

- Number and Place Value
- Addition and Subtraction
- Multiplication and Division
- Fractions, Decimals and Percentages
- Geometry
- Statistics
- Shape
- Measures

Second Order Concepts: These can be used across all aspects of a subject to organise the substantive knowledge taught.

- Arithmetic Skills
- Fluency
- Application
- Reasoning and Problem Solving

For most pupils, the Mastery Approach is followed. The maths teaching sequence allows the skills needed to be able to achieve a particular objective to be broken down into small steps so that pupils are guided through the activity to allow success. Children will complete a range of fluency based activities before being able to apply in a reasoning and problem solving context. The core mathematical skills children require to achieve success are intertwined throughout each domain and consistently revisited to become embedded, rapid and automatic. It is crucial that teachers assess their children correctly at the end of each maths lesson to inform their future teaching and planning. Pupils are given the opportunity to meet the appropriate age related objectives as well as allowing those pupils to meet a greater depth of learning when appropriate. Any child working below their age related expectation will receive a tailored curriculum with personalised objectives taken from the Curriculum Assessment Toolkit, (CATs). This will enable all children to build upon the skills and knowledge needed to bridge the gap between themselves and their peers enabling them to reach their full potential.

By the end of Nursery, children will :

Have a deep understanding of numbers up to 5 being able to develop their skill of subitising up to 5 as well as matching numerals, accurately touch counting, verbally using the part whole model, reciting numbers and being introduced to the correct terminology of the numerical

system. Children will be confident in recognising 2D and 3D shapes as well as briefly describing their properties. Children will be able to identify and describe patterns, continue to make and copy patterns then spotting errors whilst using the concept of repetition. Furthermore, children can learn how to sort objects and numbers into groups as well as comparing against size, height, length and colour. Finally, children will describe a sequence of events using their day as a prompt.

By the end of EYFS, children will:

Have a secure understanding of Number and Numerical Patterns across the new EYFS Framework. Children will have a deep understanding of numbers to 10, being able to develop their skill of subitising up to 5 as well as automatically recalling number bonds up to 5 and even 10. Furthermore, children will be able to verbally count beyond 20, recognising the counting system, comparing quantities up to 10 in various contexts and exploring and representing numbers within 10, including odds, evens and doubles. The EYFS children will use every day language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects in order to help them solve problems. They will recognise, create and describe patterns, exploring characteristics of everyday objects and shapes, using their mathematical language to describe them.

By the end of Key Stage 1, children will :

Develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources, e.g. concrete objects and measuring tools. Pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. They should also use 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 their 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.

By the end of Lower Key Stage 2, children will :

Become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. They will develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers. Pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Pupils will have the opportunity to 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 instant recall of 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.

By the end of Upper Key Stage 2, children will :

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. 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. Pupils will classify shapes with increasingly complex geometric properties and that they learn the required vocabulary they need to describe them. By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages. Pupils should read, spell and pronounce mathematical vocabulary correctly.

Pedagogy

Through careful planning we aim to ensure that, during mathematic lessons, the children are given the opportunities to develop their basic skills; develop quick recall of number facts; carry out practical activities by using a range of manipulatives; apply through reasoning and problem solving; take part in individual, group and whole class activities, tasks and discussions; carry out open ended investigations and closed tasks; work with ICT when appropriate, calculators should be introduced near the end of KS2 when written methods and mental arithmetic strategies are secure; master formal, written calculation methods and develop their mathematical vocabulary and present a mathematical justification, argument or proof.

Progressive Objectives

Our progressive objectives show what pupils should know and be able to do in each aspect of mathematics by the end of each year group. The objectives are used to support planning and the ongoing assessments of pupils' work. The **Key Concepts** are developed across each topic of maths whereas the **Second Order Concepts** are used across all aspects of the subject to organise the substantive knowledge taught.

Year Group	Number and Place Value
Nursery	<p>Children subitise numbers up to 5.</p> <p>Children match numerals to an amount.</p> <p>Children recognise numerals up to 5.</p> <p>Children use the cardinal principle up to 5.</p> <p>Children use numicon to aid their understanding of numbers up to 5.</p> <p>Children show fingers up to 5.</p> <p>Children touch count numbers up to 10.</p> <p>Children recite numbers up to 10.</p> <p>Children compare amounts using numbers up to 5.</p> <p>Children are introduced to the one ness of one, the two ness of two and the three ness of three.</p>
EYFS	<p>Children begin using numbers and counting up to 5.</p> <p>Children compare quantities of identical objects and non-identical objects.</p> <p>Children begin using numbers and counting up to 10.</p> <p>Children compare groups of objects and numbers up to 10.</p> <p>Children are introduced to doubling, halving and sharing numbers and objects within numerical patterns.</p> <p>Children learn which numbers are odd and which numbers are even as well as understanding why.</p>
Year 1	<p>Count to hundred, forwards and backwards, beginning with 0 or 1, or from any given number.</p> <p>Count, read and write numbers to 100 in numerals and words.</p> <p>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.</p> <p>Given a number, identify one more or one less.</p> <p>Recognise odd and even numbers.</p>

	Count in multiples of twos, fives and tens.
Year 2	<p>Count in steps of 2, 3 and 5 from 0 and in tens from any number, forward and backward.</p> <p>Recognise the place value of each digit in a two digit number (tens, ones.)</p> <p>Identify, represent and estimate numbers to 100 using different representations including the number line.</p> <p>Read and write numbers to at least 100 in numerals and words.</p> <p>Compare and order numbers from 0 up to 100; use <, > and = signs.</p> <p>Partition any two-digit number into different combinations of tens and ones, explaining their thinking verbally, in pictures or using apparatus.</p> <p>Use place value and number facts to solve problems.</p>
Year 3	<p>Know that 10 tens are equivalent to 1 hundred, and that 100 is 10 times the size of 10; apply this to identify and work out how many 10s there are in other three-digit multiples of 10.</p> <p>Recognise the place value of each digit in three-digit numbers, and compose and decompose three-digit numbers using standard and non-standard partitioning.</p> <p>Compare and order numbers to 1000.</p> <p>Reason about the location of any three-digit number in the linear number system, including identifying the previous and next multiple of 100 and 10.</p> <p>Counts in multiples of 2, 3, 4, 5, 6, 8, 10, 50 and 100.</p> <p>Identify, represent and estimate numbers using different representations.</p> <p>Find 10 or 100 more or less than a given number.</p> <p>Read and write numbers up to 1000 in numerals and in words.</p> <p>Solve number problems and practical problems involving these ideas.</p>
Year 4	<p>Recognise the place value of each digit in four-digit numbers, and compose and decompose four-digit numbers using standard and non-standard partitioning.</p> <p>Reason about the location of any four-digit number in the linear number system, including identifying the previous and next multiple of 1,000 and 100, and rounding to the nearest of each.</p> <p>Know that 10 hundreds are equivalent to 1 thousand, and that 1,000 is 10 times the size of 100; apply this to identify and work out how many 100s there are in other four-digit multiples of 100.</p> <p>Count in multiples of 6, 7, 9. 25 and 1000.</p> <p>Find 1000 more or less than a given number.</p> <p>Count backwards through zero to include negative numbers.</p>

	<p>Recognise the place value of each digit in a four digit number (thousands, hundreds, tens and ones). Order and compare numbers beyond 1000. Identify, represent and estimate numbers using different representations. Round any number to the nearest 10, 100 or 1000. 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 zero and place value.</p>
Year 5	<p>Know that 10 tenths are equivalent to 1 one, and that 1 is 10 times the size of 0.1. Know that 100 hundredths are equivalent to 1 one, and that 1 is 100 times the size of 0.01. Know that 10 hundredths are equivalent to 1 tenth, and that 0.1 is 10 times the size of 0.01. Recognise the place value of each digit in numbers with up to 2 decimal places. Reason about the location of any number with up to 2 decimals places. Round to the nearest whole and tenth. Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 1 tenth or 1 hundredth). Read, write, order and compare numbers to at least 1000000 and determine the value of each digit. Read Roman numerals to 1000 (M) and recognise years written in Roman numerals. Count forwards or backwards in steps of powers of 10 for any given number up to 1000000. Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers including through zero. Round any number up to 1000000 to the nearest 10, 100, 1000, 10000 and 100000. Solve number problems and practical problems that involve all of the above.</p>
Year 6	<p>Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit including decimals up to 3dp. Round any whole number to a required degree of accuracy. Demonstrate place value for large numbers and decimals. Use negative numbers in context, and calculate intervals across zero. Solve number and practical problems that involve all of the above.</p>

Year Group	Addition and Subtraction
Nursery	<p>Children subitise using numbers up to 5.</p> <p>Children use the cardinal principle with numbers up to 5.</p> <p>Children recite numbers up to 10.</p> <p>Children touch count accurately up to 5.</p> <p>Children begin to learn how to use the part whole model verbally.</p> <p>Children combine two groups to find a whole.</p>
EYFS	<p>Children find one more and one less.</p> <p>Children find changes within 5.</p> <p>Children combine two groups to find the whole amount.</p> <p>Children are introduced to the part whole model and learning how to use it with numbers up to 10.</p> <p>Children learn how to add by counting on.</p> <p>Children learn how to take away by counting back.</p>
Year 1	<p>Represent and use number bonds and related subtraction facts (within 20).</p> <p>Add and subtract one digit numbers (to 20), including zero.</p> <p>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.</p> <p>Solve one step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = ? - 9$.</p>
Year 2	<p>Add and subtract any 2 two-digit numbers using an efficient strategy, explaining their method verbally, in pictures or using apparatus (e.g. $48 + 35$; $72 - 17$).</p> <p>Recall all number bonds to and within 10 and use these to reason with and calculate bonds to and within 20, recognising other associated additive relationships.</p> <p>Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.</p> <p>Recall and use addition and subtraction facts to 20 fluently and derive and use related facts up to 100.</p> <p>Show that the addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.</p> <p>Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two digit number and ones; a two digit number and tens; two two digit numbers; adding three one digit numbers.</p>

	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.
Year 3	<p>Add and subtracts mentally 3 digits, one, tens and hundreds.</p> <p>Apply place value knowledge to known additive and multiplicative number facts (scaling facts by 10), for example: $80 + 60 = 140$.</p> <p>Add, subtract and give change in practical contexts such as calculating change from £1.</p> <p>Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction.</p> <p>Add and subtract numbers mentally, including: a three-digit number and ones; a three-digit number and tens; a three digit number and hundreds.</p> <p>Estimate the answer to a calculation and use inverse operations to check answers.</p> <p>Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.</p>
Year 4	<p>Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.</p> <p>Estimate and use inverse operations to check answers to a calculation.</p> <p>Solve addition and subtraction two step problems in contexts, deciding which operations and methods to use and why.</p>
Year 5	<p>Add and subtract numbers with up to 2 d.p. (4 digit whole numbers).</p> <p>Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction).</p> <p>Add and subtract numbers mentally with increasingly large numbers.</p> <p>Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.</p> <p>Solve addition and subtraction multi-step problems in contexts deciding which operations and methods to use and why.</p>
Year 6	<p>Solve addition and subtraction multi step problems in contexts, deciding which operations and methods to use and why.</p> <p>Solve problems with multi-steps involving addition and subtraction.</p> <p>Use estimation to check answers to calculations and determine in the context of a problem, an appropriate degree of accuracy.</p> <p>Use knowledge of the order of operations (BODMAS) to carry out calculations involving the four operations.</p> <p>Perform mental calculations using efficient strategies to simplify calculations where appropriate, including with mixed operations and large numbers.</p>

Year Group	Multiplication and Division
Nursery	<p>Children arrange up to 4 objects.</p> <p>Children learn how to sort two objects in different ways.</p> <p>Children learn how to sort into 2 groups using colour, size and objects.</p> <p>Children then sort into 3 groups using colour, size and objects.</p>
EYFS	<p>Children continue learning how to sort objects into groups.</p>
Year 1	<p>Count in multiples of twos, fives and tens.</p> <p>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.</p>
Year 2	<p>Recall multiplication and division facts for 2, 5 and 10 and use them to solve simple problems, demonstrating an understanding of commutativity as necessary.</p> <p>Recognising odd and even numbers.</p> <p>Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (\div) and equals (=) sign.</p> <p>Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and division facts, including problems in contexts.</p> <p>Show that the multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.</p>
Year 3	<p>Recall and use multiplication and division facts for multiplication tables x3, x4 and x8.</p> <p>To count from 0 in multiples of 4, 8, 50 and 100.</p> <p>Write and calculate mathematical statements for multiplication and division using the multiplication tables they know, including for two -digit numbers times one-digit numbers, using mental and progressing to formal written methods.</p> <p>Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objectives.</p>
Year 4	<p>Recall and use multiplication and division facts for multiplication tables x3, x4 and x8.</p> <p>Recall and use multiplication and division facts for multiplication tables up to 12 x 12.</p> <p>Multiply two digit and three digit numbers by a one digit number using formal written layout.</p> <p>Divide two and three digit numbers by a one digit number using an informal method and interpret remainders.</p> <p>Divide two and three digit numbers by a 1 digit number using short division.</p> <p>Multiply and divide whole numbers by 10 and 100.</p>

	<p>Count in multiples of 6, 7, 9, 25 and 1000.</p> <p>Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers.</p> <p>Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.</p> <p>Recognise and use factor pairs and commutativity in mental calculations.</p>
Year 5	<p>Multiply and divide numbers by 10 and 100; understand this as equivalent to making a number 10 or 100 times the size, or 1 tenth or 1 hundredth times the size.</p> <p>Find factors and multiples of positive whole numbers, including common factors and common multiples, and express a given number as a product of 2 or 3 factors.</p> <p>Multiply any whole number with up to 4 digits by any one-digit number using a formal written method.</p> <p>Divide a number with up to 4 digits by a one-digit number using a formal written method, and interpret remainders appropriately for the context.</p> <p>Multiply and divide numbers with up to 2dp by 10, 100 and 1000.</p> <p>Establish whether a number up to 100 is prime and recall prime numbers up to 19.</p> <p>Multiply and divide numbers mentally drawing upon known facts.</p> <p>Multiply and divide whole numbers by 10, 100 and 1000.</p> <p>Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.</p> <p>Recognise and use square numbers and cube numbers and the notation for squared (2) and cubed (3).</p> <p>Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.</p> <p>Multiply numbers up to 4 digits by a one or two digit number using a formal written method, including long multiplication for 2 digit numbers.</p> <p>Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes.</p> <p>Solve problems involving multiplication and division and a combination of these, including understanding the use of the equals sign.</p>
Year 6	<p>Multiply multi-digit number up to 4 digits by a 2 digit number using the formal written method of long multiplication.</p> <p>Divide numbers up to 4 digits by a 2 digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, decimals (up to 2dp) or by rounding as appropriate for the context.</p>

	<p>Divide numbers up to 4 digits by a 2 digit number using the formal written method of short division, interpreting remainders according to context.</p> <p>Perform mental calculations using efficient strategies to simplify calculations where appropriate, including with mixed operations and large numbers.</p> <p>Identify common factors, common multiples and prime numbers.</p> <p>Solve problems with multi-steps involving multiplication and division.</p> <p>Use knowledge of the order of operations (BODMAS), to carry out calculations involving the four operations.</p> <p>Use estimation to check answers to calculations and determine in the context of a problem, an appropriate degree of accuracy.</p>
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Year Group	Fractions, Decimals and Percentages
Nursery	
EYFS	
Year 1	<p>Recognise, find and name a half as one of two equal parts of an object, shape or quantity.</p> <p>Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.</p>
Year 2	<p>Identify $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$, $\frac{2}{4}$, $\frac{3}{4}$, of a number or shape, and know that all parts must be equal parts of the whole.</p> <p>Write simple fractions for example, $\frac{1}{2}$ of 6 = 3.</p> <p>Recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and of a length, shape, set of objects or quantity.</p> <p>Recognise the equivalence of two quarters and one half.</p>
Year 3	<p>Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.</p> <p>Add and subtract fractions with the same denominator within one whole.</p> <p>Recognise and show, using diagrams, equivalent fractions with small denominators.</p> <p>Compare and order unit fractions, and fractions with the same denominators.</p> <p>Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators.</p> <p>Count up and down in tenths.</p> <p>To recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10.</p> <p>Solve problems that involve all of the above.</p>

<p>Year 4</p>	<p>Recognise and show, using diagrams, families of common equivalent fractions. Add and subtract fractions with the same denominator. Recognise and write decimal equivalents of any number of tenths or hundredths. Recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$. Find the effect of dividing a one or two digit number by 10 or 100, identifying the value of the digits in the answer as ones, tenths and hundredths. Round decimals with one decimal place to the nearest whole number. Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. 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.</p>
<p>Year 5</p>	<p>Compare and order fractions whose denominators are 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. 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. Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates. Read and write decimal numbers as fractions, e.g. $0.71 = \frac{71}{100}$. Read, write, order and compare numbers with up to three decimal places. Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents Round decimals with two decimal places to the nearest whole number and to one decimal place. Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal. Solve problems which require knowing percentage and decimal equivalents of and those fractions with a denominator of a multiple of 10 or 25.</p>
<p>Year 6</p>	<p>Compare and order fractions, including fractions > 1. Add and subtract fractions with different denominations and mixed numbers, using the concept of equivalent fractions. Multiply simple pairs of proper fractions, writing the answer in its simplest form, e.g. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$.</p>

	<p>Divide proper fractions by whole numbers, e.g. $1/3 \div 2 = 1/6$.</p> <p>Recall and use equivalences between simple fractions, decimals and percentages, expressing as equivalent quantities.</p> <p>Calculate using decimals, fractions and percentages.</p> <p>Identify the value of each digit in numbers given to three decimal places and multiply numbers by 10, 100 and 1000 giving answers up to 3dp.</p> <p>Multiply one digit numbers with up to 2dp by whole numbers.</p> <p>Use written division methods in cases where the answer has up to two decimal places.</p> <p>Solve problems involving the calculation of percentages, e.g. of measures and such as 15% of 360, and the use of percentages for comparison.</p> <p>Use common factors to simplify fractions; use common multiples to express fractions in the same denomination.</p> <p>Generate and describe linear number sequences (with fractions).</p> <p>Associate a fraction with division and calculate decimal fraction equivalents for example, $0.375 = 3/8$.</p> <p>Solve problems which require answers to be rounded to specified degrees of accuracy.</p> <p>Recall and use equivalences between simple fractions, decimals and percentages including in different contexts.</p>
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Year Group	Geometry
Nursery	Children begin to understand positional language.
EYFS	Children recap positional language. Children begin to understand spatial awareness.
Year 1	Describe position, direction and movement, including whole, half, quarter and three quarter turns.
Year 2	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). Order and arrange combinations of mathematical objects.
Year 3	Recognise angles as a property of shape or a description of a turn. Identify right angles, recognise that two right angles make a half-term, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle. Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.

Year 4	<p>Identify acute and obtuse angles and compare and order angles up to two right angles by size.</p> <p>Describe positions on a 2D grid as coordinates in the first quadrant.</p> <p>Describe movements between positions as translations of a given unit to the left/ right and up/ down.</p>
Year 5	<p>Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.</p> <p>Draw given angles, and measure them in degrees (o).</p> <p>Children identify angles at a point and one whole turn, (total 360°), angles at a point on a straight line and ½ a turn, (total 180°) and other multiples of 90°.</p> <p>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.</p>
Year 6	<p>Describe positions on the full coordinate grid (all four quadrants).</p> <p>Draw and translate simple shapes on the coordinate plane and reflect them in the axes.</p> <p>Use simple formulae.</p> <p>Find pairs of numbers that satisfy an equation with two unknowns.</p> <p>Enumerate possibilities of combinations of two variables.</p> <p>Generate and describe linear number sequences expressing missing number sequences and number problems algebraically.</p> <p>Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.</p> <p>Solve problems involving similar shapes where the scale factor is known or can be found.</p> <p>Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.</p>

Year Group	Statistics
Nursery	
EYFS	
Year 1	
Year 2	<p>Interpret and construct simple pictograms, tally charts, block diagrams and simple tables.</p> <p>Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.</p> <p>Ask and answer questions about totalling and comparing categorical data.</p>
Year 3	<p>Interpret and present data using bar charts, pictograms and tables.</p>

	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	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.
Year 5	Complete, read and interpret information in tables including timetables. Solve comparison, sum and difference problems using information presented in a line graph.
Year 6	Interpret and construct pie charts and line graphs and use these to solve problems. Calculate the mean as an average. Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.

Year Group	Shape
Nursery	Children identify and discuss the basic properties of 2D and 3D shapes. Children identify and describe patterns. Children make a pattern trajectory. Children continue to make and copy patterns as well as spotting errors. Children are introduced to repetition.
EYFS	Children are introduced to 2D shapes and 3D shapes learning their names and recognising them. Children begin making simple patterns then once confident, explore more complex patterns.
Year 1	Recognise and name common 2D and 3D shapes, including rectangles, squares, circles and triangles, cuboids, pyramids and spheres.
Year 2	Name and describe properties of 2-D and 3-D shapes, including number of sides, vertices, edges, faces and lines of symmetry. Describe similarities and differences of 2-D and 3-D shapes, using their properties. Identify 2D shapes on the surface of 3D shapes, e.g. a circle on a cylinder and a triangle on a pyramid. Compare and sort common 2D and 3D shapes and everyday objects. Order and arrange combinations of mathematical objects in patterns and sequences.

Year 3	Draw 2-D shapes and make 3- D shapes using modelling materials. Recognise 3-D shapes in different orientations and describe them.
Year 4	Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes. Identify lines of symmetry in 2D shapes presented in different orientations. Distinguish between regular and irregular polygons based on reasoning about equal sides and angles. Complete a simple symmetric figure with respect to a specific line of symmetry. Children plot specified points and draw sides to complete a given polygon.
Year 5	Identify 3D shapes, including cubes and other cuboids, from 2D representations. Distinguish between regular and irregular polygons based on reasoning about equal sides and angles. Use the properties of rectangles to deduce related facts and find missing lengths and angles.
Year 6	Illustrate and name parts of circles, including radius, diameter and circumference and know that diameter is twice the radius. Draw 2D shapes using given dimensions and angles. Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals and regular polygons. Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.

Year Group	Measurement
Nursery	Children compare size, height, length and colour. Children describe a sequence of events.
EYFS	Children learn about their day and when events occur. Children are introduced to length, height, distance, weight, volume and capacity using numbers, objects and practical exploration.
Year 1	Compare, describe and solve practical problems for: lengths and heights for example, long/ short, longer/shorter, tall/short, double/half. Measure and begin to record lengths and heights. Compare, describe and solve practical problems for mass/weight, e.g. heavy/light, heavier than, lighter than; capacity and volume, e.g. full/empty, more than, less than, half, half full, quarter. Measure and begin to record mass/weight, capacity and volume.

	<p>Recognise and know the value of different denominations of coins and notes.</p> <p>Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.</p> <p>Recognise and use language relating to dates, including days of the week, weeks, months and years.</p> <p>Compare, describe and solve practical problems for time, e.g. quicker, slower, earlier, later.</p> <p>Measure and begin to record time (hours, minutes, seconds).</p> <p>Sequence events in chronological order using language, e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening.</p>
Year 2	<p>Use different coins to make the same amount.</p> <p>Recognise and use symbols of pounds (£) and pence (p); combine amounts to make a particular value.</p> <p>Find different combinations of coins that equal the same amounts of money.</p> <p>Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.</p> <p>Read scales in divisions of twos, fives and tens.</p> <p>Read scales where not all numbers on the scale are given and estimate points in between.</p> <p>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.</p> <p>Know the number of minutes in an hour and the number of hours in a day.</p> <p>Compare and sequence intervals of time.</p> <p>Choose and use appropriate standard units to estimate and measure capacity (litres/ml) and temperature (°C) to the nearest appropriate unit, using thermometers and measuring vessels.</p> <p>Compare and order volume/capacity and record the results using >, < and =.</p> <p>Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm) and mass (kg/ g) to the nearest appropriate unit, using rulers and scales.</p> <p>Compare and order length and mass and record the results using >, < and =.</p>
Year 3	<p>Solve simple measure and money problems involving fractions and decimals to two decimal places.</p> <p>Add and subtract amounts of money to give change, using both £ and p in practical contexts.</p> <p>Estimate, compare and calculate different measures, including money in pounds and pence.</p> <p>Tell and write the time from an analogue clock, including using Roman numerals and 12-hour and 24-hour clocks.</p> <p>Estimate and read time with increasing accuracy to the nearest minute.</p> <p>Record and compare time in terms of seconds, minutes and hours.</p>

	<p>Use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight.</p> <p>Know the number of seconds in a minute and the number of days in each month, year and leap year.</p> <p>Compare durations of events, e.g. to calculate the time taken by particular events or tasks.</p> <p>Measure, compare, add and subtract: lengths, (m/cm/mm) and mass (kg/g); volume/capacity (l/ml).</p> <p>Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.</p> <p>Measure the perimeter of simple 2D shapes.</p> <p>Continue to measure using the appropriate tools and units, progressing to using a wider range of measures, including comparing and using mixed and simple equivalents of mixed units.</p>
Year 4	<p>Solve simple measure and money problems involving fractions and decimals to two decimal places.</p> <p>Estimate, compare and calculate different measures, including money in pounds and pence.</p> <p>Read, write and convert time between analogue and digital 12 and 24 hour clocks.</p> <p>Convert between different units of measure, e.g. hour to minute.</p> <p>Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days</p> <p>Convert between different units of measure, e.g. kilometre to metre.</p> <p>Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres.</p> <p>Find the area of rectilinear shapes by counting squares.</p>
Year 5	<p>Measure and calculate the perimeter of composite rectilinear shapes in cm and m.</p> <p>Calculate and compare the area of rectangles (including squares), and including using standard units, cm² ,m² estimate the area of irregular shapes.</p> <p>Convert between different units of metric measure, e.g. km and m; cm and m; cm and mm; g and kg; l and ml.</p> <p>Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.</p> <p>Estimate volume, e.g. using 1cm³ blocks to build cuboids, including cubes, and capacity, e.g. using water.</p> <p>Use all four operations to solve problems involving measure.</p> <p>Solve problems involving converting between units of time.</p>
Year 6	<p>Children solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate.</p> <p>Children 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 3dp.</p>

	<p>Children convert between imperial units and vice versa, e.g. miles and kilometres.</p> <p>Children recognise that shapes with the same areas can have different perimeters and vice versa.</p> <p>Children recognise when it is possible to use formulae for area and volume of shapes.</p> <p>Children calculate, estimate and compare volume of cubes and cuboids using standard units including cm^3, m^3 and extending to other units, (mm^3, km^3).</p> <p>Children calculate the area of parallelograms and triangles.</p>
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