Barnburgh Primary Academy

Maths

Progression Document

maths mathematician

INTENT

'Pure mathematics is, in its way, the poetry of logical ideas'
Albert Einstein

At **Barnburgh Primary Academy**, we aim to develop pupils who are confident, curious, and resilient mathematicians, with a deep understanding of how mathematics shapes the world around them. Teaching mathematics is vital as it underpins everyday life and equips our children with the skills needed to reason, problem-solve, and think logically. Through our mathematics curriculum, pupils develop a secure understanding of number, pattern, and structure, enabling them to make sense of the world and apply their learning across a range of contexts. Mathematics also fosters creativity, curiosity, and perseverance, encouraging children to explore ideas, make connections, and develop a lifelong appreciation for the subject. In doing so, we aim to inspire Truly Great mathematicians who are equipped with the knowledge, skills, and confidence to succeed in education, employment, and everyday life.

We believe at Barnburgh that all children can master mathematics through the dedicated support and expertise of our staff. By fostering a culture where hard work and perseverance are valued, we ensure that every pupil is encouraged to succeed. Our teaching places a strong emphasis on revealing the structure of mathematics, helping children understand not only how to perform calculations, but also why mathematical concepts work. We recognise the importance of memorisation and regular practice of key facts, such as times tables and number bonds, as essential building blocks for mathematical fluency. Additionally, we teach children to use precise mathematical language consistently, supporting their ability to reason, communicate, and think confidently as mathematicians. All children are encouraged to develop and apply a broad range of mathematical skills, both within lessons and across the wider curriculum. Pupils are supported to recall known facts, reason logically, problem-solve, question effectively, and investigate mathematical ideas with curiosity. They are guided to become independent learners, confidently exploring possible solutions and selecting methods that best suit their thinking. Subject-specific vocabulary is explicitly taught and reinforced, enabling pupils to communicate their ideas with clarity and precision. Concepts are revisited and deepened as children progress through their mathematical journey, ensuring that they can draw on a variety of strategies and recall key knowledge to solve problems independently and confidently.

Our Core Values provide the platform on which we have built our curriculum offer at Barnburgh Primary Academy. Our Mathematics curriculum is underpinned by our Core Values in the following ways:

COURAGE
We teach our children to show courage in mathematics by encouraging them to explore new concepts, take risks, and share their mathematical thinking with confidence. Pupils are supported to question, investigate, and adopt a trial-and-error approach when solving problems, understanding that mistakes are an essential part of learning and mastery.

PERSEVERANCE
We teach our children perseverance in mathematics by guiding them to work through challenging problems and develop resilience when answers are not immediate. Through reasoning, practice, and reflection, pupils learn that success in mathematics requires dedication, effort, and the willingness to try different strategies.

AMBITION
We teach our children ambition in mathematics by encouraging them to aim high and continuously build on their prior knowledge. Pupils are motivated to deepen their understanding, develop rapid and accurate recall of key facts, and apply a range of mathematical methods confidently. We inspire them to push beyond what they believe is possible and achieve their full potential.

RESPECT
We teach our children respect in mathematics by valuing the ideas, methods, and achievements of others. Pupils learn to respect mathematical equipment, resources, and shared learning environments. They also develop an understanding of the importance of mathematics in everyday life and its role in future employment and financial literacy.

INDEPENDENCE
We teach our children independence in mathematics by enabling them to take ownership of their learning. Pupils are encouraged to select appropriate methods, recall and apply known facts, and explain their reasoning using precise mathematical language. This empowers them to become confident problem-solvers who can apply mathematics across the curriculum and in real-life situations.

Implementation

PURPOSE OF STUDY

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.

AIMS

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 nonroutine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

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 fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

EARLY LEARNING GOALS THAT LINK MOST CLOSELY TO THE MATHS NATIONAL CURRICULUM

The EYFS Framework states for Mathematics:

Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding - such as using manipulatives, including small pebbles and tens frames for organising counting - children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes.

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 four 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.

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 four 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.

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 four operations, including long multiplication and division, and in working with fractions, decimals and percentages. Pupils should read, spell and pronounce mathematical vocabulary correctly.

IMPLEMENTATION

To ensure high standards of the teaching and learning in maths, Barnburgh Primary Academy implement a curriculum that is progressive throughout the school. Planning for maths is a process in which all teachers ensure that the school gives full coverage of 'The 2014 National Curriculum' programmes of study or the EYFS Framework.

At Barnburgh Primary Academy, when teaching maths, the whole class moves through topics and lessons at broadly the same pace, starting from the same point. All children are given the same opportunities and the support or intervention given, will vary from lesson to lesson. Each topic is studied in depth and the teacher does not move to the next stage until children demonstrate that they have a secure understanding of the mathematical concepts. Students are given time to think deeply about the maths and really understand concepts at a relational level, rather than as a set of rules or procedures. This slower pace leads to greater progress because it ensures that students are secure in their understanding and teachers don't need to revisit topics once they have been covered in depth.

At Barnburgh Primary Academy, we believe that every child deserves the chance to shine. We believe that teaching maths for mastery offers all pupils access to the full maths curriculum. This inclusive approach, and its emphasis on promoting multiple methods of solving a problem, builds self-confidence, enjoyment and resilience in pupils. Though the whole class goes through the same content at roughly the same pace, there is still plenty of opportunity for differentiation. Those pupils who grasp concepts quickly are challenged to complete varying representations of the fluency aspect, before apply their learning to a reasoning context. Those children who are not sufficiently fluent are provided with additional support to consolidate their understanding before moving on. This element is in the form of same day intervention, both in class during the lesson or as a follow up intervention if needed.

KS1 and KS2

Each week, children across KS1 and KS2 will have five maths sessions.
Three sessions are fluency maths learning, the fourth session focuses on solving reasoning problems and the fifth is an arithmetic session.
<u>During each fluency or reasoning maths session, children will experience:</u>

- Whole class input (high quality modelling with whiteboard work and use of concrete resources where appropriate)
- Differentiation (through support, use of manipulatives and questioning)
- Same day intervention (immediate intervention) or progression onto varied fluency after the teaching input where needed
- Challenge in the form of applying their learning to an independent reasoning problem
- Live marking with instant feedback and challenge where appropriate

<u>During skills/arithmetic sessions children will have opportunities to:</u>

- Practice their fundamental mathematical skills
- Practice arithmetic style questions or multiplication questions, with a focus on the Year 4 multiplication check where appropriate

At Barnburgh Primary Academy we strive to promote children's independence and for all children to take responsibility in their own learning. Each of our young mathematicians has their own maths book, where their learning is recorded in a variety of forms.

EYFS

Mathematics involves providing children with opportunities to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems; and to describe shape, spaces and measures. The three prime areas of EYFS: communication and language, physical development and personal, social and emotional development, should be strengthened and applied through mathematics.
<u>Nursery:</u>
Use the 'Birth to 5' document to support teaching the EYFS curriculum. The children have 10–15-minute daily maths sessions that are consecutive and then where possible, there is a maths focused group time every week. Group time can be 1-1 or in small groups of up to 4, depending on the intent of the session.

<u>Reception:</u>
Use White Rose maths as a guide but also focus on the maths areas of learning within the EYFS. Maths is taught four morning sessions a week. Children start with concrete tasks guided by an adult in small groups. They then progress onto an independent task that is usually pictorial, although sometimes this is another concrete task (for example, when working with shapes). The following session, the second guided piece of work is concrete/abstract and so is the teaching input. The independent task is then pictorial/abstract. For children who are then confident, the teacher provides a challenge task where appropriate. On a Friday, either the class teacher or TA carries out feedback with individuals or small groups, to address any misconceptions or to further embed learning through interventions.
The maths area within the EYFS provision supports basic skills and the importance of embedding these skills. The EYFS has a large focus on children having a deep understanding of number and counting, rather than being able to count to high numbers by rote. Correct vocabulary linked to maths is used throughout the provision too.

IMPACT

The successful approach at Barnburgh Primary Academy results in a fun, engaging, high-quality maths education, that provides children with the foundations for understanding the world of maths and the connections between mathematics and other areas of the curriculum. At Barnburgh Primary Academy, pupils demonstrate their mathematical learning and understanding each day, in every lesson. In line with our assessment policy, data for pupil's attainment and progress in maths is collected 3 times a year and is based on both the class teachers' formative assessments as well as summative assessment results from each term. Throughout the year, pupil voice is used, alongside book looks, to monitor the day-to-day view of maths in the classroom, the effectiveness of the structure and to help review children's learning and progress.

Formative assessment takes place in every single maths lesson and is achieved through targeted questioning, observations of pupils, discussions or use of self-assessment from the children, as well as reviewing whiteboard work or practical activities which are completed in the initial teaching input.

Summative assessments are completed by the children each term in every year group, with Years 2 and 6 completing the national curriculum tests and the remainder of the school completing assessments with follow the White Rose Scheme. Year 6 complete previous maths SATs papers each half term. In EYFS, teacher assessments are made against the EYFS Framework and our progression document.

Examples of our mathematicians' work and their attitudes towards maths learning, can be seen our classrooms and in maths books.

Long Term Plan 2025-2026

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
YEAR 1	• Number - Place value (within 10) • Number - Addition and subtraction (within 10) • Geometry - Shape		• Number - Place value (within 20) • Number - Addition and subtraction (within 20) • Number - Place value (within 50) • Measurement - Length and height • Measurement - Mass and volume		• Number – Multiplication and division • Number – fractions • Geometry – Position and direction • Number – Place value (within 100) • Measurement – Money • Measurement - Time	
CROSS CURRICULAR LINKS						
ENRICHMENT						
YEAR 2	• Number - Place value • Number - Addition and subtraction • Geometry - Shape		• Measurement – Money • Number – Multiplication and division • Measurement - Length and height • Measurement – Mass, capacity and temperature		• Number – Fractions • Measurement – Time • Statistics • Geometry – Position and direction	
CROSS CURRICULAR LINKS						
ENRICHMENT						
YEAR 3	• Number - Place value • Number - Addition and subtraction • Number – Multiplication and division		• Number – Multiplication and division • Measurement – Length and perimeter • Number – Fractions • Measurement – Mass and capacity		• Number – Fractions • Measurement – Money • Measurement – Time • Geometry – Shape • Statistics	
CROSS CURRICULAR LINKS						
ENRICHMENT						
YEAR 4	• Number - Place value • Number - Addition and subtraction • Measurement – Area • Number – Multiplication and division		• Number – Multiplication and division • Measurement – Length and perimeter • Number – Fractions • Number – Decimals		• Number – Decimals • Measurement – Money • Measurement – Time • Geometry – Shape • Statistics • Geometry – Position and direction	
CROSS CURRICULAR LINKS						
ENRICHMENT						
YEAR 5	• Number - Place value • Number - Addition and subtraction • Number – Multiplication and division • Number – Fractions		• Number – Multiplication and division • Number – Fractions • Number – Decimals and percentages • Measurement – Perimeter and area • Statistics		• Geometry – Shape • Geometry – Position and direction • Number – Decimals • Number – Negative numbers • Measurement – Converting units • Measurement - Volume	
CROSS CURRICULAR LINKS						
ENRICHMENT						
YEAR 6	• Number - Place value • Number – Addition, subtraction, multiplication and division • Number – Fractions • Measurement – Converting units		• Number – Ratio • Number – Algebra • Number – Decimals • Number – Fractions, decimals and percentages • Measurement – Area, perimeter and volume • Statistics		• Geometry – Shape • Geometry – Position and direction	
CROSS CURRICULAR LINKS						
ENRICHMENT						

Place Value Progression

COUNTING

	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
PROGRAMME OF STUDY		• Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number • Count numbers to 100 in numerals; count in multiples of twos, fives and tens	• Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward	• Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number	• Count in multiples of 6, 7, 9, 25 and 1000 • Count backwards through zero to include negative numbers	• Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 • Count forwards and backwards with positive and negative whole numbers, including through zero	

REPRESENT

	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
ROGRAMME OF STUDY		• Identify and represent numbers using objects and pictorial representations • Read and write numbers to 100 in numerals • Read and write numbers from 1 to 20 in numerals and words	• Read and write numbers to at least 100 in numerals and in words • Identify, represent and estimate numbers using different representations, including the number line	• Identify, represent and estimate numbers using different representations • Read and write numbers up to 1000 in numerals and in words	• Identify, represent and estimate numbers using different representations • Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value	• Read, write, (order and compare) numbers to at least 1 000 000 and determine the value of each digit • Read Roman numerals to 1000 (M) and recognise years written in Roman numerals	Read, write, (order and compare) numbers up to 10 000 000 and determine the value of each digit

USE AND COMPARE

	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
DY		• Given a number, identify one more and one less	• Recognise the place value of each digit in a two-digit number (tens, ones) • Compare and order numbers from 0 up to 100; use <, > and = signs	• Recognise the place value of each digit in a three-digit number (hundreds, tens, ones) • Compare and order numbers up to 1000	• Find 1000 more of less than a given number • Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, ones) • Order and compare numbers beyond 1000	• (Read, write) Order and compare numbers to at least 1,000,000 and determine the value of each digit	• (Read, write) Order and compare numbers to at least 10,000,000 and determine the value of each digit
PROGRAMME OF STUDY							

PROBLEMS/ROUNDING

	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
PROGRAMME OF STUDY			• Use place value and number facts to solve problems	• Solve number problems and practical problems involving these ideas	• 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	• Interpret negative numbers in context • Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000 • Solve problems and practical problems that involve all of the above	• Round any whole number to a required degree of accuracy • Use negative numbers in context, and calculate intervals across zero • Solve number and practical problems that involve all of the above

PLACE VALUE VOCABULARY

	Count, subitise, order, ordinal, compare, forwards, backwards, numeral, digit, one more, one less, equal to, more than, less than, fewer	Sort, represent, multiples, partitioning, ones, tens	Count in steps, count in multiples, place value, estimate, compare	Ascending, descending, 10 or 100 more, 10 or 100 less, hundreds	Negative numbers, roman numerals, 1000 more, 1000 less, thousands, round	Ten thousands, hundred thousands, powers of, integer	Millions, ten millions

Addition and Subtraction Progression

CALCULATIONS

	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
PROGRAMME OF STUDY		• Add and subtract one-digit and two-digit numbers to 20, including zero	• 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	• Add and subtract numbers mentally, including: - a three-digit number and ones - a three-digit number and tens - a three-digit number and hundreds • Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	• Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	• Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) • Add and subtract numbers mentally with increasingly large numbers	• Perform mental calculations, including with mixed operations and large numbers • Use their knowledge of the order of operations to carry out calculations involving the four operations

PROBLEMS

	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
ROGRAMME OF STUDY		• Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ___ - 9	• 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	• Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction	• Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	• Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why • Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign	• Solve addition ad subtraction multi-step problems in contexts, deciding which operations and methods to use and why

ADDITION AND SUBTRACTION VOCABULARY

	Add, plus, altogether, total, take away, minus, number bonds, part, whole, digit	Addition, add, subtract, difference, equals, facts, problems, missing numbers, 2-digit number, inverse	Sum, 3-digit number, commutative	Column addition, column subtraction, exchange, estimate	4-digit number, operations, methods,	5-digit number	6-digit number

Multiplication and Division Progression

RECALL/USE

	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
PROGRAMME OF STUDY			• Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers • Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	• Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	• 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 three numbers • Recognise and use factor pairs and commutativity in mental calculations	• Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers • Know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers • Establish whether a number up to 100 is prime and recall prime numbers up to 19 • Recognise and use square numbers and cube numbers, and the notation for squared (²) and cubed (³)	• Identify common factors, common multiples and prime numbers • Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

CALCULATIONS

	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
ROGRAMME OF STUDY		•	• Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs	• 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	• Multiply two-digit and three-digit numbers by a one-digit number using formal written layout	• 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 1000	• Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication • Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context • Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context • Perform mental calculations, including with mixed operations and large numbers

PROBLEMS

	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
PROGRAMME OF STUDY		• 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	• Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	• 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 objects	• 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	• Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes • Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	• Solve problems involving addition, subtraction, multiplication and division

COMBINED

	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
PROGRAMME OF STUDY						• Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign	• Use their knowledge of the order of operations to carry out calculations involving the four operations

MULTIPLICATION AND DIVISION VOCABULARY

	Double, half, twice as many, equal, unequal, share, group, odd, even	Multiplication, division, arrays	Multiplication tables, commutative, repeated addition	Exchange, mathematical statements, missing number problems, integer scaling problems, correspondence problems, derived facts	Factor pairs, formal written method, column multiplication, bus-stop method, short division, distributive law, remainders	Multiples, factors, prime numbers, square numbers, cube numbers, short division, product, divisor, operations	Multi-digit numbers, long division

Fractions Progression

RECOGNISE AND WRITE

	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
PROGRAMME OF STUDY		• Recognise, find and name a half as one of two equal parts of an object, shape or quantity • Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity	• Recognise, find, name and write fractions 1/3, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity	• 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	• Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten	• 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]	

COMPARE

	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
ROGRAMME OF STUDY			• Recognise the equivalence of 2/4 and 1/2	• Recognise and show, using diagrams, equivalent fractions with small denominators • Compare and order unit fractions, and fractions with the same denominators	• Recognise and show, using diagrams, families of common equivalent fractions	• Compare and order fractions whose denominators are all multiples of the same number	• Use common factors, to simplify fractions; use common multiples to express fractions in the same denomination • Compare and order fractions, including fractions >1

CALCULATIONS

	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
PROGRAMME OF STUDY			• Write simple fractions for example, 1/2 of 6 = 3	• Add and subtract fractions with the same denominator within one whole [for example, 5/7 + 1/7 = 6/7]	• Add and subtract fractions with the same denominator	• 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	• 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 [for example, 1/4 x 1/2 = 1/8] • Divide proper fractions by whole numbers [for example, 1/3 ÷ 2 = 1/6]

SOLVE PROBLEMS

	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
PROGRAMME OF STUDY				• Solve problems that involve all of the above	• 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		

FRACTIONS VOCABULARY

		Whole, half, quarter, equal parts	Three quarters, third, equivalent fractions, unit fractions, non-unit fractions, numerator, denominator, one whole	Tenths,	Hundredths, convert, proper fractions, improper fractions	Fifth, thousandths, mixed numbers, factors, integers	

Decimals Progression

RECOGNISE, WRITE, COMPARE						
	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
PROGRAMME OF STUDY					• Recognise and write decimal equivalents of any number of tenths or hundredths • Recognise and write decimal equivalents to 1/4, 1/2 and 3/4 • Round decimals with one decimal place to the nearest whole number • Compare numbers with the same number of decimal places up to two decimal places	• Read and write decimal numbers as fractions [for example, 0.71 = 71/100] • 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 • Read, write, order and compare numbers with up to three decimal places	• Identify the value of each digit in numbers given to three decimal places
DECIMALS VOCABULARY							
					Tenths, hundredths, convert, decimal equivalence, decimal point	Fifth, thousandths, integers	

Fractions, Decimals and Percentages Progression

FRACTIONS, DECIMALS AND PERCENTAGES							
	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
PROGRAMME OF STUDY					• Solve simple measure and money problems involving fractions and decimals to two decimal places	• 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 1/2, 1/4, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25	• Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3/8] • Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts
FRACTIONS, DECIMALS AND PERCENTAGES VOCABULARY							
					Tenths, hundredths, convert, proper fractions, improper fractions, decimal equivalence, decimal point	Fifth, thousandths, mixed numbers, factors, integers, percent	

Ratio, Proportion and Algebra Progression

RATIO AND PROPORTION						
	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
PROGRAMME OF STUDY							• Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts • Solve problems involving the calculation/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							
	EYFS	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**YEAR 6**
PROGRAMME OF STUDY		• *Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ___ – 9*	• *Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems*	• *Solve problems, including missing number problems*			• Use simple formulae • Generate and describe linear number sequences • Express missing number problems algebraically • Find pairs of numbers that satisfy an equation with two unknowns • Enumerate possibilities of combinations of two variables
RATIO, PROPORTION AND ALGEBRA VOCABULARY							
							Relative size, missing value, integer multiplication, percentages, scale factor, unequal sharing and grouping, formulae, linear number sequences, algebraically, equation, unknowns, combinations, variables

Measurement Progression

USING MEASURES

	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
PROGRAMME OF STUDY		• Compare, describe and solve practical problems for: - lengths and heights - mass/weight - capacity and volume - time • Measure and begin to record the following: - lengths and heights - mass/weight - capacity and volume - time (hours, minutes, seconds)	• 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 • Compare and order lengths, mass, volume/capacity and record the results using >, < and =	• Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)	• Convert between different units of measure [for example, kilometre to metre; hour to minute] • Estimate, compare and calculate different measures	• Convert between different units of metric measure • Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints • Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling	• Solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 d.p. where appropriate • Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to 3 d.p. • Convert between miles and kilometres

MONEY

	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
ROGRAMME OF STUDY		• Recognise and know the value of different denominations of coins and notes	• 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	• Add and subtract amounts of money to give change, using both £ and p in practical contexts	• Estimate, compare and calculate different measures, including money in pounds and pence	• Use all four operations to solve problems involving measure [for example, money]	

TIME

	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
PROGRAMME OF STUDY		• 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	• 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	• 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, a.m./p.m., 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 [for example to calculate the time taken by particular events or tasks]	• 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	• Solve problems involving converting between units of time	• Use, read, write and convert between standard units, converting measurements of time from a smaller unit of measure to a larger unit, and vice versa

PERIMETER, AREA, VOLUME

	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
PROGRAMME OF STUDY				• Measure the perimeter of simple 2-D shapes	• Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres • Find the area of rectilinear shapes by counting squares	• Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres • Calculate and compare the area of rectangles (including squares) and including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes • Estimate volume [for example, using blocks to build cuboids] and capacity [for example, using water]	• Recognise that shapes with the same areas can have different perimeters and vice versa • Recognise when it is possible to use formulae for area and volume of shapes • calculate the area of parallelograms and triangles • Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units

MEASUREMENT VOCABULARY							
	Measure, wide, wider, narrow, narrower, compare, long, longer, longest, short, shorter, shortest, length, height, tall, taller, weight, capacity, heavy, light, heavier than, lighter than, big, bigger, biggest, full, empty, more than, less than, half, half full, time, quicker, slower, earlier, later, before, after, first, next, today, yesterday, tomorrow, morning, afternoon, evening, day, week, hour, minutes,	Compare, mass, volume, chronological order, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday, January, February, March, April, May, June, July, August, September, October, November, December, month, year, o'clock, half past, second, money, coins, notes, pounds (£), pence (p)	Standard units, estimate, order, record results, centimetre (cm), metre (m), kilogram (kg), gram (g), quarter full, three quarters full, litres (l), millilitres (ml), temperature, Celsius, intervals of time, quarter past, quarter to, duration, value, change	Millimetre (mm), perimeter, analogue clock, roman numerals, 12-hour clock, 24-hour clock, am, pm, noon, midnight, leap year, digital	Kilometre (km), rectilinear figure, area, convert	Decimal notation, scaling, metric units, imperial units, inches, compound shape, irregular shapes, square centimetres, square metres, cubic centimetre, pints, pounds	Conversion, miles, formulae, parallelograms, triangles, feet, cubic metre, gallons, stones, ounces, miles

Geometry Progression

2D SHAPES

	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
PROGRAMME OF STUDY		• Recognise and name common 2-D shapes [for example, rectangles (including squares), circles and triangles]	• Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line • 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 shapes and everyday objects	• Draw 2-D shapes	• Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes • Identify lines of symmetry in 2-D shapes presented in different orientations	• 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	• Draw 2-D shapes using given dimensions and angles • compare and classify geometric shapes based on their properties and sizes • Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius

3D SHAPES

	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
PROGRAMME OF STUDY		• Recognise and name common 3-D shapes [for example, cuboids (including cubes), pyramids and spheres]	• Recognise and name common 3-D shapes [for example, cuboids (including cubes), pyramids and spheres] • Compare and sort common 3-D shapes and everyday objects	• Make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them		• Identify 3-D shapes, including cubes and other cuboids, from 2-D representations	• Recognise, describe and build simple 3-D shapes, including making nets

ANGLES AND LINES

	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
PROGRAMME OF STUDY				• Recognise angles as a property of shape or a description of a turn • Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle • Identify horizontal and vertical lines and pairs of perpendicular and parallel lines	• Identify acute and obtuse angles and compare and order angles up to two right angles by size • Identify lines of symmetry in 2-D shapes presented in different orientations • Complete a simple symmetric figure with respect to a specific line of symmetry	• Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles • Draw given angles, and measure them in degrees • Identify: - angles at a point and one whole turn (total 360°) - angles at a point on a straight line and ½ a turn (total 180°) - other multiples of 90°	• 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

POSITION AND DIRECTION

	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
PROGRAMME OF STUDY		• Describe position, direction and movement, including whole, half, quarter and three-quarter turns	• Order and arrange combinations of mathematical objects in patterns and sequences • Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise)		• 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	• Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed	• Describe positions on the full coordinate grid (all four quadrants) • Draw and translate simple shapes on the coordinate plane, and reflect them in the axes

GEOMETRY VOCABULARY

	2D shapes, rectangle, square, circle, triangle, characteristics, 3D shapes, cube, cuboid, cone, sphere, curved, straight, flat, over under, between, around, through, on, into, next to, behind, beneath, order, repeat, patterns, on top of	Sides, corners, properties, pyramids, faces, position, direction, movement, whole turn, quarter turn, half turn, three-quarter turn	Pentagon, hexagon, line of symmetry, properties, cylinder, edges, vertices, vertex, clockwise, anti-clockwise, straight line, rotation, arrange, sequences	Right-angle triangle, heptagon, octagon, polygon, properties, prism, orientations, angles, acute angle, obtuse angle, right angles, turn, half turn, three quarters of a turn, greater than a right angle, less than a right angle, horizontal lines, vertical lines, perpendicular lines, parallel lines	Isosceles, equilateral, scalene, trapezium, rhombus, parallelogram, kite, geometric shapes, quadrilaterals, co-ordinates, first quadrant, grid, translation, plot, polygon, axis	Regular polygon, irregular polygon, reflex angles, degrees, one whole turn, angles on a straight line, angles around a point, vertically opposite, missing angles, reflection	Radius, diameter, circumference, dimensions, four quadrants, co-ordinate plane

Statistics Progression

PRESENT AND INTERPRET DATA							
PROGRAMME OF STUDY	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
			• Interpret and construct simple pictograms, tally charts, block diagrams and simple tables	• Interpret and present data using bar charts, pictograms and tables	• Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs	• Complete, read and interpret information in tables, including timetables	• Interpret and construct pie charts and line graphs and use these to solve problems
SOLVE STATISTICAL PROBLEMS							
PROGRAMME OF STUDY	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
			• 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 totaling and comparing categorical data	• 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	• Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs	• Solve comparison, sum and difference problems using information presented in a line graph	• Calculate and interpret the mean as an average
STATISTICS VOCABULARY							
			Pictograms, tally chart, block diagrams, category, sorting, totaling, comparing, horizontal, vertical	Table, bar chart, one-step problem, two-step problem	Time graph, discrete data, continuous data, line graph, comparison problem, sum problem, difference problem, calculate, interpret	Timetable, two-way tables	Pie chart, mean