# Maths at Moat Hall Primary Academy

## Intent

Our aim at Moat Hall Primary Academy is to provide children with a foundation for understanding number, reasoning, thinking logically and problem solving with resilience so that they are fully prepared to solve a range of problems through fluency with numbers and mathematical reasoning. It is essential that these keystones of Mathematics are embedded throughout all strands of the National Curriculum. We have created a maths curriculum that makes learning meaningful, relevant within the real world and engaging. Teachers make sure that the children are taught the skills, personal qualities, knowledge and understanding to achieve the best that they can and become life-long learners within maths.

- By adopting a Mastery approach, it is also intended that all children, regardless of their starting point, will maximise their academic achievement and leave Moat Hall Primary Academy with an appreciation and enthusiasm for Maths, resulting in a lifelong positive relationship with number.
- We aim for all children to meet the goal of fluency and automaticity.
- We endeavour to deliver a high- quality maths curriculum that is both challenging and enjoyable.
- Our goal is to encourage resilience and acceptance that challenge is often a necessary step in learning. Our rigorous curriculum allows children to better make sense of the world around them relating the pattern between mathematics and everyday life.
- Fully develop independent, resilient and reflective learners with inquisitive minds who have secure mathematical foundations and an interest in self-improvement.

## Implementation

Our implementation is developed through secure understanding of the curriculum and subject area.
- Our long-term planning is aligned with the National Curriculum 2014. Medium-term planning is supported by the use of the White Rose Maths Hub materials and our school calculation policy.
- White Rose supports teachers to plan lessons which avoids overloading pupils short term memory and breaks down larger concepts into smaller steps.
- By using a variety of planning resources (White Rose, Classroom Secrets, NCETM Mastering Number and Twinkl Mastering Number) we believe that we provide a bespoke teaching and learning experience that is designed to interest, inform and inspire our children.
- Using prior knowledge as a starting point for all future planning and teaching, we plan lessons which are required for all pupils to make good progress.
- Maths lessons are designed with a concrete, pictorial and abstract (CPA) approach, providing our pupils with the scaffolding and challenge required to access the learning at all levels. Maths toolkits (concrete resources) will be used effectively to deepen understanding.
- Retrieval and repetition of key number facts are vital to ensure pupils commit knowledge to the long-term memory.

- In early Maths, the fundamentals of number are embedded through planned activities to help pupils know and remember more.
- We place a large emphasis on pupil engagement and design lessons which involve all pupils using questioning and modelling at the centre of every lesson.
- Carefully structured tasks will give pupils sufficient instruction, guidance and support.
- Teachers routinely plan to address misconceptions.
- To implement our intent, we ensure that our children are invested in their learning and are making a positive contribution to their lessons.
- Working walls will be a feature of each classroom, used to support learning. Mathematical vocabulary will be displayed on working walls.

Leadership, Assessment and Feedback –
- Assessment informs the teaching and learning sequence.
- Children who are not making the required progress are given extra support through booster sessions (Shine) and support in class in order to meet our INTENT of developing pupils academically.
- Feedback is given on children's learning in line with our feedback policy.
- Formative assessment within every lesson helps teachers to identify the children who need more support to achieve the intended outcome and who are ready for greater stretch and challenge through planned questioning or additional activities.
- Summative assessments are completed and detailed diagnostic analysis informs next steps for planning and interventions.
- The maths lead/team have a clear role and overall responsibility for the progress of all children in maths throughout school.
- Working with SLT, key data is analysed and regular feedback is provided and discussed at pupil progress meetings to inform on progress and future actions.

## Impact

Pupils should leave Moat Hall equipped with the requisite skills and knowledge to succeed in key stage 3 Maths. They will have the necessary tools to confidently and meaningfully question and explore problems. A mathematical concept or skill has been mastered when a child can show it in multiple ways, using the mathematical language to explain their ideas, and can independently apply the concept to new problems in unfamiliar situations.

- Children demonstrate automaticity and rapid recall of facts and procedures. This includes the recollection of the times tables and fundamental number facts.

- The flexibility and fluidity to move between different contexts and representations of mathematics.

- The ability to recognise relationships and make connections in mathematics.

- Children show confidence in believing that they will achieve.

- Children show a high level of pride in the presentation and understanding of the work.

# Mastering Number

## Reception Overview

| Term 1 | Term 2 | Term 3 |
|---|---|---|
| Pupils will build on previous experiences of number from their home and nursery environments, and further develop their subitising and counting skills. They will explore the composition of numbers within 5. They will begin to compare sets of objects and use the language of comparison. | Pupils will continue to develop their subitising and counting skills and explore the composition of numbers within and beyond 5. They will begin to identify when two sets are equal or unequal and connect two equal groups to doubles. They will begin to connect quantities to numerals. | Pupils will consolidate their counting skills, counting to larger numbers and developing a wider range of counting strategies. They will secure knowledge of number facts through varied practice. |
| **Pupils will:**<br><br>• identify when a set can be subitised and when counting is needed<br><br>• subitise different arrangements, both unstructured and structured, including using the Hungarian number frame<br><br>• make different arrangements of numbers within 5 and talk about what they can see, to develop their conceptual subitising skills<br><br>• spot smaller numbers 'hiding' inside larger numbers | **Pupils will:**<br><br>• continue to develop their subitising skills for numbers within and beyond 5, and increasingly connect quantities to numerals<br><br>• begin to identify missing parts for numbers within 5<br><br>• explore the structure of the numbers 6 and 7 as '5 and a bit' and connect this to finger patterns and the Hungarian number frame<br><br>• focus on equal and unequal groups when comparing numbers | **Pupils will:**<br><br>• continue to develop their counting skills, counting larger sets as well as counting actions and sounds<br><br>• explore a range of representations of numbers, including the 10-frame, and see how doubles can be arranged in a 10-frame<br><br>• compare quantities and numbers, including sets of objects which have different attributes<br><br>• continue to develop a sense of magnitude, e.g. knowing that 8 is quite a lot more than 2, but 4 is only a little bit more than 2 |

- connect quantities and numbers to finger patterns and explore different ways of representing numbers on their fingers

- hear and join in with the counting sequence, and connect this to the 'staircase' pattern of the counting numbers, seeing that each number is made of one more than the previous number

- develop counting skills and knowledge, including: that the last number in the count tells us 'how many' (cardinality); to be accurate in counting, each thing must be counted once and once only and in any order; the need for 1:1 correspondence; understanding that anything can be counted, including actions and sounds

- compare sets of objects by matching

- begin to develop the language of 'whole' when talking about objects which have parts

- understand that two equal groups can be called a 'double' and connect this to finger patterns

- sort odd and even numbers according to their 'shape'

- continue to develop their understanding of the counting sequence and link cardinality and ordinality through the 'staircase' pattern

- order numbers and play track games

- join in with verbal counts beyond 20, hearing the repeated pattern within the counting numbers

- begin to generalise about 'one more than' and 'one less than' numbers within 10

- continue to identify when sets can be subitised and when counting is necessary

- develop conceptual subitising skills including when using a rekenrek

# Year 1 Scheme of work (Version 3 WRM)

| | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Autumn** | Number: Place Value (within 10) | | | | | Number: Addition and Subtraction (within 10) | | | | | Geometry: Shape | Consolidation |
| **Spring** | Number: Place Value (within 20) | | | Number: Addition and Subtraction (within 20) | | | Number: Place Value (within 50) | | Measurement: Length and Height | | Measurement: Mass and Volume | |
| **Summer** | Number: Multiplication and Division | | | Number: Fractions | | Geometry: Position and Direction | Number: Place Value (within 100 | | Measurement: Money | Measurement: Time | | Consolidation |

**Year 2 Scheme of work** (Version 3 WRM)

| | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Autumn** | Number: Place Value | | | | Number: Addition and subtraction | | | | | Geometry: Properties of Shape | | |
| **Spring** | Measurement: Money | | Number: Multiplication and Division | | | | | Measurement: Length and Height | | Measurement: Mass Capacity & Temperature | | |
| **Summer** | Number: Fractions | | | Measurement: Time | | | Statistics | | Geometry: Position and Direction | | Consolidation | |

**Year 3 Scheme of work** (Version 3 WRM)

| | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Autumn** | Number: Place Value | | | Number: Addition and Subtraction | | | | | Number: Multiplication and Division A | | | |
| **Spring** | Number: Multiplication and Division B | | | Measurement: Length and Perimeter | | | Number: Fractions A | | | Measurement: Mass and Capacity | | |
| **Summer** | Number: Fractions B | | Measurement: Money | | Measurement: Time | | | Geometry: Properties of Shape | | Statistics | | Consolidation |

# Year 4 Scheme of work (Version 3 WRM)

| | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Autumn** | Number: Place Value | | | | Number: Addition and Subtraction | | | Measurement: Area | Number: Multiplication and Division | | | Consolidation |
| **Spring** | Number: Multiplication and Division B | | Measurement: Length and Perimeter | | Number: Fractions | | | | | Number: Decimals | | |
| **Summer** | Number: Decimals B | | Measurement: Money | | Measurement: Time | | Consolidation | Geometry: Properties of Shape | | Statistics | Geometry: Position and Direction | |

# Year 5 Scheme of work (Version 3 WRM)

| | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Autumn** | Number: Place Value | | | Number: Addition and Subtraction | | Number: Multiplication and Division | | | Number: Fractions A | | | |
| **Spring** | Number: Multiplication and Division B | | | Number: Fractions B | | Number: Decimals and Percentages | | | Measurement: Perimeter and Area | | Statistics | |
| **Summer** | Geometry: Properties of Shape | | | Geometry: Position & Direction | | Number: Decimals | | | Number: Negative Numbers | Measurement: Converting Units | | Measurement: Volume |

**Year 6 Scheme of work** (Version 3 WRM)

| | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Autumn** | Number: Place Value | | Number: Addition, Subtraction, multiplication, and division | | | | | Number: Fractions A | | Number: Fractions B | | Measurement: Converting Units |
| **Spring** | Number: Ratio | | Number: Algebra | | Number: Decimals | | Number: Fractions Decimals and Percentages | | Measurement: Area, perimeter and volume | | Statistics | |
| **Summer** | Geometry: Properties of shape | | Geometry: Position and Direction | Consolidation | Themed projects, consolidation and problem solving. Enterprise activities. | | | | | | | |

# Maths: Whole School Progression of Skills

| | EYFS | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|---|
| **Place Value: Counting** | • Focus on counting skills<br>• Focus on the 'five-ness of 5' using one hand and the die pattern for 5<br>• Practise object counting skills<br>• Match numerals to quantities within 10<br>• Verbal counting beyond 20<br>• Focus on the 'staircase' pattern and ordering numbers<br>• Counting – larger sets and things that cannot be seen<br>• Subitising within 3, 5 & 6<br>• Subitise objects and sounds<br>• Match numerals to quantities within 5 | • count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number<br>• 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<br>• 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<br>• count forwards and backwards with positive and negative whole numbers, including through zero | |

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| | • Automatic recall of bonds to 5 | | | | | |
| | See Mastering Number Overview | Autumn 1<br>Spring 1<br>Spring 3<br>Summer 4 | Autumn 1 | Autumn 1<br>Autumn 3 | Autumn 1<br>Autumn 4 | Autumn 1<br>Summer 4<br>Note: In the WRM schemes, negative numbers are introduces in Year 5 | |
| Place Value: Representing | • Explore how all numbers are made of 1s<br>• Focus on composition of 3 and 4, 5, 6 & 7<br>• Composition – '5 and a bit'<br>• Composition - of 10<br>• Explore the concept of 'whole' and 'part' | • identify and represent numbers using objects and pictorial representations<br>• read and write numbers to 100 in numerals<br>• 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<br>• identify, represent and estimate numbers using different representations, including the number line | • identify, represent and estimate numbers using different representations<br>• read and write numbers up to 1000 in numerals and in words | • identify, represent and estimate numbers using different representations<br>• 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<br>• 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 |

| | | See Mastering Number Overview | Autumn 1 Spring 1 Spring 3 Summer 4 | Autumn 1 | Autumn 1 | Autumn 1 | Autumn 1 | Autumn 1 |
|---|---|---|---|---|---|---|---|---|
| Place Value: Use and Compare | | • Compare sets and use language of comparison: more than, fewer than, an equal number to <br> • Make unequal sets equal <br> • Sorting numbers according to attributes - odd and even numbers <br> • Composition of numbers to 10 <br> • Number patterns | • given a number, identify one more and one less | • recognise the place value of each digit in a two-digit number (tens, ones) <br> • 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) <br> • compare and order numbers up to 1000 | • find 1000 more or less than a given number <br> • recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) <br> • 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 up to 10 000 000 and determine the value of each digit |
| | | See Mastering Number Overview | Autumn 1 Spring 1 Spring 3 Summer 4 | Autumn 1 | Autumn 1 | Autumn 1 | Autumn 1 | Autumn 1 |

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| **Place Value: Problems & Rounding** | | | • 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<br>• solve number and practical problems that involve all of the above and with increasingly large positive numbers | • interpret negative numbers in context<br>• round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100,000<br>• solve number problems and practical problems that involve all of the above | • round any whole number to a required degree of accuracy<br>• use negative numbers in context, and calculate intervals across zero<br>• solve number and practical problems that involve all of the above |
| | See Mastering Number Overview | | Autumn 1 | Autumn 1 | Autumn 1 | Autumn 1 | Autumn 1 |
| **Addition & Subtraction: Calculations** | • Using 10s frames<br>• Addition & subtraction with objects<br>• Part/ part whole | • 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:<br>• a two-digit number and ones<br>• a two-digit number and tens<br>• two two-digit numbers<br>• adding three one- digit numbers | • add and subtract numbers mentally, including:<br>• a three-digit number and ones<br>• a three-digit number and tens<br>• a three-digit number and hundreds<br>• 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)<br>• add and subtract numbers mentally with increasingly large numbers | • perform mental calculations, including with mixed operations and large numbers<br>• use their knowledge of the order of operations to carry out calculations involving the four operations |
| | | Autumn 2<br>Spring 2 | Autumn 2 | Autumn 2 | Autumn 2 | Autumn 2 | Autumn 2 |

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| **Addition & Subtraction: Problems** | • Using 10s frames<br>• Addition & subtraction with objects<br>• Part/ part whole<br>• Links to real life scenario<br>• Addition & subtraction problem solving using halving | • 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:<br>• using concrete objects and pictorial representations, including those involving numbers, quantities and measures<br>• 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<br>• solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign | • solve addition and subtraction multi- step problems in contexts, deciding which operations and methods to use and why |
| | | Autumn 2<br>Spring 2 | Autumn 2 | Autumn 2 | Autumn 2 | Autumn 2 | Autumn 2 |
| **Multiplication & Division: Recall/ Use** | | | • recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers<br>• 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<br>• 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<br>• 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<br>• know and use the vocabulary of prime numbers, prime factors and composite (non- prime) numbers<br>• establish whether a number up to 100 is prime and recall prime numbers up to 19<br>• 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<br>• use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy |
| | | | Spring 2 | Autumn 3<br>Spring 1 | Autumn 4<br>Spring 1 | Autumn 3 | Autumn 2 |

| Multiplication & division: Calculations | | | • 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<br>• multiply and divide numbers mentally drawing upon known facts<br>• 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<br>• 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<br>• 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<br>• 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<br>• perform mental calculations, including with mixed operations and large numbers |
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| | | | Spring 2 | Autumn 3<br>Spring 1 | Spring 1 | Autumn 3<br>Spring 1 | Autumn 2 |

| Multiplication & Division: Problems | • Halving, doubling and sharing problems | • 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<br>• solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates | • solve problems involving addition, subtraction, multiplication and division |
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| | | Summer 1 | Spring 2 | Spring 1 | Spring 1 | Autumn 3<br>Spring 1 | Autumn 2 |
| Multiplication & Division: Combined | | | | | | • 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 |
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| **Fractions: Recognise & Write** | • Halving, doubling and sharing | • recognise, find and name a half as one of two equal parts of an object, shape or quantity<br>• recognise, find and name a quarter as one of four equal parts of an object, shape or quantity | • recognise, find, name and write fractions $\frac{1}{3}, \frac{1}{4}, \frac{2}{4}, \frac{3}{4}$ 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<br>• recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators<br>• 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<br>• 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, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$ |
| | | Summer 2 | Summer 1 | Spring 3 | Spring 4<br>Summer 1 | Autumn 4 |
| **Fractions: Compare** | | | • Recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$ | • recognise and show, using diagrams, equivalent fractions with small denominators<br>• 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<br>• compare and order fractions, including fractions >1 |

| | | | Summer 1 | Spring 3 | Spring 3 | Autumn 4 | Autumn 3 |
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| **Fractions: Calculations** | | | • write simple fractions for example, $\frac{1}{2}$ of 6 = 3 | • add and subtract fractions with the same denominator within one whole for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$ | • 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<br>• 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<br>• multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $\frac{1}{4}$ x $\frac{1}{2} = \frac{1}{8}$ ]<br>• divide proper fractions by whole numbers [for example $\frac{1}{3} \div 2 = \frac{1}{6}$ ] |
| | | | Summer 1 | Summer 1 | Spring 3 | Autumn 4<br>Spring 2 | Autumn 3<br>Autumn 4 |
| **Fractions: Solve** | | | | • 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 | | |

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| **Decimals: Recognise, Write & Compare** | | | | | • recognise and write decimal equivalents of any number of tenths or hundredths<br>• recognise and write decimal equivalents to $\frac{1}{4}, \frac{1}{2}, \frac{3}{4}$<br>• round decimals with one decimal place to the nearest whole number<br>• compare numbers with the same number of decimal places up to two decimal places | • read and write decimal numbers as fractions [ for example, $0.71 = \frac{71}{100}$ ]<br>• recognize and use thousandths and relate them to tenths, hundredths and decimal equivalents<br>• round decimals with two decimal places to the nearest whole number and to one decimal place<br>• 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 |
| | | | | | Spring 4<br>Summer 1 | Spring 3<br>Summer 3 | Spring 3 |

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| **Fractions, Decimals & Percentages** | | | | | • 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<br><br>solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}, \frac{1}{4}, \frac{1}{5}, \frac{2}{5}, \frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25 | • Associate a fraction with a division and calculate decimal fraction equivalents [for example 0.375] for a simple [for example, $\frac{3}{8}$]<br><br>• Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts |

| | | | | | Spring 3 Spring 4 Summer 1 | Spring 3 | Spring 3 Spring 4 |
|---|---|---|---|---|---|---|---|
| **Ratio & Proportion** | | | | | | | • solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts<br><br>• solve problems involving the calculation/use of percentages for comparison<br><br>• solve problems involving similar shapes where the scale factor is known or can be found<br><br>• solve problems involving unequal sharing and grouping using knowledge of fractions and multiples |
| | | | | | | | Spring 1 |

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| **Algebra** | • Problem solving – basic problems using halving, sharing and doubling<br>• Tens frame work | • *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<br>• generate and describe linear number sequences<br>• express missing number problems algebraically<br>• find pairs of numbers that satisfy an equation with two unknowns<br>• enumerate possibilities of combinations of two variables |
| | | Note – although formal algebraic notation is not introduced until Yr 6, algebraic thinking starts much earlier as exemplified by the 'missing number' objectives from Yr1/2&3 | | | | | Spring 2 |
| **Using measures** | • Compare length, weight & capacity<br>• Using vocabulary such as heavy & light, long & short, full & empty. | • compare, describe and solve practical problems for:<br>• lengths and heights<br>• mass/weight<br>• capacity and volume<br>• time<br>• measure and begin to record the following:<br>• lengths and heights<br>• mass/weight<br>• capacity and volume<br>• 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 (℃); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels<br>• 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]<br>• estimate, compare and calculate different measures | • convert between different units of metric measure<br>• understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints<br>• 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<br>• 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.<br>• convert between miles and kilometers |

| | | Spring 4 Spring 5 Summer 6 | Spring 3 Spring 4 | Spring 2 Spring 4 | Spring 2 Summer 3 | Spring 4 Summer 5 Summer 6 | Autumn 5 |
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| Money | • introduction to money – different coins | • 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<br>• find different combinations of coins that equal the same amounts of money<br>• 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] | |
| | | Summer 5 | Spring 1 | Summer 2 | Summer 2 | Summer 3 | |

| Time | | | | | | |
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| | • Intro to time<br>• Hands on a clock<br>• Daily routine – history link | • sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]<br>• recognise and use language relating to dates, including days of the week, weeks, months and years<br>• 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<br>• 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<br>• 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<br>• 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<br>• know the number of seconds in a minute and the number of days in each month, year and leap year<br>• 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<br>• 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<br><br>• Note – In the WRM schemes, time conversions are covered in Y5; the Y6 block concentrates on metric units. |
| | | Summer 6 | Summer 2 | Summer 3 | Summer 3 | Summer 5 | Autumn 5 |

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| **Perimeter, Area & Volume** | | | | • measure the perimeter of simple 2-D shapes | • measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres  <br> • find the area of rectilinear shapes by counting squares | • measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres <br> • calculate and compare the area of rectangles (including squares) and including using standard units, square centimetres ($cm^2$) and square metres ($m^2$) and estimate the area of irregular shapes <br> • 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 <br> • recognise when it is possible to use formulae for area and volume of shapes <br> • calculate the area of parallelograms and triangles <br> • calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres ($cm^3$) and cubic metres ($m^3$), and extending to other units |
| | | | | Spring 2 | Autumn 3 <br> Spring 2 | Spring 4 <br> Summer 6 | Spring 5 |
| **2D Shapes** | • Introduction to 2D shapes <br> • Shape patterns <br> • Vocabulary looks at sides, corners, straight, flat & round. <br> • Select shapes for a purpose. <br> • Combining shapes | • 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 <br> • identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] <br> • 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 <br> • 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. <br> • use the properties of rectangles to deduce related facts and find missing lengths and angles | • draw 2-D shapes using given dimensions and angles <br> • compare and classify geometric shapes based on their properties and sizes <br> • illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius |

| | | Autumn 3 | Autumn 3 | Summer 4 | Summer 4 | Summer 1 | Summer 1 |
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| **3D Shapes** | • Introduction to 3D shape<br>• Shape patterns<br>• Vocabulary looks at sides – edges, face. | • 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]<br>• 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 |
| | | Autumn 3 | Autumn 3 | Summer 4 | | Summer 1 | Summer 1 |
| **Angles and Lines** | | | | • recognise angles as a property of shape or a description of a turn<br>• 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<br>• 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<br>• identify lines of symmetry in 2-D shapes presented in different orientations<br>• 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<br>• draw given angles and measure them in degrees<br>• Identify: angles at a point and one whole turn (360°), angles at a point on a straight line and $\frac{1}{2}$ a turn (180°), other multiples 90° | • find unknown angles in any triangles, quadrilaterals, and regular polygons<br>• recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles |
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| **Position & Direction** | • Positional language – Geography link<br>• Use of Beebots to understand position through words.<br>• Describe a familiar route<br>• Use of language such as in front, behind and next to. | • describe position, direction and movement, including whole, half, quarter and three-quarter turns | • order and arrange combinations of mathematical objects in patterns and sequences<br>• 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) | | • describe positions on a 2-D grid as coordinates in the first quadrant<br>• describe movements between positions as translations of a given unit to the left/right and up/down<br>• 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)<br>• draw and translate simple shapes on the coordinate plane, and reflect them in the axes |
| | | Summer 3 | Summer 4 | | Summer 6 | Summer 2 | Summer 2 |
| **Present & Interpret Data** | | | • 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 |
| | | | Summer 3 | Summer 5 | Summer 5 | Spring 5 | Spring 6 |

| Solve Statistical Problems | | | | • ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity<br><br>• 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 |
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| | | | | Summer 3 | Summer 5 | Summer 5 | Spring 5 | Spring 6 |