Long Term Planning

The National Curriculum for Mathematics 2014, Development Matters and the Early Learning Goals (Number, Shape Space & Measure) provide the basis for long term planning for mathematics taught in the school.

The Year 1, 2, 3, 4 and 6 LTP is taken from the NCETM Mastery Curriculum Prioritisation materials. Additional resources can be found on the NCETM website. Teachers should draw on the experience of the Headteacher and staff members who have received mastery training. All teachers will receive additional mastery training throughout the year. In addition, the Mastering Number programme will delivered to EYFS, KS1 and KS2 throughout the year.

The Year 5 LTP is taken from the White Rose maths hub overviews, which are based on the national curriculum objectives, and their lesson overviews are used to inform MTP. The LTP is used as a guidance tool in order to pace out coverage of the curriculum throughout the year. Although the whole year is planned out, teachers are encouraged to use professional discretion when deciding on how long is needed on a particular curriculum area whilst ensuring all objectives are covered by the end of the academic year.

Medium Term Planning

Medium term planning (MTP) is based on the NCETM's PD materials. This planning overview will enable staff to build up the skills that the children need and should be adapted to suit the needs of your current class. The MTP will be used by staff to help them write their short-term plan. Key questions, activities and vocabulary should be included along with prior learning and curricular targets.

Short Term Planning

Short term planning (STP) is recorded each week on the lesson flipcharts/PowerPoints/Smart slides. These plans will include aspects such as: learning objectives to be taught that week; key vocabulary identified and taught; opportunities for pupils to carry out intelligent practise. A range of representations (see PD materials) should be used to help children to develop their understanding of concepts.

Books are monitored by the Maths co-ordinator throughout the term and feedback is provided.

Differentiation

We will follow a whole class teaching approach. The same content will be taught to the whole class. The Teaching for Mastery approach will provide scaffolding to support children to access the activities. A keep-up intervention strategy will be put in place to prevent gaps in learning from increasing. Pupils who require additional support to understand a concept will be identified and caught up before the next lesson in the sequence. Children with special educational needs in mathematics are supported to enable them to achieve their learning objective. Differentiated activities across the school will take account of the children's differing needs and abilities.

Year Group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery	Show 'finger numbers' up to 5. Select shapes appropriately: flat surfaces for building, a triangular prism for a roof, etc Talk about and identifies the patterns around them. For example: stripes on clothes, designs on rugs and wallpaper. Use informal language like 'pointy', 'spotty', 'blobs', etc.	Recite numbers past 5. Understand position through words alone – for example, "The bag is under the table," – with no pointing. Discuss routes and locations, using words like 'in front of' and 'behind' Combine shapes to make new ones – an arch, a bigger triangle, etc. Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...'	Develop fast recognition of up to 3 objects, without having to count them individually ('subitising'). Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle').	Say one number for each item in order: 1,2,3,4,5. Solve real world mathematical problems with numbers up to 5. Make comparisons between objects relating to size, length, weight and capacity. Extend and create ABAB patterns – stick, leaf, stick, leaf.	Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5. Describe a familiar route. Notice and correct an error in a repeating pattern.	Experiment with their own symbols and marks as well as numerals. Compare quantities using language: 'more than', 'fewer than' Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners'; 'straight', 'flat', 'round'.
Reception	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: • identify when a set can be subitised and when counting is needed • subitise different arrangements, both unstructured and structured, including using the Hungarian number frame • make different arrangements of numbers within 5 and talk about what they can see, to develop their conceptual subitising skills • spot smaller numbers 'hiding' inside larger numbers • 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		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: • continue to develop their subitising skills for numbers within and beyond 5, and increasingly connect quantities to numerals • begin to identify missing parts for numbers within 5 • 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 • focus on equal and unequal groups when comparing numbers • 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		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: • continue to develop their counting skills, counting larger sets as well as counting actions and sounds • explore a range of representations of numbers, including the 10-frame, and see how doubles can be arranged in a 10-frame • compare quantities and numbers, including sets of objects which have different attributes • 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# • 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	Previous Reception experiences and counting within 100

Mastering Number | Comparison of quantities and part-whole relationships

Numbers 0 - 5

Mastering Number | Recognise, compose, decompose and manipulate 2D and 3D shapes.

Number 0 - 10

Mastering Number | Additive structures: introduction to augmentation and reduction

Addition and subtraction: strategies within 10

Mastering Number | Numbers 0 – 20

Unitising and coin recognition

Mastering Number | Unitising and coin recognition

Position and direction

Time

Mastering Number |
| **Year 2** | Numbers 10 to 100

Calculations within 20

Mastering Number | Fluently add and subtract within 10

Addition and subtraction of two-digit numbers

Mastering Number | Introduction to multiplication

Introduction to division structures

Mastering Number | Shape

Addition and subtraction of two-digit numbers

Mastering Number | Money

Fractions

Time

Position and direction

Mastering Number | Subtraction – two-digit and two-digit numbers

Fractions

Mastering Number |
| **Year 3** | Adding and subtracting across 10

Numbers to 1,000

Mastering Number | Numbers to 1,000

Column addition

Mastering Number | Right angles

Manipulating the additive relationships and securing mental calculation

Mastering Number | Recap column addition

2, 4, 8 times tables

Column subtraction

Mastering Number | Unit fractions

Mastering Number | Non-unit fractions

Parallel and perpendicular sides in polygons

Time

Mastering Number |
| **Year 4** | Review of column addition and subtraction

Numbers to 10,000

Perimeter

Mastering Number | Perimeter

3, 6, 9 times tables

Mastering Number | 7 times table and patterns

Understanding and manipulating multiplicative relationships

Mastering Number | Understanding and manipulating multiplicative relationships

Coordinates

Mastering Number | Review of fractions

Fractions greater than 1

Mastering Number | Symmetry in 2D shapes

Time

Division with reaminders

Mastering Number |
| **Year 5** | **Number – Place Value (3 weeks)**
- Read, write, order and compare numbers to at least 1000000 and determine the value of each digit.
- Count forwards or backwards in steps of powers of 10 for any given number up to 1000000.
- Interpret negative numbers in context, count forwards and backwards with positive and negative | **Statistics (1 week)**
- Solve comparison, sum and difference problems using information presented in a line graph.
- Complete, read and interpret information in tables including timetables.

Number – multiplication and division (2 weeks) | **Number – Multiplication and Division (3 weeks)**
- Multiply and divide numbers mentally drawing upon known facts.
- Multiply numbers up to 4 digits by a one or two digit number using a formal written method, including long multiplication for 2 digit numbers.
- Divide numbers up to 4 digits by a one | **Number – Fractions continued**

Number: Decimals and Percentages (2 weeks)
- Read, write, order and compare numbers with up to three decimal places.
- Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents. | **Number: Decimals (4 weeks)**
- Solve problems involving number up to three decimal places.
- Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.
- Use all four operations to solve problems involving measure [for example, length, mass, volume, | **Geometry- position and direction (1 week)**
- 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.

Measurement- converting units (2 weeks)
- Convert between different units of |

whole numbers including through zero. • Round any number up to 1000000 to the nearest 10, 100, 1000, 10000 and 100000. • Solve number problems and practical problems that involve all of the above. • Read Roman numerals to 1000 (M) and recognise years written in Roman numerals. **Number- Addition and Subtraction (2 weeks)** • Add and subtract numbers mentally with increasingly large numbers. • Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy. Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.	• Multiply and divide numbers mentally drawing upon known facts. • Multiply and divide whole numbers by 10, 100 and 1000. • Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. • Recognise and use square numbers and cube numbers and the notation for squared (2) and cubed (3). • Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes. • Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. • Establish whether a number up to 100 is prime and recall prime numbers up to 19. **Perimeter and Area (2 weeks)** • Measure and calculate the perimeter of composite rectilinear shapes in cm and m. Calculate and compare the area of rectangles (including squares), and including using standard units, cm2, m2 estimate the area of irregular shapes.	digit number using the formal written method of short division and interpret remainders appropriately for the context. • Solve problems involving addition and subtraction, multiplication and division and a combination of these, including understanding the use of the equals sign. **Number: Fractions (5 weeks)** • Compare and order fractions whose denominators are multiples of the same number. • Identify, name and write equivalent fractions of a given fraction, represented visually including tenths and hundredths. • Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements >1 as a mixed number [for example 2/5 + 4/5 = 6/5 = 1 1/5]. • Add and subtract fractions with the same denominator and denominators that are multiples of the same number. • Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.	• Round decimals with two decimal places to the nearest whole number and to one decimal place. • Solve problems involving number up to three 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.	money] using decimal notation, including scaling. **Geometry- (3 weeks)Properties of Shapes and Angles** • Identify 3D shapes, including cubes and other cuboids, from 2D representations. • Use the properties of rectangles to deduce related facts and find missing lengths and angles. • Distinguish between regular and irregular polygons based on reasoning about equal sides and angles. • 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°.	metric measure [for example, km and m; cm and m; cm and mm; g and kg; l and ml]. • Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints. • Solve problems involving converting between units of time. **Measures Volume (1 week)** • Estimate volume [for example using 1cm3 blocks to build cuboids (including cubes)] and capacity [for example, using water]. Use all four operations to solve problems involving measure.

			Read and write decimal numbers as fractions [for example 0.71 = 71100]. • Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.			
Year 6	**Number: Place Value (2 weeks)** • Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit. • Round any whole number to a required degree of accuracy. • Use negative numbers in context, and calculate intervals across zero. • Solve number and practical problems that involve all of the above. **Number- addition subtraction, multiplication + division (weeks)** • Solve addition and subtraction multi step problems in contexts, deciding which operations and methods to use and why. • Multiply multi-digit number up to 4 digits by a 2-digit number using the formal written method of long multiplication. • Divide numbers up to 4 digits by a 2-digit whole number using the formal written method of long division, and interpret	**Fractions (4 weeks)** • Use common factors to simplify fractions; use common multiples to express fractions in the same denomination. • Compare and order fractions, including fractions > 1 • Generate and describe linear number sequences (with fractions). • Add and subtract fractions with different denominations and mixed numbers, using the concept of equivalent fractions. • Multiply simple pairs of proper fractions, writing the answer in its simplest form [for example 1/4 x 1/2 = 1/8]. • Divide proper fractions by whole numbers [for example 1/3 ÷ 2 = 16]. • 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	**Number: Decimals (2 weeks)** • Identify the value of each digit in numbers given to 3 decimal places and multiply numbers by 10, 100 and 1,000 giving answers up to 3 decimal places. • Multiply one-digit numbers with up to 2 decimal places by whole numbers. • Use written division methods in cases where the answer has up to 2 decimal places. • Solve problems which require answers to be rounded to specified degrees of accuracy. **Number: Percentages (2 weeks)** • Solve problems involving the calculation of percentages [for example, of measures and such as 15% of 360] and the use of percentages for comparison. • Recall and use equivalences between simple	**Measurement Converting Units (1 week)** • Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places 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 3dp. • Convert between miles and kilometres. **Measurement: Perimeter, Area and Volume (2 weeks)** • Recognise that shapes with the same areas can have different perimeters and vice versa. • Recognise when it is possible to use formulae for area	**Geometry: Properties of Shapes (2 weeks)** • Draw 2-D shapes using given dimensions and angles. • Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals and regular polygons. • Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles. **Problem Solving (3 weeks)**	**Statistics (2 weeks)** • Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius. • Interpret and construct pie charts and line graphs and use these to solve problems. • Calculate the mean as an average. **Investigations (4 weeks)**

remainders as whole number remainders, fractions, or by rounding as appropriate for the context. • Divide numbers up to 4 digits by a 2-digit number using the formal written method of short division, interpreting remainders according to the context. • Perform mental calculations, including with mixed operations and large numbers. • Identify common factors, common multiples and prime numbers. • Use their knowledge of the order of operations to carry out calculations involving the four operations. • Solve problems involving addition, subtraction, multiplication and division. Use estimation to check answers to calculations and determine in the context of a problem, an appropriate degree of accuracy.	fractions, decimals and percentages, including in different contexts. **Geometry- Position and Direction (1 week)** • 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.	fractions, decimals and percentages including in different contexts. **Number: Algebra (2 weeks)** • 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.	and volume of shapes. • Calculate the area of parallelograms and triangles. • Calculate, estimate and compare volume of cubes and cuboids using standard units, including cm3, m3 and extending to other units (mm3, km3). **Number: Ratio (2 weeks)** • 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 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.		