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| Term | Wk1 | Wk2 | Wk3 | Wk4 | Wk5 | Wk6 | Half Term | Wk7 | Wk8 | Wk9 | Wk10 | Wk11 | Wk12 | End of Term |
| Autumn | A1 | B1 | M1 | C1 | D1 |
| Spring | A2 | B2 | M2 | C2 | D2 | M3 |
| Summer | A3 | B3 | C3 | D3 | M4 |

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| **Content common to all blocks** | **Block A** | **Block B** | **Block C** | **Block D** |
| Fluency (Place value and a sense of number)Problem solving Reasoning | Addition and subtraction (for whole and part numbers)Geometry and Measure | Multiplication and division (for whole and part numbers)Statistics and Measure | Addition and subtraction (for whole and part numbers)Geometry and Measure | Multiplication and division (for whole and part numbers)Statistics and Measure |

**Notes**

* Assessment Milestones (M1-4) based on HAM phase model, KPIs and end of year expectations.
* Big Ideas taken from NCETM Assessment for Mastery documents
* The use of concrete, pictorial and abstract multiple representations for number and calculation is implicit in every lesson.
* Recording should always show a range of representations including, as appropriate, the number line; use of Dienes, Numicon, Cuisenaire etc.; arrays; bar models; informal jottings; different ways to solve the same problem using the child’s own recording methods and more formal methods when ready.

**It is better to have five ways to solve one problem, than one way to solve five.**

**Can you: Say it; make it; draw it; write it; explain it?**

**Five Questions to support mathematical thinking**

* **If you know this, then what else do you know?**
* **Can you give me an example of…. and another….and another…?**
* **What if you change….?**
* **Which is harder and which is easier…..?**
* **What is the same and what is different?**

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| The Big Ideas in Mathematics: Y4: NCETM |
| Number and PV | * Imagining the position of numbers on a horizontal number line helps us to order them: the number to the right on a number line is the larger number. So 5 is greater than 4, as 5 is to the right of 4. But –4 is greater than –5 as –4 is to the right of –5.
* Rounding numbers in context may mean rounding up or down. Buying packets of ten cakes, we might round up to the nearest ten to make sure everyone gets a cake.
* Estimating the number of chairs in a room for a large number of people we might round down to estimate the number of chairs to make sure there are enough.
* We can think of place value in additive terms: 456 is 400 + 50 + 6, or in multiplicative terms: one hundred is ten times as large as ten.
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| Addition and Subtraction | * It helps to round numbers before carrying out a calculation to get a sense of the size of the answer. For example, 4786 – 2135 is close to 5000 – 2000, so the answer will be around 3000. Looking at the numbers in a calculation and their relationship to each other can help make calculating easier. For example, 3012 – 2996. Noticing that the numbers are close to each other might mean this is more easily calculated by thinking about subtraction as difference.
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| Multiplication and Division | * It is important for children not just to be able to chant their multiplication tables but to understand what the facts in them mean, to be able to use these facts to figure out others and to use them in problems.
* It is also important for children to be able to link facts within the tables (e.g. 5× is half of 10×).
* They understand what multiplication means and see division as both grouping and sharing, and to see division as the inverse of multiplication.
* The distributive law can be used to partition numbers in different ways to create equivalent calculations. For example, 4 × 27 = 4 × (25 + 2) = (4 × 25) + (4 × 2) = 108.
* Looking for equivalent calculations can make calculating easier. For example, 98 × 5 is equivalent to 98 × 10 ÷ 2 or to (100 × 5) – (2 × 5). The array model can help show equivalences.
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| Fractions | * Fractions arise from solving problems, where the answer lies between two whole numbers.
* Fractions express a relationship between a whole and equal parts of a whole. Children should recognise this and speak in full sentences when answering a question involving fractions. For example, in response to the question *What fraction of the chocolate bar is shaded?* the pupil might say *Two sevenths of the whole chocolate bar is shaded.*
* Equivalency in relation to fractions is important. Fractions that look very different in their symbolic notation can mean the same thing.
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| Measurement | * The smaller the unit, the greater the number of units needed to measure (that is, there is an inverse relationship between size of unit and measure).
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| Geometry | * During this year, pupils increase the range of 2-D and 3-D shapes that they are familiar with. They know the correct names for these shapes, but, more importantly, they are able to say why certain shapes are what they are by referring to their properties, including lengths of sides, size of angles and number of lines of symmetry.
* The naming of shapes sometimes focuses on angle properties (e.g. a rectangle is right-angled), and sometimes on properties of sides (e.g. an equilateral triangle is an equal sided triangle).
* Shapes can belong to more than one classification. For example, a square is a rectangle, a parallelogram, a rhombus and a quadrilateral.
 |
| Statistics | * In mathematics the focus is on numerical data. This can be discrete or continuous.
* Discrete data are counted and have fixed values, for example, the number of children who chose red as their favourite colour (this has to be a whole number and cannot be anything in between).
* Continuous data are measured, for example at what time did each child finish the race? (Theoretically this could be any time: 67.3 seconds or 67.333 seconds, depending on the degree of accuracy this is applied)
* Continuous data are best represented with a line graph where every point on the line has a potential value.
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| Autumn Term Y4 | Place Value and a Sense of Number | Problem Solving and Reasoning | Core Calculation(four rules for whole and part numbers) | Geometry, Measure and Statistics |
| A1 | Find 1000 more than any given numberRecognise the place value of each digit in a four-digit number (Th, H, T, O) | Solve addition and subtraction two-step problems in context, deciding which operations to use and why | Addition and SubtractionAdd and subtract three digit numbers using a variety of strategiesEstimate and use inverse operations to check answers to a calculation (use bar modelling and number lines to explain the structure) | GeometryCompare and classify geometric shapes, based on their properties and sizes.Identify acute and obtuse anglesComplete a simple symmetric figure with respect to a specific line of symmetry.Describe positions on a 2D grid as coordinates in the first quadrantMeasureMeasure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres |
| B1 | Count in multiples of 25 and 1000.Identify multiples of 2,3,4 and 8, using patterning to generate the next multiple.Identify, represent and estimate numbers using different representations.Round any number to the nearest 10, 100Round decimals with one dp to the nearest whole number | Solve problems involving multiplying and dividing by 10 and 100. | Multiplication and DivisionUse place value and known and derived facts to multiple and divide mentally, with informal jottings.Fractions Recognise and show using diagrams simple equivalent fractionsDivide a one- or two-digit number by 10 or 100 (÷ or x by 100 = convert between £ and p, m and cm; ÷ or x by 10 = convert between cm and mm)Add or subtract fractions with the same denominator beyond one whole. | StatisticsInterpret and present discrete and continuous data using bar charts and line graphs to show time.MeasureEstimate, compare and calculate with money in £ and pConvert between pounds and pence  |
| Assessment Milestone 1 |
| HALF TERM |
| C1 | Order and compare numbers beyond 1000 | Solve problems involving addition and subtraction with numbers up to four digits in context. Encourage pupils to estimate and show them 1000 objects for a sense of size of number. | Addition and SubtractionAdd and subtract with up to four digits, using a range of representations and informal recording | GeometryCompare and classify geometric shapes, including different quadrilaterals, based on their properties.Identify lines of symmetry in 2-D shapes presented in different orientationsMeasureRead, write and convert between analogue and digital 12 and 24-hour clocks |
| D1 | Count in multiples of 6Round any number to the nearest 10, 100 or 1000 | Solve simple measure and money problems involving fractions | Multiplication and DivisionRecall and use multiplication and division facts for, 2x, 3x, 4x, 5x, 6x, 8xFractions Recognise that hundredths arise when dividing a quantity by 100 and dividing tenths by 10.Find the effect of dividing a one-or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths. | MeasureEstimate, compare and calculate with mass in kg / gConvert between kg and g |
| CHRISTMAS HOLIDAYS |

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| Spring Term Y4 | Place Value and a Sense of Number | Problem Solving and Reasoning | Core Calculation(four rules for whole and part numbers) | Geometry , Measure and Statistics |
| A2 | Count backwards through zero to include negative numbers | Use partitioning with appropriate resources, models and images to reason about how column methods work (conceptual to support procedural) | Addition and SubtractionAdd and subtract with up to four digits, beginning to develop column methods with concrete and pictorial representations alongside | GeometryDescribe movements between positions as translations of a given unit to the left/right and up/down (the square has moved 3 squares to the left and 2 squares down)Plot given points to draw the sides to complete a polygon.MeasureEstimate, compare and calculate with capacity in litres and ml |
| B2 | Count in multiples of 6, 25 and 1000 (link to 2x, 3x, 4x, 5x and 10x) | Solve problems involving multiplying and dividing using the distributive law (partitioning) to multiply two-digit by one-digit numbers | Multiplication and DivisionMultiply by 0 and 1, divide by 1.Multiply a two-digit or three-digit number by a one-digit number in informal ways, developing the idea of partitioning to support multiplying (use Dienes to show this)Fractions Recognise and show, using diagrams, families of common equivalent fractions (use bar model and Cuisenaire rods to support this) | MeasureConvert between units of length: km, m , cmConvert between different units of capacity: litres and ml |
| Assessment Milestone 2 |
| HALF TERM |
| C2 | Read Roman numerals to 100 (I to C) and know that, over time the numeral system changed to include zero and the concept of place value | Solve simple money and measure problems involving fractions and decimals to 2dps. | Addition and SubtractionAdd and subtract with up to four digits, developing column methods where appropriate, with concrete and pictorial representations alongside | GeometryCompare and classify geometric shapes including different triangles, based on their properties.Identify acute and obtuse angles and compare and order angles up to two right angles by size. |
| D2 | Order and compare numbers beyond 1000Identify 1, 10, 100 more and less to support efficient calculation.Count up and down in hundredths.Recognise and write decimal equivalents of any number of tenths or hundredths | Solve contextual integer scaling problems, such as four times as high.Solve contextual correspondence problems, such as 3 hats and 4 coats ~ how many different outfits?  | Multiplication and DivisionKnow or quickly derive multiplication and division facts up to 12x12 (arrays, repeated addition, partitioning)Use factor pairs in mental calculations and partitioning (the distributive law) to multiply up to 2-dogit by 1-digit numbersDevelop a reliable written method for multiplication of 2-digit or 3-digit by 1-digit numbers.Fractions Recognise and write decimal equivalents to ½, ¼ and ¾ Compare numbers with the same number of decimal places up to two dps | MeasureConvert between hours and minutes; minutes to seconds; years to months; weeks to days. |
| Assessment Milestone 3 |
| EASTER HOLIDAYS |

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| Summer Term Y4 | Place Value and a Sense of Number | Problem Solving and Reasoning | Core Calculation(four rules for whole and part numbers) | Geometry and Measure |
| A3 | Explore partitioning up to numbers in different ways.How many ways can a partition 3?(3+0; 2+1; 1+1+1)How many ways can I partition 19 into two parts?(19+0; 18+1; ….)Model heuristics such as being systematic and patterning. | Solve problems involving length where lengths are given in two different units so that pupils must convert before solving e.g. I walked 3500 m and my friend walked 3.6 km. Who walked furthest, justify your answer. | Addition and SubtractionContinue to develop fluency with addition and subtraction by working with a few four digit examples and generating all possible representations and solutions e.g. 2563 + 3491 can be solved in a variety of ways. What could it mean? Crowds at a sports match / ants in two ant hills …. Show the solution using as many different ways as possible (bar model, Dienes, partitioning in a range of ways, rounding and adjusting the answer and so on | GeometryPlot specified points to complete a polygon on a coordinate grid. Reason about possible places if the final point in the quadrilateral makes it into a kite, or a rectangle, or a parallelogramMeasureConvert between length measurements (km, m, cm and mm) |
| B3 | Round numbers to the nearest whole number, 10, 100, 1000.Use rounding to estimate answers.Explore decimal partitions of 1 and compare to known number bonds | Solve comparison, sum and difference problems involving a range of statistical charts and graphs. | Multiplication and DivisionRecall multiplication and division facts up to 12x12 ( explore a range of representations to enable pupils to quickly call the facts to mind)Fractions Multiply and divide by 10, 100 and 1000 in context.Convert between fractions and decimals | MeasureConvert between mass measurements (kg, g)StatisticsInterpret and present discrete and continuous data using appropriate graphical methods including bar charts and time graphs. |
| HALF TERM |
| C3 | Count in multiples of 6,7,9 | Solve problems involving capacity and mass where pupils need to convert between units to find a solution and justify that solution, | Addition and SubtractionContinue to develop efficient written and mental methods, performing calculations with increasingly large numbers (up to four digits but could bridge to 10,000). Ensure that pupils reason about their chosen method and justify their choice with multiple representations. Generate ‘new for old’ by identifying ‘nearly numbers’. e.g. 2500 – 999 is nearly 2500 -1000 = 1500 (so my answer is 1501). | GeometryDraw shapes with accuracy using mathematical reasoning and analyse shapes and their properties, describing the relationship between them (all have four sides, both have sides of equal length, both have four equal angles..)MeasureConvert between capacity measurements (litres and ml) |
| D3 | Count backwards through zero to include negative numbers. | Solve a contextual problem that requires all four operations and fractions (perhaps a budget for an end of term party, or a summer holiday, or a recipe (and cost) for a party drink for 5, 10, 100 children) | Multiplication and DivisionDevelop formal methods of short multiplication and short division with appropriate models and images alongsideFractions Independently identify equivalent fractions using the multiplicative relationship between the numerator and the denominator (e.g.in quarters, the denominator is always four times the numerator) | MeasureUse measuring instruments accurately, making connections between measure and number (e.g. recipes, mixing fruit cocktails, the perimeter of the playground…) |
| END OF YEAR ASSESSMENT AND TRANSITION DIALOGUE (Milestone 4) |
| SUMMER HOLIDAYS |

**UNIT PLANNING MODEL**

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| --- | --- | --- | --- | --- |
| Week | Date | Block | Unit  | Big ideas, unit objectives, hot and cold tasks with key activities, resources, models and images.(now construct the connected learning journey – link to previous learning) |
| 1 | 04-09-17 | A1 | Geometry  |  |
| 2 | 11-09-17 | A1 | Addition and Subtraction |  |
| 3 | 18-09-17 | A1 | Addition and Subtraction |  |
| 4 | 25-09-17 | A1 | Statistics and Measure |  |
| 5 | 02-10-17 | B1 | Measure |  |
| 6 | 09-10-17 | B1 | Multiplication and Division |  |
| 7 | 16-10-17 | B1 | Division and Fractions |  |
| Milestone 1 |
| Half Term |
| 8 | 30-10-17 | C1 | Geometry |  |
| 9 | 06-11-17 | C1 | Addition and Subtraction |  |
| 10 | 13-11-17 | C1 | Addition and Subtraction |  |
| 11 | 20-11-17 | D1 | Statistics and Measure |  |
| 12 | 27-11-17 | D1 | Fractions |  |
| 13 | 04-12-17 | D1 | Multiplication and Division |  |
| 14 | 11-12-17 | D1 | Multiplication and Division |  |
| Christmas Holiday |

What planning a learning journey looks like!

*Identify key tasks ~ plan the journey ~ choose the ‘cold task’ ~ design the ‘hot task’*

