Medium Term Plans for Mathematics (aligned with the 2014 National Curriculum) - Year Five (Summer Term)

Oral mental starters (ongoing, throughout the term):
- Identify multiples and count from (and back to) 0 in multiples of 3, 4, 6, 7, 8, 9, 11,12, 25, 50, 100 and 1000
- Recall and use multiplication and division facts for the 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 times tables (up to the 12th multiple)
- Find all factor pairs of a given number; find all common factors for a pair of numbers
- Multiply and divide numbers mentally using known facts and a range of strategies
- Multiply numbers with up to two decimal places by 10, 100 and 1000 and divide corresponding numbers by 10, by 100 and by 1000
- Read, write, compare and order numbers with up to three decimal places
- Subtract larger numbers mentally by finding the difference, e.g. 8004 – 6999 = 1005 (consider empty number lines)
- Find doubles of five-digit numbers (using knowledge of partitioning and place value) and find corresponding halves
- Count forwards and backwards with positive and negative whole numbers, including through zero; calculate intervals across zero (in context)
- Recognise, describe and extend linear number sequences, including those involving decimals, e.g. 0.7, 1.4, 2.1 ; find the term to term rule
- Compare and order fractions, decimals and percentages (using diagrams and resources to support)
- Know and use the vocabulary of prime numbers and establish whether a number up to 100 is a prime number.
- Recognise and use square numbers (up to 12 x 12) and the notation e.g. $9^2 = 81$
- Read and write Roman numerals to 1000 (M)
- Count forwards and backwards in steps of powers of 10 (10,100,1000,10,000) from any given number up to 100,000)

NB Also see the **Mental Maths Policy** for further guidance

Areas of Study	No of days	Statutory requirements and non-statutory guidance	Suggested Key Vocabulary
Number Number and place value	3-5	Read and write numbers to at least a million; recognise 1,000,000 as one million. Order and compare numbers within 1,000,000 Round numbers up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000 Determine the place value of each digit in a six-digit number Partition six-digit numbers into hundred thousands, ten thousands, thousands, hundreds, tens and ones/units; continue to use place value cards and charts to support, if necessary Use knowledge of place value to solve number problems by adding and subtracting 10, 100, 1000, 10,000 to any number up to 1,000,000 e.g. I am buying a new flat. It was for sale for £215,000 but the price has gone up by £1,000. How much does it cost now? Last year it was £10,000 cheaper. How much was it then?	Partition, Place Value Digit, number Units/ones, Tens, Hundreds, Thousands, Ten thousands. Hundred thousands, (one million) Order Compare More than, Less than, <, > Round

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Number Decimals/ place value & Addition/ Subtraction	2	Read, write numbers with up to three decimal places Order and compare numbers with up to three decimal places (including in the context of measures) Round decimal numbers with one or two decimal places to the nearest whole number Round decimal numbers with two decimal places to one decimal place Determine the place value of each digit in a decimal number with up to three decimal places (hundreds, tens, units/ones, tenths, hundredths, thousandths) Partition decimal numbers into hundreds, tens, units/ones, tenths, hundredths and thousandths; use place value cards and charts to support, if necessary	Partition, Place value Digit, number, decimal tenth, hundredth, thousandths Order Compare More than, greater than, less than, <, >
	3	Consolidate using the **formal written method of addition** to add two four-digit or five-digit numbers, decimal numbers (up to three-decimal places), including in the context of money and measures **(See Calculation Policy)** Consolidate the **formal written method of subtraction** to subtract two four-digit or five-digit numbers, decimal numbers (with up to three decimal places), including in the context of money and measures **(See Calculation Policy)** Solve addition and subtraction one-step, two-step and multi-step word problems (including money and measures problems, with up to 3 decimal places), deciding which operation to use; use rounding and inverse operations to estimate and check answers to calculations	Round Inverse operations Addition, plus, altogether, add, sum of, total, more than, increase Subtraction, subtract, minus, less than, decrease Estimate, check
Measurement Length, perimeter, area and volume	5	Convert between different metric units of length Estimate and measure length using appropriate units and equipment, including mixed units of measurement, and record using decimal notation, **in practical contexts** ;measure and draw lines to the nearest mm **(Possible link to Science Curriculum)** Consolidate understanding of perimeter and express the formula for finding the perimeter of a rectangle in words (and then letters); measure and calculate the perimeter of rectilinear shapes and of composite rectilinear shapes; solve perimeter problems with missing measurements Consolidate understanding of area and relate finding area to arrays and to multiplication Find the area of rectangles using the formula in words (and then letters), using the notation for square centimetres (cm²) and square metres (m²); estimate the area of irregular shapes Consolidate understanding of volume; **begin** to estimate and calculate the volume of cubes and cuboids using standard units of cm³ **(taken from Y6 Programmes of Study)**	Length, height, distance, km, kilometres, cm, centimetre, m, metre, mm, millimetre Perimeter Area Square centimetres, cm², square metres, m² Volume, cuboids Cubic centimetres, cm³

Geometry Properties of Shape (2D & 3D)	2	Identify 3D shapes, including cubes and other cuboids, from 2D representations; describe the properties of 3D shapes using vocabulary from previous years ; extend with' pairs of parallel faces' Identify simple nets of 3D shapes **Investigate** the different nets that will make a cube or cuboid e.g. using Polydron or squared paper to support	Relevant vocabulary from previous years/terms including all triangles and quadrilaterals
	2	Identify 2D shapes including all quadrilaterals and triangles Describe properties of 2D shapes using vocabulary from previous years, including: acute/obtuse/reflex/right angle; lines of symmetry/symmetric/symmetrical; extend with 'pairs of parallel sides; use conventional marking or parallel line and right angles. Distinguish between regular and irregular polygons based on reasoning about equal sides and angles	Parallel (sides and faces) Regular, irregular
	1	Consolidate describing positions on a 2D grid as co-ordinates in the first quadrant; plot specified points and draw sides to complete a given polygon (Possible link to Geography curriculum for co-ordinates)	Co-ordinates, first quadrant
Number Multiplication	5	Recognise and use square numbers up to 12 x 12 and the notation for squared number (^{2}) Introduce **cube numbers** and the notation e.g. $2^3 = 2 \times 2 \times 2 = 8$; relate to volume and cm^3 Use the formal written method of **short multiplication** to multiply a two-digit number, a three digit-number or a four- digit number by a single digit number **(See Calculation Policy for guidance on progression in methods)** Consolidate the formal written method of **long multiplication** to multiply a two-digit number by a two-digit number; extend with multiplication of a three digit number by a two-digit number **(See Calculation Policy for guidance on progression in methods)** Solve word problems, which involve short and long multiplication e.g. How many days are there in 7 years? At the cinema there are 26 seats in a row and 24 rows. How many seats are there altogether?	Square numbers (^{2}) Cube numbers (^{3}) Multiply, multiplication, times, product Thousands, hundreds, tens, ones/units, digit Formal method of short multiplication Formal method of long multiplication

Number Division	5	Know and apply tests of divisibility by 2, 3, 4, 5 , 9, 10, 100 Establish whether a number up to 100 is prime, using knowledge of multiplication and division facts, factors and multiples; recall prime numbers up to 19; use the vocabulary of prime numbers, prime factors and **composite (non-prime) numbers** Use the **formal method of short division** to divide numbers with up to four- digits by a single digit number with whole number answers or with remainders, including expressing the remainder as a fraction **(See Calculation Policy**) Solve word problems, which involve short division, with and without remainders; interpret remainders appropriately for the context e.g. For every 7 tokens I collect I can get a free book. I collect 156 tokens. How many books can I get? (round down)		Prime number, composite number, prime factor Divide, division, divisor, dividend, quotient Short division Formal layout ‾⟩ Round up/down, remainder
Number Fractions, decimals and percentages	5	Consolidate understanding of mixed numbers and improper fractions and convert from one form to the other Consolidate understanding of equivalent fractions; name and write equivalent fractions of a given fraction, including tenths and hundredths (represented visually and supported by materials and diagrams if necessary) Find unit and non-unit fractions of whole number quantities e.g. 1/6 of 420; 5/6 of 72; relate to multiplication and division Multiply proper fractions and mixed numbers by whole numbers, **supported by materials and diagrams** e.g. 2/5 x 4 = 8/5 (the answer can be expressed as a mixed number); 1¼ x 3 = 3 ¾ ; 2¾ x 3 = 8 ¼ Know decimal and percentage 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 Find percentages of whole number quantities using known fraction equivalences e.g. 10% of 45 = 4.5; 20% of 80 = 16; 50% of £184 = £92 Solve word problems which involve percentages e.g. There are 80 children in the playground. 20% of them are girls. How many girls and how many boys are there?		Whole Unit fraction, non-unit fraction Numerator, denominator Equivalent fractions, mixed number, improper fractions Decimal, percentage, %, equivalence

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Measurement Units of measurement & **Statistics**	4	Convert between 12 hour digital clocks and 24 hour digital clocks e.g. What time on the 12 hour clock is 19:55? What time on the 24 hour clock is 8:20 pm? Convert between units of time e.g. how many seconds in five minutes? How many seconds in an hour? How many months have you been alive? How many days have you been alive? How many days are there in the first four months of the year altogether? How many hours in a week? Make estimates of measurements and choose suitable units of measure; read a range of scales Convert between different units of metric measures, using decimal notation, when appropriate e.g. I am 158cm tall. How many metres is this? What is 1.255 km expressed as metres? How many ml in a 2.5 jug of juice? My dog weighs 4.25 kg. How much does he weigh in grams? Understand and use approximate equivalences between metric units and **common imperial units**, such as feet and inches, pounds and pints. Establish where we still see/ use imperial units e.g. a pint of milk, inches on some rulers, my new baby weighs 7 pounds	All relevant vocabulary from previous years relating to measures (including time) Metric measures, imperial measures
	1	Interpret a straight line graph showing conversion from km to miles and answer related questions **(taken from Y6 Programme of Study)**	Straight line graph, conversion
Number Multiplication and division (mental methods)	5	Multiply and divide numbers mentally using a range of strategies, drawing upon known facts, knowledge of place value, inverse operations, knowledge of factors and multiples **(See Mental Maths Policy)** For example: Use inverse operations, place value and the known fact $7 \times 8 = 56$ to calculate $56 \div 8$; 70×8; $560 \div 70$; 0.8×7; 80×70; $560 \div 8$ etc Use factor pairs and the associative law to calculate $4 \times 35 = 2 \times 2 \times 35 = 2 \times 35 \times 2 = 70 \times 2 = 140$ Partition and use the distributive law to calculate $47 \times 5 = (40 \times 5) + (7 \times 5) = 200 + 35 = 235$ Use partitioning to calculate $98 \div 7 = (70 + 28) \div 7 = 10 + 4 = 14$ Understand the meaning of the = sign to indicate equivalence, including missing number problems e.g. $96 \div \square = 12$; $54 \div 9 = \square \div 7$; $8 \times \square = 4 \times 12$	Multiply, multiplication, times, product Divide, division, divisor, dividend, quotient Inverse operation Factors, factor pair Partition Equivalence, equivalent

Number Problem solving (involving all operations)	5	Solve one-step, two-step or multi-step addition, subtraction, multiplication and division problems (and a combination of these); use **mental methods** with jottings or **formal written methods**; decide which operations and methods to use; use rounding to check answers to calculation and determine, in the context of a problem, levels of accuracy E.g. I buy a punnet of strawberries that cost £2.99 and a tray of peaches that cost £3.99. How much do I spend? How much change do I get from a ten pound note? I buy three trays of peaches and two punnets of strawberries. How much change will I get from £20? How many trays of peaches could I buy with £30? How much change would I get? There are 1,585 cars on the ground floor of a car park and 998 cars in the first floor. How many cars are there in the car park altogether? 115 cars drive away. How many cars are left? The car park has a total of 3000 spaces. How many more cars can fit in? **Investigate** statements and apply reasoning e.g. What do you notice about the sum of three consecutive numbers? Solve a problem by applying mathematics, generalising, looking for patterns, finding all possibilities, recording and reporting findings e.g. You have a blue, red and yellow sports shirt and blue, red, and yellow shorts. How many different combinations of sports kits can you make? What if you lost the yellow kit? What if I also had a green kit? Can you see a pattern? Can you see a rule? Can you predict the number of kits if I had a fifth colour? What if I also had hats in the same colours? (use and apply knowledge of square and cube numbers)	Calculate, calculation Operation, method Problem, solution, pattern, rule, predict
Measurement Length, Mass and Capacity (problem solving)	5	Solve problems involving length, mass, capacity, e.g. A bottle of salad dressing holds 399ml. A tablespoon holds 15ml. How many tablespoons of dressing are in the bottle? I have a piece of rope 2.5 metres long. I cut off 65 cm. How much is left? There is 2.2kg of flour in a bag. How much flour is in 10 bags? If I use 500g of flour from a bag, how much will be left? A full bucket holds 5 ½ litres of water. A jug holds 500ml of water. How many jugs full of water will fill the bucket? Solve integer scaling problems e.g. Change this recipe for 4 people to a recipe for 12 people, for 6 people etc. (in preparation for ratio in Year 6) **Investigate** statements relating to measurement e.g. The circumference of your head is longer than the length of your arm. Is this true or false? How will you find out?	Weight, mass, measure Kilograms, kg, grams, g Capacity, measure Litre, l, millilitre, ml Length, height, distance, km, kilometres, cm, centimetre, m, metre, mm, millimetre Problem, solution Investigate, investigation

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Additional weeks

To be used for:
- assessment, consolidation and responding to AfL
- additional using and applying activities