Year 5 Mathematics Medium Term Planning Autumn

Mental Maths objectives to be covered:

Number - Number and place value:
Partition, order and compare numbers to at least 1 000 000, including those with up to three decimal places and determine the value of each digit.
Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000.
Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000.
Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero.
Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.

Number – Addition and Subtraction:
Add and subtract numbers mentally with increasingly large numbers.

Number – Multiplication and division:
Derive multiplication and division facts up to 12 x 12.
Multiply together 3 numbers.
Multiply and divide whole numbers by 10, 100 and 1000.
Double or halve any whole number or decimal number.

Number – Fractions:
Find fractions of shapes, quantities, measures.
Recognise equivalent fractions, decimals and percentages.

Measurement:
Read Roman numerals to 100 (I to C).
Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre).
Read, write and convert time between analogue and digital 12- and 24-hour clocks. (Y4)
Convert from hours to minutes; minutes to seconds; years to months; weeks to days. (Y4) - Needs to be practised daily to be secure for the Spring term (timetables) Review chn's understanding early on so that individuals gaps can be addressed.

Geometery – Properties of shape
Calculate the perimeter and area of regular shapes and rectangles.

Things to remember:
It is important to consistently use the appropriate vocabulary and insist that the children do the same (see 'Talk and Tasks' document).
Learning of times tables should be prioritised and reflected in the children's 'Maths Mountains' results.
The plans should be adjusted at least half-termly based on teacher assessments and analyses. The plans may also need adjusting due to changes in the number of weeks in a term or half term.
Cross-curricular links between mathematics and other subjects should be explored wherever relevant.

Objectives in **bold** are KPIs. Highlighted objectives will be assessed during the term (may be part). Objectives in *italics* are taken from the previous or next year.

Problem-solving and reasoning should be integrated into all activities.
Opportunities to explain and justify opinions and make explanations should be incorporated into planning.
Children should be challenged and extended through the problems they are given to solve.
Use a range of models and images to support conceptual understanding.

Week	Date	Strand	Curriculum objectives derived from the 2014 Curriculum	Resources
		Numbers to 1 Million (2 ½ weeks)	• Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit. Start by checking if understanding of 4-digit numbers is secure. • Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000. • Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000. Start by checking if10, 100 and 1000 are secure. • Solve number problems and practical problems that involve all of the above.	1–9 digit cards Blank number lines (increments marked) Place-value charts Place-value discs
		Whole Numbers 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). *Revisit Y4 objective - add and subtract whole numbers with up to 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.	Place-value discs
		Whole Numbers Multiplication and division (4 weeks)	• Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. • Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. • Establish whether a number up to 100 is prime and recall prime numbers up to 19. • Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}). • Multiply and divide whole numbers by 10, 100 and 1000. • 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 two-digit numbers. • 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. • Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes.	100-square 1–5 digit cards Base 10 materials – ones Coins and notes Counters Place-value charts Place-value discs Six-sided dice
		Whole Numbers Word Problems (1 week)	• Solve problems involving multiplication and division.	None
		Graphs (1 ½ weeks)	• Complete, read and interpret information in tables, including timetables. • Solve comparison, sum and difference problems using information presented in a line graph.	None

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Year 5 Mathematics Medium Term Planning Spring

Mental Maths objectives to be covered:

Number - Number and place value:
Partition, order and compare numbers to at least 1 000 000, including those with up to three decimal places and determine the value of each digit.
Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000.
Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000.
Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero.
Use knowledge of place value to derive doubles and halves of decimals e.g. half of 5.6, double 0.4.
Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.

Number – Addition and Subtraction:
Add and subtract numbers mentally with increasingly large numbers.

Number – Multiplication and division:
Derive multiplication and division facts up to 12 x 12.
Identify multiples and factors.
Establish whether a number up to 100 is prime and recall prime numbers up to 19 (using the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.
Multiply and divide numbers mentally drawing upon known facts.
Recall squared numbers.

Number - fractions:
Find fractions of shapes, quantities, measures.
Recognise equivalent fractions, decimals and percentages. (Adapted)

Measurement:
Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.
Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre).
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.
Read, write and convert time between analogue and digital 12- and 24-hour clocks. (Y4)
Convert from hours to minutes; minutes to seconds; years to months; weeks to days. (Y4) - Needs to be practised daily to be secure for the Spring term (timetables) Review chn's understanding early on so that individuals gaps can be addressed.

Geometery – Properties of shape:
Calculate the perimeter and area of regular shapes and rectangles.
Identify, visualise and describe properties of 2D and 3D shapes.

Things to remember:
It is important to consistently use the appropriate vocabulary and insist that the children do the same (see 'Talk and Tasks' document).
Learning of times tables should be prioritised and reflected in the children's 'Maths Mountains' results.
The plans should be adjusted at least half-termly based on teacher assessments and analyses. The plans may also need adjusting due to changes in the number of weeks in a term or half term.
Cross-curricular links between mathematics and other subjects should be explored wherever relevant.

Objectives in **bold** are KPIs. Highlighted objectives will be assessed during the term (may be part). Objectives in *italics* are taken from the previous or next year.

Problem-solving and reasoning should be integrated into all activities.
Opportunities to explain and justify opinions and make explanations should be incorporated into planning.
Children should be challenged and extended through the problems they are given to solve.
Use a range of models and images to support conceptual understanding.

Week	Date	Strand	Curriculum objectives derived from the 2014 Curriculum	Resources
		Fractions (4 weeks)	• 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, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$]. • Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths. • Compare and order fractions whose denominators are all multiples of the same number. • 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. • Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates. (Multiplication and division)	Fraction wall Circular representations of fractions Coloured strips of paper/card for cutting and folding Pattern Blocks
		Decimals (3 weeks)	• Read and write decimal numbers as fractions [for example, 0.71 = $\frac{71}{100}$]. • 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. • Solve problems involving number up to three decimal places. • Round decimals with two decimal places to the nearest whole number and to one decimal place.	Bags of different weights Base 10 materials Blank number lines Card strips divided into hundredths Card strips divided into tenths Counters Decimal strips Digital scales Labelled objects Linking cubes Number lines Place-value charts Rope Squared paper
		Percentages (½ week)	• 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 $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25.	100 ml measuring beakers Squared paper
		Geometry (2 ½ weeks)	• Estimate and compare acute, obtuse and reflex angles. • Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles. • Draw given angles, and measure them in degrees (º). • Identify: angles at a point and one whole turn (total 360º); angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180º); other multiples of 90º. • Draw given angles, and measure them in degrees (º). • Use the properties of rectangles to deduce related facts and find missing lengths and angles. • Identify angles at a point on a straight line and ½ a turn (total 180º), and other multiples of 90º. • Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.	Irregular polygon shapes Protractors Rectangle paper shapes Regular polygon shapes Shapes Square paper shapes Squared paper

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Year 5 Mathematics Medium Term Planning Summer

Mental Maths objectives to be covered:

Number - Number and place value:
Partition, order and compare numbers to at least 1 000 000, including those with up to three decimal places and determine the value of each digit.
Round any number up to 1 000 000 to the nearest 1, 10, 100, 1000, 10 000 and 100 000.
Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000.
Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero.
Use knowledge of place value to derive doubles and halves of decimals e.g. half of 5.6, double 0.4.
Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.
Partition to multiply by single digit numbers. Use tests of divisibility.

Number – Addition and Subtraction:
Add and subtract numbers mentally with increasingly large numbers.

Number – Multiplication and division:
Derive multiplication and division facts up to 12 x 12.
Identify multiples and factors.
Establish whether a number up to 100 is prime and recall prime numbers up to 19 (using the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.
Multiply and divide numbers mentally drawing upon known facts.

Number - fractions:
Find percentages of shapes, quantities, measures.
Recognise equivalent fractions, decimals and percentages.
Count on and back in fractions and decimals, including bridging 0.

Measurement:
Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.
Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre).
Calculate the perimeter and area of regular shapes and rectangles. (Adapted)

Things to remember:
It is important to consistently use the appropriate vocabulary and insist that the children do the same (see 'Talk and Tasks' document).
Learning of times tables should be prioritised and reflected in the children's 'Maths Mountains' results.
The plans should be adjusted at least half-termly based on teacher assessments and analyses. The plans may also need adjusting due to changes in the number of weeks in a term or half term.
Cross-curricular links between mathematics and other subjects should be explored wherever relevant.

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Problem-solving and reasoning should be integrated into all activities.
Opportunities to explain and justify opinions and make explanations should be incorporated into planning.
Children should be challenged and extended through the problems they are given to solve.
Use a range of models and images to support conceptual understanding.

Week	Date	Strand	Curriculum objectives derived from the 2014 Curriculum	Resources
		Position and Movement (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.	Coordinates grid Graph paper Mirrors Rulers Squared paper
		Measurements (3 weeks)	• Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre). • Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints. • Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling. • Solve problems involving converting between units of time. • Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero.	Digital scales Kitchen weights Measuring tapes Number lines (including negative numbers) Rulers Weighing scales
		Area and Perimeter (2 weeks)	• Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres. • Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes. • Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.	1 cm^2 squares 1 m paper strips 1 m^2 squares (six) Graph paper Paper rectangles Squared paper
		Volume (2 weeks)	• Estimate volume [for example, using 1 cm^3 blocks to build cuboids (including cubes)] and capacity [for example, using water]. • Identify 3-D shapes, including cubes and other cuboids, from 2-D representations. • Use all four operations to solve problems involving measure [for example, length, mass, volume, money]. • Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre). • Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.	Bottles (different capacities) Cardboard boxes (different sizes) Pints of milk (cartons) Unit cubes
		Roman Numerals (½ week)	• Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.	None

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