

## Hampshire Medium Term Plans for Mathematics: Block C (for use with mixed age classes).

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	
				SATs (Y2/Y6)												

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

### Key:

- **A (B, C, D) 1 (2, 3):** Block A (B, C, D): Term 1 (2, 3)
- **M1 (2, 3):** Assessment milestone 1 (2, 3)
- **M4:** Assessment milestone 4: Transition to next year group ~ could be End of Year Key Performance Indicators, summative or formative assessments, transition conversations with attainment evidence.

Blocks are laid out across year groups to enable schools to combine two (or three) year groups when planning for mixed age classes (vertical year groups)

There is one document for each of the four blocks.

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C1 (Autumn Term)				
Year	Place Value and a Sense of Number	Problem Solving and Reasoning	Core Calculation (four rules for whole and part numbers)	Geometry and Measure
1	Count in multiples of tens	Solve one and two step problems that involve addition and subtraction, including empty box problems.	<u>Addition and Subtraction</u> Represent and use number bonds and related subtraction facts within 20	<u>Geometry</u> Recognise and name common 2-D shapes such as triangles and rectangles  Describe position, directions and movements as half turns
2	Use place value and known number facts to solve problems	Solve addition and subtraction problems using concrete and pictorial representations alongside number recordings, including in the context of measure	<u>Addition and Subtraction</u> Add and subtract whole numbers using concrete and pictorial representations, including: -three one-digit numbers ( $9 + 7 + 1 = 10 + 7$ ; $10 = 7 = 17$ )	<u>Geometry</u> Identify and describe properties of 3-D shapes, including the number of faces, edges and vertices <u>Measure</u> Choose and use appropriate standard units to estimate and measure length/height in m/cm. Use a ruler to measure
3	Partition a three-digit number to support addition and subtraction Find 10 or 100 more or less than a given number	Solve problems involving addition and subtraction of money, giving change (£ and p)	<u>Addition and Subtraction</u> Add and subtract numbers mentally (with jottings): Three-digit number and ones ( $362+7$ ), tens ( $362+30$ ) and hundreds ( $362+700$ ) ~ use base 10 materials to support and reason	<u>Measure</u> Add and subtract money in £ and p, giving change  Know the number of seconds in a minute. Known the number of days in each month, year and leap year
4	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.	<u>Addition and Subtraction</u> Add and subtract with up to four digits, using a range of representations and informal recording	<u>Geometry</u> Compare and classify geometric shapes, including different quadrilaterals, based on their properties. Identify lines of symmetry in 2-D shapes presented in different orientations <u>Measure</u> Read, write and convert between analogue and digital 12 and 24-hour clocks
5	Count forwards and backwards in steps of	Solve problems to develop the use of heuristics: focus on	<u>Addition and Subtraction</u> Add and subtract whole numbers with more than	<u>Geometry</u> Draw given angles and measure them in

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	powers of 10 for any given number up to 1,000,000 (steps of 0.01, 0.01 up to steps of 100,000)	patterning	four digits including using formal column methods alongside a full range of other representations (to demonstrate an understanding of structure and to support reasoning)	degrees. 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. <u>Measure</u> Use four operations, decimal notation and scaling to solve problems involving length.
6	Use negative numbers in context and calculate intervals across zero (using a number line)	Solve missing number problems in context	<u>Calculation</u> Use knowledge of the order of operations to carry out calculations involving all four. <u>Algebra</u> Express missing number problems algebraically	<u>Measure</u> Recognise, describe and build simple 3-D shapes, including constructing nets accurately.  Calculate, estimate and compare the volume of cubes and cuboids using standard cubic units (from $\text{km}^3$ to $\text{mm}^3$ )

C2 (Spring Term)				
Year	Place Value and a Sense of Number	Problem Solving and Reasoning	Core Calculation (four rules for whole and part numbers)	Geometry and Measure
1	Count, read and write numbers to too	Solve one and two step problems involving addition and subtraction	<u>Addition and Subtraction</u> Add and subtract one and two digit numbers in a range of contexts. Develop the idea of part-whole to link addition and subtraction ( 6 is the whole; 4 and 2 are the parts) Relate numbers to 5 and 10 to develop fluency ( 6 is one more than 5 , so $5 + 3 = 8$ means that $6 + 3 = 9$ )	<u>Geometry</u> Recognise and name common 3-D shapes such as cubes and cuboids  Describe position, directions and movements as half, quarter and three quarter turns
2	Count in steps of 3 from zero	Solve missing number problems for addition and subtraction using	<u>Addition and Subtraction</u> Recall and use facts to 20 fluently.	<u>Geometry</u> Compare and sort common 2-D and 3-D

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		a bar model to support use of inverse	Derive and use related facts to 100. ( $3+6 = 9$ ; $30+60 = 90$ and $31+59 = 90$ (one more, one less)) Add and subtract two two-digit numbers with informal jottings and concrete and visual resources. Recognise and use the inverse relationship between + and – to check and solve missing number problems (use a bar model)	shapes Know that rotation is a turn and know that a quarter, half and three quarter turn represent a right angle (clockwise and anti-cws) <u>Measure</u> Write and tell the time to 5 minutes Compare and order mass and volume/capacity , introducing standard units and recording the results using >,< and =
3	Count from 0 in multiples of 4 and 8	Solve missing number problems using known number facts, with the empty box in any position in the number sentence.	<u>Addition and Subtraction</u> Develop a range of strategies and recordings for addition and subtraction calculations and explore which method to choose and why.	<u>Geometry</u> Recognise 3D shapes in different orientations and describe them. Know that two right angles make a half turn, three make a three quarter turn and four make a complete turn. Identify whether angles are greater than or less than a right angle
4	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.	<u>Addition and Subtraction</u> Add and subtract with up to four digits, developing column methods where appropriate, with concrete and pictorial representations alongside	<u>Geometry</u> Compare 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.
5	Read Roman numerals to 1000 (M) and recognise years written in Roman numerals	Solve problems using geometric reasoning and questioning: If I know this, then what else do I know? What is the same and what is different?	<u>Addition and Subtraction</u> Fluently solve addition and subtraction problems in context, selecting the best method to use and justifying their choice. e.g. column addition for $546 + 328$ but informal partitioning for $546 + 122$ and near doubles for $546 + 554 (=550+550)$	<u>Geometry</u> 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. <u>Measure</u> Understand and use equivalences between common metric and imperial units such as

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				inches, pounds and pints.
6	Decide which operations and methods to use when calculating and problem solving with number. Explain their choices.	Solve multi-step problems involving all four operations and numbers of any size (very large and very small)	<u>Algebra</u> Use simple formulae. Substitute values into formulae to find total costs, for example.	<u>Geometry</u> Classify and compare geometric shapes using known properties and angle facts. Find unknown angles in shapes (triangles, quadrilaterals and regular polygons)

C3 (Summer Term)				
Year	Place Value and a Sense of Number	Problem Solving and Reasoning	Core Calculation (four rules for whole and part numbers)	Geometry and Measure
1	Count on to and back from any given whole number, up to and across 100 Use concrete and pictorial representations with comparative language to independently order whole numbers (more than/less than)	Be able to independently use manipulatives and pictorial representations to show how to find the solution to addition and subtraction problems in context.	<u>Addition and Subtraction</u> Add and subtract one and two digit numbers to 20, including zero. Be able to represent the calculations using manipulatives including Diennes , Numicon and Cuisenaire; pictorially using a supported structured number line and their own jottings and pictures; as an abstract 'number sentence'. Solve empty box problems and begin to use the inverse to check.	<u>Geometry</u> Describe position, direction and movements for $\frac{1}{2}$ , $\frac{1}{4}$ and $\frac{3}{4}$ turns ~ use a clock to link this with time and a compass to begin to describe direction. Link this to maps using a Beebot.
2	Know that the position (place) of a digit in a number determines its value. Show understanding by partitioning into hundreds, tens and ones. Use partitioning and Dienes to support an appreciation of the structure of calculation.	Reasoning problems such as 'What comes next?' $41+5=46$ $46+5=51$ $51+5=56$ Developing patterning as a PS heuristic	<u>Addition and Subtraction</u> Using known facts to derived related facts using patterning: $90=100-10$ $80=100-20$ Continue Start with a different number and make a similar pattern  Which number sentences link these numbers: 100,	<u>Geometry</u> Use position and direction on a grid to give a set of instructions to a pirate to find his treasure <u>Measure</u> Keep a diary of your day, record the time you wake up, eat breakfast.... Compare with your friend. Work out how long you are in school, watch the TV , are asleep.etc. in hours and

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			67, 33? Draw a bar model and show on a number-line.	minutes
3	Generate and derive number bonds to and within 1000	Solve more complex addition and subtraction problems, where the strategy is not immediately obvious. Pupils should make efficient choices each time.	<u>Addition and Subtraction</u> Add and subtract mentally (with jottings) any three digit number and ones, tens and hundreds Add and subtract pairs of three digit numbers using informal written methods. Introduce formal column methods using Dienes and other constructions alongside the recording.	<u>Measure</u> Apply knowledge of volume and capacity to solve problems in practical contexts, such as which container holds more liquid the tall, narrow one or the short, wider one? Or How many ways can I build a cuboid with 36 multilink cubes?
4	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,	<u>Addition and Subtraction</u> Continue 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).	<u>Geometry</u> Draw 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..) <u>Measure</u> Convert between capacity measurements (litres and ml)
5	Recognise and describe linear sequences using patterning. e.g. 2 ,5 ,8 , 11, 14 (Add three to find the next term)	Solve problems using mathematical reasoning and questioning. Ensure that pupils can offer solutions with a wide range of representations, including concrete and pictorial to demonstrate an understanding of structure.	<u>Addition and Subtraction</u> Secure formal written methods for addition and subtraction with models and images to encourage pupils to select effectively and reason appropriately. Solve multi-step problems in a range of contexts, with rounding for estimation	<u>Geometry</u> Compare and classify 2-D and 3-D shapes based on angle, side and symmetry properties. Use the terms parallel and perpendicular <u>Measure</u> Measure, compare and convert between units of length using knowledge of PV and reasoning (km, m, cm and mm). Practical contexts needed here.
6	Additive facts and related facts	<u>Problem solving strategies</u> Solve a wide range of problems in different contexts and with a variety of numbers and operations. <ul style="list-style-type: none"> <li>Patterning (what is the same and what is different)</li> </ul>	<u>Fractions</u> Four operations with fractions Using fractions as an operator and as a number (so $\frac{1}{2}$ has a value on the number line and we can also find half of an amount) Use fractions in the context of money, measure and time	<u>Statistics</u> Using the mean. Introduce the median and the mode. Represent and interpret data on different graphs and charts. Carry out some data collection and allow pupils to display in different ways to explore the best charts to use etc.

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		<ul style="list-style-type: none"> <li>Find all possibilities (make a list or use a table)</li> <li>Work systematically</li> <li>Trial and Improvement</li> <li>Start with a simpler example</li> <li>Draw a diagram</li> <li>Use equipment (can you say it, make it, draw it, write it, explain it?)</li> </ul>		
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### UNIT PLANNING MODEL

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!

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Identify key tasks ~ plan the journey ~ choose the 'cold task' ~ design the 'hot task'

