

Hampshire Medium Term Plans for Mathematics: Block B (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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B1 (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 to and across 100 from any given number (forwards and backwards) Begin to use a number line to count on and back with whole numbers Read and write whole numbers from 1 to 20 in numbers and words	Solve practical problems involving length and time	<u>Multiplication and Division</u> Use a number line to count in twos Use counting objects to double and half amounts to 20 Share objects equally by counting how many in each group <u>Fractions</u> Recognise, find and name a half as one of two equal parts of an object, shapes or quantity. Know that halving involved partitioning into two equal parts.	<u>Measure</u> Compare and describe lengths and heights (longer/shorter) Compare and describe time in hours (quicker/slower/ earlier/later) Sequence events in chronological order (before/after/ next/ first/yesterday/today) Tell the time to the hour Know the days of the week
2	Read and write numbers to at least 100 in numerals Compare and order numbers from 0 up to 100 Estimate numbers using a number line Count in steps of 2 from any given whole number.	Solve problems involving multiplication and division using materials, arrays and repeated addition.	<u>Multiplication and Division</u> Recall and use multiplication and division facts for the 2 and 10 times tables Recognise odd and even numbers (using Numicon to see the even and odd shape) Know that multiplication of two numbers can be done in any order (commutative) using an array and practical materials. (2 rows of 5 is equivalent to 5 rows of 2) <u>Fractions</u> Recognise, find, name and write $\frac{1}{3}$ and $\frac{1}{4}$ of a length, shape, set of objects or quantity	<u>Geometry</u> Order and arrange combinations of mathematical objects in patterns <u>Measure</u> Compare and order lengths, record the results using $>$, $<$ and $=$
3	Count on in multiples of 2, 3 and 4 Count up and down in tenths using a number line. Identify, represent and estimate numbers using different representations (True or false: 34 is a multiple of 4 use a number line to count in 2s and then find the 4s) What is the value of the 7 in these three-digit numbers ~ 371, 507, 735 Explain how you know (use Dienes)	<u>Multiplication and Division</u> Recall and use multiplication and division facts for 3x and 4x tables (use arrays and repeated addition to spot patterns to generate new facts from known facts) <u>Fractions</u> Recognise that tenths arise from dividing an object into ten equal parts (bar model) Compare and order unit fractions, and fractions	<u>Statistics</u> Interpret and present data using bar charts, pictograms and tables: Given a bar chart ; true or false "Twice as many people like plain crisps as like salt and vinegar" <u>Measure</u> Measure, compare, add and subtract volume/capacity in standard units

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	100 is double 50 ~ show on a bar ~ so half of 100 is 50)		with the same denominator (bar model) Find unit fractions of quantities (1/10 of 30 sweets; 1/3 of 30 marbles)	Tell and write the time from an analogue, 12 hour, clock. Use the terms a.m. and p.m.
4	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, 100 Round decimals with one dp to the nearest whole number	Solve problems involving multiplying and dividing by 10 and 100.	<u>Multiplication and Division</u> Use place value and known and derived facts to multiply and divide mentally, with informal jottings. <u>Fractions</u> Recognise and show using diagrams simple equivalent fractions Divide a one- or two-digit number by 10 or 100 (\div or \times by 100 = convert between £ and p, m and cm; \div or \times by 10 = convert between cm and mm) Add or subtract fractions with the same denominator beyond one whole.	<u>Statistics</u> Interpret and present discrete and continuous data using bar charts and line graphs to show time. <u>Measure</u> Estimate, compare and calculate with money in £ and p Convert between pounds and pence
5	Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 or 100,000. Use rounding to estimate solutions before calculating.	Solve problems involving converting between units of time and interpreting information from timetables.	<u>Multiplication and Division</u> Identify multiples and factors. Find all factor pairs of a number, and common factors of two numbers. Know prime numbers to 20. Multiply and divide whole numbers mentally drawing on known facts (use these to derive new facts) Multiply and divide part and whole numbers by 10 and 100 <u>Fractions</u> Compare and order, add and subtract fractions whose denominators are all multiples of the same number ($\frac{3}{4} + \frac{5}{8} = \frac{6}{8} + \frac{5}{8} = \frac{11}{8} = 1\frac{3}{8}$). Use a bar model to support visual memory and understanding. Recognise mixed numbers and improper fractions. Convert from one form to the other (bar models) and write mathematical statements as above.	<u>Statistics</u> Complete, read and interpret information in tables, including timetables <u>Measure</u> Convert between different units of metric measure Calculate and compare the area of a rectangle or square using standard units (m^2 , cm^2) Estimate the area of irregular shapes.

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6	Round any number to a required degree of accuracy when estimating or problem solving. Identify the value of each digit and multiply and divide by 10, 100, 1000 (up to 3 dps)	Solve problems involving equivalence between fractions, decimals and percentages in different contexts. Solve problems involving ratio, proportion and percentages such as sharing £50 out in the ratio 4:1, or receiving 20% of £50, or receiving $\frac{1}{5}$ of £50.	<u>Calculation</u> Multiply and divide up to 4-digit numbers by a 2-digit number using a formal method, alongside structural representations such as PV counters. Interpret remainders in context <u>Fractions</u> Multiply simple pairs of proper fractions (use arrays). Write the answer in its simplest form. Know that fraction and division are linked and use short division to change common fractions into decimals ($\frac{3}{8} = 3 \div 8 = 0.375$) Multiply one-digit numbers with numbers with up to two dps	<u>Statistics</u> Calculate and interpret the mean as an average. <u>Geometry</u> Revise from Y5: Compare and classify shapes based on properties, angles and symmetry. Be able to calculate missing angles in triangles, quadrilaterals and regular polygons. <u>Measure</u> Convert between standard units of measure up to three dps.
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B2 (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	Use a number line to count on and back with whole numbers in equal steps. Begin to read and write whole numbers to 100 in numerals.	Solve one step problems involving multiplication and division using concrete and pictorial representations, including arrays with support Solve practical problems involving capacity, volume and time	<u>Multiplication and Division</u> Begin to construct arrays for multiplication using concrete objects and pictorial representations. Use arrays to show commutativity ($5 \times 2 = 2 \times 5$) <u>Fractions</u> Recognise, find and name a half and a quarter as one of two, or four, equal parts of an object, shapes or quantity. Represent using bars	<u>Measure</u> Sequence events in chronological order (times in a day to the hour/yesterday/today) Tell the time to the hour and half past the hour. Draw the hands on a clock face to show these times. Know the months of the year Compare, describe capacity and volume

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				(full/empty/half full) Measure and record capacity and volume (how many cubes to fill?)
2	Count in steps of 2 or 5 from any given number	Solve problems involving multiplication and division using materials, arrays and repeated addition.	<u>Multiplication and Division</u> Recall and use multiplication and division facts for the 5x table. Recognise odds and evens Calculate and record multiplication statements using x and = signs (compare with repeated addition) <u>Fractions</u> Recognise, find, name and write fractions for $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shapes, set of objects or quantity	<u>Statistics</u> Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity
3	Count from 0 in multiples of 50 and 100	Solve missing number problems involving multiplication and division, including integer scaling problems (twice as much, half as much etc). Solve one and two step questions using information in scaled (e.g. going up in 2s) bar charts, pictograms and tables	<u>Multiplication and Division</u> Calculate mentally using multiplication tables they know. Use this to derive new facts using jottings and different representations. Link multiples to equivalent fractions. <u>Fractions</u> Recognise and show, using diagrams, equivalent fractions with small denominators (be clear about the relationship between the numerator and the denominator i.e. all halves have a denominator that is exactly 2x its numerator)	<u>Measure</u> Measure and compare capacity in litres and ml <u>Statistics</u> Interpret and present data using bar charts, pictograms and tables.
4	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	<u>Multiplication and Division</u> Multiply 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) <u>Fractions</u> Recognise and show, using diagrams, families of common equivalent fractions (use bar model and Cuisenaire rods to support this)	<u>Measure</u> Convert between units of length: km, m, cm Convert between different units of capacity: litres and ml

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5	<p>Know all multiplication facts to 12x12 and be able to derive facts for much larger and much smaller numbers</p> <p>If I know that $11 \times 12 = 132$, then $13 \times 12 = 132 + 12 + 12$.</p> <p>Also $111 \times 12 = 10 \times 11 \times 12 + (1 \times 12)$. Use open and closed arrays to support derivations.</p>	<p>Solve problems to develop the use of heuristics: focus on being systematic and making a list to find all possibilities</p>	<p><u>Multiplication and Division</u></p> <p>Multiply numbers up to 4-digits by a one or two digit number using a range of methods , including more formal written methods (long multiplication and short division~ chunking for 2-digit numbers with increasingly efficient chunks)</p> <p><u>Fractions</u></p> <p>Read and write decimal numbers as fractions ($0.61 = \frac{61}{100}$), up to thousandths.</p> <p>Round decimals with two dps to 1 dp and the nearest whole number</p> <p>Identify equivalent fractions (using the multiplicative relationship between numerator and denominator ~ for $\frac{1}{8}$ the denominator is always 8x the numerator)</p> <p>Recognise the % symbol as number of parts per hundred.</p> <p>Write percentages as a fraction or a decimal (e.g $20\% = 0.2 = \frac{1}{5}$)</p>	<p><u>Measure</u></p> <p>Use four operations, decimal notation and scaling to solve problems involving area volume</p>
6	<p>Be able to represent any number using a range of resources and jottings to demonstrate an understanding of structure.</p>	<p>Solve ratio and proportion problems involving unequal sharing and grouping using knowledge of fractions and multiples (John gets three times as many marbles as Peter; there are 44 marbles in total. How many marbles does Peter have?)</p> <p>Use a bar model</p>	<p><u>Fractions</u></p> <p>Divide proper fractions by whole numbers ($\frac{1}{3} \div 2 = \frac{1}{6}$) Use a bar model.</p>	<p><u>Measure</u></p> <p>Calculate the area of parallelograms and triangles</p> <p><u>Statistics</u></p> <p>Interpret and construct pie charts.</p>

B3 (Summer Term)				
Year	Place Value and a Sense of	Problem Solving and Reasoning	Core Calculation	Geometry and Measure

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	Number		(four rules for whole and part numbers)	
1	<p>Identify one more and one less (ten more and ten less) from any given whole number</p> <p>Count in multiples of 2s, 5s and 10s (using visual prompts such as a number line)</p>	<p>Be able to use manipulatives and pictorial representations to show how to find the solution to multiplication and division problems in context.</p>	<p><u>Multiplication and Division</u> Solve one step multiplication and division problems in context, calculating the answer using concrete and pictorial representations</p> <p><u>Fractions</u> Use a range of representations, including such things as a bar made from multi-link, to double, half and quarter quantities. Use comparative language such as half as long, twice as long.</p>	<p><u>Measure</u> Compare, describe and record lengths and heights. Extend this beyond the classroom to very long/short and very tall/ short (steps around the playground, multi-link towers to find heights or the length of the giant's footprint)</p>
2	<p>Count in steps of 2,3 and 5 from 0 and in 10s from any number (fwd and back)</p> <p>Compare and order numbers using < , > and =</p>	<p>Solve contextual problems involving multiplication and division facts, using materials, arrays, repeated addition and known facts. Include fractions (e.g. I have one metre of ribbon, I want to cut it into five equal pieces, how long is each piece?)</p>	<p><u>Multiplication and Division</u> Explore patterns in multiples to develop an understanding of links and relationships to generate new facts from known. (e.g. 5x is half of 10x) Use the inverse as an alternative representation (x/÷) <u>Fractions</u> Recognise and find fractions of a length, shapes or quantity (1/3, ¼, 2/4, ¾) Describe ¼, ½ and ¾ turns in terms of right angles in a practical situation such as a clock.</p>	<p><u>Measure</u> Accurately draw two lines and compare the lengths using cm (draw a line that is twice as long, half as long)</p> <p><u>Statistics</u> Interpret and construct simple tables, pictograms, block diagrams and tally charts from given data (e.g. a picture of a large number of different sea creatures in a tank to be counted and categorised)</p>
3	<p>Count up and down in tenths</p>	<p>Solve problems that involve independently choosing a diagram or representation to support a x or ÷ problem</p> <p>Solve problems involving finding fractions of quantities</p>	<p><u>Multiplication and Division</u> Recall and use multiplication and division facts for 3,4 and 8 times tables Independently generate multiples of 2,5 and 10. <u>Fractions</u> Add and subtract fractions with the same denominator within one whole using a range of representations and in a variety of contexts.</p>	<p><u>Measure</u> Add and subtract amounts of money to give change. Begin to record this in a more formal way , alongside jottings and diagrams (bar). Use both £ and p in practical contexts.</p> <p>Measure and compare mass/ weight. E.g. Use a simple recipe to make cup-cakes. Calculate how much of each ingredient would be needed for three times as many</p>

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				cup-cakes, 4x, 8x etc.
4	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.	<u>Multiplication and Division</u> Recall multiplication and division facts up to 12x12 (explore a range of representations to enable pupils to quickly call the facts to mind) <u>Fractions</u> Multiply and divide by 10, 100 and 1000 in context. Convert between fractions and decimals	<u>Measure</u> Convert between mass measurements (kg, g) <u>Statistics</u> Interpret and present discrete and continuous data using appropriate graphical methods including bar charts and time graphs.
5	Round any number to an appropriate degree of accuracy to make the answer to a calculation make sense.	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>Multiplication and Division</u> Develop division strategies, using the idea of division as the inverse of multiplication, to enable pupils to reason about multi-step solutions and interpret remainders in context. <u>Fractions</u> Link fractions to division. See that division by 2 is the same as halving the group etc. Use a bar model to support this idea. Secure an understanding of equivalence with proper and improper fractions. Introduce the idea of ratio as a fraction (3:1 is the same as $\frac{3}{4}$ share and $\frac{1}{4}$ share)	<u>Measure</u> Construct cuboids from cm cubes .Calculate and count to find volumes. <u>Statistics</u> Time graphs (story graphs). Be able to interpret and construct line graphs that tell a story over time (e.g. of a journey)
SATs revision				
Support pupils by reviewing past questions and modelling solutions and strategies. Let pupils answer a similar question collaboratively and then independently. Build this up to groups of questions Do not spend time on 'practice papers' as it is too late to test what they do not know! Concentrate on building confidence through good modelling and supportive questioning				
6	WK4 Place value , rounding and estimating Partitioning	SATs problems from past papers Take examples for P1,P2 and P3	Ratio and proportion: link to fractions and unequal sharing	Mean average Pie Charts, Line graphs Time and timetables

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	WK5: Factors, multiples and primes		Reasoning and missing number problems in any context	Parts of a circle Perimeter and area
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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				

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What planning a learning journey looks like!

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

