

Hampshire Medium Term Plans for Mathematics: Year 3

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			

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: Y3: NCETM	
Number and PV	<ul style="list-style-type: none"> The value of a digit is determined by its position in a number. Place value is based on unitising, treating a group of things as one 'unit'. This generalises to 3 units + 2 units = 5 units (where the units are the same size).
Addition and Subtraction	<ul style="list-style-type: none"> Relating numbers to 5 and 10 helps develop knowledge of the number bonds within 20. For example, given $8 + 7$, thinking of 7 as $2 + 5$, and adding the 2 and 8 to make 10, then the 5 to 15. This should then be applied when calculating with larger numbers. Subtraction bonds can be thought of in terms of addition: for example, in answering $15 - 8$, thinking what needs to be added to 8 to make 15. Counting on for subtraction is a useful strategy that can also be applied to larger numbers.
Multiplication and Division	<ul style="list-style-type: none"> It is important for children not just to be able to chant their multiplication tables but also to understand what the facts in them mean, to be able to use these facts to figure out others and to use in problems. It is also important for children to be able to link facts within the tables (e.g. $5 \times$ is half of $10 \times$). They understand what multiplication means, see division as both grouping and sharing, and see division as the inverse of multiplication.
Fractions	<ul style="list-style-type: none"> Fractions are equal parts of a whole. Equal parts of shapes do not need to be congruent but need to be equal in area. Decimal fractions are linked to other fractions. The number line is a useful representation that helps children to think about fractions as numbers.
Measure ment	<ul style="list-style-type: none"> Developing benchmarks to support estimation skills is important as pupils become confident in their use of standard measures. The height of a door frame, for example, is approximately 2 metres, and a bag of sugar weighs approximately 1 kilogram.
Geometry	<ul style="list-style-type: none"> During this year there is an increasing range of shapes that pupils are familiar with. The introduction of symmetrical and non-symmetrical polygons and the requirement that pupils should be able to draw them will give rise to discussions about lengths of sides and sizes of angles. Pupils need to appreciate these features as properties of shapes as well as the number of sides and vertices. Pupils recognise that angles are about the amount of turn – the lengths of the lines used to represent angles do not affect the size of the angle. Pupils recognise that relationships are at the heart of properties of shapes, not particular measurements. For example, the opposite sides of any rectangle will always be equal, not that rectangles have a pair of long sides and a pair of short sides.
Statistics	<ul style="list-style-type: none"> Data needs to be collected with a question or purpose in mind. Tally charts are used to collect data over time (cars passing the schools, birds on the bird table). They can also be used to keep track of counting.

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Autumn Term Y3	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	<p>Recognise the PV of each digit in a three-digit number (hundreds, tens and ones). Find 10 more and 10 less than a given number</p>	<p>Add and subtract mentally using 'nearly numbers' and patterning $15+15=30$ $16+15=31$ $16+16=32$ $16+17 = ?$</p> <p>Solve problems involving money, length and mass</p>	<p><u>Addition and Subtraction</u> Add and subtract numbers mentally (with jottings): Three-digit number and ones ($362+7$) Three-digit number and hundreds ($362+700$) ~ use base 10 materials to support and reason</p> <p>Use inverses to check answers (part-whole bar model)</p> <p>Estimate answers using 'nearly numbers' $51+48$ is nearly $50+50$</p>	<p><u>Geometry</u> Draw simple 2-D shapes accurately. Identify right angles. Identify horizontal and vertical lines. Make 3-D shapes using modelling materials.</p> <p><u>Measure</u> Measure the perimeter of simple 2-D shapes Measure, compare, add and subtract lengths and mass in standard units</p> <p>Add and subtract amounts of money</p>
B1	<p>Count on in multiples of 2,3 and 4</p> <p>Count up and down in tenths using a number line.</p> <p>Identify, represent and estimate numbers using different representations (100 is double 50 ~ show on a bar ~ so half of 100 is</p>	<p>True or false: 34 is a multiple of 4 use a number line to count in 2s and then find the 4s)</p> <p>What is the value of the 7 in these three-digit numbers ~ $371,507, 735$ Explain how you know (use Dienes)</p>	<p><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)</p> <p>Compare and order unit fractions, and fractions with the same denominator (bar model)</p>	<p><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"</p> <p><u>Measure</u> Measure, compare, add and subtract volume/capacity in standard units</p>

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	50)		Find unit fractions of quantities ($\frac{1}{10}$ of 30 sweets; $\frac{1}{3}$ of 30 marbles)	Tell and write the time from an analogue, 12 hour, clock. Use the terms a.m. and p.m.
Assessment Milestone 1				
HALF TERM				
C1	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
D1	Count from 0 in multiples of 4	Solve problems involving multiples of 2,3,4,5,10 in practical contexts linked with measure	<u>Multiplication and Division</u> Recall and use multiplication and division facts for the 3x and 4x tables Multiply and divide one digit numbers by 10 using PV reasoning. <u>Fractions</u> Recognise and use fractions as numbers (i.e. they have a value and a place on the number line) Recognise that tenths arise from dividing an object into 10 equal parts (bar model) . Compare and order unit fractions (use a number line or other diagram)	<u>Measure</u> Measure and compare lengths in m, cm and mm Begin to estimate simple measure , such as the height of a doorframe is approximately 2m. Measure the perimeter of simple 2D shapes <u>Geometry</u> Draw simple 2D shapes (quadrilaterals with a right angles, triangles with right angles), given the measurements of side lengths. Identify horizontal and

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				vertical lines and pairs of perpendicular and parallel lines.
CHRISTMAS HOLIDAYS				

Spring Term Y3	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	Compare and order numbers up to 1000 Read and write numbers up to 1000 in numerals and words	Solve missing number problems for addition and subtraction with numbers of up to three digits.	<u>Addition and Subtraction</u> Add and subtract numbers with up to three digits in a variety of informal ways, including partitioning and considering 'nearly numbers'. (395+ 406 is the same as 395 + 5 + 400 + 1). Use part- whole models (bar) to show inverse relationship.	<u>Geometry</u> Recognise angles as a property of shape. Identify right angles. Recognise that two right angles make a half turn (a 'straight' angle) <u>Measure</u> Measure and compare mass in kg and g
B2	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	<u>Measure</u> Measure and compare capacity in litres and ml <u>Statistics</u> Interpret and present data using bar charts, pictograms and tables.

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			numerator)	
Assessment Milestone 2				
HALF TERM				
C2	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
D2	Count on from 0 in multiples of 50 and 100	Use know multiplication and division facts to solve problems in context and to derive new facts for old (If I know that $3 \times 4 = 12$; then I know that $6 \times 4 = 24$ ~ using an array to explain why).	<u>Multiplication and Division</u> Recall and use facts for the 4x and 8x tables (x and ÷) Write and calculate mathematical statements for multiplication and division including for two-digit numbers times on-digit numbers <u>Fractions</u> Recognise and write fractions of a discrete set of objects, unit and non-unit fractions with small denominators (i.e. small groups of counting objects) Add and subtract fractions with the same denominator within one whole. Use a bar model (e.g $\frac{1}{6} + \frac{2}{6} = \frac{3}{6}$ and $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$)	<u>Measure</u> Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks Estimate and read time with increasing accuracy to the nearest minute Record and compare time in terms of seconds, minutes, hours and o'clock. Compare the duration of events such as the time taken to complete a particular task.

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Assessment Milestone 3

EASTER HOLIDAYS

Summer Term Y3	Place Value and a Sense of Number	Problem Solving and Reasoning	Core Calculation (four rules for whole and part numbers)	Geometry and Measure
A3		Solve problems that involve independently choosing a diagram or representation to support a + or – problem	<u>Addition and Subtraction</u> Develop a range of strategies for addition and subtraction calculations and explore which method to choose and why.	<u>Geometry</u> Identify lines of symmetry in simple 2-D shapes. Know when a polygon is symmetrical and when it is non-symmetrical. Describe the angle properties of shape, including introducing the terms acute and obtuse for angles. <u>Measure</u> Draw and measure straight lines in cms and introduce 0.5cm (5mm) Measure perimeters of rectilinear shapes (those with right angles)
B3	Count up and down in tenths	Solve problems that involve independently choosing a diagram or representation to support a x or ÷ problem Solve problems involving finding fractions of quantities	<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	<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.

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			of contexts.	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 cup-cakes, 4x, 8x etc.
HALF TERM				
C3	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?
D3	Connect tenths to place value, decimal measures and to division by 10 Begin to see that decimal fractions are linked to proper fractions (such as $\frac{1}{2} = 0.5$ and $\frac{1}{10} = 0.1$)	Solve problems involving missing numbers and reasoning. If $3 \times 7 = 21$; then $3 \times ? = 28$ Use arrays to explain why	<u>Multiplication and Division</u> Begin to progress towards formal written methods using the times tables that are secure. <u>Fractions</u> Generate equivalent fractions, using diagrams to compare and explain why they are the same. Begin to link to multiples.	<u>Statistics</u> Carry out a simple statistics project such as tallying the number of different fish in a big tank (A3 picture), creating a pictogram and a bar chart with different scales (such as 2, 5, 10). Work together to solve problems about the data, such as how much would it cost to buy all the fish in the smallest group? Produce a poster to show their data,

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				charts, questions and conclusions.
END OF YEAR ASSESSMENT AND TRANSITION DIALOGUE (Milestone 4)				
SUMMER HOLIDAYS				

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'

