

## Hampshire Medium Term Plans for Mathematics: Year 2

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		
			KS1 SATs												

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?**

## Hampshire Medium Term Plans for Mathematics: Year 2

The Big Ideas in Mathematics: Y2 : NCETM	
Number and PV	<ul style="list-style-type: none"> <li>The position (place) of a digit in a number determines its value. Hence the term <i>place value</i>.</li> </ul>
Addition and Subtraction	<ul style="list-style-type: none"> <li>Understanding that addition of two or more numbers can be done in any order is important to support children's fluency. When adding two numbers it can be more efficient to put the larger number first. For example, given <math>3 + 8</math> it is easier to calculate <math>8 + 3</math>.</li> <li>When adding three or more numbers it is helpful to look for pairs of numbers that are easy to add. For example, given <math>5 + 8 + 2</math> it is easier to add <math>8 + 2</math> first than to begin with <math>5 + 8</math>.</li> <li>Understanding the importance of the equals sign meaning 'equivalent to' (i.e. that <math>6 + 4 = 10</math>, <math>10 = 6 + 4</math> and <math>5 + 5 = 6 + 4</math> are all valid uses of the equals sign) is crucial for later work in algebra. Empty box problems can support the development of this key idea. Correct use of the equals sign should be reinforced at all times. Altering where the equals sign is placed develops fluency and flexibility.</li> </ul>
Multiplication and Division	<ul style="list-style-type: none"> <li>It is important that pupils both commit multiplication facts to memory and also develop an understanding of conceptual relationships. This will aid them in using known facts to work out unknown facts and in solving problems.</li> <li>Pupils should look for and recognise patterns within tables and connections between them (e.g. <math>5 \times</math> is half of <math>10 \times</math>).</li> <li>Pupils should recognise multiplication and division as inverse operations and use this knowledge to solve problems. They should also recognise division as both grouping and sharing.</li> <li>The recognition of pattern in multiplication helps pupils commit facts to memory, for example doubling twice is the same as multiplying by four, or halving a multiple of ten gives you the related multiple of five.</li> </ul>
Fractions	<ul style="list-style-type: none"> <li>Fractions involve a relationship between a whole and parts of a whole. Ensure children express this relationship when talking about fractions. For example, <i>'If the bag of 12 sweets is the whole, then 4 sweets are one third of the whole.'</i></li> <li>Partitioning or 'fair share' problems when each share is less than one gives rise to fractions.</li> <li>Measuring where the unit is longer than the item being measured gives rise to fractions.</li> </ul>
Measurement	<ul style="list-style-type: none"> <li>We need standard units of measure in order to compare things more accurately and consistently.</li> </ul>
Geometry	<ul style="list-style-type: none"> <li>It is important for pupils to know what the properties are that make up certain shapes, and for them not to just learn the names of typical proto looking shapes.</li> <li>It is helpful to think about non examples of shapes. For example, why this is not a triangle:</li> <li>Recognising pattern and generalising structures and relationships are key elements for laying the foundations for later work in algebra.</li> </ul>
Statistics	<ul style="list-style-type: none"> <li>Data need to be collected with a question or purpose in mind</li> <li>Tally charts are used to collect data over time (cars passing the school, birds on a bird table)</li> </ul>

## Hampshire Medium Term Plans for Mathematics: Year 2

Autumn Term Y2	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	Recall and use number bonds to 20 fluently Recognise the place value of each digit in a two-digit number (tens and ones)	Solve addition and subtraction problems using concrete and pictorial representations alongside number recordings, including in the context of money of the same unit.	<u>Addition and Subtraction</u> Use and apply known number facts to 20 Add and subtract whole numbers using concrete and pictorial representations, including: - a two-digit number and ones (27+3) - a two digit number and tens (27+30)	<u>Geometry</u> Identify and describe the properties of 2-D shapes including the number of sides and symmetry in a vertical line. Identify 2-D shapes on the surface of 3-D shapes (circle on a cylinder, triangle on a pyramid) <u>Measure</u> Find different combinations of coins that equal the same amount of money Compare and sequence intervals of time
B1	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 $=$

## Hampshire Medium Term Plans for Mathematics: Year 2

Assessment Milestone 1				
HALF TERM				
C1	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
D1	Count in steps of 5 from 0 forward and backward Read and write numbers to at least 100 in numerals and words	Solve problems involving multiplication and division using materials, arrays and repeated addition, including in the context of money	<u>Multiplication and Division</u> Recall and use multiplication and division facts for the 5x table. Calculate and record multiplication statements using x and = signs (demonstrating understanding using an array, concrete or pictorial)	<u>Measure</u> Recognise and use symbols for £ and p Combine amounts to make a particular value
CHRISTMAS HOLIDAYS				

Spring Term Y2	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	Generate new number facts from known facts, using 'nearly' numbers.(If $15 - 5 = 10$ ; then $15-6 = 9$ )	Solve addition and subtraction problems using concrete and pictorial representations alongside number recordings, including in the context of money, including given change.	<u>Addition and Subtraction</u> Add and subtract whole numbers using concrete and pictorial representations, including: - two two-digit numbers with support	<u>Geometry</u> Use mathematical vocabulary to describe position, direction and movement ( give instructions on turn and travel to other

## Hampshire Medium Term Plans for Mathematics: Year 2

			Show that the addition of two numbers can be done in any order (commutative) using groups of objects and jumps on a number line	pupils, programme a Beebot) <u>Measure</u> Tell and write the time to quarter to and past the hour Draw the hands on a clock face to show these times Know the number of minutes in an hour and hours in a day.
B2	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
Assessment Milestone 2				
HALF TERM				
C2	Count in steps of 3 from zero	Solve missing number problems for addition and subtraction using a bar model to support use of inverse	<u>Addition and Subtraction</u> Recall and use facts to 20 fluently. 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	<u>Geometry</u> Compare and sort common 2-D and 3-D 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

## Hampshire Medium Term Plans for Mathematics: Year 2

			(use a bar model)	Compare and order mass and volume/capacity , introducing standard units and recording the results using >,< and =
D2	Count in steps of 3 from zero, forwards or backward.	Solve multiplicative problems in practical contexts such as recipes (doubling, halving, five times as many, shared into three)	<p><u>Multiplication and Division</u> Calculate division problems using known multiplication facts and an array. Record using ÷ sign. Use an array and groups of objects to show that multiplication of two numbers is commutative but division is not</p> <p><u>Fractions</u> calculate simple fractions of amounts such as <math>\frac{1}{2}</math> of 6 = 3 by using concrete sharing and pictorial representations</p>	<p><u>Measure</u> Choose and use appropriate standard units to estimate and measure mass (kg/g); temperature (°C); capacity (l/ml), using scales, thermometers and measuring vessels ~ perhaps when cooking</p> <p><u>Statistics</u> Interpret and construct simple pictograms, tally charts, block diagrams and simple tables. Answer questions about totals and comparison of discrete data.</p>
Assessment Milestone 3				
EASTER HOLIDAYS				

Summer Term Y2	Place Value and a Sense of Number	Problem Solving and Reasoning	Core Calculation (four rules for whole and part numbers)	Geometry and Measure
A3	Know that the position (place) of a digit in a number determines its value. Show understanding by	Use place value and number facts to solve problems involving measure and in other real life contexts, using multiple representations	<p><u>Addition and Subtraction</u> Calculate with two digit numbers, showing an understanding of the commutative law and use of the inverse as an alternative representation using the</p>	<p><u>Geometry</u> Compare and sort common 2D and 3D shapes. Explain choices about sorting.</p> <p><u>Measure</u></p>

## Hampshire Medium Term Plans for Mathematics: Year 2

	partitioning into hundreds, tens and ones.  Recall (or derive) and use addition and subtraction facts to 20 and 100		idea of whole and part (bar models and other representations) When adding three or more numbers, look for pairs that are easy to add ( $8+5+2$ is better organised as $8+2+5$ to give 15 as the bond to 10 is clear.	Add and subtract money of the same unit, including giving change.
B3	Count in steps of 2,3 and 5 from 0 and in 10s from any number (fwd and back)  Compare and order numbers using $<$ , $>$ and $=$	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?)	<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 ( $x/\div$ ) <u>Fractions</u> Recognise and find fractions of a length, shapes or quantity ( $\frac{1}{3}$ , $\frac{1}{4}$ , $\frac{2}{4}$ , $\frac{3}{4}$ ) Describe $\frac{1}{4}$ , $\frac{1}{2}$ and $\frac{3}{4}$ turns in terms of right angles in a practical situation such as a clock.	<u>Measure</u> Accurately draw two lines and compare the lengths using cm ( draw a line that is twice as long, half as long) <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)
SATs				
HALF TERM				
C3	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	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	<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....

## Hampshire Medium Term Plans for Mathematics: Year 2

	an appreciation of the structure of calculation.		Which number sentences link these numbers: 100, 67, 33? Draw a bar model and show on a number-line.	Compare with your friend. Work out how long you are in school, watch the TV, are asleep.etc. in hours and minutes
D3	Doubling and halving. Using steps of 2 to see steps of 4	Reasoning problems such as 'spot the mistake' with counting on or back in regular steps eg. 45,40,35,25 and 'True or false' such as I start at 3 and count in 3s. I will say 13.	<u>Multiplication and Division</u> Explore the similarities and difference between sharing and grouping. Use counting in 2s to identify odds (1,3,5..) and evens (2,4,6...) <u>Fractions</u> Count in fractions up to 10 using a number line ~ use the $\frac{1}{2}$ and $\frac{2}{4}$ equivalence to help.	<u>Measure</u> You have 50p in your purse. How many coins could you have, what could they be? (heuristic: being systematic, listing all possibilities) <u>Statistics</u> Count and categorise small collections of items (e.g. counters or smarties). Ask and answer questions about the data and compare with another child's data.
END OF YEAR ASSESSMENT AND TRANSITION DIALOGUE (Milestone 4)				
SUMMER HOLIDAYS				



## Hampshire Medium Term Plans for Mathematics: Year 2

### 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				

## Hampshire Medium Term Plans for Mathematics: Year 2

What planning a learning journey looks like!

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

