Hampshire Services
HIAS SCHOOL IMPROVEMENT

Year 6 Summer term 2021

This document could be used by all schools to support teachers in planning learning in all domains of mathematics during the summer term 2021. It is based on the Hampshire Scheme of Learning (HSL), which is available to schools subscribing to Moodle Plus (https://maths.hias.hants.gov.uk). **It does not include all national curriculum statements.** Some additional maths team objectives included as suggestions. Teachers will need to adapt these plans based on prior planning and assessment.

The careful sequencing of domains encourages pupils to make links across domains and supports teachers' use of effective strategies supporting recall of learning, particularly spaced practice and retrieval practice, identified through cognitive psychology research (Weinstein, Sumeracki and Caviglioli, 2019). It is important that children are prompted to access their memories of prior teaching and learned knowledge during periods of remote teaching.

The number of lessons provides a suggested structure, based on hourly lessons.

It will be important for teachers to plan a sequence of a few key tasks and linked skills practise as a 'learning journey' for each unit of work. Pupils will need support to understand the problem and have examples of how to record their solutions. Further examples of similar problems to the key task, using variation techniques, will support pupils to develop confidence and independence with each task.

This document also shows where 'Ready -to- Progress' criteria (RTPs) from the DFE Teaching Mathematics: Guidance for Key Stage 1 and 2 (June 2020)* document could be used to support review, practice, and consolidation. The National Centre for the Teaching of mathematics (NCETM) has produced resource materials to support the RTPs. Each RTP has linked resources, including power point slides, which could be used to support modelling of key mathematical concepts

*(DfE Mathematics Guidance: Key stage 1 and 2, June 2020, https://www.ncetm.org.uk/in-the-classroom/teaching-maths-through-the-pandemic/support-with-2020-dfe-guidance/

The NCETM supporting resource materials can be found at:

https://www.ncetm.org.uk/classroom-resources/exemplification-of-ready-to-progress-criteria/

Points to consider when using RTP resources:

They should be used flexibly, guided by pupils' response, repeating activities where pupils lack confidence. Materials from Year 6 may support addressing gaps and misconceptions for whole class, small groups or 1:1 focused intervention. The ready-to-progress criteria are intended as goals for the end of the year.

Summer 1

Find everyday opportunities to develop children's understanding of time.

Lessons	Content Domain	Objectives (HSL Unit 6.12)	DfE RTPs
15	Multiplication and division (including square, cube and prime numbers) (15)	• **Identify common factors, common multiples and prime numbers.** • Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. Construct arrays to show that prime numbers (p) have exactly one array (1 x p) • Recognise and use square numbers and cube numbers and the notation for (^{2}) and (^{3})**.** Construct arrays for square numbers to show that square numbers have an odd number of factors since one is repeated (e.g. 16 can be constructed as 1 x 16; 2 x 8 and 4 x 4 ~ factors are 1,2,4,8,16) • Solve problems involving all four operations including using their knowledge of factors and multiples, squares and cubes.	5MD-2

Lessons	Domains	Objectives (HSL Unit 6.14)	DfE RTPs
10	Fractions (equivalence) (5)	• **Add and subtract fractions with different denominators and mixed numbers using the concept of equivalent fractions** • **Multiply simple pairs of proper fractions** (show on an array)**, writing the answer in its simplest form e.g ¼ x ½ = 1/8** **Divide proper fractions by whole numbers e.g. 1/3 ÷ 2 = 1/6**	6F-1 6F-2 6F-3

Lessons	Domains	Objectives (HSL Unit 6.15)	DfE RTPs
10	Addition and subtraction / whole numbers and fractions (5)	• Partition (determine the value of each digit), compare and calculate with numbers up to 10,000,000 • **Perform mental calculations, including with mixed operations and large numbers** • **Solve addition and subtraction multi-step problems in contexts, deciding which operations to use and why** • **Use estimation to check answers to calculations and determine, in the context of the problem, levels of accuracy.** • **Use knowledge of the order of operations to carry out calculation involving the four operations** • **Use simple formulae** • **Express missing number problems algebraically** • **Find pairs of numbers that satisfy number sentences involving two unknowns** (e.g. a pair of numbers that sum to 10 and have a product of 24 = 6 and 4) • **Generate and describe linear sequences** • **Describe positions on a full coordinate grid (all four quadrants), draw and translate simple shapes and reflect them in the axes.** Notice how describing translations links to addition and subtraction of directed number. **Use negative numbers in context and calculate intervals across zero (**link to coordinate axes and to temperature)	
	Multiplication and division (tables and related facts) (5)	• **Perform mental calculations involving all four operations** • **Use estimation to check answers to calculations and determine, in the context of the problem, levels of accuracy** • **Identify common factors, common multiples and prime numbers** • **Express missing numbers problems algebraically** **Use simple formulae**	

Summer 2

Lessons	Domains	Objectives (HSL 6.16)	DfE RTPs
15	Fractions/ geometry (10)	• **Use common factors to simplify fractions** • **Use common multiples to express fraction in the same denomination** • **Compare and order fractions >1** • **Add and subtract fractions with different denominators, using the concept of equivalence** • **Multiply simple pairs of proper fractions** • **Divide proper fractions by whole numbers** • **Associate a fraction with division** • **Calculate decimal fractions by division (e.g. 1÷ 2 = 0.5)** • **Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.** • **Draw 2-D shapes and simple nets for 3-D shapes using given dimensions and angles** • **Compare and classify geometric shapes** • **Find unknown angles in triangles, quadrilaterals and regular polygons** **Recognise angles at a point, on a straight line, vertically opposite. Find missing angles in these cases.**	6G-1 6AS/MD-3
	Ratio and proportion (5)	• **Solve problems involving the relative sizes of two quantities where the missing values can be found using integer multiplication and division facts** (Use a: b notation) • **Solve problems involving the calculation of percentages, e.g. 15% of 360** (link to calculating angles in pie charts) **and the use of percentages for comparison.** • **Solve problems involving ratio and proportion.** Pupils should recognise proportionality in contexts when the relations between quantities are in the same ratio such as similar shapes and recipes. • **Solve problems involving similar shapes where the scale factor is known or can be found** • **Solve problems involving unequal sharing or grouping using knowledge of fractions and multiples.** e.g.'for every egg you need three spoonful's of flour', '3/5 of the class are boys'. (These problems are the foundation for later formal approaches to ratio and proportion.) • **Calculate the mean as average.** **Interpret and construct pie charts and line graphs** (axes -> scale) **and use these to solve problems**	

Lessons	Domains	Objectives (HSL 6.17)	DfE RTPs
10	Multiplication and division (secure formal methods) (10)	• **Multiply up to 4-digit numbers by a 2-digit number using a formal written method** • **Divide up to 4-digit numbers by a 2-digit number using a formal written method** • **Interpret remainders from division as whole numbers, fractions, or by rounding as appropriate to the context** • **Use estimation to check answers to calculations and determine, in the context of the problem, levels of accuracy** **Express missing numbers problems algebraically**	6AS/MD-1 6AS/MD-2

Lessons	Domains	Objectives (HSL 6.18)	DfE RTPs
10	All four operations (context: measure) (10)	• **Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate** • **Use, read, write and convert between all standard metric units.** • **Recognise that shapes with the same areas can have different perimeters and vice versa** • **Recognise when it is possible to use formulae for the area ad volume of shapes.** • **Convert between miles and km.** • **Calculate the area of parallelograms and triangles** **Calculate, estimate and compare volume of cubes and cuboids using standard metric units (mm^3 , cm^3, m^3 km^3).**	6AS/MD-4