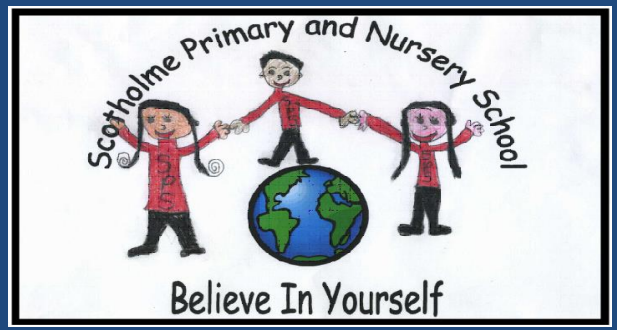

Year 2

Mathematics Curriculum

Adam Newton

CONTENTS

RATIONALE

This maths curriculum has been designed to support a mastery approach to teaching and learning and to effectively meet the aims and objectives of the new National Curriculum. It incorporates more time for children to apply their skills, to demonstrate a deeper understanding of mathematics and to see mathematics in everything they do, both across the rest of the curriculum in school and in the wider world.

The core principles of this curriculum will help to pupils and teachers to develop even greater confidence in mathematics and will enable our children to become mathematicians.

A mathematician…

- Makes connections
- Shows fluency (choosing and using efficient methods, as well as known facts)
- Is able to reason about what they are doing
- Creates
- Checks (in different ways)
- Is resilient
- Explains
- Evaluates
- Models
- Invents
- Applies in a range of contexts
- Is curious
- Has confidence
- Uses mistakes to improve
- Is resourceful
- Is efficient

Lessons are crafted with care and are perfected over time with input from other teachers, drawing on evidence from careful observations of all pupils in each class.

Lesson designs are set out in detail and use well-tested methods to teach each mathematical topic. They include a variety of representations, which are essential to introduce and explore concepts effectively and set out related teacher explanations and questions to pupils.

All lessons will contain: a range of representations; variation; stem sentences; intelligent practice; coherence; fluency; differentiation; careful choices and the opportunity to dive deeper for all (Dong Nao Jin).

YEARLY PLAN

	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk 12
Autumn	**Number: Place Value**			**Number: Addition and Subtraction**					**Measurement: Mass, Capacity and Temperature**		**Number: Multiplication and Division**	
Spring	**Number: Multiplication and Division**		**Statistics**		**Geometry: Properties of shape**			**Number: Fractions**			**Measurement: Length and Height**	**Measurement: Money**
Summer	**Geometry: Position and Direction**			**Measurement: Time**	**CONSOLIDATION**	**Number: Place Value**			**Number: Addition and Subtraction**		**Number: Multiplication and Division**	

HEURISTICS TO FOCUS ON DURING THE YEAR:

Draw Something

Act it out

Guess, check, improve

LINKS TO MASTERY MATERIALS

NCETM Teaching for Mastery

NCETM Mastery PD Materials

White Rose Materials For Units

TERMLY PLANS

KEY FOR NRICH TASKS

Tasks badged with a * are suitable for the whole class	Tasks badged with a ** are suitable for the majority of the class	Tasks badged with a *** are for those who like a serious challenge
G = game	All NRICH tasks are categorised as problems.	I = investigation

AUTUMN

Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk12
Number: Place Value Read and write numbers to at least 100 in numerals and in words. Recognise the place value of each digit in a two digit number (tens, ones) NRICH: Snail One Hundred * G NRICH: Two-digit Targets * NRICH: 6 Beads ** Identify, represent and estimate numbers using different representations including the number line. NRICH: How Would We Count? * G I NRICH: Tug of War * G NRICH: Count the Crayons *			**Number: Addition and Subtraction** Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100. NRICH: Strike it Out * G NRICH: Number Round Up *** G NRICH: 4 Dom *** G Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones; a two-digit number and tens; two two-digit numbers; adding three one-digit numbers. NRICH: Cuisenaire Environment * G NRICH: Unit Differences * I NRICH: Dicey Addition * G NRICH: Number Balance ** I NRICH: Jumping Squares ** G Show that the addition of two numbers can be done in any order (commutative) and subtraction					**Measurement: Mass, Capacity and Temperature** Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels Compare and order lengths, mass, volume/capacity and record the results using >, < and = NRICH: Compare the Cups *	**Number: Multiplication and Division** Recall and use multiplication and division facts for the 2, 5 and 10 times tables, including recognising odd and even numbers. NRICH: Even and Odd * I NRICH: Ring a Ring of Numbers * G NRICH: Clapping Times * G I NRICH: Double or Halve? * G NRICH: Always, Sometimes or Never? * NRICH: How Odd ** I NRICH: Two Numbers Under the Microscope ** I NRICH: Odd Times Even *** I NRICH: More Numbers in the Ring *** G NRICH: Number Detective *	

Compare and order numbers from 0 up to 100; use <, > and = signs. NRICH: Domino Sequences * NRICH: Next Domino * NRICH: 100 Square Jigsaw * G NRICH: That Number Square! * I NRICH: Domino Number Patterns ** Use place value and number facts to solve problems. NRICH: I Like … * G NRICH: Largest Even * G NRICH: Round the Two Dice * I NRICH: Light the Lights *** G	of one number from another cannot. NRICH: Always, Sometimes or Never? KS1 * Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures; applying their increasing knowledge of mental and written methods. NRICH: Sitting Round the Party Tables * I NRICH: Two Spinners * I NRICH: Half Time * NRICH: Heads and Feet ** NRICH: Noah ** NRICH: Eggs in Baskets ** NRICH: Birthday Cakes ** NRICH: Getting the Balance *** I NRICH: Cuisenaire Counting *** G NRICH: The Brown Family *** G Recognise and use the inverse relationship		Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) sign. NRICH: Ordering Cards * G NRICH: Which Symbol? * NRICH: I'm Eight * I Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and division facts, including problems in contexts. NRICH: Our Numbers * G NRICH: Ip Dip * I NRICH: Magic Plant ** NRICH: The Amazing Splitting Plant *** NRICH: The Tomato and the Bean *** NRICH: Lots of Lollies *** I NRICH: Growing Garlic ***

Count in steps of 2, 3 and 5 from 0, and in tens from any number, forward and backward. NRICH: Buzzy Bee * NRICH: Five Steps to 50 * I	between addition and subtraction and use this to check calculations and solve missing number problems. NRICH: The Add and Take-away Path * I NRICH: How Many? * G NRICH: What Was in the Box? * G NRICH: Doing and Undoing * I NRICH: Secret Number ** G		NRICH: Are You Well Balanced? *** G I NRICH: Birthday Sharing * NRICH: Catrina's Cards * Show that the multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.

AUTUMN SMALL STEPS

Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk12
Number: Place Value • Count objects to 100 and read and write numbers in numerals and words • Represent numbers to 100 • Tens and ones with a part-whole model • Tens and ones using addition • Use a place value chart • Compare objects • Compare numbers • Order objects and numbers • Count in 2s, 5s and 10s • Count in 3s			**Number: Addition and Subtraction** • Fact families – addition and subtraction bonds to 20 • Check calculations • Compare number sentences • Related facts • Bonds to 100 (tens) • Add and subtract 1s • 10 more and 10 less • Add and subtract 10s • Add a 2-digit and 1-digit number – crossing ten • Subtract a 1-digit number from a 2-digit number – crossing ten • Add 2-digit numbers – not crossing ten – add ones and add tens • Add 2-digit numbers – crossing ten – add ones and add tens • Subtract a 2-digit number from a 2-digit number – not crossing ten • Subtract a 2-digit number from a 2-digit number - crossing ten – subtract ones and tens • Bonds to 100 (tens and ones) • Add three 1-digit numbers					**Measurement: Mass, Capacity and Temperature** • Compare mass • Measure mass in grams • Measure mass in kilograms • Compare capacity • Millilitres • Litres • Temperature		**Number: Multiplication and Division** • Recognise equal groups • Make equal groups • Add equal groups • Multiplication sentences using the X symbol • Multiplication sentences from pictures • Use arrays • 2 times-table • 5 times-table • 10 times-table	

SPRING

Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk 12
Number: Multiplication and Division Recall and use multiplication and division facts for the 2, 5 and 10 times tables, including recognising odd and even numbers. Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) sign.		**Statistics** Interpret and construct simple pictograms, tally charts, block diagrams and simple tables. NRICH: Sticky Data * G NRICH: If the World Were a Village * I NRICH: What Shape and Colour?* G NRICH: Carroll Diagrams * NRICH: Ladybird Count * NRICH: Plants **		**Geometry: Properties of Shape** Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line. NRICH: Shapely Lines * I NRICH: Exploded Squares * NRICH: Poly Plug Rectangles * G I NRICH: Let's Investigate Triangles * NRICH: Seeing Squares * NRICH: Paper			**Number: Fractions** Recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity. Write simple fractions for example, $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.			**Measurement: Length and Height** Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels. NRICH: Discuss and Choose * G NRICH: Little Man * Compare and order lengths, mass, volume/capacity and record the results using >, < and = NRICH: Order, Order! * I NRICH: Making Longer, Making Shorter ** I	**Measurement: Money** Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value. NRICH: Five Coins ** I Find different combinations of coins that equal the same amounts of money. NRICH: Money Bags ** Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change. NRICH: The Puzzling Sweet Shop **

Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and division facts, including problems in contexts. Show that the multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.	Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. NRICH: Sort the Street * NRICH: Button-up * NRICH: Beads and Bags * NRICH: The Hair Colour Game ** G NRICH: Mixed-up Socks ** I Ask and answer questions about totalling and comparing categorical data. NRICH: In the Playground * I	Patchwork 1 * NRICH: Paper Patchwork 2 * NRICH: Chain of Changes ** NRICH: Colouring Triangles ** I NRICH: Complete the Square *** G NRICH: Inside Triangles *** G NRICH: Triangle or No Triangle? * Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces. NRICH: Building with Solid Shapes * I NRICH: Rolling That Cube * I NRICH: Skeleton			

		Shapes ** I Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid.] NRICH: **Cubes** * I NRICH: **Shadow Play** *** Compare and sort common 2-D and 3-D shapes and everyday objects. NRICH: **Matching Triangles** * G NRICH: **Data Shapes** * NRICH: **Paper Partners** * NRICH: **Cubes Cut Into Four Pieces** ***			

SPRING SMALL STEPS

Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk 12
Number: Multiplication and Division • Make equal groups – sharing • Make equal groups – grouping • Divide by 2 • Odd and even numbers • Divide by 5 • Divide by 10		**Statistics** • Make tally charts • Draw pictograms (1-1) • Interpret pictograms (1-1) • Draw pictograms (2, 5 and 10) • Interpret pictograms (2,5 and 10) • Block diagrams		**Geometry: Properties of Shape** • Recognise 2D and 3D shapes • Count sides on 2D shapes • Count vertices on 2D shapes • Draw 2D shapes • Lines of symmetry • Sort 2D shapes • Make patterns with 2D shapes • Count faces on 3D shapes • Count edges on 3D shapes • Count vertices on 3D shapes • Sort 3D shapes • Make patterns with 3D shapes			**Number: Fractions** • Make equal parts • Recognise a half • Find a half • Recognise a quarter • Find a quarter • Recognise a third • Find a third • Unit fractions • Non-unit fractions • Equivalence of $\frac{1}{2}$ and $\frac{2}{4}$ • Find three quarters • Count in fractions			**Measurement: Length and Height** • Measure length (cm) • Measure length (m) • Compare lengths • Order lengths • Four operations with lengths	**Measurement: Money** • Count money – pence • Count money – pounds (notes and coins) • Count money – notes and coins • Select money • Make the same amount • Compare money • Find the total • Find the difference • Find change • Two-step problems

SUMMER

Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk 12
Geometry: Position and Direction Use mathematical vocabulary to describe position, direction and movement including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise). NRICH: Turning Man * **I** NRICH: Walking Round a Triangle * NRICH: Cover the Camel * NRICH: Triangle Animals ** NRICH: En-counters * Order and arrange combinations of mathematical objects in patterns and sequences			**Measurement: Time** Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times. NRICH: What Is the Time? * NRICH: Stop the Clock *** ***G*** Know the number of minutes in an hour and the number of hours in a day. NRICH: Matching Time * ***G*** Compare and sequence intervals of time.	**CONSOLIDATION**	**Number: Place Value**			**Number: Addition and Subtraction**		**Number: Multiplication and Division**	

NRICH: Poly Plug Pattern * G NRICH: Triple Cubes * G NRICH: Repeating Patterns * I NRICH: Domino Patterns * I NRICH: Circles, Circles * NRICH: Break it Up! * I NRICH: School Fair Necklaces ** I NRICH: Hundred Square ** NRICH: Three Ball Line Up ** NRICH: A City of Towers ** NRICH: Caterpillars ** I					

SUMMER SMALL STEPS

Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk 12
Geometry: Position and Direction • Describing movement • Describing turns • Describing movement and turns • Making patterns with shapes			Measurement: Time • O'clock and half past • Quarter past and quarter to • Telling time to 5 minutes • Minutes in an hour, hours in a day • Find durations of time • Compare durations of time	CONSOLIDATION	Number: Place Value			Number: Addition and Subtraction		Number: Multiplication and Division	