

Maths at The Grove Junior School

National Curriculum

The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers. Pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number. By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

In upper key stage 2, pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio. At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them. By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages. Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Links to learning in KS1

The majority of pupils transition to the Grove Junior School from The Grove Infant School. The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools].

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money. By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency. Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Intent

Our aim for pupils learning Maths at The Grove Junior School is that they become experienced and **competent problem solvers** who develop **a flexible, as well as a resilient**, understanding of the core concepts of mathematics. Pupils should be **confident in their reasoning** and be able to fully **explain and justify their answers**. Furthermore, pupils should be encouraged to **develop their natural curiosity and to analyse patterns**. This should be done by providing pupils with plentiful opportunities to **investigate and take risks**. This will provide pupils with the tools to thrive in the 21st Century. Every Maths lesson at The Grove Junior School has **high expectations** of what pupils can achieve and is **appropriately differentiated** to ensure **all are challenged and supported**. Teachers will use assessment data to identify any children who need additional reinforcement of key concepts and **take action to address and close any gaps in understanding**.

Implementation

Maths at The Grove Junior School is taught daily, following the Herts Essentials scheme of work that is designed to benefit pupils by delivering carefully planned Learning Sequences that ensures consistency. The inbuilt examples of what children should be able to achieve through destination questions allows teachers to keep assessing and informing the children's learning against age-related expectations. There is a Daily Fluency session with a heavy focus on Times Tables in Years 3 and 4. Fluency could be consolidation from previous weeks or questions from the next learning sequence coming up for teachers to assess prior knowledge.

In line with our statement of intent, we would expect every teacher to use the ESSENTIALMaths as a basis for their planning. ESSENTIALMaths has been designed by Herts for Learning to match the expectations of the National Curriculum. We would also expect to see activities, lesson order and pace are adapted to suit the needs of the children in the class. Furthermore, it is expected that every lesson has activities planned not only for the children expected to achieve age-related expectations, but also for those working towards age-related expectation and those working at greater depth. A second way that the planning expectations could be met is with a lesson presentation (Google slides, Smart notebook, PowerPoint). This presentation should contain clear evidence of all the above points. These should be saved on the year group planning folder with clear labelling explaining which presentation belongs to whom and what order they have been taught in. All planning should be purposeful and meaningful. The expectation is that each teacher produces either **their own plan or presentations so that it meets the needs of the children in their class**. Sharing resources/planning within the year group is strongly encouraged. For our Greater Depth Learners and Problem Solving, teachers use NCETM resources as well as Collins (which has been written by Herts Essentials). They also supplement with GDS resources from other sources eg Deepening Understanding, Classroom Secrets etc.

Years 3-5 complete NFER tests during each term which are marked and analysed by the teachers. The scores of each test are uploaded to the NFER Hub, including the question level analysis. The results of these tests should be used (alongside work completed in class) to inform teacher assessments of attainment levels. Once all testing is complete, teachers will use this data to identify any areas of common weakness. Long term plans should then be modified to address any gaps in knowledge. Data should also be used to identify all children who are in danger of not making the required progress from the end of Key stage one. The details of these children's areas of weakness should be recorded on the 'Backtracking Form' and submitted to subject leaders. This form should also include the details of any actions that are going to be taken to address the lack of progress. Teachers are also expected to use TTRockstars to identify pupils who do not have a firm grasp of their times tables (whichever are appropriate for their year group) and plan intervention to address this. Year 6 use past SATs papers in the same way.

To ensure that learning is based in experience, physical resources (manipulatives) should be used as much as possible in all teaching. Furthermore, it is important that children are exposed to, and record, as many different representations (concrete, pictorial and abstract) as possible. Teachers should ensure

that they are using consistent vocabulary in line with the ESSENTIALmaths planning documents.

Classroom seating should also be used thoughtfully, with those in greatest need (considering progress, attainment, disadvantage, SEN) seated nearest the teacher. The placement of children highlighted on the 'Backtracking Form' should be given special consideration. The use of open questioning (always, sometimes, never, what do you notice etc) should be evident in all classrooms, along with ample opportunities for children to explain and justify their answers. Children should be given regular opportunities to take part in investigation activities where they can apply their existing knowledge and feel free to try different ways of solving complex problems.

Subject leader will hold regular staff meetings across the year where results of monitoring activities, new resources and new pedagogy can be shared. These meetings will provide staff the opportunity to share good practice and have time to prepare for any changes to their practice and long-term plans.

Impact

As a result of the Maths Curriculum used at The Grove Junior School, children leave having their own Maths 'toolkit' which they can use throughout their lives and contains many different strategies which work for them. They are confident problem solvers who can explain the reasoning behind their answers and can represent problems in a variety of ways. Children can make links to previous learning and apply their Maths skills to real life situations. They are risk takers and learn from mistakes.

Across the school and year groups, there is consistency and high expectations. Ongoing rigorous assessment (formative and summative) means that teachers are confident to address any gaps or barriers to learning and put in place high quality interventions where necessary. Close monitoring of different groups ensures that children make good progress. Long and medium-term planning is adapted to ensure that areas of weakness are covered and re-visited. Regular CPD for staff enables the subject leaders to share outcomes of monitoring and inform staff of updates and pedagogical changes as well as delivering specific training and support.

Most children are working at the Expected Standard at the end of Key Stage 2 with some children being able to work at Greater Depth and make further progress.

Maths Long Term Plan

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 3	<p>3LS1 Place Value and Regrouping 3LS Counting On and Back in Ones, Tens and Hundreds 3LS3 Estimation, Magnitude and Rounding 3LS4 Measures – Comparison, Estimation and Magnitude 3LS5 Mental Fluency – Addition 3LS6 Mental Fluency – Subtraction 3LS7 Fact Families and Applying the Inverse 3LS8 Written Addition 3LS9 Written Subtraction</p>	<p>3LS10 Problem Solving – Worded Problems 3LS11 Statistics – Interpreting Bar Charts and Tables 3LS12 Angles, Right Angles and Estimation 3LS13 Perpendicular and Parallel Lines, Vertical and Horizontal Lines 3LS14 2-D Shape – Properties and Drawing 3LS15 Perimeter Including Problem Solving Using Written and Mental Methods</p>	<p>3LS16 Multiplication – 3, 4 and 8 Times Tables including Counting 3LS17 Division – 1, 2, 3, 5, 4 and 8 Times Tables 3LS18 Multiplication – Strategy, Associative and Distributive Laws 3LS19 Statistics – Pictograms and Scaled Bar Charts 3LS20 Multiplication and Division Worded Problems 3LS21 Fractions – Finding Fractions of Discrete and Continuous Quantities</p>	<p>3LS22 Ordering and Comparing Fractions 3LS23 Adding and Subtracting Fractions with the Same Denominators 3LS24 Fractions – Problem Solving with Unit and Non-Unit Fractions 3LS25 Multiplication – Multiplying Multiples of Ten 3LS26 Multiplication – Formal Written Multiplication</p>	<p>3LS22 Ordering and Comparing Fractions 3LS23 Adding and Subtracting Fractions with the Same Denominators 3LS24 Fractions – Problem Solving with Unit and Non-Unit Fractions 3LS25 Multiplication – Multiplying Multiples of Ten 3LS26 Multiplication – Formal Written Multiplication</p>	<p>3LS34 Securing the Four Operations with Whole Number including Problem Solving 3LS35 Place Value and Decimals – Ten Times Greater and Ten Times Smaller 3LS36 Place Value and Decimals – Regrouping 3LS37 Place Value and Decimals – Estimation, Comparing and Rounding 3LS38 Measures – Measuring and Problem Solving 3LS39 3-D Shape – Building and Identifying Properties</p>
	<p><u>Supplemented curriculum resources</u> Place Value - Who am I? Collins Simple Subtraction – Collins Variety of NCETM mastery questions Deepening Understanding Classroom Secrets</p>	<p><u>Supplemented curriculum resources</u> Shapes within shapes - Collins Variety of NCETM mastery questions Deepening Understanding Classroom Secrets</p>	<p><u>Supplemented curriculum resources</u> Multiplication – Triple Trick – Collins Multiplication - Marching Elephants - Collins Variety of NCETM mastery questions Deepening Understanding Classroom Secrets</p>	<p><u>Supplemented curriculum resources</u> Fractions - Stabilising Snowflakes – Collins Variety of NCETM mastery questions Deepening Understanding Classroom Secrets</p>	<p><u>Supplemented curriculum resources</u> Geometry – Shapes within shapes – Collins Variety of NCETM mastery questions Deepening Understanding Classroom Secrets</p>	<p><u>Supplemented curriculum resources</u> Measurement - Balancing Act - Collins Variety of NCETM mastery questions Deepening Understanding Classroom Secrets</p>

<p>Year 4</p>	<p>4LS1 Place Value – Order and Compare Numbers Beyond 1000 4LS2 Rounding, Estimation and Magnitude 4LS3 Securing Addition and Subtraction Mental Fluency 4LS4 Securing Formal Written Addition and Subtraction Fluency 4LS5 Counting in Multiples of 6, 7, 9, 25 and 1000 4LS6 Multiplication and Division Facts (Times Tables) 4LS7 Factor Pairs, Integer Scaling and Correspondence Problems</p>	<p>4LS8 Problem Solving Including Measures to Apply Place Value, Mental Strategies and Arithmetic Laws 4LS9 Multiply and Divide a One or Two-digit Number by 10 and 100 4LS10 Measure – Conversion of Units 4LS11 Measures – Compare, Estimate and Calculate 4LS12 Discrete and Continuous Data (Time Graphs), Including Application of Scales and Division 4LS13 Perimeter</p>	<p>4LS14 Properties of Shape 4LS15 Symmetry 4LS16 Decimal Numbers 4LS17 Calculating With Decimals 4LS18 Measure – Money 4LS19 Problem Solving involving Decimals to Two Decimal Places</p>	<p>4LS20 Add and Subtract Fractions with the Same Denominator 4LS21 Finding Fractions of Quantities 4LS22 Fractions in the Context of Measure 4LS23 Equivalent Fractions, Ordering and Comparing 4LS24 Multiply Two and Three-digit Numbers by a One-digit Number Using a Formal method 4LS25 Written Layout Divide Two and Three-digit Numbers by a One-digit Number Using a Formal Written Layout</p>	<p>4LS26 Time – Read, Write Calculate and Convert Time on Analogue and Digital 12- and 24-Hour Clocks 4LS27 Statistics – Interpret and Present Continuous and Discrete Data, Solve Problems incorporating Measures 4LS28 Roman Numerals to 100 and Zero 4LS29 Negative Numbers – Counting through Zero and Calculating in Context 4LS30 Geometry – Angles 4LS31 Geometry – Properties of Triangles 4LS32 Geometry – Coordinates in the First Quadrant and Translations</p>	<p>4LS33 Geometry – Position and Direction, incorporating Angles and Plotting Points of a Shape 4LS34 Multiplication and Division Review 4LS35 Area 4LS36 Fractions Review 4LS37 Application and Problem Solving – Developing Operation Sense</p> <p><i>Remaining weeks should be review and close the gap sessions focusing upon high value learning</i></p>
	<p><u>Supplemented curriculum resources</u> Place Value Pebbles – Collins Addition and Subtraction - X marks the spot – Collins Variety of NCETM mastery questions Deepening Understanding Classroom Secrets</p>	<p><u>Supplemented curriculum resources</u> Multiplication Facts - Fair and Square - Collins Multiplication – Beat the Calculator - Collins Variety of NCETM mastery questions Deepening Understanding Classroom Secrets</p>	<p><u>Supplemented curriculum resources</u> Measurement - Perfect Poggle Pens – Collins Variety of NCETM mastery questions Deepening Understanding Classroom Secrets</p>	<p><u>Supplemented curriculum resources</u> Fractions – Queen Bee - Collins Variety of NCETM mastery questions Deepening Understanding Classroom Secrets</p>	<p><u>Supplemented curriculum resources</u> Geometry – L Plates - Collins Variety of NCETM mastery questions Deepening Understanding Classroom Secrets</p>	<p><u>Supplemented curriculum resources</u> Statistics - Blown Away – Collins Variety of NCETM mastery questions Deepening Understanding Classroom Secrets</p>

<p>Year 5</p>	<p>5LS1 Place Value and Rounding of Large Numbers 5LS2 Interpret Negative Numbers 5LS3 Place Value of Numbers with up to Three Decimal Places 5LS4 Multiply and Divide by 10, 100 and 1,000 5LS5 Properties of Number – Multiples, Factors and Common Factors 5LS6 Prime and Composite Numbers 5LS7 Multiply and Divide Mentally 5LS8 Solve Problems Involving Knowledge of Key Facts</p>	<p>5LS9 Add and Subtract Using a Range of Strategies 5L10 Add and Subtract Using Formal Written Methods 5LS11 Formal Written Method for Multiplication 5LS12 Formal Written Method of Short Division 5LS13 Equivalent Fractions 5LS14 Compare and Order Fractions 5LS15 Adding and Subtracting Fractions</p>	<p>5LS16 Problem Solving – All Four Operations 5LS17 Multiply Fractions by Whole Numbers 5LS18 Fraction Problem Solving 5LS19 Measure – Converting Units of Measure 5LS20 Area 5LS21 Volume and Capacity</p>	<p>5LS22 Percentages 5LS23 Problem Solving – Percentages 5LS24 3-D Shapes from 2-D Representations Autumn Term covered by PPA teacher 5LS25 Reflection and Translation 5LS26 Perimeter 5LS27 Estimate, Compare, Measure and Draw Angles 5LS28 Identify Unknown Angles</p>	<p>5LS29 Formal Methods for Division and Multiplication in Increasingly Complex Problems 5L S30 Strategies for Multiplication and Division (Mental and Written) 5LS31 Solving Problems involving Scaling by Simple Fractions and Rates 5LS32 Conversion of Imperial and Metric Units of Measure 5LS33 Fractions, Decimals and Percentages Problem Solving 5LS34 Reading Timetables and Calculating with Time 5LS35 Solve Problems involving the Four Operations</p>	<p>5LS36 Distinguish between Regular and Irregular Polygons Autumn Term covered by PPA teacher 5LS37 Use Properties of Rectangles 5LS38 Statistics – Solve Comparison, Sum and Difference Problems using Information in a Line Graph 5LS39 Statistics – Interpreting and Evaluating Information Presented in Charts and Tables 5LS40 Roman Numerals</p> <p><i>Remaining weeks should be review and close the gap sessions focusing upon high value learning</i></p>
	<p><u>Supplemented curriculum resources</u> Place Value – The Hidden Number – Collins Addition/ Subtraction – The Magic Circle Variety of NCETM mastery questions Deepening Understanding Classroom Secrets</p>	<p><u>Supplemented curriculum resources</u> Multiplication and division – Dice it up - Collins Variety of NCETM mastery questions Deepening Understanding Classroom Secrets</p>	<p><u>Supplemented curriculum resources</u> Fractions – Ancient Egyptians – Collins Measurement – The Red Rectangle - Collins Variety of NCETM mastery questions Deepening Understanding Classroom Secrets</p>	<p><u>Supplemented curriculum resources</u> Geometry – Talented Tessellation Variety of NCETM mastery questions Deepening Understanding Classroom Secrets</p>	<p><u>Supplemented curriculum resources</u> Multiplication/ division – Missing digit multiplication - Collins Variety of NCETM mastery questions Deepening Understanding Classroom Secrets</p>	<p><u>Supplemented curriculum resources</u> Statistics – Distorted Data – Collins Variety of NCETM mastery questions Deepening Understanding Classroom Secrets</p>

Year 6	<p>6LS1 Place Value 6LS2 Multiply and Divide by 10, 100 and 1,000 6LS3 Choosing Effective Mental Calculation Strategies 6LS4 Problem Solving with Four Operations 6LS5 Application of Factors, Multiples and Primes 6LS6 Equivalent Fractions 6LS7 Comparing and Ordering Fractions 6LS8 Adding and Subtracting Fractions</p>	<p>6LS9 Fraction and Decimal Equivalents 6LS10 Fractions, Decimals and Percentages 6LS11 Calculating Percentages 6LS12 Formal Written Method of Multiplication 6LS13 Area of Parallelograms and Triangles 6LS14 Formal Written Method of Short Division 6LS15 Properties of Shape</p>	<p>6LS16 Order of Operations and Algebra 6LS17 Formal Written Method for Long Division – Autumn Term 6LS18 Exploring Relationships Between Perimeter and Area 6LS19 Recognise and Find Angles 6LS20 Reflection and Translation 6LS21 Multiplying Fractions 6LS22 Dividing Fractions</p>	<p>6LS23 Fraction Problem Solving 6LS24 Ratio and Proportion 6LS25 Volume 6LS26 Measures 6LS27 Statistics – Interpret Line Graphs and Pie Charts 6LS28 Algebra and Sequences</p>	<p>6LS29 Statistics – Calculate and Interpret Mean Average 6LS30 Application of Previous Years' Learning 6LS31 Application of Known Facts and Calculation Strategies</p> <p style="color: red;">Any remaining time before SATs should be used to consolidate key learning</p>	<p>6LS32 Constructing Pie Charts 6LS33 Statistical Representations 6LS34 Further Algebra 6LS35 Financial Maths and Enterprise 6LS36 Maths Preparation for KS3</p>
	<p><u>Supplemented curriculum resources</u> Place Value – An ancient number system – Collins Addition/ Subtraction – Does it all add up? Variety of NCETM mastery questions Deepening Understanding Classroom Secrets</p>	<p><u>Supplemented curriculum resources</u> Multiplication and division – The Perfect number - Collins Variety of NCETM mastery questions Deepening Understanding Classroom Secrets</p>	<p><u>Supplemented curriculum resources</u> Algebra is amazing - Collins Percentages –Puzzling percentages - Collins Variety of NCETM mastery questions Deepening Understanding Classroom Secrets</p>	<p><u>Supplemented curriculum resources</u> Measurement –The Tale of 2 squares - Collins Variety of NCETM mastery questions Deepening Understanding Classroom Secrets</p>	<p><u>Supplemented curriculum resources</u> Geometry – The Battle of the nets - Collins Variety of NCETM mastery questions Deepening Understanding Classroom Secrets</p>	<p><u>Supplemented curriculum resources</u> Variety of NCETM mastery questions Deepening Understanding Classroom Secrets</p>

