Maths Curriculum

Intent

At The Duston School, we use the White Rose Maths Scheme, which offers a framework to teach the Mathematics Programme of Study as laid out by the National Curriculum and the Statutory Framework for the Early Years Foundation Stage.

From the early years, we develop a positive attitude towards Mathematics and proficiency in Mathematical concepts and skills which is vital for engaging successfully with the real world. We provide a Mathematics curriculum that balances acquiring rapid fluency alongside opportunities to apply reasoning skills in various problem-solving contexts. Each classroom environment is set up to enable children to build independence in their mathematical learning, from up-to-date working walls, carefully chosen scaffolds and accessible resources.

The aim of our mathematics curriculum is to ensure that all children:

- become fluent in the fundamentals of Mathematics
- frequently practice increasingly complex problems over time, ensuring that children can apply their knowledge across a range of problem-solving questions
- reason mathematically by following a line of enquiry and developing an argument or justification
- use correct Mathematical vocabulary confidently and in context
- talk positively and knowledgeably about their Mathematical learning

Implementation

Mathematics is taught in a discrete daily lesson. White Rose Schemes of Learning provide sequential blocks/units which are revisited and built upon each where, providing a progressive curriculum. Each unit includes notes, guidance and small steps which provide valuable support for teachers.

White Rose Flashback 4 is used at the beginning of each mathematics lesson as retrieval practice to support children's long-term memory by revisiting learning from previous weeks, months and years.

Each mathematics lesson follows The Duston School lesson structure, where appropriate:

Prior Learning – Flashback 4
Teaching of New vocabulary
Teacher Models New Learning – I Do, We Do, You Do
Talk Task – using White Rose 'Mathematical Talk'
Independent Task
Plenary

The Duston School's Calculation Policy has been designed to support teachers and uses a concrete, pictorial, abstract approach. Manipulatives including: objects, Base 10 and place value counters are used when the teacher is modelling, using a visualiser, to ensure consistency in teaching and the resources are then available for the children to use which builds confidence in strategies.

In addition to the daily Mathematics lesson, children have a regular arithmetic fluency sessions. In EYFS, 1 Minute Maths is used to support subitising and quick recall of calculations, in Key Stage 1, the White Rose Fluency Bee Programme is used and in Key Stage 2, the sessions are focussed on quick recall of arithmetic questions using Tough Ten resources.

Homework at The Duston School is centred around Reading and Mathematics. Children in EYFS and Year 1 are encouraged to use the 1 Minute Maths and Numbots APP and in Year 2 and Key Stage 2, children are encouraged to use the Times Tables Rock Star APP. To increase practice and

mathematics profile, across the school, we hold regular TTRS competitions and award a mathematics certificate for each class in our weekly achievement assembly. Mathematic achievement is also celebrated in our Maths Star Worker display which is updated regularly with high quality children's work from across the school.

Assessment for learning takes place throughout Mathematics lessons and immediate feedback given to ensure that children know their successes and next steps. End of unit assessments and summative termly assessments take place using White Rose Assessments. Test Base and previous SATs papers are used to support assessment, when appropriate. The data from these assessments is used to track progress and inform interventions.

Curriculum Map and Key Knowledge Goals

	Curriculum Map and Key Knowledge Goals					
	EYFS					
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
EYFS	**Match, Sort and Compare** Identify a set. Count a set of objects. Sort objects to a type. Compare amounts. **Talk about measures and pattern** Compare size. Compare mass and capacity. Create simple patterns.	**It's me 1, 2, 3 (1,2,3,4,5)** Recognise numerals 1,2,3,4 and 5. Subitise 1,2,3,4 and 5. Represent 1,2,3,4 and 5. Find one more and one less. **Shape** Recognise and name circles, triangles, squares and rectangles.	**Alive 5 (Growing 6,7,8)** Subitise 5,6,7 and 8. Recognise numerals 5,6,7 and 8. Find one more and one less. **Measures** Compare mass and capacity. Compare length and height. Order and sequence time.	**Building 9 and 10** Compare numbers to 10. Represent numbers to 10. Subitise numbers to 10. Find one more and one less. Know number bonds within 10. **Shape** Recognise and name 3D shapes.	**To 20 and Beyond** Count beyond 20. **How many now?** Use objects to solve addition and subtraction. **Manipulate, compose and decompose** Select shapes for a purpose. Recognise 2D shapes within 3D shapes.	**Sharing and Grouping** Explore sharing amounts equally. Explore grouping amounts. Recognise odd and even numbers. **Visualise, build and map** Continue repeating patterns. Describe positions.
	Key vocabulary *Object count set sort compare size mass heavy tall short big small amount more less pattern*	*Key vocabulary* *Count numeral amount subitise represent one more one less shape circle triangle square rectangle 2D*	*Key vocabulary* *Subitise less numeral count more than less than amount mass heavy capacity more length tall short time morning evening lunchtime*	*Key vocabulary* *Compare amount subitise represent one more one less number bonds 3D cube sphere cylinder pyramid*	*Key vocabulary* *Count build ten ones add take away subtraction more less circle square rectangle triangle cube sphere pyramid cylinder*	*Key vocabulary* *Share group amount fair equal odd even repeating pattern position in front behind next to*
	Key Stage 1					
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Year 1	**Place Value** Count objects, actions and sounds. Compare numbers. Count objects from a larger group. Recognise numerals. Count on from any number.	**Addition and Subtraction** Know number bonds within 10. Write number sentences. Find a part. **Shape** Recognise and name 2D shapes Recognise and name 3D shapes Sort 2D and 3D shapes	**Place Value** Compare numbers to 20. Order numbers to 20. Count within 20. Know one more than a given number (within 20). **Addition and Subtraction** Add by counting on. Know doubles to 20. Subtract by counting back.	**Place Value (to 50)** Partition into tens and ones. Count by making groups of ten. Find one more and one less. **Measure** Measure length in centimetres. Compare lengths and heights. Measure and compare mass and capacity.	**Multiplication** Count in multiples of 2,5 and 10. Know doubles to 20. Recognise equal groups. **Fractions** Recognise half and a quarter of an object or shape and quantity. **Position and Direction** Describe position	**Place Value (to 100)** Partition into tens and ones. Compare numbers with the same tens. **Money** Recognise notes and coins. **Time** Recite the days of the week. Recite the months of the year. Tell the time to the half hour.

	Key vocabulary *Count amount compare greater than less than numerals count on count back*	*Key vocabulary* *Number bonds addition number sentence part 2D shape 3D circle square triangle rectangle hexagon cube pyramid cylinder sphere*	*Key vocabulary* *Compare order more less count on count back addition subtraction*	*Key vocabulary* *Partition tens ones teen group one more one less length centimetres length height tall short mass capacity more less heavy*	*Key vocabulary* *Count multiple doubles equal even odd multiplication times tables fractions half quarter turn left right forwards backwards above below*	*Key vocabulary* *Partition tens ones compare more less greater than notes pounds pence coins copper silver amount more less days week months clock hour half hands minute hour*
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Year 2	**Place Value** Partition numbers to 100. Flexibly partition numbers to 100. **Addition and Subtraction** Recall number bonds to 10. Recall number bonds to 100. Recall addition and subtraction facts within 20.	**Addition and Subtraction** Know how to add when crossing a 10. Know how to subtract across 10. **Shape** Count sides and vertices on 2D shapes. Count faces, edges and vertices on 3D shapes. Recognise lines of symmetry on shapes.	**Money** Make an amount using different coins. Solve 2 step problems involving money. **Multiplication and Division** Use sharing to solve x problems. Use know times tables to solve problems. Recall the 2, 5 and 10 times tables.	**Length and Height** Measure in centimetres and metres. Compare and order length and height. **Mass, Capacity and Temperature** Measure in grams, kilograms and millilitres. Compare mass, capacity and temperature.	**Fractions** Recognise half, quarter, a third and three quarters of a shape and amount. **Time** Tell the time to the nearest 5 minutes.	**Statistics** Interpret tallies, block graphs and pictograms. Represent data in graph form. **Position and Direction** Describe movement and turns.
	Key Vocabulary *Tens ones partition number bonds recall addition subtraction pattern*	*Key Vocabulary* *Addition subtraction ten boundary regroup 2D 3D sides vertices faces edges symmetry equal*	*Key Vocabulary* *Amount money coins notes pounds pence change price multiplication division times tables sharing equal*	*Key Vocabulary* *Length height centimetres metres scale millimetres compare order grams hot cold kilograms millilitres litres temperature*	*Key Vocabulary* *Fractions half quarter third three quarters equivalent equal whole time hour half quarter minute hands*	*Key Vocabulary* *Data statistics tally gate block graph more less pictogram represent left right forward backwards clockwise anticlockwise*

	Lower Key Stage 2					
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Year 3	**Place Value** Partition numbers to 1000. Flexibly partition numbers to 1000. Find 1, 10 or 100 more or less. **Addition and Subtraction** Add 3-digit numbers crossing the 100. Subtract a 2-digit number from a 3-digit number crossing 100.	**Multiplication and Division A** Recite the 3, 4 and 8 times tables. Multiply and divide by 3, 4 and 8. Know how to use an array to help multiply and divide.	**Multiplication and Division B** Multiply a 2-digit number by a 1-digit number with exchange. Reason about multiplication. **Length and Perimeter** Measure length in millimetres, centimetres and metres. Recognise equivalent lengths. Know how to measure perimeter.	**Fractions A** Compare and order unit and non-unit fractions. Understand the role of the numerator and denominator. **Mass and Capacity** Measure and compare mass in grams and kilograms. Measure and compare capacity and volume in litres and millilitres.	**Fractions B** Add and subtract fractions. **Money** Add and subtract amounts. Convert pounds and pence. **Time** Tell the time to the minute. Read the time on a digital clock. Use hours and minutes to calculate durations.	**Time** Recognise Roman numerals to 12. Use a.m. and p.m. correctly. **Shape** Recognise and draw right angles. Use parallel and perpendicular when describing shapes. Describe more polygons. **Statistics** Interpret data in pictograms and bar charts

	Key Vocabulary *Partition place value compare flexible digit addition subtraction exchanging boundary regrouping*	*Key Vocabulary* *Multiplication division times tables array quick recall number facts*	*Key Vocabulary* *Multiplication division reason problem solve exchange boundary length height perimeter millimetres centimetres metres equivalent*	*Key Vocabulary* *Fractions numerator denominator unit non-unit equivalent whole scales mass capacity volume gram kilogram litre millilitre*	*Key Vocabulary* *Fractions add subtract numerator denominator money pounds pence convert minute hour duration hands digital*	*Key Vocabulary* *Time roman numerals a.m. p.m. anti post meridiem right angle parallel perpendicular polygon statistics interpret represent*
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Year 4	**Place Value** Flexibly partition numbers to 10,000. Find 1, 10, 100 and 1000 more or less. **Addition and Subtraction** Add and subtract 1s, 10s, 100s and 1000s.	**Addition and Subtraction** Add and subtract two 4-digit numbers with more than one exchange. **Area** Calculated the area of a shape. **Multiplication and Division A** Multiply and divide by 6, 7 and 9. Recall times-tables to 12x12.	**Multiplication and Division B** Recognise factor pairs. Multiply and divide mentally by 10 and 100. Multiply and divide a 3-digt number by a 1-digit number. **Length and Perimeter** Calculate the perimeter of rectilinear shapes and regular polygons.	**Fractions** Convert mixed numbers to improper fractions. Convert improper fractions to mixed numbers. **Decimals A** Divide by 10 and 100. Recognise tenths and hundredths as fractions and decimals.	**Decimals B** Compare decimals. Flexibly partition decimals. **Money** Compare amounts of money. Write amounts using decimals. **Time** Convert between analogue and digital times. Convert between 12 and 24 hour clock.	**Shape** Identify and compare angles in shapes. Identify lines of symmetry. **Statistics** Interpret charts and line graphs using comparison, sum and difference. **Position and Direction** Plot coordinates on a grid. Describe translation on a grid.
	Key Vocabulary *Place value partition exchange holder addition subtraction column*	*Key Vocabulary* *Addition subtraction exchange column holder area perimeter multiplication division quick recall times-tables*	*Key Vocabulary* *Factor pairs multiply divide place value length perimeter rectilinear polygon metres kilometres equivalent*	*Key Vocabulary* *Whole partition mixed number improper convert equivalent fractions decimals place value tenths hundredths divide*	*Key Vocabulary* *Whole tenths hundredths partition decimals order compare round amount digital estimate convert hour minute digital convert*	*Key Vocabulary* *Angles turns symmetry lines acute obtuse interpret chart line graph comparison sum difference coordinates position plot translate*
	Upper Key Stage 2					
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Year 5	**Place Value** Read, write and partition numbers to 1,000.000. Round to the nearest 10, 100, or 1,000. **Addition and Subtraction** Add and subtract numbers with more than 4 digits. Solve multi-step addition and subtraction problems.	**Multiplication and Division** Understand common factors, prime numbers, square numbers and cube numbers. **Fractions A** Compare and order fractions. Add and subtract fractions with the same denominator. Add two mixed number fractions.	**Multiplication and Division B** Multiply a 4-digit number by a 2-digit number. Divide a 4-digit number by a 1-digit number. Divide with remainders. **Fractions B** Multiply a unit and non-unit fractions by an integer. Calculate fractions of a quantity and an amount.	**Decimals and Percentages** Compare any decimals with up to 3 decimal places. Understand percentages. **Perimeter and Area** Calculate the area of compound shapes. **Statistics** Read and interpret line graphs, tables and timetables.	**Shape** Calculate angles around a point and on a straight line. Recognise regular and irregular polygons. **Position and Direction** Understand translation and coordinates. **Decimals** Add and subtract decimals. Multiply and divide by 10, 100 and 1,000.	**Negative Numbers** Compare and order negative numbers. **Converting Units** Convert between metric and imperial units. Convert units of time. **Volume** Estimate and compare volume and capacity.

	Key Vocabulary *Represent roman numerals value digits order compare round placeholder million partition mental columns exchange formal columnar*	*Key Vocabulary* *Multiples common factors prime square cube equivalent non-unit compare mixed number numerator denominator*	*Key Vocabulary* *Multiply divide remainders exchange long multiplication placeholder formal method mental unit fraction non-unit integer*	*Key Vocabulary* *Decimals fractions equivalent compare round percentages perimeter area estimate line graph interpret table timetable*	*Key Vocabulary* *Degrees angles estimate point straight line regular irregular coordinates translation symmetry reflection decimal complements*	*Key Vocabulary* *Negative numbers zero compare difference convert volume capacity cubic*
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Year 6	**Place Value** Compare and order any integers. Round any integer. **Addition, Subtraction, multiplication and Division** Know how to do long division with remainders. Use mental calculations and estimations.	**Fractions A** Add and subtract any two fractions. **Fractions B** Multiply fractions by fractions. Divide any fraction by an integer. **Converting Units** Convert Metric Units.	**Ratio** Use scale factors. Solve proportion problems. **Algebra** Solve two step equations. Find pairs of values. **Decimals** Multiply and divide decimals by integers.	**Fractions, Decimals and Percentages** Convert fractions to percentages. Calculate the percentage of an amount. **Area, Perimeter and Volume** Calculate the area of a 2-D shape and the volume of a cuboid. **Statistics** Interpret Pie charts with percentages.	**Shape** Calculate angles in 2-D shapes. Recognise the nets of 3-D shapes. **Geometry** Recognise and draw translations and reflections in four quadrants.	**Consolidation and project**
	Key Vocabulary *Powers integers round negative numbers long division factors remainders known facts*	*Key Vocabulary* *Fractions equivalent compare mixed numbers integer measures metric imperial convert*	*Key Vocabulary* *Ratio scale factors proportion form expressions substitution formulae equations values integers decimals*	*Key Vocabulary* *Decimals equivalent percentage values compare area perimeter volume dual bar graph pie chart mean*	*Key Vocabulary* *Angles vertically opposite nets quadrant coordinates translations reflections*	*Key Vocabulary*

Impact

The impact of our mathematics curriculum is that children understand the relevance and importance of what they are learning in relation to real world concepts. Children know that maths is a vital life skill that they will rely on in many areas of their daily life. Our maths books evidence work of a high standard of which children clearly take pride; the components of the teaching sequences demonstrate good coverage of fluency, reasoning and problem solving. Our feedback and interventions support children to strive to be the best mathematicians they can be, ensuring a high proportion of children are on track or above. Our school standards are high, we moderate our books both internally and externally and children are achieving, at least, in line with national outcomes.

Values

Children demonstrate the Primary Phase values of Care, Challenge and Succeed throughout their Maths learning.

 Care:

Children are taught care in Maths lessons by understanding that linking maths to problem solving will help them in the real world. Our aim is for children to understand the importance of Maths for their futures. Children will show care by being willing to share their ideas and strategies and by valuing all responses from others. There will be opportunities to work through continuous provision in EYFS, independently and collaboratively and children will be able to listen respectfully to others and build confidence to explain their strategies to the group. Staff and children will talk about Maths in a positive way and children will care for resources by using them correctly and tidying after their use.

 Challenge:

Children are challenged to learn new knowledge and vocabulary throughout the Maths curriculum. All units of work are progressive and build on what the children already know. Lessons are structured so that each day the children practise arithmetic skills so that they become fluent and can use these skills efficiently in problem solving and reasoning tasks. All children have the opportunity to access a 'step for depth' task which challenges them to apply their learning in different ways.

 Succeed:

All children can succeed in all their Maths learning. Scaffolding and assessment for learning is used effectively so that all children can achieve in their Maths lessons. Throughout the Maths curriculum, children have opportunities to apply their knowledge and to succeed in problem solving and reasoning tasks. Assessments are used to highlight any gaps in learning and to identify those who need intervention in a specific aspect of Maths. Enjoyment and achievement in Maths is celebrated in weekly achievement assemblies with children being awarded certificates for Times Tables Rockstars and Numbots. Success in Maths is also promoted with excellent work being displayed on 'Best Work' displays in the classroom and on a display in a shared area of the school.