

Curriculum overview

Here at Downsell, we ensure that our maths offer incorporates the intent of the National Curriculum. We are using a bespoke curriculum whose objectives are in line with the National Curriculum.

National Curriculum Intent

The national curriculum for mathematics intends to ensure that all pupils:

1. Become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
2. Reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.
3. Can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions. Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas.

Mathematics at Downsell Primary School

Intent	When teaching mathematics at Downsell Primary School, we intend to provide a curriculum, which caters for the needs of all individuals and sets them up with the necessary skills and knowledge for them to become successful in their future adventures. We aim to support them in understanding the links between Maths and other areas of learning and the wider world. We incorporate sustained levels of challenge through varied and high quality activities with a focus on fluency, reasoning and problem solving. Whilst we teach Maths in progressive distinct domains (units of work), we recognise that Maths is an interconnected subject. Therefore, we encourage children to make connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. Children also apply their mathematical knowledge across the curriculum, and particularly in Science, Geography or other subjects where relevant.
Implementation	Maths is timetabled daily in all classes. Our Maths planning is based on a bespoke curriculum based on the National Curriculum, which incorporates some aspects of planning from White Rose, NCETM and Primary Advantage's Maths scheme. The use of these schemes complement each other to meet the needs of our learners, as well as ensuring coverage and progression across the curriculum. <u>EYFS</u> In Early Years, Mathematics involves providing children with opportunities to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems; and to describe shapes, spaces, and measure. Maths is taught daily, mostly practical. The week is split into two topics - number/number patterns, with a mini maths review taking place at the end of the week for 15-20 minutes. All evidence is recorded on Tapestry. From Summer 1 books will be used to record the maths across all of reception Implementation of maths skills is done in the following ways: High quality resources are used in conjunction with such as NCETM to support, stretch and challenge all children within the classroom. In addition, the school's calculation policy is used to ensure a coherent approach to teaching the operations across our school. Our curriculum builds on the concrete, pictorial, abstract approach. By using all three, the children can explore and demonstrate their mathematical learning. Together, these elements help to cement knowledge so children truly understand what they have learnt. All children when introduced to a new concept for the first time are encouraged to physically represent mathematical concepts. Objects and pictures are used to demonstrate and visualise abstract ideas, alongside numbers and symbols. Throughout Downsell Primary School you will see these three methods being used:

	Concrete – children have the opportunity to use concrete objects and manipulatives to help them understand and explain what they are doing. Pictorial – children then build on this concrete approach by using these pictorial representations, which can then be used to reason and solve problems. Abstract – with the foundations firmly laid by using the concrete and pictorial methods the children can move onto an abstract approach using numbers and key concepts with confidence. The lessons are structured into check it, think it and master it. The check it is to check prior knowledge, the think it is incorporating the reasoning element and the master it incorporate the problem-solving element. A mathematical concept or skill has been mastered when a child can show it in multiple ways, using the mathematical language to explain their ideas, and can independently apply the concept to new problems in unfamiliar situations. - Children demonstrate quick recall of facts and procedures. This includes the recollection of the times tables. - The flexibility and fluidity to move between different contexts and representations of mathematics. - The ability to recognise relationships and make connections in mathematics. - Children show our value of resilience when tackling new mathematical problems. - Children show a high level of pride in the presentation and understanding of the work. Assessment through our teaching means that we continuously monitor pupils' progress against expected attainment for their age, making formative assessment notes where appropriate and using these to inform our teaching. Summative assessments are completed at the end of each half term; their results form discussions in termly Pupil Progress Meetings and update our summative school tracker. The main purpose of all assessment is to always ensure that we are providing excellent provision for every child.
Impact	By the end of Key Stage 2, we aim for children to be fluent in the fundamentals of mathematics with a conceptual understanding and the ability to recall and apply knowledge rapidly and accurately. They should have the skills to solve problems by applying their mathematics to a variety of situations with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios. Children will be able to reason mathematically by following a line of enquiry and develop and present a justification, argument or proof using mathematical language.

Mathematics Programmes of Study: Key Stage 1 and 2 National curriculum

Key Stage 1:

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.

Lower Key Stage 2:

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. At this stage, 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. Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Upper Key Stage 2:

The principal focus of mathematics teaching in upper key stage 2 is to ensure that 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, spell and pronounce mathematical vocabulary correctly.

Recovery Curriculum

We recognise the impact that the pandemic has had on our children and their learning, despite our best efforts to continue teaching remotely. We have therefore put in place a recovery curriculum that we seek to address the most pressing needs for our pupils within the maths curriculum.

Research shows that fluency is an essential skills to developing as a successful mathematician:

- In teaching procedural and factual knowledge, ensure that students get to automaticity. Explain to students that automaticity with procedures and facts is important because it frees their minds to think about concepts. (Willingham 2009 p19)
- But the point of being fluent in them [times table facts] is to free up the working memory when tackling a more interesting and engaging piece of mathematics. (Askew 2012 p54)

With this in mind, our recovery curriculum focuses on developing fluency across the school. The objectives below are the fluency focus areas, which have been taken from the national curriculum.

	Spring 2	Summer 1	Summer 2
Whole school focus	Multiplication	Division	Addition and Subtraction
Year 1	Count in multiples of 2,5 and 10s	To create equal amounts of and record it	Represent and use number bonds and related subtraction facts within 20
Year 2	Count in steps of 2,3, 5 and 10s from any number – forwards and backwards	Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables	Represent and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100.
Year 3	Count in steps of 2,3, 5 and 10s from any number – forwards and backwards (Y2) Count in multiples of 4,8, 50 and 100	Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables (Y2) Recall and use multiplication and division facts for the 3, 4 and 6 multiplication	Represent and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100.(Y2) Add and subtract numbers mentally including 3-digit numbers and 1 , 3-digit numbers and 10, 3-digit numbers and 100.
Year 4	Count in multiples of 4,8, 50 and 100 (Y4) Count in multiples of 6, 7, 9 25 and 1000	Recall and use multiplication and division facts for the 3, 4 and 6 multiplication (Y3) Recognise and use factor pairs and commutativity in mental calculations.	Add and subtract numbers mentally including 3-digit numbers and 1 , 3-digit numbers and 10, 3-digit numbers and 100. (Y3) Add and subtract numbers mentally with increasingly large numbers.
Year 5	Count in multiples of 6, 7, 9 25 and 1000 (Y5) Count forwards or backwards of powers of 10 from any given number up to 1 million	Recognise and use factor pairs and commutativity in mental calculations.(Y4) Divide numbers mentally drawing upon known facts.(decimals by 10,100,1000)	Add and subtract numbers mentally with increasingly large numbers.
Year 6	Count forwards or backwards of powers of 10 from any given number up to 1 million (Y5) Multiply multi-digit numbers up to 4 digits by a 2 digit number	Divide numbers mentally drawing upon known facts.(decimals by 10,100,1000) (Y5) Associate a fraction with division and calculate decimal fraction equivalents.	Add and subtract numbers mentally with increasingly large numbers. (Y5) Perform mental calculations, including with mixed operations and large number s.

The following table is an overview of the areas taught within the EYFS Framework or National Curriculum each half term.

Those areas in red are our catch up topics that would not normally feature in that particular year group but are part of our recovery timetable.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery	Place Value Shape	Place Value Measurement Shapes Position and Direction	Place Value Shape Position and Direction	Place Value Position and Direction	Measurement Position and Direction	Position and Direction
Reception	Place Value	Shape Position and Direction Place value Addition and Subtraction	Shape Position and Direction Addition and subtraction Measurement	Position and Direction Shapes Measurement	Shapes Measurement	Transition activities
Year 1	Place Value Addition and Subtraction Measurement: Money	Addition and subtraction Multiplication and Division Measurement	Place Value Shape Multiplication and Division Measurement: capacity Measurement: Money	Position and Direction Addition and subtraction Multiplication and division Shape Fractions Measurement: Time	Place Value Measurement: Money Addition and subtraction Multiplication and Division	Fractions Multiplication and Division Measurement: Time Shape Addition and Subtraction
Year 2	Place Value Addition and Subtraction Statistics	Multiplication and Division Shape Fractions	Place Value Addition and Subtraction Multiplication and Division Measurement: Time	Measurement Fractions Position and Direction Statistics	Place Value Measurement: Capacity Addition and subtraction Multiplication and Division Measurement	Measurement Addition and subtraction Multiplication and Division Measurement; money Fractions Statistics Position and Direction
Year 3	Place Value Addition and Subtraction Fractions Shapes Measurement: Time	Place Value Properties of shape: Angles Shape Measurement; Time Statistics	Place Value Shape Fractions Addition and Subtraction Multiplication	Division Measurement: Money Measurement: Time Measurement: length Measurement: area and perimeter	Place Value Addition and Subtraction Multiplication and Division Fractions and Decimals	Fractions and Decimals Measurement Multiplication and Division Addition and Subtraction Geometry
Year 4	Place Value Addition and Subtraction Multiplication and Division Measurement: time	Place Value Multiplication and Division Shape Statistics Measurement	Place Value Measurement: Money Measurement; Time Statistics Subtraction	Statistics Decimals Measurement: Money Shape Position and Direction	Addition and Subtraction Multiplication and Division Fractions Shape	Decimals Measurement: area Addition and subtraction Multiplication and division Measurement

		Measurement: money	Multiplication			
Year 5	Place Value Addition and Subtraction Multiplication and Division	Fractions and Decimals Measurement: area and perimeter Measurement Measurement: Time	Place Value Addition and Subtraction Multiplication and Division Fractions Percentages	Measurement: Money Measurement: Time Position and Direction Shape Measurement: area and perimeter Statistics	Multiplication and Division FDP Statistics	Position and Direction Shape Measurement: Volume and Capacity Measurement: Length Measurement: Money
Year 6	Place Value Addition and Subtraction Multiplication and Division Fractions	FDP Geometry Measures: Volume Shape Position and Movement	Measures: Length and Mass Measures: Volume and Time Algebra Statistics Ratio and Proportion	Curriculum area reviews: Place Value FDP Measures Shape Statistics	Curriculum area reviews: Place Value FDP Measures Measurement: Money	Curriculum area reviews: Sequences Algebra Number Ratio Fractions