Heelands School
Maths Progression Map

Our Vision

At Heelands School, we believe mathematics is an essential part of children's development throughout the school right from when they start in Early Years. We are therefore committed to delivering a high class mathematics curriculum and one that is both broad and challenging to enthuse and inspire young minds who are excited to learn and to be challenged.

Curriculum

Intent

We intend to deliver a curriculum which:

- Is accessible to every child and one that helps to maximize the development of every child's ability and academic achievement.
- Allows children to be part of creative and engaging lessons that will give them a range of opportunities to explore mathematics following a mastery curriculum approach.
- Gives each pupil a change to believe in themselves as mathematicians and develop the power of resilience and perseverance when faced with mathematical challenges.
- Recognises that mathematics underpins much of our daily lives and is therefore of paramount importance. Children need to develop the necessary skills to make them deep thinkers and they need to acquire mathematics skills that can be recalled quickly and applied in different contexts. Mathematics is the foundation of understanding the world and we want all our children to know the purpose behind their learning and to be able to apply their knowledge to their everyday lives.
- Equips children to predict what they already know and to praise hunches and ideas and not just outcomes in mathematics.
- Provides equal opportunities for children to apply their mathematical knowledge in other subjects (cross curricular links).
- Is in line with the expectation in the National Curriculum 2014 and that the three core areas of the National Curriculum are covered in our lessons: *fluency, reasoning and problem solving.*

Implementation

Our mastery approach to the curriculum is designed to develop children's knowledge and understanding of mathematical concepts from the Early Years through to the end of Year 2.

Teaching and Learning, Content and Sequence.

- In the Foundation stage, pupils are provided with many exciting opportunities, through a planned purposeful play and a mix of planes adult-led lessons and child-initiated activities, to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems; and to describe shapes, spaces and measures.
- In Key stage 1 we follow the national curriculum and also use The White Rose Schemes of work as a guide to support teachers with their planning and assessment.
- All teachers have a flexible approach to the structure of their lessons but in key stage 1 the math's lessons will start with skills practice e.g. counting in 2s followed by the hook to introduce the lesson. This might be a picture, question or a problem to solve and pupils are expected to work out the answer, solve the problem with a talk partner or a group. Time is given to discuss the hook and reason e.g. I think that it is this because... The hook is an opportunity for children to reason and think mathematically from the start of the lesson and provide the teacher with an opportunity to listen and observe pupil's mathematical thinking.
- At Heelands we ensure that mathematics is taught in creative and engaging lessons and we use a wide array of manipulatives to aid and support our children in their learning including ICT.
- Resources are readily available to assist demonstration of securing a conceptual understanding of the different skills appropriate for each year group.
- The calculation policy is used within school to ensure a consistent approach to teaching the four operations over time.
- At the start of each new topic, key vocabulary is introduced and is revisited regularly to develop language acquisition and is embedded as topic progresses.
- Children are taught through clear modelling and have the opportunity to develop their knowledge and understanding of mathematical concepts. The mastery approach incorporates using objects, pictures, words and numbers to help children explore and demonstrate mathematical ideas, enrich their learning experience and deepen understanding at all levels.
- All children are catered for within the mathematics lesson ensuring the teacher offers the necessary support and challenge for each individual to make progress and children move through the different stages of their learning at their own pace.
- Children who have shown a greater understanding at a deeper level within the topic will have opportunities to apply these skills in a GREATER DEPTH activity. This should be challenging and ensure that children are using more than just one skill to be able to answer the mathematical problems.
- Reasoning and problem solving are integral to the activities children are given to further develop their mathematical thinking.

- Children are encouraged to explore, apply and evaluate their mathematical approach during investigations to develop a deeper understanding when solving different problems or puzzles.
- A love of mathematics is encouraged throughout the school with many cross curricular links applying an every growing range of skills with growing independence.
- Children with additional needs are given extra support within the whole class lesson from a class teacher or TA and daily interventions given where needed to ensure that all children 'keep up' with learning. Some groups of SEN children work at a level according to their needs outside of the classroom with TAs following planning provided by the class teacher.

EYFS

The Early Years Foundation Stage is underpinned by the Characteristics of Effective Learning.

Playing and Exploring/Engagement	Active Learning/Motivation	Creating and Thinking Critically/Thinking
Finding out and exploring Playing with what they know Being willing to 'have a go'	Being involved and concentrating Keeping trying Enjoying achieving what they set out to do	Having their own ideas Making links Choosing ways to do things

KS1

The National Curriculum for Mathematics aims to ensure that all pupils:
- 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.
- Reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- 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.

Impact

- Children will make at least good progress in Mathematics, which is measured through a combination of teacher assessment or summative assessment at points throughout the year.
- They will use their Mathematics knowledge and skills, in all curriculum areas, to enable them to know more, remember more and understand more.
- Children will recognise the importance of Mathematics as a facilitating subject to enable them to access other areas of learning and operate successfully in everyday life both now and in the future.
- They will have a confident attitude towards Mathematics and they will use their mathematics skills to make connections in order to solve real life problems.
- They will recognise that mathematics is essential for everyday life and make at least good progress in Mathematics from their last point of statutory assessment or from their starting point in Nursery/Reception.
- The Children will use their Mathematics skills as a key tool in helping them to learn, and as a result, know more, remember more and understand more. They will exhibit fluency in the four operations, use reasoning skills to illustrate understanding, and use their overall knowledge to solve problems
- The Children show a high level of pride in the presentation and understanding of the work.

Whole School Progression Map

		EYFS	Year 1	Year 2
		Reception ELG	Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance* **Teacher Assessment Framework**	
Number and Place Value	Counting	Count objects, actions and sounds. Count beyond ten. Verbally count beyond 20, recognising the pattern of the counting system. Subitise.	To count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. To identify one more and one less than a given number. To count in multiples of twos, fives and tens from different multiples to develop their recognition of patterns in the number system, including varied and frequent practice through increasingly complex questions. To recognise and create repeating patterns with objects and with shapes.	To count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward.
		Link the number symbol (numeral) with its cardinal number value. Subitise (recognise quantities without counting) up to 5.		
	Reading and Writing Numbers	Link the number symbol (numeral) with its cardinal number value.	To read and write numbers from 1 to 20 in numerals and words. To count, read and write numbers to 100 in numerals.	To read and write numbers to at least 100 in numerals and in words.
	Compare and order Numbers	Compare numbers. Understand the 'one more than/one less than' relationship between consecutive numbers. Compare quantities up to10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.	Compare and order numbers to 50.	To compare and order numbers from 0 up to 100; use <, > and = signs.

Understanding Place Value		Understand the 'one more than/one less than' relationship between consecutive numbers. Explore the composition of numbers to10. Have a deep understanding of numbers to 10, including the composition of each number.	To recognise the value of tens and ones in a 2 digit number	To recognise the place value of each digit in a two-digit number (tens, ones) to *become fluent and apply their knowledge of numbers to reason with, discuss and solve problems.* *To begin to understand zero as a place holder*
Solve Problems		Solve real world mathematical problems with numbers up to 5. Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then…'	*To practise ordinal numbers and solve simple concrete problems.*	To use place value and number facts to solve *related* problems *to develop fluency*.
Addition and subtraction	**Mental Calculations**	Subitise. Explore the composition of numbers to 10. Automatically recall number bonds 0-5 and some to 10. Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts. Have a deep understanding of numbers to 10, including the composition of each number. Subitise (recognise quantities without counting) up to 5.	To add and subtract one-digit and two-digit numbers to 20, including zero. *To realise the effect of adding or subtracting zero.*	*To extend the language of addition and subtraction to include sum and difference.* To show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot. To add and subtract numbers using an efficient strategy, explaining their method verbally using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones, a two-digit number and tens, two two-digit numbers, add three one-digit numbers.

Addition and Subtraction	**Number Bonds**	Subitise. Explore the composition of numbers to 10. Automatically recall number bonds 0-5 and some to 10. Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts. Have a deep understanding of numbers to 10, including the composition of each number. Subitise (recognise quantities without counting) up to 5	To *memorise*, represent and use number bonds and related subtraction facts within 20.	To recall all number bonds to and within 10 and use these to reason with and calculate bonds to and within 20, recognising other associated additive relationships. To recall and use addition and subtraction facts to 20 *to become fluent in deriving associative facts (e.g. 10 – 7 = 3, 100 – 70 = 30)* and derive and use related facts up to 100.
	Written Calculations		To read, write and interpret mathematical statements involving addition (+), subtraction (−) and equals (=) signs.	*To begin to record addition and subtraction in columns to support place value and prepare for formal written methods with larger numbers.*
	Inverse Operations, Inverse, Estimating and Checking Answers	Explore the composition of numbers to 10.		To recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.
	Solve Problems	Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly.	To *discuss* and solve one-step problems *(in familiar practical contexts)* that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems. *Problems include the terms: put together, add, altogether, total, take away, distance between, difference between, more than and less than, so that pupils develop the concept of addition and subtraction and are enable to use these operations flexibly*.	To 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.

Multiplication and Division		Explore the composition of numbers to 10. Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly. Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.	*To make connections between arrays, number patterns, and counting in twos, fives and tens.* *Through grouping and sharing small quantities, pupils begin to understand: multiplication and division; doubling numbers and quantities; and finding simple fractions of objects, numbers and quantities.*	*To use a variety of language to describe multiplication and division.* To count from 0 in multiples of 4, 8, 50 and 100. To recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers and use them to solve simple problems, demonstrating an understanding of commutativity as necessary. *To connect the 10 multiplication table to place value, and the 5 multiplication table to the divisions on the clock face.*
	Written calculations			To calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs. *To begin to use other multiplication tables and recall multiplication facts, including using related division facts to perform written and mental calculations.*
	Solve Problems	Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly.	To solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.	To solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.
Fractions, Decimals and Percentages	**Counting**			*To count in fractions up to 10, starting from any number and using the $\frac{1}{2}$ and $\frac{2}{4}$ equivalence on the number line.*
	Recognising, Finding and Naming Fractions		To recognise, find and name a half as one of two equal parts of an object, shape or quantity *by solving problems*. To recognise, find and name a quarter as one of four equal parts of an object, shape or quantity *by solving problems*. *To connect halves and quarters to the equal sharing and grouping of sets of objects and to measures, as well as recognising and combining halves and quarters as parts of a whole.*	To recognise, find, name, identify and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ of a length, number, shape, set of objects or quantity and know that all parts must be equal parts of the whole. *To connect unit fractions to equal sharing and grouping, to numbers when they can be calculated, and to measures, finding fractions of lengths, quantities, sets of objects or shapes. They meet $\frac{3}{4}$ as the first example of a non-unit fraction.*

Equivalence				To write simple fractions for example, $\frac{1}{2}$ of 6 = 3 and recognise the equivalence $\frac{2}{4}$ and $\frac{1}{2}$.
Measurement	**Describe, Measure, Compare and Solve**	Compare length, weight and capacity.	To compare, describe and solve practical problems for: lengths and heights, mass/weight, capacity and volume, time. To measure and begin to record the following: lengths and heights, mass/weight, capacity and volume, time. *To move from using and comparing different types of quantities and measures using non-standard units, including discrete (for example, counting) and continuous (for example, liquid) measurement, to using manageable common standard units using measuring tools, such as a ruler, weighing scales and containers.*	To choose and use appropriate standard units *with increasing accuracy using their knowledge of the number system* 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. *To use the appropriate language and record using standard abbreviations.* To compare and order lengths, mass, volume/capacity and record the results using >, < and =. *To compare measures including simple multiples such as 'half as high'; 'twice as wide'.*
	Time		To sequence events in chronological order using language. To recognise and use language relating to dates, including days of the week, weeks, months and years. To tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	To read, tell and write the time to five minutes, including quarter past/to the hour/half hour and draw the hands on a clock face to show these times. To become fluent in telling the time on analogue clocks and recording it. To know the number of minutes in an hour and the number of hours in a day. To compare and sequence intervals of time.
Properties of Shape	**Recognise 2D and 3D Shapes and Their Properties**	Select, rotate and manipulate shapes in order to develop spatial reasoning skills	To recognise, handle and name common 2D and 3D shapes in different orientations/sizes and relate everyday objects fluently. To recognise that rectangles, triangles, cuboids and pyramids are not always similar to each other.	Pupils read and write names for shapes that are appropriate for their word reading and spelling. To handle, identify and describe the properties of 2D shapes, including the number of sides and line symmetry in a vertical line. To handle, identify and describe the properties of 3D shapes, including the number of edges, vertices and faces. To identify 2D shapes on the surface of 3D shapes.

	Compare and Classify Shapes	Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can.		To identify, compare and sort common 2D and 3D shapes and everyday objects on the basis of their properties and use vocabulary precisely.
Position and Direction	Position, Direction and Movement		To describe position, direction and movement, including whole, half, quarter and three-quarter turns *in both directions and connect clockwise with the movement on a clock face.* *To use the language of position, direction and motion, including: left and right, top, middle and bottom, on top of, in front of, above, between, around, near, close and far, up and down, forwards and backwards, inside and outside.*	To 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 anticlockwise).
	Patterns	Continue, copy and create repeating patterns.		To order and arrange combinations of mathematical objects and *shapes, including those in different orientations,* in patterns and sequences.
Statistics	Record, Present and Interpret Data			*To record, interpret, collate, organise and compare information.* To interpret and construct simple pictograms, tally charts, block diagrams and simple tables *(e.g. many-to-one correspondence in pictograms with simple ratios 2, 5, 10 scales).* To ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. To ask and answer questions about totalling and comparing categorical data.