

## Maths Curriculum INTENT

The maths curriculum at Nethergate, intends to inspire pupils and enable them to gain fluency and understanding of mathematical concepts. This will support them to use reasoning through exploration, varied and frequent practice to solve routine and non-routine problems in everyday life, through interrelation with subjects from across the curriculum and to instil curiosity in the world around them through an appreciation and recognition of pattern, shape, space and time.

Our maths curriculum aims to lay the foundations for our pupils to function within a numerate society and allow them to solve problems by being strategic and employing the appropriate skills and knowledge to reach an appropriate answer or solution. Pupils are encouraged to develop transferrable skills enabling them to function in the local and wider community as this is an essential skill for everyday life.

Pupils follow a broad, balanced and progressive curriculum. Based on the National Curriculum but adapted to meet individual needs and interests. They receive a cohesive structure of experiences that ensure continuity and progress whilst allowing the flexibility necessary to address individual needs. The curriculum recognises and responds to the needs of the individual, enabling students to live their life with dignity, choice and independence.

	Informal	Semi-formal	Formal
Communication	Pupils will communicate through ACC, gestures, signs and symbols to make choices and express their likes/dislikes of a variety of maths-based objects/items which they will explore and discover e.g., in action rhymes, through hearing and 'saying' numbers. As well as using vocabulary long/short, heavy/light, big/small.	Pupils will communicate through key words (verbal or written) to develop their mathematical knowledge and understanding e.g., can match numerals to quantities, can write numerals to express an amount using addition and subtraction. As well as using vocabulary such as more and less, describing measurements using non-standard forms of measurement such as hands or cubes.	Pupils will communicate through short number sentences (written and/or verbal) for a purpose and audience to deepen their mathematical knowledge and understanding e.g., writing more or less than or equal to. As well as using standard forms of measurement mm, cm, m, g, kg, l, ml.

<p style="text-align: center;"><b>Independence</b></p>	<p>Pupils will independently engage with and discover a variety of maths-based objects/items e.g., quantities of objects, Numicon, pouring &amp; filling containers.</p> <p>Pupils will independently engage with and discover a variety of geometric based objects/items e.g., sand and water, practical activities, filling and emptying containers.</p>	<p>Pupils will independently think for themselves to develop their understanding and knowledge of number and problem solving e.g., to identify a bigger group, to sequence numerals.</p> <p>Pupils will independently think for themselves to develop their understanding and recognition of both human and physical features in their local area e.g., to know to use cubes to measure and then to use a ruler to measure.</p>	<p>Pupils will independently think for themselves and find things out for themselves to deepen their knowledge of mathematical facts about numerals and solving problems e.g., estimate how many more to fill the box, use a number line, using place value.</p> <p>Pupils will independently think for themselves and find things out for themselves to deepen their knowledge of geometric facts e.g., to choose the correct unit of measure when weighing flour in grams, liquid in litres and converting grams into kilograms</p>
<p style="text-align: center;"><b>Safety</b></p>	<p>The use of maths outside the classroom will allow the pupils to engage with the wider world by being able to read, follow and understand, timetables, recipes, money, and time.</p> <p>Pupils will begin to express themselves appropriately, using their preferred methods of communication. Pupils will start to become familiar with routines within a safe environment.</p>	<p>The ability to listen and follow set instructions or be able to instruct another will enable pupils to develop and maintain personal safety.</p>	<p>Ensuring safe use of equipment such as weighing scales, thermometers, trundle wheels and kitchen equipment will allow pupils to experiment with new and diverse tasks whilst keeping themselves and others safe</p>
<p style="text-align: center;"><b>Wellbeing</b></p>	<p>Emphasis will be placed on extracting meaning from the many forms of playfulness in which pupils engage. Everyday maths-related experiences will be used to arouse pupils' curiosity allowing them to explore mathematical concepts through familiar activities and environments.</p>	<p>Pupils will be encouraged to discuss areas which interest them mathematically so they can begin to identify their own mathematical problems based on own their interests. Using context-related and personal topics, while allowing them to make mistakes will help them to establish confidence in maths and increase their sense of wellbeing.</p>	<p>Using open-ended resources, pupils will begin to seek challenges, take risks, and develop their learning through trial and error. By making links and noticing patterns in their experience pupils will show persistence and develop self-esteem.</p>

In **Maths**, (Number – Place value) pupils will be expected to know, understand and apply the following by the end of each learning stage.

Steps to engagement		
<p>With assistance, pupils will clap while staff sing number songs to them            Encourage pupils to take part in action, number songs            Pupils are encouraged to explore different collections of objects e.g., balls and their qualities            Pupils will engage in activity e.g., putting on clothes while staff count</p>		
Informal	Semi-formal	Formal
<p>Pupils will discover numbers through taking part in counting on action rhymes e.g., “1,2,3,4,5 once I caught a fish alive.”</p> <p>Pupils will discover and be exposed to numbers in their environment e.g., on classroom displays and using symbols. Show finger numbers up to 5.</p> <p>Pupils will discover number &amp; written numerals to 3 through exploratory learning experiences e.g., matching one object to a symbol. Pupils will learn to subitise (recognise quantities without counting) up to 5, e.g. using dice and other visual representations of numbers.</p> <p>Pupils will discover number &amp; written numerals to 3 through exploratory learning experiences e.g., matching one object to a symbol.</p>	<p>Pupils will develop their knowledge &amp; understanding of counting in steps of 2, 3 and 5 from 0, using objects such as base 10 or pairs of shoes.</p> <p>Pupils will develop their knowledge &amp; understanding of reading numbers to at least 100 in numerals and words, recognising the pattern of the counting system.</p> <p>Pupils will develop their knowledge &amp; understanding of identifying and estimating numbers using different representations, including number lines, and number squares.</p> <p>Pupils will develop their knowledge &amp; understanding of counting forwards and backwards in tens from any number, for example adding and removing pairs of socks, boxes with fruit snacks.</p> <p>Pupils will develop their knowledge &amp; understanding of writing numbers to at least 100 in numerals and words, such as when</p>	<p>Pupils will deepen their knowledge &amp; understanding of counting multiples of 6, 7, 9, 25 and 1000.</p> <p>Pupils will deepen their knowledge &amp; understanding of reading and using numbers to at least 1000 in numerals and words including roman numerals (I to C.)</p> <p>Pupils will deepen their knowledge &amp; understanding of the place value of each digit in a four-digit number.</p> <p>Pupils will deepen their knowledge &amp; understanding of counting backwards through zero through negative numbers.</p>

<p>Pupils will discover the importance of mark making to record numbers including seeing adults' model numerals e.g., enhanced provision.</p> <p>Pupils will discover using numbers, not necessarily in the correct order, to count objects e.g., in role play situations.</p> <p>Pupils will discover and handle different quantities by placing objects into groups and lines e.g., group all the red cars together. Understand 'one more', 'one less' between consecutive numbers.</p> <p>Pupils will discover real life situations when they need to use 1:1 correspondence e.g., handing out plates, putting on shoes etc.</p>	<p>using money and comparing different currencies.</p> <p>Pupils will develop their knowledge &amp; understanding of comparing and ordering numbers up to 100, such as examining the weather in different cities.</p> <p>Pupils will develop their knowledge &amp; understanding of estimating numbers using different representations, such as when in a restaurant or grocery store.</p> <p>Pupils will develop their knowledge &amp; understanding of using number facts to solve problems, such as finding the best price for a new video game or the shortest route to a destination.</p>	<p>Pupils will deepen their knowledge &amp; understanding of writing and using numbers to beyond 1000 in numerals and words including roman numerals (I to C.)</p> <p>Pupils will deepen their knowledge &amp; understanding of comparing and ordering numbers beyond 1000.</p> <p>Pupils will deepen their knowledge &amp; understanding of identifying and estimating numbers.</p> <p>Pupils will deepen their knowledge &amp; understanding of using inverse operations to check answers and calculations.</p>
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In **Maths**, (Number – Addition and subtraction) pupils will be expected to know, understand and apply the following by the end of each learning stage.

Informal	Semi-formal	Formal
<p>Pupils will discover placing and removing objects in containers on demand e.g., counting objects into a container.</p> <p>Pupils will discover how to place a range of objects into groups based on their own criteria e.g., all the blue cars.</p>	<p>Pupils will develop their knowledge &amp; understanding of mathematical signs including <math>+</math> <math>-</math> <math>\times</math> <math>\div</math> <math>&lt;</math>, <math>&gt;</math> and <math>=</math>. Represent and use number bonds within 20.</p> <p>Pupils will develop their knowledge &amp; understanding of the use of number lines to solve mathematical equations.</p>	<p>Pupils will deepen their knowledge &amp; understanding of mathematical signs to solve 2 and 3 step number problem in context, deciding which operation to use and why.</p> <p>Pupils will deepen their knowledge &amp; understanding using written methods to solve equations including column addition and subtraction.</p>

<p>Pupils will discover that repeated action has the same effect every time e.g., knocking down a tower of bricks.</p> <p>Pupils will discover through cause-and-effect toys that their actions have a consequence to develop their problem-solving skills.</p>	<p>Pupils will develop their knowledge &amp; understanding of solving a variety of related number problems to develop fluency.</p> <p>Pupils will develop their knowledge &amp; understanding of using place value to solve number problems, such as dividing large quantities among small groups of people.</p>	<p>Pupils will deepen their knowledge &amp; understanding of solving a variety of related number problems to deepen their fluency.</p> <p>Pupils will deepen their knowledge &amp; understanding to use the methods taught to solve number problems using increasingly large positive numbers</p>
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In **Maths**, (Number – Multiplication and division) pupils will be expected to know, understand and apply the following by the end of each learning stage.

Informal	Semi-formal	Formal
<p>Pupils will discover the counting sequence by helping a member of staff count objects.</p> <p>Pupils will discover handling different quantities by placing objects into groups and lines as well as assisting with 1:1 matching activity e.g., setting the table.</p>	<p>Pupils will develop their knowledge &amp; understanding of doubling any number to 10 and halving any even number to 10.</p> <p>Pupils will develop their knowledge &amp; understanding of simple number patterns to 100 using repeated addition e.g., in 2s, 5s and 10s.</p> <p>Pupils will develop their knowledge &amp; understanding of simple vocabulary associated with multiplication and division e.g., sharing and grouping.</p> <p>Pupils will develop their knowledge &amp; understanding of solving one step problems using concrete objects and pictorial representations.</p>	<p>Pupils will deepen their knowledge &amp; understanding recalling multiplication and division facts for multiplication tables up to 12 x 12.</p> <p>Pupils will deepen their knowledge &amp; understanding of multiplying two- and three-digit numbers using formal written layout.</p> <p>Pupils will deepen their knowledge &amp; understanding of using place value known and derived facts to multiply and divide mentally.</p> <p>Pupils will deepen their knowledge &amp; understanding of solving problems involving multiplying and adding including equations.</p>

In **Maths**, (Number – Fractions and decimals) pupils will be expected to know, understand and apply the following by the end of each learning stage.

Informal	Semi-formal	Formal
<p>Pupils will discover that two <math>\frac{1}{2}</math> make a whole one using practical resources e.g., food items at snack time and cooking sessions in the learning kitchen.</p> <p>Pupils will discover and recognise numerals in the environment up to 10 e.g., on classroom displays and using symbols.</p> <p>Pupils will discover experiencing and handling coins through role play and community visits e.g., hand over a coin to pay for snack</p>	<p>Pupils will develop their knowledge &amp; understanding of recognising, finding and naming a <math>\frac{1}{2}</math> as one of two equal parts of an object, shape or quantity.</p> <p>Pupils will develop their knowledge &amp; understanding of combining <math>\frac{1}{2}</math> and <math>\frac{1}{4}</math> to make a whole one understanding that a fraction has a numerator and denominator.</p> <p>Pupils will develop their knowledge &amp; understanding of rounding whole 2-digit number to the nearest 10 using a number line e.g., 21 to 20 or 58 to 60.</p> <p>Pupils will develop their knowledge &amp; understanding of identifying and the value of coins and notes up to £10 beginning to make totals e.g., 5 1pennies = 5p.</p>	<p>Pupils will deepen their knowledge &amp; understanding of recognising and show representations, using diagrams, families of common equivalent fractions.</p> <p>Pupils will deepen their knowledge &amp; understanding of adding and subtracting fractions with a common denominator.</p> <p>Pupils will deepen their knowledge &amp; understanding of rounding decimals to the nearest whole number e.g., 1.8 to 2 or 1.2 to 1.</p> <p>Pupils will deepen their knowledge &amp; understanding of solving money and measure problems involving fractions and decimals.</p>

## Measurement

In **Maths**, Measure. Pupils will be expected to know, understand and apply the following by the end of each learning stage.

Informal	Semi-formal	Formal
<p>Pupils will discover handling a variety of objects of differing length while being introduced to the spoken language long / short, whilst playing/investigating with toys or objects.</p> <p>Pupils will discover handling a variety of objects of differing mass while being introduced to the spoken language heavy / light through playing/investigating with toys and objects.</p> <p>Pupils will discover capacity through practical activities including pouring sand and water, filling and emptying containers, investigating play. Introduce simple language empty, full.</p> <p>Pupils will discover handling coins and notes in practical situations such as snack times and communication cafes. Pupils will demonstrate an understanding of the concept of transaction -exchanging a coin for an item.</p>	<p>Pupils will develop their knowledge and understanding of comparing, describing and solving practical problems for lengths and heights e.g., long / short, longer / shorter, tall / small for e.g.; playing with blocks or boxes of differing sizes.</p> <p>Pupils will develop their knowledge and understanding of describing and solving practical problems for mass / weight e.g., heavy / light, heavier than, lighter than whilst investigating and building with bricks and objects.</p> <p>Pupils will develop their knowledge and understanding of measuring and beginning to record the following units of measure for capacity e.g., litres and millilitres. Pupils will develop appropriate mathematical language, less than, more than, equal too.</p> <p>Pupils will develop their knowledge and understanding of recognising and knowing the value of different denominations of coins and notes. Pupils will access the wider community and pay for their chosen items in a café or shopping. Pupils will begin to use mathematical language pence and pounds</p>	<p>Pupils will deepen their knowledge and understanding of measuring, comparing and converting between units of measure for length mm, cm, m, km for eg, during cooking and science experiments.</p> <p>Pupils will deepen their knowledge and understanding of measuring, comparing and converting between units of measure for mass grams, kilograms</p> <p>Pupils will deepen their knowledge and understanding of recording, converting, adding and subtracting between units of measure for capacity litres and millilitres.</p> <p>Pupils will deepen their knowledge and understanding of estimating, comparing and calculating in monetary measures: pounds and pence whilst at school and in the wider community. Pupils will be able to experience online shopping using the internet. Pupils will use their maths skills in practical ways and real-life situations such as problem solving and money management. Pupils will use a self-scan till and pay for their items using cash or a debit card.</p>

In **Maths**, (measurement, time) pupils will be expected to know, understand and apply the following by the end of each learning stage.

Informal	Semi-formal	Formal
<p>Pupils will discover the sequence of events using language 'now and next' or 'first and then'. Through using their now and next communication boards and timetables.</p> <p>Pupils will discover the change of time based on specific events in relation to the time of the day e.g., visiting the hall can mean dinner time or P.E. dependent on the sequence of time.</p>	<p>Pupils will develop their knowledge and understanding of measuring and beginning to record the following units of measure for time (minute, hour, 12hr, 24hr) using their personal timetables, and in their familiar surroundings. Online games to support their learning.</p> <p>Pupils will begin to show understanding about familiar routines e.g., the sequence of getting ready for bed, the order they get dressed in. Pupils will look at different clothes you wear for distinct types of weather. Pupils will begin to understand the days of the week.</p>	<p>Pupils will deepen their knowledge and understanding recording, adding &amp; subtracting between units of measure for time e.g., minute, hour, 12hr and 24hr, in everyday situations and in the wider community. Pupils will use mathematical language to help solve everyday problems.</p> <p>Pupils will begin to develop their understanding of time, they will be able to tell you what is happening tomorrow, or what happened yesterday. What will happen next week or next month. Pupils will name the seasons of the year and show some understanding of what happens in each season.</p>



In **Maths**, Measure Shape. pupils will be expected to know, understand and apply the following by the end of each learning stage.

Informal	Semi-formal	Formal
<p>Pupils will discover 2D and 3D shapes through handling, stacking, matching and sorting activities, including exploring ways the shapes move and can be manipulated through play and investigation.</p> <p>Pupils will discover 2D and 3D shapes through handling, stacking, matching and sorting activities, including exploring ways the shapes move and can be manipulated, e.g., a triangle can be used for a roof.</p> <p>Pupils will discover object permanence through objects that have gone out of sight, hearing or touch. for e.g., hiding a toy under a blanket.</p> <p>Pupils will discover through exploring a variety of objects of differing sizes while being introduced to the spoken language big/small, through play and investigation.</p> <p>Pupils will discover 2D shapes through matching and comparing sizes of big and small objects. Through investigation and play.</p>	<p>Pupils will develop their knowledge and understanding of naming 2D shapes and identifying their properties and beginning to use mathematical language such as sides, corners and straight, flat and round. Use puzzles to place the correct shape into a space. Pupils will use a variety of bricks/objects to create a repeating pattern.</p> <p>Pupils will develop their knowledge and understanding of identify 2D shapes on the surface of 3D shapes, for example, a circle on a cylinder and a triangle on a pyramid. Pupils will investigate shapes to recognise that a shape can have other shapes within it.</p> <p>Pupils will develop their knowledge and understanding of symmetry using shapes, pictures of themselves, art and in their natural environment.</p> <p>Pupils will develop their knowledge and understanding through comparison and of ordering of 2D and 3D shapes based on their size.</p> <p>Pupils will develop their knowledge and understanding of comparing the overall size of one object with that of another, using familiar words (big, small) in a practical situation e.g., during communication café and cooking.</p>	<p>Pupils will deepen their knowledge and understanding of identifying lines of symmetry in regular 2D shapes presented at different orientations. Pupils will be using the correct mathematical language.</p> <p>Pupils will deepen their knowledge and understanding of identifying 3D shapes, including cubes and other cuboids, from 2D representations. Pupils will see patterns in the wider community.</p> <p>Pupils will deepen their knowledge and understanding of completing and identifying simple symmetric problems, whilst following a specific line of symmetry. Whilst observing shapes, in their natural environment and in the wider community.</p> <p>Pupils will deepen their knowledge and understanding of identifying angles as right, acute, or obtuse as well as comparing and ordering angles by size.</p> <p>Pupils will deepen their knowledge and understanding of finding the area of shapes by counting squares.</p>

In **Maths**, Measure Space. pupils will be expected to know, understand, and apply the following by the end of each learning stage.

Informal	Semi-formal	Formal
<p>Pupils will discover position and direction through placing objects in specific places using 'up' and 'down.'</p> <p>Pupils will discover position through handling, moving objects. And manipulation. Whilst playing with a range of objects, shapes, blocks, and objects.</p>	<p>Pupils will develop their knowledge and understanding of using mathematical vocabulary to describe position, direction, and movement e.g., next to, under, on top off, in front, behind.</p> <p>Pupils will develop their knowledge and understanding of position through drawing simple models, pictures, and patterns e.g., a simple map. Pupils will develop how to describe a familiar route.</p>	<p>Pupils will deepen their knowledge and understanding of describing positions on a 2D shape grid as coordinates and using a map.</p> <p>Pupils will deepen their knowledge and understanding of plotting specified points on a graph. Pupils will plan a simple route to get from A to B.</p>

### Data and Statistics

In **Maths**, (Data) pupils will be expected to know, understand, and apply the following by the end of each learning stage.

Informal	Semi-formal	Formal
<ul style="list-style-type: none"> <li>• Pupils will discover sorting objects by a given criteria when the contrasts are obvious e.g., sorting coloured building blocks.</li> <li>• Pupils will discover sorting objects by a given criteria when the contrasts are obvious e.g., sorting coloured building blocks.</li> <li>• Pupils will discover collections of similar objects and will begin to classify them e.g.; different coins are all money.</li> <li>• Pupils will discover collections of similar objects and will begin to classify them e.g.; different coins are all money.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupils will develop their knowledge &amp; understanding of extracting simple information from bar charts and pictograms.</li> <li>• Pupils will develop their knowledge &amp; understanding of collecting and recording data in a database e.g., bar chart to show how many children like apples.</li> <li>• Pupils will develop their knowledge &amp; understanding of extracting simple information from bar charts and pictograms.</li> <li>• Pupils will develop their knowledge &amp; understanding of recording their results using a simple pre-drawn bar chart.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupils will deepen their knowledge &amp; understanding of interpreting and presenting data using bar charts, pictograms, and tables.</li> <li>• Pupils will deepen their knowledge &amp; understanding of deciding the best way to represent the data they have gathered e.g., bar chart, line graph.</li> <li>• Pupils will deepen their knowledge &amp; understanding to solve one-step and two-step questions e.g. 'How many more?' and 'How many fewer?' using bar charts, pictograms, and tables.</li> <li>• Pupils will deepen their knowledge &amp; understanding of interpreting simple scales in pictograms and bar charts.</li> </ul>

