



Mathematics: Our Vision

Applying fluency in concepts and reasoning skills to solve and understand problems in the real world.

Intent

At the Oaks Federation, our aim is to give children exciting and engaging learning opportunities that develop a love of learning. These are based on our Learning Values; 'push yourself', 'don't give up', 'understand others', 'explore' and 'imagine', as well as giving children opportunities to express and practise our Christian Values of 'love', 'compassion' and 'respect'. Our teaching and learning approach to maths is centred around the Concrete/Pictorial/Abstract (CPA) approach. We strive to embed our teaching through real-life contexts, making appropriate links across the curriculum. We aim to weave the three National Curriculum objectives of Fluency, Problem Solving and Reasoning into all units of maths learning. These objectives are connected and interdependent skills. We hope to have pupils who think mathematically, learn to master a range of methods to allow for deeper conceptual understanding and confidence when they tackle problem solving and explaining their reasoning. Emphasis is placed on number fluency using the NCETM Mastering Number Programme in all year groups, to support rapid recall of maths facts to support children's efficiency. This in turn supports children to achieve mastery in a concept with a deeper, more secure and adaptable understanding.

Implementation

Our curriculum is built upon a Mastery approach from Year R to Year 2 with lessons and learning experiences planned sequentially over time to aid progression and understanding, building upon previous learning. Children take on their mathematical learning journeys together, feeling like all can achieve and succeed. Teachers facilitate this ethos by differentiating accordingly for support and challenge.

In the Early Years, children begin their learning journey and love of maths with lessons, activities (with varied fluency, problem solving and reasoning appropriate to their level and age) and continuous provision based upon NCETM's Mastering Number Programme - focusing on developing a deep understanding of number. This high quality mathematic teaching will prepare the children for continuing this journey in KS1 and embed sound knowledge for White Rose Planning in the mixed years of KS1.

In KS1, separate year groups undertake 10 minute "Mini Maths" sessions (NCETM's Mastering Number) as well as maths lessons, within mixed year classes, supported by White Rose. Fluency, Problem Solving and Reasoning opportunities are supplemented with other trusted resources such as NRich and NCETM. Year 1/2 lessons are taught whole class in a Mastery Approach meaning all children work together on the same objectives and activities, following a progressive and enriched sequence. Teachers ensure all achieve and are successful by supporting and challenging accordingly. Lessons focus on high quality first teaching from the class teacher with differentiated questioning and an encouragement for discussion, debate and an open ethos for mistake making and solving.

Impact

When pupils leave the Oaks Federation, their learning in Maths will have enabled them to be fluent at manipulating number; able to reason confidently and solve both routine and non-routine tasks, using an appropriate and efficient method. The children will give tackling problems a go, utilising the Learning Values and Christian Values of our federation, understanding that mistakes and errors are good and a natural and inspiring part of learning. Using their high-quality maths education, they will be able to tackle the real world with an inquisitive, investigative mind and with an attitude of enjoyment and excitement.

Early Years Foundation Stage

Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding - such as using manipulatives, including small pebbles and tens frames for organising counting - children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes.

Mathematics ELG:

Number

Children at the expected level of development will:

- Have a deep understanding of number to 10, including the composition of each number;
- Subitise (recognise quantities without counting) up to 5;
- 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.

Numerical Patterns

Children at the expected level of development will:

- Verbally count beyond 20, recognising the pattern of the counting system;
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

Our vision statement states that our Federation is striving to ensure children are future ready. Therefore, throughout the Foundation Stage, opportunities for children to develop, practise and explore their mathematics skills are created throughout the curriculum in continuous provision opportunities to begin their journey towards this.

Key Stage One

Key Objectives Year One (National Curriculum 2014)
Children will learn:

<p>Number - Place Value</p> <ul style="list-style-type: none"> count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number count, read and write numbers to 100 in numerals; count in multiples of 2s, 5s and 10s given a number, identify 1 more and 1 less identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least read and write numbers from 1 to 20 in numerals and words 	<p>Number - Addition & Subtraction</p> <ul style="list-style-type: none"> read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs represent and use number bonds and related subtraction facts within 20 add and subtract one-digit and two-digit numbers to 20, including 0 solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = ? - 9$ 	<p>Number - Multiplication & Division</p> <ul style="list-style-type: none"> 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
<p>Number - Fractions</p> <ul style="list-style-type: none"> recognise, find and name a half as 1 of 2 equal parts of an object, shape or quantity recognise, find and name a quarter as 1 of 4 equal parts of an object, shape or quantity 	<p>Measure</p> <ul style="list-style-type: none"> compare, describe and solve practical problems for: <ul style="list-style-type: none"> lengths and heights [for example, long/short, longer/shorter, tall/short, double/half] mass/weight [for example, heavy/light, heavier than, lighter than] capacity and volume [for example, full/empty, more than, less than, half, half full, quarter] time [for example, quicker, slower, earlier, later] measure and begin to record the following: <ul style="list-style-type: none"> lengths and heights mass/weight capacity and volume time (hours, minutes, seconds) recognise and know the value of different denominations of coins and notes sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] recognise and use language relating to dates, including days of the week, weeks, months and years tell the time to the hour and half past the hour and draw the hands on a clock face to show these times 	<p>Geometry - Shape</p> <ul style="list-style-type: none"> recognise and name common 2-D and 3-D shapes, including: <ul style="list-style-type: none"> 2-D shapes [for example, rectangles (including squares), circles and triangles] 3-D shapes [for example, cuboids (including cubes), pyramids and spheres] <p>Geometry - Position & Direction</p> <ul style="list-style-type: none"> describe position, direction and movement, including whole, half, quarter and three-quarter turns

Key Objectives Year Two (National Curriculum 2014)

Children will learn:

Number - Place Value <ul style="list-style-type: none">count in steps of 2, 3, and 5 from 0, and in 10s from any number, forward and backwardrecognise the place value of each digit in a two-digit number (10s, 1s)identify, represent and estimate numbers using different representations, including the number linecompare and order numbers from 0 up to 100; use <, > and = signsread and write numbers to at least 100 in numerals and in wordsuse place value and number facts to solve problems		Number - addition and subtraction <ul style="list-style-type: none">solve problems with addition and subtraction:<ul style="list-style-type: none">using concrete objects and pictorial representations, including those involving numbers, quantities and measuresapplying their increasing knowledge of mental and written methodsrecall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100add and subtract numbers using concrete objects, pictorial representations, and mentally, including:<ul style="list-style-type: none">a two-digit number and 1sa two-digit number and 10s2 two-digit numbersadding 3 one-digit numbersshow that addition of 2 numbers can be done in any order (commutative) and subtraction of 1 number from another cannotrecognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems	Number - multiplication and division <ul style="list-style-type: none">recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numberscalculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signsshow that multiplication of 2 numbers can be done in any order (commutative) and division of 1 number by another cannotsolve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts
Number - fractions <ul style="list-style-type: none">recognise, find, name and write fractions 1/3, ¼, 2/4 and 3/4 of a length, shape, set of objects or quantitywrite simple fractions, for example 1/2 of 6 = 3 and recognise the equivalence of 2/4 and ½	Statistics <ul style="list-style-type: none">interpret and construct simple pictograms, tally charts, block diagrams and tablesask and answer simple questions by counting the number of objects in each category and sorting the categories by quantityask-and-answer questions about totalling and comparing categorical data	Measurement <ul style="list-style-type: none">choose and use appropriate standard units 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 vesselscompare and order lengths, mass, volume/capacity and record the results using >, < and =recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular valuefind different combinations of coins that equal the same amounts of moneysolve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving changecompare and sequence intervals of timetell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these timesknow the number of minutes in an hour and the number of hours in a day	Geometry - properties of shapes <ul style="list-style-type: none">identify and describe the properties of 2-D shapes, including the number of sides, and line symmetry in a vertical lineidentify and describe the properties of 3-D shapes, including the number of edges, vertices and facesidentify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]compare and sort common 2-D and 3-D shapes and everyday objects Geometry - position and direction <ul style="list-style-type: none">order and arrange combinations of mathematical objects in patterns and sequencesuse 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 anti-clockwise)