



## MATHS

### Why is Maths Important?

Mathematics equips children with a uniquely powerful set of tools to understand and change the world. These tools include logical reasoning, problem-solving skills, and the ability to think in abstract ways. Mathematics is important in everyday life, many forms of employment, science and technology, medicine, the economy, the environment and development, and in public decision-making. Different cultures have contributed to the development and application of mathematics. Today, the subject transcends cultural boundaries and its importance is universally recognised. Mathematics is a creative discipline. It can stimulate moments of pleasure and wonder when a child solves a problem for the first time, discovers a more elegant solution to that problem, or suddenly sees hidden connections.

The mathematics teaching at Outwood Primary Academies is geared towards enabling each child to develop mastery; not only the mathematics skills and understanding required for later life, but also an enthusiasm and fascination about maths itself. We aim to increase children's confidence in maths and aim for all pupils to develop a deep conceptual and procedural understanding of mathematics to ensure sustainable learning. We believe that all pupils are capable of understanding and doing mathematics, given sufficient time.

We are continually aiming to raise the standards of achievement of all children in our Outwood Primary Academies to give them the best possible life chances.

The study of Mathematics, within our academies, encourages children to think deeply and helps them to problem solve more effectively – a great life skill that will support children with all future learning. Across the curriculum and key stages children explore number, geometry, measure, statistics, fractions and percentages. Lessons provide a wide range of opportunities which encourage children to construct their own learning and discover their own rules through offering them rich and sophisticated problems. Through applying a concrete, pictorial, abstract approach to Maths we support all children to build procedural and conceptual knowledge alongside developing procedural fluency.

Within lessons children are encouraged to work collaboratively to develop their mathematical language and reasoning skills - key skills essential to all areas of the curriculum.

### How can the study of Maths support children's futures?

The mathematics teaching at Outwood Primary Academies is geared towards enabling each child to develop mastery; not only the mathematics skills and understanding required for later life, but also an enthusiasm and fascination about maths itself. These skills, fascination and enthusiasm equip children with solid foundations to enable them to go on to succeed in maths at GCSE and beyond.

Careers that the study of Mathematics supports include:

- Accountancy
- Statistician
- Meteorologist
- Maths Teacher
- Software engineer
- Quantity survivor
- Research Scientist

*Maths is the truly global language. With it, we convey ideas to each other that words can't handle – and bypass our spoken Tower of Babel.*

Professor Alison Wolf, Head of Mathematical Sciences Group, Institute of Education, University of London

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Term	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Autumn 1</b>	<b>Numbers to 5</b> <ul style="list-style-type: none"> <li>Counting to 5</li> <li>Sorting into 2 groups</li> <li>Comparing groups within 5</li> </ul>	<b>Numbers to 10</b> <ul style="list-style-type: none"> <li>Place Value</li> <li>Numbers to 10</li> <li>Number bonds</li> <li>Part whole</li> <li>Addition and Subtraction</li> <li>Word problems</li> </ul>	<b>Place Value</b> <ul style="list-style-type: none"> <li>Numbers to 100</li> </ul> <b>Addition and Subtraction</b> <ul style="list-style-type: none"> <li>Involving numbers to 100</li> <li>Worded problems</li> </ul>	<b>Place Value</b> <ul style="list-style-type: none"> <li>Numbers to 1000</li> <li>Partition numbers</li> <li>Counting in 100s</li> <li>Finding 1, 10 and 100 more or less than a number.</li> <li>Counting in 50s</li> </ul> <b>Addition and Subtraction</b> <ul style="list-style-type: none"> <li>Involving numbers within 1000</li> <li>Solving word problems</li> </ul>	<b>Place Value</b> <ul style="list-style-type: none"> <li>4 digit numbers</li> <li>The number line to 10,000</li> <li>Counting in thousands and twenty fives</li> <li>Negative numbers</li> <li>Roman numerals</li> </ul> <b>Rounding</b> <ul style="list-style-type: none"> <li>Round numbers to the nearest 10 and 100.</li> <li>Use rounding to estimate.</li> </ul> <b>Addition and Subtraction</b> <ul style="list-style-type: none"> <li>Adding and subtracting two four digit numbers</li> <li>Solving multi-step problems.</li> </ul>	<b>Place Value</b> <ul style="list-style-type: none"> <li>Numbers to 1,000,000</li> <li>Roman numerals to 10,000</li> <li>Interpret negative numbers in context</li> <li>Count forward and back in negative numbers</li> </ul> <b>Rounding</b> <ul style="list-style-type: none"> <li>Rounding to the nearest 10, 100 and 1000</li> </ul> <b>Addition and Subtraction</b> <ul style="list-style-type: none"> <li>Adding and subtracting whole numbers with more than four digits</li> <li>Using rounding to check answers</li> <li>Mental addition and subtraction</li> <li>Using inverse operations</li> </ul>	<b>Place Value</b> <ul style="list-style-type: none"> <li>Numbers to 10 000 000</li> <li>Interpret negative numbers</li> <li>Round any number including decimals to 3 decimal places.</li> <li>Multiplying and dividing by 10, 100 and 1000 including decimal numbers up to three decimal places.</li> </ul> <b>Addition and Subtraction</b> <ul style="list-style-type: none"> <li>Add large numbers including decimals</li> <li>Solve multi-step problems</li> </ul> <b>Multiplication and Division</b> <ul style="list-style-type: none"> <li>Multiply and divide numbers up to 4 digits by a 2 digit number</li> <li>Interpret remainders.</li> <li>Solve multi-step problems and decide which operation to use and why.</li> <li>Order of operations.</li> <li>Identify common multiples and factors.</li> <li>Recognise prime numbers up to 100.</li> <li>Recognise and use square and cubes numbers.</li> <li>Mental calculations.</li> </ul>
<b>Autumn 2</b>	<b>Addition</b> <ul style="list-style-type: none"> <li>1 more (within 5)</li> </ul> <b>Subtraction</b> <ul style="list-style-type: none"> <li>1 less (within 5)</li> </ul>	<b>Shape</b> <ul style="list-style-type: none"> <li>Identify and classify triangles, squares, Circles and rectangles</li> <li>Properties of 2D shapes</li> <li>Properties of 3D shapes</li> </ul> <b>Place Value</b> <ul style="list-style-type: none"> <li>Numbers to 20</li> <li>Count within 20.</li> <li>Order and compare numbers to 20.</li> <li>Recall number bonds to 20.</li> <li>Partition numbers within 20.</li> </ul>	<b>Money</b> <ul style="list-style-type: none"> <li>Counting money (coins and notes)</li> <li>Showing equal amounts</li> <li>Comparing money</li> <li>Calculating with money</li> </ul> <b>Multiplication and Division</b> <ul style="list-style-type: none"> <li>making equal groups</li> <li>adding equal groups</li> <li>multiplication sentences</li> <li>making arrays</li> <li>2, 5, 10 times tables</li> </ul>	<b>Addition and Subtraction</b> <ul style="list-style-type: none"> <li>Addition and subtraction within 1000</li> <li>Solving word problems</li> </ul> <b>Multiplication and Division</b> <ul style="list-style-type: none"> <li>Multiplying and dividing by 3</li> <li>Multiplying and dividing by 4</li> <li>Multiplying and dividing by 8</li> <li>Solving problems with multiplication and division</li> </ul>	<b>Measure</b> <ul style="list-style-type: none"> <li>Measure and calculate perimeter in both meters and centimetres</li> <li>Convert between different units of measure</li> </ul> <b>Multiplication and Division</b> <ul style="list-style-type: none"> <li>Multiply by 10 and 100.</li> <li>Divide by multiples of 10 and 100.</li> <li>Multiplying by 0, 1, 6, 7, 9, 11 and 12.</li> </ul>	<b>Statistics</b> <ul style="list-style-type: none"> <li>Interpreting tables</li> <li>Interpreting and drawing line graphs</li> </ul> <b>Multiplication and Division</b> <ul style="list-style-type: none"> <li>Identify and find factors and multiples</li> <li>Identify and find prime numbers up to 19</li> <li>Finding and identifying square and cubed numbers</li> <li>Inverse operations</li> <li>Multiplying and dividing by 10, 100 and 1000 involving decimal numbers</li> </ul> <b>Measure</b> <ul style="list-style-type: none"> <li>Calculate and measure area and perimeter of squares and rectangles</li> <li>Calculate the perimeter of composite shapes</li> <li>Compare areas and perimeters</li> <li>Estimate area</li> </ul>	<b>Fractions, Decimals and Percentages</b> <ul style="list-style-type: none"> <li>Simplifying fractions.</li> <li>Fractions on a number line.</li> <li>Comparing and ordering fractions with different denominator and those greater than 1.</li> <li>Add and subtract fractions including mixed numbers with different denominators.</li> <li>Multiply proper fractions and mixed numbers by whole numbers.</li> <li>Divide proper fractions by whole numbers.</li> <li>Calculating fractions of amounts.</li> <li>Problem solving with fractions.</li> <li>Decimals as fractions.</li> <li>Fractions as decimals</li> <li>Multiplying and dividing decimals.</li> <li>Percentages</li> <li>Equivalent fractions, decimals and percentages.</li> <li>Converting between equivalent decimals, fractions and percentages.</li> </ul> <b>Ratio and Proportion</b> <ul style="list-style-type: none"> <li>Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.</li> <li>Solve problems involving similar shapes where the scale factor is known or can be found.</li> <li>Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.</li> <li>Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.</li> <li>Scale drawings.</li> <li>Scale factors.</li> <li>Scale shapes.</li> <li>Problem solving with ratio and proportion.</li> </ul>

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<b>Spring 1</b>	<b>Addition and Subtraction</b> <ul style="list-style-type: none"> <li>Number bonds within 5</li> </ul> <b>Number and Place Value</b> <ul style="list-style-type: none"> <li>Counting to 10</li> <li>Comparing numbers within 10</li> </ul>	<b>Addition</b> <ul style="list-style-type: none"> <li>Addition within 20</li> </ul> <b>Subtraction</b> <ul style="list-style-type: none"> <li>Subtraction within 20</li> </ul> <b>Number and Place Value</b> <ul style="list-style-type: none"> <li>Numbers to 50</li> <li>Count within 50</li> <li>Compare and order numbers within 50.</li> <li>Partition numbers within 50.</li> </ul>	<b>Multiplication and Division</b> <ul style="list-style-type: none"> <li>Sharing and grouping</li> <li>Dividing by 2</li> <li>Odd and even numbers</li> <li>Dividing by 5</li> <li>Dividing by 10</li> <li>Solving problems using bar modelling</li> </ul> <b>Statistics</b> <ul style="list-style-type: none"> <li>Making tally charts</li> <li>Making and interpreting pictograms</li> <li>Block diagrams</li> </ul> <b>Measurement</b> <ul style="list-style-type: none"> <li>Measuring cm</li> <li>Measuring m</li> <li>Comparing lengths</li> <li>Solving problems involving length and height</li> </ul>	<b>Multiplication and Division</b> <ul style="list-style-type: none"> <li>Comparing multiplication and division statements</li> <li>Related multiplication and division statements</li> <li>Multiplying a two digit number by a one digit number</li> <li>Dividing a two digit number by a one digit number</li> <li>Solving mixed problems</li> </ul> <b>Money</b> <ul style="list-style-type: none"> <li>Add and subtract pound and pence including giving change</li> <li>Converting pounds and pence</li> <li>Problem solving with money</li> </ul> <b>Statistics</b> <ul style="list-style-type: none"> <li>Interpreting and creating Pictograms</li> <li>Interpreting and creating Bar charts</li> <li>Interpreting and creating Tables</li> </ul>	<b>Multiplication and Division</b> <ul style="list-style-type: none"> <li>Multiplying by more than two numbers</li> <li>Multiplying a two and three digit number by a one digit number</li> <li>Dividing a two digit number by a one digit number</li> <li>Dividing with remainders</li> <li>Dividing a three digit number by a one digit number</li> <li>Problem solving</li> </ul> <b>Area</b> <ul style="list-style-type: none"> <li>What is area</li> <li>Calculating area by counting squares</li> </ul>	<b>Multiplication and Division</b> <ul style="list-style-type: none"> <li>Multiply up to a four digit number and a two digit number</li> <li>Divide up to a four digit number by a one digit number</li> <li>Multiply a two digit number by a one digit number mentally</li> <li>Division with remainders</li> <li>Problem solving</li> </ul> <b>Fractions</b> <ul style="list-style-type: none"> <li>Equivalent fractions</li> <li>Convert improper fractions to mixed numbers and vice versa</li> <li>Compare and order fractions with multiples of the same denominator</li> <li>Fractions as division</li> <li>Adding and subtracting fractions with denominators with the same multiple</li> <li>Problem solving</li> </ul>	<b>Measure</b> <ul style="list-style-type: none"> <li>Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate.</li> <li>Use, read, write and convert between standard units.</li> <li>Imperial units.</li> </ul> <b>Area and Perimeter</b> <ul style="list-style-type: none"> <li>Shapes with the same area</li> <li>Area and perimeter. Recognise that shapes with the same area can have different perimeters and vice versa.</li> <li>Area of parallelograms</li> <li>Area of a triangle.</li> <li>Problem solving with area and perimeters.</li> <li>Volume of a cuboid.</li> </ul>
<b>Spring 2</b>	<b>Addition and Subtraction</b> <ul style="list-style-type: none"> <li>Addition and subtraction within 10</li> <li>Number bonds to 10</li> </ul>	<b>Measure</b> <ul style="list-style-type: none"> <li>Introducing length and height</li> <li>Introducing weight and height</li> </ul>	<b>Geometry - Properties of Shape</b> <ul style="list-style-type: none"> <li>Recognising 2D and 3D shapes</li> <li>Drawing 2D shapes</li> <li>Properties of 2D shapes</li> </ul> <b>Fractions</b> <ul style="list-style-type: none"> <li>Introducing wholes and parts</li> <li>Making equal parts</li> <li>Recognising a half</li> <li>Recognising a quarter</li> <li>Finding a half and quarter</li> <li>Understanding other fractions</li> <li>Counting in halves and quarters</li> </ul>	<b>Measure (Length)</b> <ul style="list-style-type: none"> <li>Measuring length</li> <li>Equivalent lengths cm and m</li> <li>Adding and subtracting lengths</li> <li>Measuring the perimeter</li> <li>Solving problems involving length</li> </ul> <b>Fractions</b> <ul style="list-style-type: none"> <li>Unit and non-unit fractions</li> <li>Making the whole</li> <li>Counting with tenths</li> <li>Fractions as numbers</li> <li>Fractions as a set of objects</li> <li>Problem solving with fractions</li> </ul>	<b>Fractions</b> <ul style="list-style-type: none"> <li>Counting up and down in tenths and hundredths</li> <li>Equivalent fractions</li> <li>Simplifying fractions</li> <li>Fractions greater than one</li> <li>Adding and subtracting fractions with the same denominator</li> <li>Calculating fractions of a quantity</li> <li>Problem solving</li> </ul> <b>Decimals</b> <ul style="list-style-type: none"> <li>Recognise and write any decimal equivalent of tenths and hundredths</li> <li>Dividing by 10 and 100</li> </ul>	<b>Decimals and Percentages</b> <ul style="list-style-type: none"> <li>Writing decimals</li> <li>Decimals as fractions</li> <li>Understanding thousandths</li> <li>Writing thousandths as fractions</li> <li>Ordering and comparing decimals</li> <li>Rounding decimals with two decimal places to the nearest whole number and one decimal place</li> <li>Understanding percentages</li> <li>Percentages as fractions and decimals</li> <li>Equivalent fractions, decimals and percentages</li> </ul>	<b>Angles</b> <ul style="list-style-type: none"> <li>Estimate and compare angles.</li> <li>Angles in a triangles.</li> <li>Angles in a polygon.</li> <li>Vertically opposite angles.</li> <li>Measuring with a protractor</li> </ul> <b>Geometry - Properties of Shapes</b> <ul style="list-style-type: none"> <li>Recognising and drawing parallel and perpendicular lines.</li> <li>Distinguish between regular and irregular polygons.</li> <li>Reasoning about 3D shapes.</li> <li>Parts of a circle.</li> <li>Nets</li> </ul> <b>Statistics</b> <ul style="list-style-type: none"> <li>Calculating the mean</li> <li>Interpreting and constructing pie charts.</li> <li>Percentages and pie charts.</li> <li>Interpreting and constructing Line Graphs.</li> </ul> <b>Algebra</b> <ul style="list-style-type: none"> <li>Finding and using the rule.</li> <li>Formulae</li> <li>Finding</li> <li>Solving equations</li> </ul>

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<b>Summer 1</b>	<b>Addition and Subtraction</b> <ul style="list-style-type: none"> <li>Adding and subtracting by counting on or back</li> </ul>	<b>Multiplication and Division</b> <ul style="list-style-type: none"> <li>Counting in twos, fives and tens</li> <li>Making equal groups</li> <li>Adding simple groups</li> <li>Making arrays</li> <li>Making doubles</li> <li>Sharing equally</li> <li>Doubling and halving</li> <li>Solving word problems</li> </ul> <b>Fractions</b> <ul style="list-style-type: none"> <li>Finding and recognising halves and quarters</li> </ul> <b>Place Value Numbers to 100</b> <ul style="list-style-type: none"> <li>Count forwards and backwards within 100.</li> <li>Order and compare numbers within 100.</li> <li>Partition numbers to 100.</li> </ul>	<b>Geometry - Position and Direction</b> <ul style="list-style-type: none"> <li>Describing movement and turns</li> <li>Making patterns with shapes</li> </ul> <b>Number - Addition and Subtraction</b> <ul style="list-style-type: none"> <li>Mental addition and subtraction</li> <li>Solving problems using the 4 operations</li> </ul> <b>Time</b> <ul style="list-style-type: none"> <li>Telling the time to the hour and half hour</li> <li>Telling the time to 5 minutes</li> <li>Minutes in an hour</li> <li>Finding durations of time</li> <li>Comparing durations of time</li> <li>Finding the start and end time</li> <li>Hours in a day</li> </ul>	<b>Fractions</b> <ul style="list-style-type: none"> <li>Recognise and understand equivalent fractions</li> <li>Compare and order fractions</li> <li>Add and subtract fractions with the same denominators</li> <li>Solving problems involving Fractions</li> </ul> <b>Time</b> <ul style="list-style-type: none"> <li>Months and years</li> <li>Hours in a day</li> <li>Telling the time to the minute</li> <li>Finding and comparing durations of time</li> <li>Measuring time in seconds</li> <li>Solving problems involving time</li> </ul> <b>Geometry - Angles</b> <ul style="list-style-type: none"> <li>Understand and classify angles</li> <li>Recognise and identify right angles</li> <li>Types of lines</li> </ul>	<b>Decimals</b> <ul style="list-style-type: none"> <li>Making a whole</li> <li>Writing decimals</li> <li>Comparing decimals</li> <li>Ordering decimals</li> <li>Rounding decimals with one decimal place to nearest whole number</li> <li>Recognise and write decimal equivalents for a half, a quarter and three quarters</li> </ul> <b>Money</b> <ul style="list-style-type: none"> <li>Compare and calculate in pounds and pence</li> <li>Order amounts of money</li> <li>Use rounding to estimate using money</li> <li>Two-step problems</li> </ul>	<b>Number Fractions</b> <ul style="list-style-type: none"> <li>Adding and subtracting decimals up to three decimal places</li> <li>Decimal sequences</li> <li>Multiplying and dividing decimals by 10, 100 and 1000</li> </ul> <b>Angles</b> <ul style="list-style-type: none"> <li>Measuring with a protractor</li> <li>Drawing lines and angles accurately</li> <li>Calculating angles on a straight line</li> <li>Calculating angles around a point</li> <li>Calculating lengths and angles in shapes</li> </ul> <b>Geometry - Shape</b> <ul style="list-style-type: none"> <li>Recognising and drawing parallel and perpendicular lines</li> <li>Distinguish between regular and irregular polygons</li> <li>Reasoning about 3D shapes</li> </ul> <b>Geometry - Position and Direction</b> <ul style="list-style-type: none"> <li>Reflection</li> <li>Reflection and coordinates</li> <li>Translation</li> <li>Translation with co-ordinates</li> </ul>	<b>Problem solving</b> <ul style="list-style-type: none"> <li>Problem solving place value and negative numbers.</li> <li>Problem solving using the 4 operations.</li> <li>Problems solving with fractions, decimals and percentages.</li> <li>Problem solving involving Ratio and Proportion.</li> <li>Problem solving with measure.</li> <li>Problem solving involving shape.</li> </ul>
<b>Summer 2</b>	<b>Multiplication and Division</b> <ul style="list-style-type: none"> <li>Doubling</li> <li>Halving and sharing</li> <li>Odds and evens</li> </ul> <b>Measure (Number and Place Value)</b> <ul style="list-style-type: none"> <li>Length height and distance</li> <li>Weight</li> <li>Volume and capacity</li> </ul>	<b>Geometry</b> <ul style="list-style-type: none"> <li>Position and direction</li> <li>Number and Place Value</li> <li>Numbers to 100</li> </ul> <b>Time</b> <ul style="list-style-type: none"> <li>Using before and after</li> <li>Telling the time to the hour</li> <li>Telling the time to the half hour</li> <li>Writing the time</li> <li>Comparing time</li> <li>Solving word problems</li> </ul> <b>Money</b> <ul style="list-style-type: none"> <li>Recognising coins and notes</li> <li>Counting with coins</li> </ul>	<b>Weight, Volume and Temperature</b> <ul style="list-style-type: none"> <li>Measuring in grams and kilograms</li> <li>Comparing volume</li> <li>Measuring in millilitres and litres</li> <li>Measuring temperature with a thermometer</li> </ul>	<b>Geometry - Shape</b> <ul style="list-style-type: none"> <li>Recognising and describing 2D and 3D shapes</li> </ul> <b>Measurement - Mass and Capacity</b> <ul style="list-style-type: none"> <li>Measuring mass</li> <li>Comparing mass</li> <li>Adding and subtracting masses</li> <li>Solving problems</li> <li>Measuring capacity</li> <li>Comparing capacities</li> <li>Adding and subtracting capacities</li> <li>Solving problems involving capacity</li> </ul>	<b>Time</b> <ul style="list-style-type: none"> <li>Understand and use seconds</li> <li>24 hour clock</li> </ul> <b>Statistics</b> <ul style="list-style-type: none"> <li>Identify and draw symmetrical shapes and lines</li> </ul> <b>Geometry</b> <ul style="list-style-type: none"> <li>Identifying angles</li> <li>Comparing angles</li> <li>Identify regular and irregular shapes</li> <li>Classifying triangles</li> <li>Classifying and comparing quadrilaterals</li> <li>Deducing facts about shapes</li> <li>Identifying lines of symmetry in shapes</li> <li>Completing symmetrical figures and shapes</li> <li>Describing position on a grid</li> <li>Drawing on a grid</li> <li>Describing movement on a grid</li> </ul>	<b>Measure</b> <ul style="list-style-type: none"> <li>Converting metric units of measure including mass, length and capacity</li> <li>Use all 4 operations to solve problems involving measure</li> <li>Imperial units of length, mass and capacity</li> <li>Converting units of time</li> <li>Solving problems involving timetables</li> <li>What is volume?</li> <li>Comparing volumes</li> <li>Estimating volume and capacity</li> </ul>	<ul style="list-style-type: none"> <li>Problem Solving</li> </ul>