



## **Maths Subject Leaders' Sequence and Progression Document**

### **INTRODUCTION**

The purpose of this document is to outline the approach and method that has been adopted to implement the **Mathematics** curriculum at St. Andrew's. It sets out what we aim to achieve and the knowledge and understanding that we have apportioned to each class and key stage. The decisions made have been done so by reference to the school's *Mission Statement*, the staff and Governing Body's vision for the future of our school. This document summarises the organisation of the Mathematics curriculum and the school's method of securing children's entitlement to essential knowledge and skills to equip them for the next stage of their education and for later life.

### **AIMS**

- To ensure standards remain high and English and Maths is taught discretely
- To ensure reading remains a high priority
- To utilize the rich resource and history of our local community of Boothstown
- To support our school's values and ethos
- To ensure pupils leave as 'well rounded' and confident individuals
- To ensure the wider sports curriculum and the arts are a key focus

### **LIFESKILLS WE DEVELOP**

- Resilience
- Assertiveness and confidence
- Self esteem
- Communication skills
- Social skills
- Coping skills
- Stress management
- Problem solving
- Emotional awareness

### **END POINTS IN THE CURRICULUM**

At St. Andrew's, we strive to ensure that all pupils are confident and capable mathematicians, and are ready to progress with a successful transition into Key Stage 3 by the end of their primary school journey with us. We strive to make their journey engaging and relatable so that they develop a natural desire to learn more in this subject but also acquire an enthusiasm for tackling maths in everyday life. We believe all pupils, regardless of their ability, background, gender or ethnicity are provided with a curriculum that nurtures and develops the foundations needed to not only fulfil their potential, but their aspirations too. When transitioning to the next year group or phase, pupils will demonstrate fluency, reasoning and problem solving skills, which they will apply across a variety of contexts and subjects.

## CULTURAL CAPITAL

Mathematics is essential to each child's everyday life and future career opportunities. Our curriculum equips children with mathematical skills to function better in primary school through to adulthood. During lessons, and around school, children will independently think, talk, justify and negotiate like mathematicians and will show resilience, independence and perseverance whilst making decisions and cooperating with others to be complex problem solvers. Classroom culture allows children to make mistakes and learn from them, developing self-knowledge and self-esteem. In addition, it provides an opportunity for children to present their thoughts and ideas confidently and encourages them to value others' methods that may differ from their own, providing an opportunity for them to agree, disagree or add to others' ideas to help or advise them. Children learn to use maths for enjoyment through many competitive opportunities throughout the year and during our extra-curricular maths club in which they can learn games such as chess.

## INTENT

At St. Andrew's we deliver a high quality curriculum by following the National Curriculum and using a teaching for mastery approach. 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.
- A teaching for mastery approach aims for all learners to succeed and learn with their peers through representation and structure, mathematical thinking, variation, fluency and detailed sequencing of steps in learning.

We want all of our pupils at St. Andrew's to:

- Enjoy learning maths and experience maths confidently in everyday life.
- Develop and apply a strong sense of number from Nursery through to year 6.
- Have a secure understanding of place value to sit as a stable foundation for other mathematical concepts.
- Rapidly recall facts, such as number bonds and times tables, so that their application of these facts is automatic and avoids barriers to working competently on other concepts or problems.
- Talk about maths in a sophisticated manner.
- Develop good reasoning skills in maths to explore a deeper understanding.
- Develop cognitive flexibility through problem solving and reasoning.
- Be complex problem solvers in a range of contexts in and outside of the classroom.
- Spot patterns and make links in their mathematical learning.
- Be confident and creative when thinking mathematically.
- Have resilience, courage and self-belief.
- Have the right amount of challenge and support to ensure they master this subject.

## IMPLEMENTATION

We deliver our curriculum in a manner in which children can achieve our aims.

- We follow schemes of work to ensure our delivery is consistent across school. White Rose is our main scheme however, teachers will adapt accordingly to meet the needs of their children. They may draw on other suitable resources and expertise that will enhance children's learning.
- We follow agreed long-term plans and small steps within different blocks of learning to ensure progression. We may adapt these steps to suit the needs of cohorts.
- We use concrete resources and visual representations to help children understand new, or abstract, concepts.
- We use our environments to support learning. In Nursery and Reception, we ensure maths is accessible in many areas of the indoor and outdoor classrooms.
- We use talk stems and other sentences stems to support children's fluency and mathematical thinking.

- We develop our own maths experts across school and support Early Careers Teachers and teachers new to year groups. We do this through a variety of CPD opportunities such as work groups with Turing North West Maths Hub throughout the year for staff across school, subject specific Network meetings for the Maths Lead, Staff meetings, collaborative planning, and peer coaching through lesson studies.
- We use Times Tables Rock Stars as a platform to engage children and to prepare them for the Multiplication Check in year 4.
- We revisit previous learning on a regular basis through our '5 a day' questions, weekly arithmetic quizzes, questioning within lessons and bursts of fun tasks.
- We question children to check their knowledge and understanding and to challenge their thinking.
- We ensure children have regular practice of counting and rehearsal of key facts.
- Teachers assess children during the lesson and intervene in the moment. Their assessments inform future planning then adaptations are made accordingly. Gaps in learning may be identified, and then interventions to secure key skills will be put in place.


## **IMPACT**

The maths lead and other senior leaders monitor the subject through a supportive monitoring cycle. A range of evidence is collected to show that teaching and learning in this subject are effective and professional conversations take place to ensure needs of children are identified, planned for and met. Transition meetings between teachers help to identify gaps and maximise progress in the next year group. We have high expectations for all children, including those with additional needs. Subsequently, we achieve above national expectations. See assessments below over recent years.

At Expected %		2015 Leve ls	2016	2017	2018	2019	2020	2021	2022	2023			
<b>EYFS Number</b>	<b>Sch</b>	77	87	97	87	92			90	88			
	<b>Nat</b>	62	63	79	79	80			78	79			
<b>KS1 Maths</b>	<b>Sch</b>	98	90	88	88	93			83	89			
	<b>Nat</b>	93	73	75	76	76			68	71			
<b>KS2 Maths</b>	<b>Sch</b>	100	83	83	88	96			90	95			
	<b>Nat</b>	87	70	72	76	79			71	73			

<b>Maths Long Term Plan</b>						
	<b>Autumn 1</b>	<b>Autumn 2</b>	<b>Spring 1</b>	<b>Spring 2</b>	<b>Summer 1</b>	<b>Summer 2</b>
Nur	Counting to 10. Count on from a given number	Counting to 10 Use mathematical names for 'flat' 2D shapes	Counting to 20 1-1 correspondence	Counting to 20 Match numbers to amounts of objects	Counting to 20 Number sequence	Counting to 20 Number problems
Rec	Count objects to 10 and beyond Use 2d shape vocabulary 1 more /1 less Patterns	Order numbers to 20 Use 3d shape vocabulary Positional Language Language of Height	Use add and subtract vocabulary Order items by weight and capacity Subtraction	Recognise coins and their value Recognise periods of time and o'clock Length Recognise numbers to 20 3D shape	Solve problems involving doubling and halving, distance and number Addition/ subtraction	Count in 2s, 5s,10s Compare quantities and objects Time Number bonds Estimating Measure
Y1	Place value (within 10)	Addition and subtraction (within 10) Shape	Place value (within 20) Addition and subtraction (within 20)	Place value (within 50) Length and height Mass and volume	Multiplication and division Fractions Position and direction	Place Value (within 100) Money Time
Y2	Place value	Addition and subtraction cont.	Money	Multiplication and division cont.	Fractions Time	Statistics

	Addition and subtraction	Shape	Multiplication and division	Length and height Mass, capacity & temperature		Position and direction
Y3	Place value Addition and subtraction	Addition and subtraction cont. Multiplication and division A	Multiplication and division B Length and perimeter	Fractions A Mass and capacity	Fractions B Money Time	Time cont. Shape Statistics
Y4	Place value Addition and subtraction	Addition and subtraction cont. Area Multiplication and division A	Multiplication and division B Length and perimeter Fractions	Fractions cont. Decimals A	Decimals B Money Time	Shape Statistics Position and direction
Y5	Place Value Addition and subtraction	Multiplication and division A Fractions A	Multiplication and division B Fractions B	Decimals and percentages Perimeter and area Statistics	Shape Position and direction Decimals	Negative numbers Converting units Volume
Y6	Place value Addition, subtraction, multiplication and division Fractions A	Fractions B Finding % BODMAS Shape Position and direction	Area, perimeter, volume Shape (angles) Algebra	Fractions, decimals, percentages Ratio Statistics	Converting units. Revision	Consolidation, problem solving, projects, cross curricular maths (science link)

 <b>EYFS Maths Progression at St. Andrew's CE</b>		
	<b>Nursery 3-4</b>	<b>Reception and ELGs</b>
<b>Number</b>	<p>Develop fast recognition of up to 3 objects, without having to count them individually ('subitising').</p> <p>Recite numbers past 5.</p> <p>Say one number for each item in order: 1,2,3,4,5.</p> <p>Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle').</p> <p>Show 'finger numbers' up to 5.</p> <p>Link numerals and amounts: for example, showing the right number of objects to the numeral, up to 5.</p> <p>Experiment with their own symbols and marks as well as numerals.</p> <p>Solve real world mathematical problems with numbers up to 5.</p> <p>Compare quantities using language: 'more than', 'fewer than'.</p>	<p>Count objects, actions and sounds.</p> <p>Subitise.</p> <p>Link the number symbol (numeral) with its cardinal number value.</p> <p>Count beyond ten.</p> <p>Compare numbers.</p> <p>Understand the 'one more than/one less than' relationship between consecutive numbers.</p> <p>Explore the composition of numbers to 10.</p> <p>Automatically recall number bonds for numbers 0–5 and some to 10.</p> <p><b>Automatically recalls number bonds up to 5 and some number bonds to 10, including double facts. Have a deep understanding of number to 10, including the composition of each number. Able to subitise up to 5.</b></p>
<b>Numerical Patterns</b>	<p>Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners'; 'straight', 'flat', 'round'.</p> <p>Understand position through words alone – for example, "The bag is under the table," –with no pointing.</p> <p>Describe a familiar route.</p> <p>Discuss routes and locations, using words like 'in front of' and 'behind'.</p> <p>Make comparisons between objects relating to size, length, weight and capacity.</p> <p>Select shapes appropriately: flat surfaces for building, a triangular prism for a roof etc.</p> <p>Combine shapes to make new ones - an arch, a bigger triangle etc.</p> <p>Talk about and identify the patterns around them. For example: stripes on clothes, designs on rugs and wallpaper. Use informal language like 'pointy', 'spotty', 'blobs' etc.</p> <p>Extend and create ABAB patterns – stick, leaf, stick, leaf.</p>	<p>Select, rotate and manipulate shapes in order to develop spatial reasoning skills.</p> <p>Compose and decompose shapes so that children recognise a shape can have other shapes <i>within</i> it, just as numbers can.</p> <p>Continue copy and create repeating patterns.</p> <p>Compare length, weight and capacity.</p> <p><b>Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than, is the same as the other.</b></p> <p><b>Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be disturbed equally.</b></p> <p><b>Verbally counts beyond 20, recognising the pattern of the counting system.</b></p>

	Notice and correct an error in a repeating pattern. Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...'	
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Content Summary KS1 and 2						
Maths Progression at St. Andrew's CE						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Counting</b>	<ul style="list-style-type: none"> <li>count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number</li> <li>count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens</li> </ul>	<ul style="list-style-type: none"> <li>count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward</li> </ul>	<ul style="list-style-type: none"> <li>count from 0 in multiples of 4, 8, 50 and 100;</li> <li>find 10 or 100 more or less than a given number.</li> </ul>		<ul style="list-style-type: none"> <li>count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000</li> <li>interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero</li> </ul>	<ul style="list-style-type: none"> <li>use negative numbers in context, and calculate intervals across zero</li> </ul>
<b>Place value</b>		<ul style="list-style-type: none"> <li>recognise the place value of each digit in a two-digit number</li> <li>compare and order numbers from 0 up to 100; use &lt;, &gt; and = signs</li> </ul>	<ul style="list-style-type: none"> <li>recognise the place value of each digit in a three-digit number</li> <li>compare and order numbers up to 1000</li> </ul>	<ul style="list-style-type: none"> <li>recognise the place value of each digit in a four-digit number</li> <li>order and compare numbers beyond 1000</li> <li>round any number to the nearest 10, 100 or 1000</li> </ul>	<ul style="list-style-type: none"> <li>read, write, order and compare numbers up to 1 000 000 and determine the value of each digit</li> <li>round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000</li> </ul>	<ul style="list-style-type: none"> <li>read, write, order and compare numbers up to 10 000 000 and determine the value of each digit</li> <li>round any whole number to a required degree of accuracy</li> </ul>
<b>Representing Number</b>	<ul style="list-style-type: none"> <li>identify and represent numbers using objects and pictorial representations including the number line, &amp; use language of: equal to, more than, less than (fewer), most, least</li> <li>read and write numbers from 1 to 20 in numerals and words</li> <li>read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</li> </ul>	<ul style="list-style-type: none"> <li>identify, represent and estimate numbers using different representations, including the number line</li> <li>read and write numbers to at least 100 in numerals and in words</li> </ul>	<ul style="list-style-type: none"> <li>identify, represent and estimate numbers using different representations</li> <li>read and write numbers up to 1000 in numerals and in words</li> </ul>		<ul style="list-style-type: none"> <li>identify, represent and estimate numbers using different representations</li> <li>read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value</li> </ul>	<ul style="list-style-type: none"> <li>read Roman numerals to 1000 (M) and recognise years written in Roman numerals</li> <li>recognise and use square numbers and cube numbers, and the notation for squared (<sup>2</sup>) and cubed (<sup>3</sup>)</li> </ul>
<b>Number facts (+/-)</b>	<ul style="list-style-type: none"> <li>given a number, identify one more and one less</li> <li>represent and use number bonds and</li> </ul>	<ul style="list-style-type: none"> <li>use place value and number facts to solve problems</li> <li>recall and use addition and subtraction facts</li> </ul>				

	related subtraction facts within 20	to 20 fluently, and derive and use related facts up to 100				
<b>Mental +/-</b>	<ul style="list-style-type: none"> <li>•add and subtract one-digit and two-digit numbers to 20, including zero</li> </ul>	<ul style="list-style-type: none"> <li>•add and subtract numbers using concrete objects, pictorial representations, and mentally, including: TU+U, TU+T, TU+TU and U+U+U</li> <li>•show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot</li> </ul>	<ul style="list-style-type: none"> <li>•add and subtract numbers mentally, including: HTU+U, HTU+T and HTU+H</li> </ul>		<ul style="list-style-type: none"> <li>•add and subtract numbers mentally with increasingly large numbers</li> </ul>	<ul style="list-style-type: none"> <li>•perform mental calculations, including with mixed operations and large numbers</li> </ul>
<b>Written +/-</b>			<ul style="list-style-type: none"> <li>•add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction</li> </ul>	<ul style="list-style-type: none"> <li>•add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate</li> </ul>	<ul style="list-style-type: none"> <li>•add and subtract whole numbers with more than 4 digits, including using formal written methods</li> </ul>	
<b>Problems +/-</b>	<ul style="list-style-type: none"> <li>•solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = \square - 9</math></li> </ul>	<ul style="list-style-type: none"> <li>•solve problems with addition and subtraction, using concrete, pictorial and abstract representations</li> <li>•recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.</li> </ul>	<ul style="list-style-type: none"> <li>•estimate the answer to a calculation and use inverse operations to check answers</li> <li>•solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction</li> </ul>		<ul style="list-style-type: none"> <li>•estimate and use inverse operations to check answers to a</li> <li>•use rounding to check answers to calculations and determine, in calculation the context of a problem, levels of accuracy</li> <li>•solve addition and subtraction two-step problems in contexts,</li> <li>•solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</li> </ul>	<ul style="list-style-type: none"> <li>•estimate and use inverse operations to check answers to a</li> <li>•use rounding to check answers to calculations and determine, in calculation the context of a problem, levels of accuracy</li> <li>•solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</li> </ul>
<b>Number facts (x/÷)</b>		<ul style="list-style-type: none"> <li>•recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd</li> </ul>	<ul style="list-style-type: none"> <li>•recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables</li> </ul>	<ul style="list-style-type: none"> <li>•recall multiplication and division facts for multiplication tables up to <math>12 \times 12</math></li> </ul>	<ul style="list-style-type: none"> <li>•identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers</li> </ul>	<ul style="list-style-type: none"> <li>•identify common factors, common multiples and prime numbers</li> </ul>

		and even numbers			<ul style="list-style-type: none"> <li>•know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers</li> <li>•establish whether a number up to 100 is prime and recall prime numbers up to 19</li> </ul>	
<b>Mental (<math>\times/\div</math>)</b>		<ul style="list-style-type: none"> <li>•calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (<math>\times</math>), division (<math>\div</math>) and equals (=) signs</li> <li>•show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot</li> </ul>	<ul style="list-style-type: none"> <li>•write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental methods</li> </ul>	<ul style="list-style-type: none"> <li>•use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers</li> <li>•recognise and use factor pairs and commutative-ity in mental calculations</li> </ul>	<ul style="list-style-type: none"> <li>•multiply and divide numbers mentally drawing upon known facts</li> <li>•multiply and divide whole numbers and those involving decimals by 10, 100 and 1000</li> </ul>	<ul style="list-style-type: none"> <li>•perform mental calculations, including with mixed operations and large numbers</li> </ul>
<b>Written (<math>\times/\div</math>)</b>			<ul style="list-style-type: none"> <li>•Progress to formal written methods calculations as above</li> </ul>	<ul style="list-style-type: none"> <li>•multiply two-digit and three-digit numbers by a one-digit number using formal written layout</li> </ul>	<ul style="list-style-type: none"> <li>•multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers</li> <li>•divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context</li> </ul>	<ul style="list-style-type: none"> <li>•multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</li> <li>•divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context</li> <li>•divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to context</li> </ul>
<b>Problems (<math>\times/\div</math>)</b>	<ul style="list-style-type: none"> <li>•solve one-step problems involving</li> </ul>	<ul style="list-style-type: none"> <li>•solve problems involving multiplication</li> </ul>	<ul style="list-style-type: none"> <li>•solve problems, including missing number</li> </ul>	<ul style="list-style-type: none"> <li>•solve problems involving multiplying and</li> </ul>	<ul style="list-style-type: none"> <li>•solve problems involving multiplication</li> </ul>	<ul style="list-style-type: none"> <li>•use their knowledge of the order of</li> </ul>

	<p>multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.</p>	<p>and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts</p>	<p>problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which <math>n</math> objects are connected to <math>m</math> objects.</p>	<p>adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as <math>n</math> objects are connected to <math>m</math> objects</p>	<p>and division including using their knowledge of factors and multiples, squares and cubes</p> <ul style="list-style-type: none"> <li>•solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign</li> <li>•solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates</li> </ul>	<p>operations to carry out calculations involving the four operations</p> <ul style="list-style-type: none"> <li>•solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</li> <li>•solve problems involving addition, subtraction, multiplication and division</li> <li>•use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy</li> </ul>
<b>Recognising fractions</b>	<ul style="list-style-type: none"> <li>•recognise, find and name a half as one of two equal parts of an object, shape or quantity</li> <li>•recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.</li> </ul>	<ul style="list-style-type: none"> <li>•recognise, find, name and write fractions <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math> of a length, shape, set of objects or quantity</li> </ul>	<ul style="list-style-type: none"> <li>•count up and down in tenths</li> <li>•recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10</li> </ul>	<ul style="list-style-type: none"> <li>•count up and down in hundredths</li> <li>•recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.</li> </ul>	<ul style="list-style-type: none"> <li>•recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements <math>&gt; 1</math> as a mixed number</li> </ul>	
<b>Comparing Fractions</b>				<ul style="list-style-type: none"> <li>•recognise and show, using diagrams, families of common equivalent fractions</li> </ul>	<ul style="list-style-type: none"> <li>•compare and order fractions whose denominators are all multiples of the same number</li> <li>•identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths</li> </ul>	<ul style="list-style-type: none"> <li>•use common factors to simplify fractions</li> <li>•use common multiples to express fractions in the same denomination</li> <li>•compare and order fractions, including fractions <math>&gt; 1</math></li> </ul>
<b>Finding Fractions of Quantities</b>			<ul style="list-style-type: none"> <li>•recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators</li> <li>•recognise and use fractions as numbers: unit fractions and non-unit fractions</li> </ul>	<ul style="list-style-type: none"> <li>•solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number</li> </ul>		

			with small denominators			
<b>Fraction calculations</b>		<ul style="list-style-type: none"> <li>•write simple fractions for example, <math>\frac{1}{2}</math> of 6 = 3 and recognise the equivalence of <math>\frac{2}{4}</math> and <math>\frac{1}{2}</math>.</li> </ul>	<ul style="list-style-type: none"> <li>•add and subtract fractions with the same denominator within one whole [for example, <math>\frac{5}{7} + \frac{1}{7} = \frac{6}{7}</math> ]</li> </ul>	<ul style="list-style-type: none"> <li>•add and subtract fractions with the same denominator</li> </ul>	<ul style="list-style-type: none"> <li>•add and subtract fractions with the same denominator and denominators that are multiples of the same number</li> <li>•multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams</li> </ul>	<ul style="list-style-type: none"> <li>•add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions</li> <li>•multiply simple pairs of proper fractions, writing the answer in its simplest form</li> <li>•divide proper fractions by whole numbers</li> </ul>
<b>Decimals as Fractional Amounts</b>				<ul style="list-style-type: none"> <li>•recognise and write decimal equivalents of any number of tenths or hundredths</li> <li>•recognise and write decimal equivalents to <math>\frac{1}{4}</math>, <math>\frac{1}{2}</math> and <math>\frac{3}{4}</math></li> <li>•find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths</li> </ul>	<ul style="list-style-type: none"> <li>•read and write decimal numbers as fractions</li> </ul>	<ul style="list-style-type: none"> <li>•associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction</li> <li>•identify the value of each digit in numbers given to three decimal places</li> </ul>
<b>Ordering Decimals</b>				<ul style="list-style-type: none"> <li>•round decimals with one decimal place to the nearest whole number</li> <li>•compare numbers with the same number of decimal places up to two decimal places</li> </ul>	<ul style="list-style-type: none"> <li>•recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents</li> <li>•round decimals with two decimal places to the nearest whole number and to one decimal place</li> <li>•read, write, order and compare numbers with up to three decimal places</li> </ul>	
<b>Calculating with Decimals</b>						<ul style="list-style-type: none"> <li>•multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places</li> <li>•multiply one-digit number with up to two decimal places by whole numbers</li> </ul>

						<ul style="list-style-type: none"> <li>•use written division methods in cases where the answer has up to two decimal places</li> </ul>
<b>Percentages</b>					<ul style="list-style-type: none"> <li>•recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal</li> </ul>	<ul style="list-style-type: none"> <li>•solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison</li> </ul>
<b>Fraction problems</b>			<ul style="list-style-type: none"> <li>•solve problems using all fraction knowledge</li> </ul>	<ul style="list-style-type: none"> <li>•solve simple measure and money problems involving fractions and decimals to two decimal places</li> </ul>	<ul style="list-style-type: none"> <li>•solve problems involving number up to three decimal places</li> <li>•solve problems which require knowing percentage and decimal equivalents of <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{5}</math>, <math>\frac{2}{5}</math>, <math>\frac{4}{5}</math> and those fractions with a denominator of a multiple of 10 or 25</li> </ul>	<ul style="list-style-type: none"> <li>•solve problems which require answers to be rounded to specified degrees of accuracy</li> <li>•recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.</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> </ul>
<b>Algebra</b>						<ul style="list-style-type: none"> <li>•use simple formulae</li> <li>•generate and describe linear number sequences</li> <li>•express missing number problems algebraically</li> <li>•find pairs of numbers that satisfy an</li> </ul>

						equation with two unknowns •enumerate possibilities of combinations of two variables
<b>Measures</b>	<ul style="list-style-type: none"> <li>•compare, describe and solve practical problems for: length/height, weight/mass, capacity/volume &amp; time</li> <li>•measure and begin to record length/height, weight/mass, capacity/volume &amp; time</li> </ul>	<ul style="list-style-type: none"> <li>•choose and use appropriate standard units to estimate and measure length/height (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels</li> <li>•compare and order lengths, mass, volume/capacity and record the results using &gt;, &lt; and =</li> </ul>	<ul style="list-style-type: none"> <li>•measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)</li> </ul>	<ul style="list-style-type: none"> <li>•Convert between different units of measure estimate, compare and calculate different measures, including money in pounds and pence</li> </ul>	<ul style="list-style-type: none"> <li>•convert between different units of metric measure</li> <li>•understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints</li> <li>•estimate volume and capacity</li> </ul>	<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, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places convert between miles and kilometres</li> </ul>
<b>Measuring</b>			<ul style="list-style-type: none"> <li>•measure the perimeter of simple 2-D shapes</li> </ul>	<ul style="list-style-type: none"> <li>•measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres</li> <li>•find the area of rectilinear shapes by counting squares</li> </ul>	<ul style="list-style-type: none"> <li>•measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres</li> <li>•calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm<sup>2</sup>) and square metres (m<sup>2</sup>) and estimate the area of irregular shapes</li> </ul>	<ul style="list-style-type: none"> <li>•recognise that shapes with the same areas can have different perimeters and vice versa</li> <li>•recognise when it is possible to use formulae for area and volume of shapes</li> <li>•calculate the area of parallelograms and triangles</li> <li>•calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm<sup>3</sup>) and cubic metres (m<sup>3</sup>), and extending to other units.</li> </ul>
<b>Money</b>	<ul style="list-style-type: none"> <li>•recognise and know the value of different denominations of coins and notes</li> </ul>	<ul style="list-style-type: none"> <li>•recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value</li> <li>•find different combinations of coins that equal</li> </ul>	<ul style="list-style-type: none"> <li>•add and subtract amounts of money to give change, using both £ and p in practical contexts</li> </ul>		<ul style="list-style-type: none"> <li>•use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling</li> </ul>	

		<p>the same amounts of money</p> <ul style="list-style-type: none"> <li>•solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change</li> </ul>				
<b>Time</b>	<ul style="list-style-type: none"> <li>•sequence events in chronological order using language recognise and use language relating to dates, including days of the week, weeks, months and years</li> <li>•tell the time to the hour and half past the hour and draw the hands on a clock face to show these times</li> </ul>	<ul style="list-style-type: none"> <li>•compare and sequence intervals of time</li> <li>•tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times</li> <li>•know the number of minutes in an hour and the number of hours in a day</li> </ul>	<ul style="list-style-type: none"> <li>•tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks</li> <li>•estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight</li> <li>•know the number of seconds in a minute and the number of days in each month, year and leap year compare durations of events</li> </ul>	<ul style="list-style-type: none"> <li>•Convert between different units of measure (e.g. Hours to minutes)</li> <li>•read, write and convert time between analogue and digital 12- and 24-hour clocks</li> <li>•solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days</li> </ul>	<ul style="list-style-type: none"> <li>•solve problems involving converting between units of time</li> </ul>	
<b>Shape vocabulary</b>	<ul style="list-style-type: none"> <li>•recognise and name common 2-D shapes (e.g. Square, circle, triangle)</li> <li>•recognise and name common 3-D shapes (e.g. Cubes, cuboids, pyramids &amp; spheres)</li> </ul>	<p>vertices, edges, faces, symmetry)</p>	<ul style="list-style-type: none"> <li>•identify horizontal and vertical lines and pairs of perpendicular and parallel lines</li> </ul>			<ul style="list-style-type: none"> <li>•illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius</li> </ul>
<b>Properties of 2-d shape</b>		<ul style="list-style-type: none"> <li>•identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line.</li> <li>•compare and sort common 2-D and 3-D shapes and everyday objects</li> </ul>	<ul style="list-style-type: none"> <li>•draw 2-D shapes</li> </ul>	<ul style="list-style-type: none"> <li>•compare and classify geometric shapes, including quadrilaterals and triangles, based on properties and sizes</li> <li>•identify lines of symmetry in 2-D shapes presented in different orientations</li> </ul>	<ul style="list-style-type: none"> <li>•use the properties of rectangles to deduce related facts and find missing lengths and angles</li> <li>•distinguish between regular and irregular polygons based on reasoning about equal sides and angles.</li> </ul>	<ul style="list-style-type: none"> <li>•draw 2-D shapes using given dimensions and angles</li> <li>•compare and classify geometric shapes based on their properties and sizes</li> </ul>

				<ul style="list-style-type: none"> <li>complete a simple symmetric figure with respect to a specific line of symmetry.</li> </ul>		
<b>Properties of 3-d shape</b>		<ul style="list-style-type: none"> <li>identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces</li> <li>identify 2-D shapes on the surface of 3-D shapes.</li> <li>compare and sort common 2-D and 3-D shapes and everyday objects.</li> </ul>	<ul style="list-style-type: none"> <li>identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces</li> <li>identify 2-D shapes on the surface of 3-D shapes.</li> <li>compare and sort common 2-D and 3-D shapes and everyday objects.</li> </ul>		<ul style="list-style-type: none"> <li>identify 3-D shapes, including cubes and other cuboids, from 2-D representations</li> </ul>	<ul style="list-style-type: none"> <li>recognise, describe and build simple 3-D shapes, including making nets</li> <li>find unknown angles in any triangles, quadrilaterals, and regular polygons</li> </ul>
<b>Angles</b>			<ul style="list-style-type: none"> <li>recognise angles as a property of shape or a description of a turn</li> <li>identify right angles, recognise that two right angles make a half- turn, three make three quarters of a turn and four a complete turn</li> <li>identify whether angles are greater or less than right angle</li> </ul>	<ul style="list-style-type: none"> <li>identify acute and obtuse angles and compare and order angles up to two right angles by size</li> </ul>	<ul style="list-style-type: none"> <li>know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles</li> <li>draw given angles, and measure them in degrees (°)</li> <li>identify angles at a point and one whole turn (total 360°); at a point on a straight line and <math>\frac{1}{2}</math> a turn (total 180°)</li> <li>identify other multiples of 90°</li> </ul>	<ul style="list-style-type: none"> <li>recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles</li> </ul>
<b>Position &amp; Direction</b>	<ul style="list-style-type: none"> <li>describe position, direction and movement, including whole, half, quarter and three-quarter turns</li> </ul>	<ul style="list-style-type: none"> <li>order and arrange combinations of mathematical objects in patterns and sequences.</li> <li>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 <math>\frac{3}{4}</math> turns</li> </ul>		<ul style="list-style-type: none"> <li>describe positions on a 2-D grid as coordinates in the first quadrant</li> <li>describe movements between positions as translations of a given unit to the left/right and up/down</li> <li>plot specified points and draw sides to complete a given polygon</li> </ul>	<ul style="list-style-type: none"> <li>identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed</li> </ul>	<ul style="list-style-type: none"> <li>describe positions on the full coordinate grid (all four quadrants)</li> <li>draw and translate simple shapes on the coordinate plane, and reflect them in the axes</li> </ul>
<b>Interpreting data</b>		<ul style="list-style-type: none"> <li>interpret and construct simple pictograms, tally charts, block diagrams and simple tables</li> </ul>	<ul style="list-style-type: none"> <li>interpret and present data using bar charts, pictograms and tables</li> </ul>	<ul style="list-style-type: none"> <li>interpret and present discrete and continuous data using appropriate graphical</li> </ul>	<ul style="list-style-type: none"> <li>complete, read and interpret information in tables, including timetables</li> </ul>	<ul style="list-style-type: none"> <li>interpret and construct pie charts and line graphs calculate and interpret the</li> </ul>

				methods, including bar charts and time graphs		mean as an average
<b>Extract info from data</b>		<ul style="list-style-type: none"> <li>ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity</li> <li>ask and answer questions about totalling and comparing categorical data</li> </ul>	<ul style="list-style-type: none"> <li>solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables</li> </ul>	<ul style="list-style-type: none"> <li>solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs</li> </ul>	<ul style="list-style-type: none"> <li>solve comparison, sum and difference problems using information presented in a line graph</li> </ul>	<ul style="list-style-type: none"> <li>use pie charts and line graphs to solve problems</li> </ul>

## Maths Skills

### Fluency

- Recall number facts.
- Apply this knowledge rapidly and accurately.

### Reasoning

- Follow a line of enquiry.
- See relationships/patterns in numbers and shapes.
- Make generalisations eg always, sometimes, never.
- Prove something using mathematical language. E.g. this is a multiple of 9 because....

### Problem Solving

- Apply their Maths to routine and non-routine problems.
- Break down problems into a series of steps.
- Persevere in order to find a solution.

### Making connections

- Pupils should be able to apply their Maths skills in a different context.
- Make links between concrete, pictorial and abstract representations.
- Apply mathematical knowledge to science and other subjects.