St Cuthbert's
ROMAN CATHOLIC ACADEMY TRUST

St Peter's VC Academy

Mathematics Curriculum

GROWING IN FAITH

ST PETER'S
VC ACADEMY

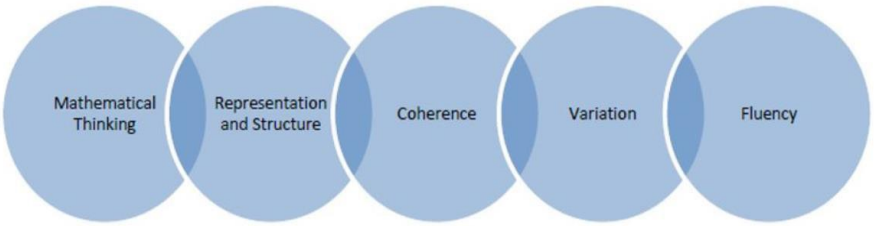
Intent

The ultimate purpose of maths is the pursuit of truth. The thinking skills inherent in the maths curriculum inspire and enable learners to be innovative, creative, critical, and analytical learners. Exploring the beauty of mathematics enables students to engage transcendent dimensions of life, freeing them to be pioneers, trailblazers and the inventors needed today and in the future.

Here at St Peter's RC Primary School, we strive to provide the best possible education for our children. We want all pupils to experience the beauty, wonder and enjoyment of mathematics. Furthermore, we want them to build a sense of curiosity about the subject, whilst also developing a clear understanding. At St Peter's RC Primary School, we foster positive 'can do' attitudes and we promote the fact that 'we can all do maths!' We firmly believe that all children can be successful and can achieve in mathematics.

We acknowledge and impart the words and beliefs of the National Curriculum when it states that '*high-quality mathematics education should ensure that all children: become fluent in the fundamentals of Mathematics, are able to reason mathematically and can solve problems by applying their Mathematics knowledge and skills*.'

At St Peter's, our teaching for mastery approach is underpinned by the NCETM's 5 big ideas:



This means that all children are taught the content from their year group only. This is to allow for children to develop a deep understanding and to master the mathematical content by applying and being creative with new knowledge in multiple ways. We teach for secure and deep understanding of mathematical concepts through small, manageable steps. We use mistakes and misconceptions as an essential part of learning and provide challenges through rich reasoning questions and sophisticated problems.

At the end of Foundation at St Peter's	At the end of KS1 at St Peter's	At the end of KS2 at St Peter's
Pupils have a strong grounding in number so they can develop building blocks to excel mathematically. Children have a deep understanding of numbers to 10 and understand what 10 represents as a number and discover different ways of making the same number. Children also develop their spatial reasoning by looking for patterns and relationships and noticing connections.	Pupils build on the foundations that were taught and further develop their understanding of numbers. Pupils develop their confidence and fluency with whole numbers, counting and place value. Pupils work with all four operations and look at the inverse as well as the commutative law. Pupils compare and describe different quantities such as length, mass as well as time and money.	Pupils extend their knowledge of the number system and place value to larger integers. Pupils make connections between fractions, decimals, percentages and ratios. Pupils use efficient written and mental methods for calculation when solving problems. Pupils also use mathematical vocabulary correctly, when articulating and explaining how they solved the problems.

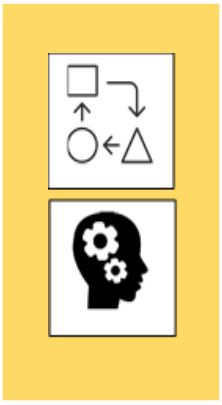
Implementation

School Beliefs

"*Mastering maths means pupils acquiring a deep, long-term, secure and adaptable understanding of the subject. The phrase 'teaching for mastery' describes the elements of classroom practice and school organisation that combine to give pupils the best chances of mastering maths. Achieving mastery means acquiring a solid enough understanding of the maths that's been taught to enable pupils to move on to more advanced material." (NCETM)*

1) All pupils can succeed and achieve in mathematics
2) Children learn best when improving upon previous learning in small, manageable steps
3) A CPA (concrete, pictorial, abstract) approach is fundamental in developing and deepening children's understanding
4) Retrieval practice and ongoing teacher assessment are key to success
5) Children need opportunities to explore and apply learnt skills to develop/ deepen understanding

Content, Sequencing and Retrieval



- Carefully sequenced lessons from Power Maths/ White Rose Premium are used across year groups
- Lessons start with opportunities for retrieval (KS1 – Flashback 4 and KS2 – Core Skills)
- **Coherence:** Lessons are broken down into small, connected steps that gradually unfold the concept, providing access for all children and leading to a generalisation of the concept and the ability to apply the concept to a range of contexts
- **Representation and Structure**: Representations and manipulatives are used in lessons to expose the mathematical concept, to aid learning and to develop understanding
- **Mathematical Thinking**: If taught ideas are to be understood deeply, they must not merely be passively received but must be worked on by the students thinking deeply, reasoning with and discussing with others. High-quality reasoning and problem-solving resources (such as Gareth Metcalfe's 'ISeeReasoning' and 'NRich') are used to aid this
- **Fluency**: Quick and efficient recall of facts and procedures previously taught to aid long-term retention
- **Variation**: Variation is twofold. It is firstly about how the teacher represents the concept being taught, often in more than one way, to draw attention to critical aspects, and to develop deep and holistic understanding. It is also about the sequencing of the lessons, activities and exercises used within a lesson and follow up practice, paying attention to what is kept the same and what changes, to connect the mathematics and draw attention to mathematical relationships and structure

Support, Inclusion and Progress for All

- Units of work are carefully sequenced, so prior knowledge and concepts are returned to and built upon from previous year groups and units
- Remembering and building on skills, information and knowledge is celebrated and giving opportunities for this is a key part of St Peter's teaching and learning opportunities
- Some children have specific support and guidance taken from their ECP and SEND provision map
- Scaffolding, diverse questioning and opportunities for shared thinking are key tools in supporting pupils to make progress at all levels
- Interventions are used for specific groups of children to ensure progress.

Pedagogy: How the Curriculum is Taught

At St Peter's we follow a 'mastery' approach to teaching mathematics. Teaching is underpinned by methodical, coherent, curriculum design.

EYFS receive daily NCETM 'Mastering Number' sessions with discrete and direct teaching using the high-quality materials. The pupils are taught concurrently in 'family groups', led by the class teacher and HLTA.

Children then apply their maths understanding through engaging in the high-quality provision, with an area designated with maths materials. However, maths is woven through all areas of provision.

In KS1, NCETM Mastering Number sessions are used to support and embed a deep understanding of number through daily sessions. Alongside these shorter sessions, White Rose Premium, supplemented by planning from the *White Rose Edition* of 'Power Maths' is used to provide carefully crafted lessons and resources to foster deep conceptual and procedural knowledge. The curriculum design enables children to use their previous knowledge and build upon this.

In KS2 White Rose Premium, supplemented by planning from the *White Rose Edition* of 'Power Maths' is used to provide carefully crafted lessons and resources to foster deep conceptual and procedural knowledge. The curriculum design enables children to use their previous knowledge and build upon this. A greater emphasis in KS1 is placed on retrieval practice.

In all age-groups, whole class teaching takes place within year groups with mixed attainment learning partners. We work with the belief that all pupils can achieve a high standard and be successful in mathematics. Pupil work is not differentiated by task (unless in exceptional circumstances). Instead, children who require more support are provided with additional structures and scaffolding to enable them to access the learning (such as working with concrete resources for longer, having additional adult support or intervention), and children who grasp concepts quickly will be challenged to think about particular aspects more deeply and to work on more challenging problems within the same curriculum content. For those that complete the required work within the session, an extension challenge is provided to provide pupils with an opportunity to go deeper with learning, by making links to previous concepts or applying the new learning in a less familiar way. Resources such as Gareth Metcalfe's 'I See Reasoning' and 'I See Problem Solving' can be used for this, although not exclusively- many are used for all learners.

KS1/2 Lesson Structure:

1) Retrieval Practice
2) New learning (problem/ hook/ discussion point)
3) Guided Practice of new content (manipulatives and representations are used to draw out the maths on show and aid/ deepen understanding)
4) Independent Practice (includes high-quality reasoning/ problem-solving tasks)

Impact

Assessment

- Retrieval practice at the beginning of every lesson ('Flashback 4' and 'Core Skills')
- Assessment for learning is used within each lesson through skillful use of questioning and live feedback/ marking
- Termly assessments (NFER) are used to see what knowledge pupils have retained and to identify gaps in learning/ areas for development
- Times tables tests and KIRF's to build fluency (Y1-Y6).

Low-stakes arithmetic tests are used weekly to provide children with new concepts to practice and to recap previous learning in a safe and supportive environment. Teachers use the outcomes to identify individual gaps in knowledge and to Children in Yea

Cultural Capital

Enrichment is an essential part of the St Peter's maths curriculum which provides pupils with discrete time to focus and deepen their learning. Children are provided with opportunities for new experiences as well as nurturing and developing a thirst for learning. This is achieved through: Maths Month workshops, STEM week, Children's University, Beach School, and school trips to Danby Moors Centre.

Career Professional Development

We focus on developing all teachers' subject knowledge and mathematical pedagogy through comprehensive CPD within staff meetings. In addition, we have external support from the Yorkshire Ridings Maths Hub to further enhance the quality of our leaders.

Below is a summary of the CPD activities bespoke to Mathematics:

- Staff training meetings as part of CPD log (linked to school action plan)
- Sharing knowledge from trust-wide meetings
- Adapting long term plans with class teachers
- Bespoke training videos (NCETM and Power Maths) to develop subject knowledge
- 1:1 discussion with staff about lessons
- Subject Leader accessing NCETM funded Maths Hub Teacher Research Group 'Embedding Mastery Approach'
- HLTA NCETM EYFS training
- Staff training led by Gareth Metcalfe- effective interactive teaching

Long Term Plan

Based on 6 weeks per half term (36 weeks in total)

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	Getting to Know you Just Like Me!	1,2,3	Consolidating 5, 6,7,8	9 & 10	To 20 and beyond	To 20 and beyond
Number	Match & Sort Compare Amounts	Representing 1,2,3,4,5 Comparing 1,2,3,4, 5 Composition of 1, 2,3, 4, 5 Ordinal Numbers More and Fewer	Introducing 0 Comparing Numbers to 5 Composition of numbers 4 and 5 Representing 6,7,8 Comparing 6,7,8 Composition of 6,7,8	Combining 2 amounts Making Pairs Doubling More and Less Counting to 9&10 Comparing numbers to 10 Bonds to 10	Building Numbers beyond 10 Counting Patterns beyond 10 Adding More Taking Away	Doubling, Sharing, Grouping Even and Odd Deepening Understanding Patterns and Relationships
Measure, Shape and Spatial Thinking	Compare Size,Mass, Capacity, Exploring Pattern	Circle and Triangles Shapes with four sides Pentagon Measure (big, medium, small) Compare Mass	Compare Capacity	Hexagon Cube & Cuboid Octagon Sequencing/ Time Patterns 3D shapes	Spatial Reasoning Match, Rotate, Manipulate Compose and decompose,	Visualise and Build Mapping
Year 1 (suggested time)	**Number** Place value within 10 (5 weeks) **Number** Addition and subtraction within 10 (1 week)	**Number** Addition and subtraction within 10- cont (4 weeks) **Geometry** Shape (1 week)	**Number** Place Value within 20 (3 weeks) **Number** Addition and subtraction within 20 (3 weeks)	**Number** Place value within 50 (2 weeks) **Measurement** Length and height (2 weeks) **Measurement** Mass and volume (2 weeks)	**Number** Multiplication and division (3 weeks) **Number** Fractions (2 weeks) **Geometry** Position and direction (1 week)	**Number** Place value within 100 (2 weeks) **Measurement** Money (1 week) **Measurement** Time (2 weeks)
Year 2 (suggested time)	**Number** Place Value (4 weeks) **Number** Addition and subtraction (2 weeks)	**Number** Addition and subtraction- continued (3 weeks) **Geometry** Shape 3 weeks)	**Measurement** Money (2 weeks) **Number** Multiplication and division (4 weeks)	**Number** Multiplication and division- continued (1 week) **Measurement** Length and height (2 weeks)	**Number** Fractions (3 weeks) **Measurement** Time (3 weeks)	**Statistics** (2 weeks) **Geometry** Position and Direction (2 weeks)

				Measurement Mass, Capacity and Temperature (3 weeks)		
Year 3 **(suggested time)**	**Number** Place value (3 weeks) **Number** Addition and subtraction (3 weeks)	**Number** Addition and subtraction-continued- (2 weeks) **Number** Multiplication and division (4 weeks)	**Number** Multiplication and Division (3 weeks) **Measurement** Length and Perimeter (3 weeks)	**Number** Fractions A (3 weeks) **Measurement** Mass and Capacity (3 weeks)	**Number** Fractions B (2 weeks) **Measurement** Money (2 weeks) **Measurement** Time (2 weeks)	**Measurement** Time- continued (1 week) **Geometry** Shape (2 weeks) Statistics (2 weeks)
Year 4 **(suggested time)**	**Number** Place Value (4 weeks) **Number** Addition and Subtraction (2 weeks)	**Number** Addition and Subtraction-continued (1 week) **Measurement** Area (1 week) **Number** Multiplication and Division (a) (3 weeks)	**Number** Multiplication and Division (b) (3 weeks) **Measurement** Length and perimeter (2 weeks) **Number** Fractions (1 week)	**Number** Fractions-continued (3 weeks) **Number** Decimals (a) (3 weeks)	**Number** Decimals (b) (2 weeks) **Measurement**: Money (2 weeks) **Measurement**: Time (2 weeks)	**Geometry** Shape (2 weeks) **Statistics** (1 week) **Geometry** Position and Direction (2 weeks)
Year 5 **(suggested time)**	**Number** Place Value (3 weeks) **Number** Addition and Subtraction (2 weeks) **Number** Multiplicatio n and Division (a)- (1 weeks)	**Number** Multiplication and Division (a)-continued (2 weeks) **Number** Fractions(a) (4 weeks)	**Number** Multiplication and Division (b) (3 weeks) **Number** Fractions (b) (2 weeks) **Number** Decimals and percentages (1 week)	**Number** Decimals and percentages - continued (2 weeks) **Measurement - Perimeter and area** (2 weeks)] **Statistics** (2 weeks)	**Geometry** Shape (3 weeks) **Geometry** Position and direction (2 weeks) **Number** Decimals (1 week)	**Number** Decimals-continued (2 weeks) **Number** Negative numbers (1 week) **Measurement** Converting units (2 weeks) **Measurement** Volume (1 week)

Year 6 **(suggested time)**	**Number** - Place value (2 weeks) **Number** - Four Operations (4 weeks)	**Number** – Four Operations- continued (1 week) **Number** – Fractions (a) (2 weeks) **Number** – Fractions (b) (2 weeks) **Measurement** – Converting Units (1 week)	**Number** – Ratio (2 weeks) **Number** – Algebra (2 weeks) **Number** Decimals (2 weeks)	**Number** Fractions, Decimals and Percentages (2 weeks) **Measurement** – Perimeter, Area and Volume (2 weeks) **Statistics** (2 weeks)	**Geometry** – Shapes (3 weeks) **Geometry-** Position and direction (1 week) Consolidation	Consolidation and themed projects

Mathematics Progression

Place Value

EYFS	● Count to 20. ● Count up to five objects in different arrangements by touching each object as they count, saying the names in a stable order. ● Say the total number in the group, understanding that the final number they have said is the total in the group. ● Subitise numbers up to five and can also count out up to five objects from a larger set. ● Apply the counting principles when counting. ● Count out up to five objects from a larger group. ● Represent numbers 1-20 in different ways. ● Compare groups to 10. ● Compare quantities of identical objects. ● Compare quantities of non-identical objects.			
	Counting	**Represent**	**Use PV and Compare**	**Problems & Rounding**
Year One	● Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. ● Count numbers to 100 in numerals; count in multiples of twos, fives and tens.	● Identify and represent numbers using objects and pictorial representations. ● Read and write numbers to 100 in numerals. ● Read and write numbers from 1-20 in numerals and words.	● Given a number, identify one more and one less.	

Year Two	• Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward	• Read and write numbers to at least 100 in numerals and in words. • Identify, represent and estimate numbers using different representations, including the number line.	• Recognise the place value of each digit in a two-digit (tens, ones). • Compare and order numbers from 0 up to 100. • Use <, > and = signs.	• Use place value and number facts to solve problems.
Year Three	• Count from 0 in multiples of 4, 8, 50 and 100. • Find 10 or 100 more or less than a given number	• Identify, represent and estimate numbers using different representations. • Read and write numbers up to 1000 in numerals and in words.	• Recognise the place value of each digit in a three-digit number (hundreds, tens, ones). • Compare and order numbers up to 1000.	• Solve number problems and practical problems involving these ideas.
Year Four	• Count backwards through zero to include negative numbers • count in multiples of 6, 7, 9, 25 and 1000.	• Identify, represent and estimate numbers using different representations. • 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.	• Find 1000 more or less than a given number. • Recognise the place value of each digit in a 4-digit number (thousands, hundreds, tens, ones). • Order and compare numbers beyond 1000.	• Round any number to the nearest 10, 100 or 1000. • Solve number and practical problems that involve all of the above and with increasingly large numbers.
Year Five		• Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit. • Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.	• Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit.	• Interpret negative numbers in context. • Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000. • Solve number problems and practical problems that involve all of the above.
Year Six		• Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit.	• Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit.	• Round any whole number to a required degree of accuracy.

				• Use negative numbers in context and calculate intervals across zero. • Solve number and practical problems that involve all of the above.

Addition & Subtraction

EYFS	• Sorts into groups. • Finds one more and one less within 5. • Combines two groups (up to 10) to find the whole. • Finds number bonds to 10 using objects or diagrams. • Add by counting on. • Take away by counting back. • Finds number bonds to 5.		
	Recall, Represent, Use	**Calculations**	**Solve Problems**
Year One	• 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 1-digit and 2-digit numbers to 20, including zero.	• Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations and missing number problems.
Year Two	• Recall and use addition and subtraction facts to 20 fluently and derive and use related facts up to 100. • Show that addition of two numbers in any order (commutative) and subtraction of one number from another cannot.	• Add and subtract numbers using concrete objects, pictorial representations and mentally, including: - A 2-digit number and ones. • A 2-digit number and tens. - 2-digit numbers. • Adding three 1-digit numbers.	• Solve problems with addition and subtraction: • Using concrete objects and pictorial representations, including those involving numbers, quantities and measures. • Applying their increasing knowledge of mental and written methods.

	● Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.		
Year Three	● Estimate the answer to a calculation and use inverse operations to check answers.	● Add and subtract numbers mentally, including: ● 3-digit number and ones. ● 3-digit number and tens. ● 3-digit number and hundreds ● Add and subtract numbers with up to 3-digits, using formal written methods of columnar addition and subtraction.	● Solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction.
Year Four	● Estimate and use inverse operations to check answers to a calculation.	● Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.	● Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.
Year Five	● Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.	● Add and subtract whole numbers with more than 4 digits, including using formal written methods. ● Add and subtract numbers mentally with increasingly large numbers.	● Solve addition and subtraction multi- step problems in contexts, deciding which operations and methods to use and why. ● Solve problems involving addition and subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.
Year Six		● Perform mental calculations, including with mixed operations and large numbers. ● Use their knowledge of the order of operations to carry out calculations involving the four operations.	● Solve addition and subtraction multi- step problems in contexts, deciding which operations and methods to use and why.

Multiplication and Division

EYFS	● Finds doubles. ● Halves and shares. ● Identifies odds and evens. ● Solve problems including doubling and halving.			
	Recall, Represent, Use	**Calculations**	**Solve Problems**	**Combined Operations**
Year One			● Solve one step problems involving multiplication and division using objects, pictures and arrays, with support from the teacher.	
Year Two	● Recall and use multiplication and division facts for the 2, 5 and 10 times tables, including recognising odd and even numbers. ● Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.	● Calculate mathematical statements for multiplication and division within the x tables and write them using the correct signs.	● Solve problems involving multiplication and division using objects, arrays, repeated addition, mental methods, facts.	
Year Three	● Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.	● Write and calculate mathematical statements for multiplication and division using the x tables that they know, including for 2-digit numbers x 1-digit numbers, using mental and progressing to formal written methods.	● Solve problems including missing number problems involving multiplication and division, integer scaling and correspondence problems.	
Year Four	● Recall multiplication and division facts for multiplication tables up to 12 x 12.	● Multiply 2-digit and 3-digit numbers by a 1-digit number using formal written layout.	● Solve problems involving multiplying and adding, including using the distributive law to multiply 2-digit by 1-digit, integer scaling problems	

	● Use place value, known and derived facts to multiply and divide mentally, including by 0 and 1, dividing by 1, multiplying together three numbers. ● Recognise and use factor pairs and commutativity in mental calculations.		and harder correspondence problems.	
Year Five	● Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. ● Know and use the vocabulary of prime numbers, prime numbers, composite (non-prime) numbers. ● Establish whether a number up to 100 is prime and recall prime number up to 19. ● Recognise and use square numbers and cube numbers and use the correct notation.	● Multiply numbers up to 4-digits by a 1-digit number using a formal written method. ● Multiply and divide numbers mentally drawing upon known facts. ● Divide numbers up to 4-digits by a 1-digit number using a formal written method and interpret remainders. ● Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.	● Solve problems involving multiplication and division including using their knowledge of factors, multiples, squares and cubes and solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.	● Solve problems involving addition, subtraction, multiplication and division and a combination of these.
Year Six	● Identify common factors, common multiples and prime numbers. ● Use estimation to check answers to calculations.	● Multiply multi-digit numbers up to 4-digits by a 2-digit using a formal written method of long multiplication. ● Divide numbers up to 4-digits by a 2-digit whole number using long division including remainders. ● Divide numbers up to 4-digit by a 2-digit number using short division and interpreting remainders.	● Solve problems involving addition, subtraction, multiplication and division.	● Use their knowledge of the order of operations to carry out calculations involving the four operations.

Fractions

EYFS	N/A			
	Recognise and Write	Compare	Calculations	Solve Problems
Year One	● Recognise, find and name a half as pone of two equal parts of an object, shape or quantity. ● Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.			
Year Two	● Recognise, find, name and write fractions 1/3 , ¼ , 2/4 , and ¾ of a length, shape, set of objects or quantity.	● Recognise the equivalence of 2/4 and ½.	● Write simple fractions.	
Year Three	● Count up and down in tenths. ● Recognise that tenths arise from dividing an objects into 10 equal parts and in dividing 1-digit numbers or quantities by 10. ● Recognise, find and write fractions of a discrete set of objects: unit and non-unit fractions with small denominators. ● Recognise and use fractions as numbers: unit and non-unit fractions with small denominators.	● Recognise and show, using diagrams, equivalent fractions with small denominators. ● Compare and order unit fractions and fractions with the same denominators.	● Add and subtract fractions with the same denominator within one whole.	● Solve problems that involve all the above.

Year Four	● Count up and down in hundredths. ● Recognise that hundredths arise when dividing an object by one hundred and dividing by ten.	● Recognise and show, using diagrams, families of common equivalent fractions.	● Add and subtract fractions with the same denominator.	● 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.
Year Five	● Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths. ● Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements >1 as a mixed number.	● Compare and order fractions whose denominators are all multiples of the same number.	● Add and subtract fractions with the same denominator and denominators that are multiples of the same number. ● Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.	
Year Six		● Use common factors to simplify fractions. ● Use common multiples to express fractions in the same denomination. ● Compare and order fractions, including >1.	● Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. ● Multiply simple pairs of proper fractions, writing the answer in its simplest form. ● Divide proper fractions by whole numbers.	

Decimals, Percentages and Algebra

EYFS	N/A			
	Calculations & Problems (Decimals)	Fractions, Decimals and Percentages	Ratio and Proportion	Algrebra
Year One				
Year Two				
Year Three				
Year Four	● Find the effect of dividing a 1 or 2-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths.	● Solve simple measure and money problems involving fractions and decimals to two decimal places.		
Year Five	● Solve problems involving number up to three decimal places.	● Recognise the percent symbol and understand that per cent relates to 'number of parts per whole'. ● Write percentages as a fraction with a denominator of 100 and as a decimal. ● Solve problems which require knowing percentage and decimal equivalents of ½, ¼, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25.		
Year Six	● Multiply and divide numbers by 10, 100 and 100 giving answers up to three decimal places. ● Multiply 1-digit numbers with up to two decimal places by whole numbers.	● Associate a fraction with division and calculate decimal fraction equivalents. ● Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.	● Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. ● Solve problems involving the calculation of percentages and	● Use simple formulae. ● Generate and describe linear number sequences. ● Express missing number problems algebraically.

	● Use written division methods in cases where the answers has up to two decimal places. ● Solve problems which require answers to be rounded to specific degrees of accuracy.		the use of percentages for comparison. ● Solve problems involving similar shapes where the scale factor is known or can be found. ● Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.	● Find pairs of numbers that satisfy an equation with two unknowns. ● Enumerate possibilities of combinations of two variables.

Note – algebraic thinking is seen in the 'missing number' objectives from Y1 upwards.

Measurement

EYFS	● Order important times in their day. ● Use positional language to describe when events happen. ● Use vocab such as yesterday, today, tomorrow to describe relative events. ● Measure time e.g. using timers, number of sleeps to an event. ● Measure length, height, distance			
	Using Measures	**Money**	**Time**	**Perimeter, Area, Volume**
Year One	● Compare, describe and solve practical problems for lengths and heights, mass/weight, capacity and volume, time. ● Measure and begin to record length, height, mass/weight, capacity and volume and time.	● Recognise and know the value of different denominations of coins and notes.	● Sequence events in chronological order using language. ● Recognise and use language relating to dates, days, weeks, months, years. ● Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	
Year Two	● Choose and use appropriate standard units to estimate and measure length/height in any direction, mass, temperature, capacity to the nearest appropriate unit using rules, scales, thermometers and measuring vessels. ● Compare and order lengths, mass, volume/capacity and record the results using <, > and =.	● Recognise and use symbols for pounds and pence combine amounts to make a particular value. ● Find different combinations of coins that equal the same amounts of money. ● Solve simple problems in a practical content involving addition and subtraction of money of the same unit, including giving change.	● Compare and sequence intervals of time. ● Tell and write the time to five minutes, quarter past/to and draw the hands on a clock face to show these times. ● Know the number of minutes in an hour and the number of hours in a day.	
Year Three	● Measure, compare, add and subtract lengths, mass, volume/capacity.	● Add and subtract amounts of money to give change, using both £ and p in practical contexts.	● Tell and write the time from an analogue clock, including Roman numerals and 24 hr clocks.	● Measure the perimeter of simple 2D shapes.

			• Estimate and read time with increasing accuracy to the nearest minute. • Record and compare time in terms of seconds, minutes, hours and use vocab relating to these. • Know the number of seconds in a minute and the number of days in each year and leap year. • Compare durations of events.	
Year Four	• Convert between different units of measure. • Estimate, compare and calculate different measures.	• Estimate, compare and calculate different measures, including money in pounds and pence.	• Read, write and convert time between analogue and digital 12 and 24 hr clocks. • Solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days.	• Measure and calculate the perimeter of rectilinear figure in cm and m. • Find the area of rectilinear shapes by counting squares.
Year Five	• Convert between different units of metric measure. • Understand and use approximate equivalences between metric and common imperial units. • Use all four operations to solve problems involving measure using decimal notation, including scaling.	• Use all four operations to solve problems involving measure.	• Solve problems involving calculations converting between units of time.	• Measure and calculate the perimeter of composite rectilinear shapes in cm and m. • Calculate and compare the area of rectangles and including using standard units, square cm, square m, and estimate the area of irregular shapes. • Estimate volume and capacity.
Year Six	• Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three		• Use, read, write and convert between standard units, converting measurements of time from a smaller unit of	• Recognise that shapes with the same areas can have different perimeters and vice versa.

	decimal places where appropriate. ● 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 km.		measure to a larger unit and vice versa.	● Recognise when it is possible to use formulae for area of parallelograms and triangles. ● Calculate, estimate and compare volume of cubes, cuboids, using standard units including cubic m, cubic cm and extending to other units.

Geometry

EYFS	● Here and begin to use positional language to describe how items are positions in relation to other items. ● Represent real places they have visited with drawings, maps, models. ● Explore similarities and differences between 3D shapes. ● Sort shapes according to what they notice. ● Construct their own 3D shapes in different ways. ● See 2D shapes on the flat surface of 3D shapes. ● Name some common shapes. ● Compare 2D shapes, saying what is the same, what is different. ● Explore how shapes can be combined to make patterns or new shapes.			
	2D shapes	**3D shapes**	**Angles and Lines**	**Position and Direction**
EYFS				
Year One	● Recognise and name common 2D shapes.	● Recognise and name common 3D shapes.		● Describe position, direction and movement including whole, half, quarter and three-quarter turns.
Year Two	● Identify and describe the properties of 2D shapes, including number of sides and symmetry in a vertical line. ● Identify 2D shapes on the surface of 3D shapes.	● Recognise and name common 3D shapes. ● Compare and sort common 3D shapes and everyday objects.		● Order and arrange combinations of mathematical objects in patterns and sequences. ● Use mathematical vocab to describe position, direction and movement.

	● Compare and sort common 2D shapes and everyday objects.			
Year Three	● Draw 2D shapes.	● Make 3D shapes using modelling materials. ● Recognise 3D shapes in different orientations and describe them.	● Recognise angles as a property of shape or a description of a turn. ● Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn. ● Identify whether angles are greater than or less than a right angle. ● Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.	
Year Four	● Compare and classify geometric shapes. ● Identify lines of symmetry in 2D shapes presented in different orientations.		● Identify acute and obtuse angles and compare and order angles up to two right angles by size. ● Identify lines of symmetry in 2D shapes presented in different orientations. ● Complete a simple symmetric figure with respect to a specific line of symmetry.	● Describe position on a 2D grid as coordinates in the first quadrant. ● Describe movements between positions as translations of a given unit to the left/right and up/down. ● Plot specified points and draw sides to complete a given polygon.
Year Five	● Distinguish between regular and irregular polygons based on reasoning about equal sides and angles. ● Use the properties of rectangle to deduce related facts and find missing lengths and angles.	● Identify 3D shapes, including cubes and other cuboids from 2D representations.	● Know angles are measured in degrees. ● Estimate and compare acute, obtuse and reflex angles. ● Drawn given angles and measure them in degrees.	● 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.

			● Identify angles at a point and one whole turn and other multiples of 90 degrees.	
Year Six	● Draw 2D shapes using given dimensions and angles. ● Compare and classify geometric shapes based on their properties and sizes. ● Illustrate and name parts of circles including radius, diameter and circumference and known that diameter is twice the radius.	● Recognise, describe and build simple 3D shapes including making nets.	● Find unknown angles in any triangles, quadrilaterals, and regular polygons. ● Recognise angles where they meet at a point, are on a straight line or are vertically opposite and find missing angles.	● Describe positions on the full coordinate grid (all four quadrants). ● Draw and translate simple shapes on the coordinate plane and reflect them in the axes.

Statistics

EYFS	N/A	
	Present and Interpret	Solve Problems
Year One		
Year Two	● Interpret and construct simple pictograms, tally charts, block diagrams and simple tables.	● Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. ● Ask and answer questions about totaling and comparing categorical data.
Year Three	● Interpret and present data using bar charts, pictograms and tables.	● Solve one-step and two-step questions using information presented in scaled bar charts and pictograms and tables.
Year Four	● Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.	● Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.
Year Five	● Complete, read and interpret information in tables including timetables.	● Solve comparison, sum and difference problems using information presented in a line graph.
Year Six	● Interpret and construct pie charts and line graphs and use these to solve problems.	● Calculate and interpret the mean as an average.

Mathematics Curriculum Coverage