Maths Curriculum Progression

Intent

The intention of the maths curriculum at St Thomas More's Catholic Primary is that children are taught to become competent and independent mathematicians. The 'mastery approach' to teaching maths is the underlying principle of Mathematics Mastery. Instead of learning mathematical procedures by rote, we want pupils to build a deep understanding of concepts which will enable them to apply their learning in different situations. Through mathematical talk, children will develop the ability to articulate, discuss and explain their thinking. We will provide the children with the necessary resources to allow all children to access the curriculum and encourage them to use this where appropriate to explain their logic and reasoning.

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.

Implementation

At St Thomas More's Catholic Primary, we recognise that in order for pupils to progress to deeper and more complex problems, children need to be confident and fluent across each yearly objective. We follow the Hampshire Maths advisory team's medium term plans from the Moodle Plus to ensure that all objectives are covered for each year group, including those children in mixed classes. This provides all teachers with an outline of a possible learning journey with suggestions of types of tasks that could be used. The Moodle Plus plans also identify key prior learning, some common misconceptions and an indication of number fluency pupils need to develop towards automaticity.
Within each learning journey, each National Curriculum objective is broken down into fluency, reasoning and problem solving. Teachers have a wide range of quality problem solving resources to draw upon to ensure that all children have the opportunity to become more accurate and flexible in their approaches to solving routine and non-routine problems.

A heuristic problem solving approach has also been interweaved into learning journeys to allow for explicit teaching of problem solving skills and the subsequent application of this.
To ensure all children know the key number facts that they need to by the end of each academic year, a redesigned Quickfire scheme is used in every year group. This is broken down into small steps for each child to progress through. This key number fact knowledge is also applied through problem solving opportunities.

As part of our 'High Quality Inclusive Teaching', all teachers:
1. 'Know where their children are' through the use of concise summative assessment, prior learning, assessment, maths talk
2. 'Understand where their children need to be' through a secure understanding of year group expectations and/or pre key stage expectations and incisive, ongoing, formative assessment
3. 'Know how they are going to get them there' through the use of a range of strategies to promote independence, mastery and high expectations of ALL.
4. Effectively deploy adults, specifically during introductions, plenaries & catch-up sessions
5. Plan for progression during and between lessons.

Impact

Throughout each lesson formative assessment takes place and feedback is given to the children through live feedback in lessons or marking and next step tasks in books to ensure they are meeting the specific learning objective. Teacher's then use this assessment to influence their planning and ensure they are providing a mathematics curriculum that will allow each child to progress. The teaching of maths is also monitored regularly through book looks, pupil conferencing and learning walks. From this monitoring, professional support is directed, where necessary, to ensure there is high quality teaching and learning for all. Summative assessment takes place during each term and children's progress and attainment is discussed with senior leaders in pupil progress meetings. Regular cluster moderation also takes places to validate judgements.

Number and Place							
Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Comparison • Beginning to compare and recognise changes in numbers of things, using words like more, lots or 'same' • Compares two small groups of up to five objects, saying when there are the same number of objects in each group, e.g. You've got two, I've got two. Same! *Counting*	*Comparison* • Uses number names and symbols when comparing numbers, showing interest in large numbers. • Estimates of numbers of things, showing understanding of relative size. *Counting* • Enjoys reciting numbers from 0 to 10 (and beyond) and back from 10 to 0. • Increasingly confident at putting numerals in order 0 to 10 (ordinality).	• Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. • Given a number, identify one more and one less. • identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most and least. • Read and write numbers from 1 to 20 in numerals and words.	• Count in steps of 2, from 0,and in tens from any number, forward or backward. • Count in steps of 5 and 3 from 0 forward or backward. • Recognise the place value of each digit in a two-digit number (tens, ones). • Identify, represent and estimate numbers using different representations, including the number line. • Compare and order numbers from 0 up to 100; use <, > and = signs. • Read and write numbers to at least 100 in	• Count from 0 in multiples of 4, 8, 50 and 100. • Find 10 or 100 more or less than a given number. • Recognise the place value of each digit in a three-digit number (hundreds, tens, ones). • Identify, represent and estimate numbers using different representations. • Compare and order numbers up to 1000. • Read and write numbers up to 1000 in numerals and in words. • Know that 10 tens are equivalent to 1 hundred, and	• Count in multiples of 6, 25 and 1000. • Find 1000 more or less than a given number. • Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones). • Identify, represent and estimate numbers using different representations. • Round any number to the nearest 10, 100 or 1000. • Count backwards through zero to include negative numbers.	• Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit. • 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. • Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000.	• 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. • Understand the relationship between powers of 10

• Begins to say numbers in order, some of which are in the right order (ordinality) • May enjoy counting verbally as far as they can go • Points or touches (tags) each item, saying one number for each item, using the stable order of 1,2,3,4,5. • Uses some number names and number language within play, and may show	*Cardinality* • Engages in subitising numbers to four and maybe five. • Counts out up to 10 objects from a larger group. • Matches the numeral with a group of items to show how many there are (up to 10).	• Count in multiples of twos, fives and tens. • Count, read and write numbers to 100 in numerals. • Reason about the location of numbers to 20 within the linear number system, including comparing using < > and =. • Count forwards and backwards in multiples of 2, 5 and 10, up to 10 multiples, beginning with any multiple, and count forwards and backwards through the odd numbers.	numerals and words. • Recognise the place value of each digit in two-digit numbers, and compose and decompose two-digit numbers using standard and non-standard partitioning. • Reason about the location of any two-digit number in the linear number system, including identifying the previous and next multiple of 10.	that 100 is 10 times the size of 10; apply this to identify and work out how many 10s there are in other three-digit multiples of 10. • Recognise the place value of each digit in three-digit numbers, and compose and decompose three-digit numbers using standard and non-standard partitioning. • Reason about the location of any three-digit number in the linear number system, including identifying the previous and next multiple of 100 and 10. • Divide 100 into 2, 4, 5 and 10 equal parts,	• Order and compare numbers beyond 1000. • 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. • Know that 10 hundreds are equivalent to 1 thousand, and that 1,000 is 10 times the size of 100; apply this to identify and work out how many 100s there are in other four-digit multiples of 100. • Recognise the place value of each digit in *four*-digit numbers, and	• Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero. • Read Roman numerals to 1000 (M) and recognise years written in Roman numerals. • Know that 10 tenths are equivalent to 1 one, and that 1 is 10 times the size of 0.1. • Know that 100 hundredths are equivalent to 1 one, and that 1 is 100 times the size of 0.01.	from 1 hundredth to 10 million, and use this to make a given number 10, 100, 1,000, 1 tenth, 1 hundredth or 1 thousandth times the size (multiply and divide by 10, 100 and 1,000). • Recognise the place value of each digit in numbers up to 10 million, including decimal fractions, and compose and decompose numbers up to 10 million using standard and non-standard partitioning. • Reason about the location of any

fascination with large numbers • Begin to recognise numerals 0 to 10 *Cardinality* • In everyday situations, takes or gives two or three objects from a group • Beginning to notice numerals (number symbols) • Beginning to count on their fingers. • Subitises one, two and three objects (without counting)				and read scales/number lines marked in multiples of 100 with 2, 4, 5 and 10 equal parts.	compose and decompose *four*-digit numbers using standard and non-standard partitioning. • Reason about the location of any *four*-digit number in the linear number system, including identifying the previous and next multiple of 1,000 and 100, and rounding to the nearest of each. • Divide 1,000 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 1,000 with 2, 4, 5 and 10 equal parts.	• Know that 10 hundredths are equivalent to 1 tenth, and that 0.1 is 10 times the size of 0.01. • Recognise the place value of each digit in numbers with up to 2 decimal places and compose and decompose numbers with up to 2 decimal places using standard and non-standard partitioning. • Reason about the location of any number with up to 2 decimals places in the linear number system, including	number up to 10 million, including decimal fractions, in the linear number system, and round numbers, as appropriate, including in contexts. • Divide powers of 10, from 1 hundredth to 10 million, into 2, 4, 5 and 10 equal parts, and read scales/number lines with labelled intervals divided into 2, 4, 5 and 10 equal parts.

• Counts up to five items, recognising that the last number said represents the total counted so far (cardinal principle) • Links numerals with amounts up to 5 and maybe beyond • Explores using a range of their own marks and signs to which they ascribe mathematical meanings						identifying the previous and next multiple of 1 and 0.1 and rounding to the nearest of each. • Divide 1 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in units of 1 with 2, 4, 5 and 10 equal parts. • Convert between units of measure, including using common decimals and fractions.	

Addition and Subtraction							
Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Composition • Through play and exploration, beginning to learn that numbers are made up (composed) of smaller numbers • Beginning to use understanding of number to solve practical problems in play and meaningful activities • Beginning to recognise that each counting number is one more than the one before • Separates a group of	*Composition* • Shows awareness that numbers are made up (composed) of smaller numbers, exploring partitioning in different ways with a wide range of objects. • Begins to conceptually subitise larger numbers by subitising smaller groups within the number, e.g. sees six raisins on a plate as three and three. • In practical activities, adds one and	• Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs and relate additive expressions and equations to real-life contexts. • Represent and use number bonds and related subtraction facts within 20. • Add and subtract one-digit and two-digit numbers to 20, including zero. • Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representation	• Solve problems with addition and subtraction using concrete objects and pictorial representations, including those involving numbers, quantities and measures. • Apply their increasing knowledge of mental and written methods. • Recall and use addition and subtraction facts to 20 fluently and derive and use related facts up to 100. • Add and subtract numbers using concrete objects, pictorial representation	• Add and subtract numbers mentally, including: a three-digit number and ones, a three-digit number and tens, a three-digit number and hundreds. • Estimate the answer to a calculation and use inverse operations to check answers. • Add and subtract numbers with up to three digits. • Solve problems, including missing number problems, using number facts, place value, and more complex	• 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 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 (columnar addition and subtraction). • Add and subtract numbers mentally with increasingly	• Perform mental calculations, including with mixed operations and large numbers. • Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. • Solve problems involving addition, subtraction, multiplication and division. • Use estimation to check answers to calculations and determine, in

three or four objects in different ways, beginning to recognise that the total is still the same	subtracts one with numbers to 10. • Begins to explore and work out mathematical problems, using signs and strategies of their own choice, including (when appropriate) standard numerals, tallies and "+" or "-".	s, and missing number problems such as 7 = ___ - 9. • Develop fluency in addition and subtraction facts within 10. • Compose numbers to 10 from 2 parts and partition numbers to 10 into parts, including recognizing odd and even numbers.	s, and mentally, including: – a two-digit number and ones. – a two-digit number and tens. • Add three one-digit numbers. • Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot. • Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: two-digit numbers	addition and subtraction. • Secure fluency in addition and subtraction facts that bridge 10, through continued practice. • Calculate complements to 100. • Add and subtract up to three-digit numbers using columnar methods. • Manipulate the additive relationship: – Understand the inverse relationship between addition and subtraction, and how both relate to the part–part–	use and why. • Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 100). *Statistics* • 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,	large numbers. • Solve addition and subtraction multi- step problems in contexts, deciding which operations and methods to use and why. • Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 1 tenth or 1 hundredth). *Statistics* • Complete, read and interpret information in tables, including timetables.	the context of a problem, levels of accuracy • Use knowledge of the order of operations to carry out calculations involving the four operations. • Use a given additive or multiplicative calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding. *Algebra* • Use simple formulae. • Express missing

			• Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems. • Secure fluency in addition and subtraction facts within 10, through continued practice. • Add and subtract across 10. • Recognise the subtraction structure of 'difference' and answer questions of the form, "How many more…?". • Add and subtract within 100 by applying related one-	whole structure. • Understand and use the commutative property of addition, and understand the related property for subtraction. *Statistics* − Interpret and present data using bar charts, pictograms and tables. − Interpret and present data using scaled bar charts, pictograms and tables to solve one-step and two-step questions, for example, 'How many more?' and 'How many fewer?'	tables and other graphs.	• Solve comparison, sum and difference problems using information presented in a line graph.	number problems algebraically. • Find pairs of numbers that satisfy number sentences involving two unknowns.

			digit addition and subtraction facts: add and subtract only ones or only tens to/from a two-digit number. • Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract any 2 two-digit numbers. *Statistics* • Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. • Interpret and construct simple				

			pictograms, tally charts, block diagrams and simple tables. • Ask and answer questions about totalling and comparing categorical data.				

Multiplication and Division							
Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		• Count reliably in twos. • Share objects equally by counting how many in each group. • Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.	• Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers. • Calculate mathematical statements for multiplication using the multiplication (×), and equals (=) signs. • Calculate mathematical statements for division within the multiplication tables and write them using division (÷). • Show that multiplication of two numbers can be done in any	• Recall and use multiplication and division facts for the 4 and 8 multiplication tables. • 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 strategies and formal methods. • Recall multiplication facts, and corresponding division facts, in the 10, 5, 2,	• Use place value, known and derived facts to multiply and divide mentally, including: – multiplying by 0 and 1; dividing by 1. – multiply two-digit and three-digit numbers by a one-digit number. – multiplying together three numbers. • Multiplication and division facts for multiplication tables up to 12 × 12. • Recognise and use factor pairs and commutativity in mental calculations.	• 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. • Multiply and divide numbers mentally drawing upon known facts. • Multiply and divide whole numbers and those involving decimals by 10, 100. • Solve problems involving addition, subtraction,	• Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication. • 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. • Perform mental calculations, including with mixed operations and large numbers. • Solve problems involving addition,

			order (commutative) and division of one number by another cannot. • Solve problems involving multiplication and division facts, including problems in contexts. • Solve problems involving multiplication and division, using materials, arrays and mental methods. • Recognise repeated addition contexts, representing them with multiplication equations and calculating the product, within the 2, 5 and 10	4 and 8 multiplication tables, and recognise products in these multiplication tables as multiples of the corresponding number. • Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10). • Apply known multiplication and division facts to solve contextual problems with different structures, including quotitive and partitive division.	• Multiply two-digit and three-digit numbers by a one-digit number using formal written layout. • Solve problems involving multiplying and adding, including using the distributive law to multiply two- digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects. • Recall multiplication and division facts up to 12x 12, and recognise products in multiplication tables as multiples of the	multiplication and division • Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. • Establish whether a number up to 100 is prime and recall prime numbers up to 19. • 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. • Divide numbers up to 4 digits by a one-digit	subtraction, multiplication and division. • Use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy. • Use knowledge of the order of operations to carry out calculations involving the four operations. • Identify common factors, common multiples and prime numbers. • Understand that 2 numbers can be related additively or multiplicatively, and quantify additive and multiplicative relationships

			multiplication tables. • Relate grouping problems where the number of groups is unknown to multiplication equations with a missing factor, and to division equations (quotitive division).		corresponding number. • Solve division problems, with two-digit dividends and one-digit divisors, that involve remainders, and interpret remainders appropriately according to the context. • Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 100). • Multiply and divide whole numbers by 10 and 100 (keeping to whole number quotients); understand this as equivalent to making a number 10 or	number using the formal written method of short division and interpret remainders appropriately for the context. • Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. • Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}). • Solve problems involving addition, subtraction, multiplication and division and a	(multiplicative relationships restricted to multiplication by a whole number). *Algebra* • Use simple formulae. • Generate and describe linear number sequences. • Express missing number problems algebraically. • Find pairs of numbers that satisfy number sentences involving two unknowns. • Enumerate all possibilities of combinations of two variables. *Ratio and Proportion* • Solve problems involving the relative sizes of

					100 times the size. • Manipulate multiplication and division equations, and understand and apply the commutative property of multiplication. • Understand and apply the distributive property of multiplication.	combination of these. • Multiply and divide numbers by 10 and 100; understand this as equivalent to making a number 10 or 100 times the size, or 1 tenth or 1 hundredth times the size. • Find factors and multiples of positive whole numbers, including common factors and common multiples, and express a given number as a product of 2 or 3 factors.	two quantities where missing values can be found by using integer multiplication and division facts. • Solve problems involving the calculation of percentages (e.g. of measures) such as 15% of 360 and the use of percentages for comparison. • Solve problems involving ratio and proportion. • 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.

							• Solve problems with 2 unknowns. *Statistics* • Calculate and interpret the mean as an average. • Interpret and construct pie charts and line graphs and use these to solve problems.

Fractions							
Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		• Recognise, find and name a half as one 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.	• Write simple fractions e.g. $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$. • Recognise, find, name and write fractions $\frac{1}{3}$; $\frac{1}{4}$; $\frac{2}{4}$; $\frac{3}{4}$ of a length, shape and quantity.	• Recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10. • Recognise and show, using diagrams, equivalent fractions with small denominators. • Compare and order unit fractions. • Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. • Recognise and use fractions as numbers:	• Find the effect of dividing a one- or two-digit number by 10 and 100. • Add and subtract fractions with the same denominator. • Round decimals with one decimal place to the nearest whole number. • Recognise and show, using diagrams, families of common equivalent fractions. • Recognise that hundredths arise when dividing an object by a hundred and dividing	• Compare and order fractions whose denominators are all multiples of the same number. • Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (e.g. $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$). • Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.	• Use common factors to simplify fractions; use common multiples to express fractions in the same denomination. • Compare and order fractions, including fractions >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 (e.g. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$).

				unit fractions and non-unit fractions with small denominators. • Add and subtract fractions with the same denominator within one whole (e.g. $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$). • Interpret and write proper fractions to represent 1 or several parts of a whole that is divided into equal parts. • Find unit fractions of quantities using known division facts (multiplication tables fluency). • Reason about the location of any fraction within 1 in the	tenths by ten. • Count up and down in hundredths. • Recognise and write decimal equivalents of any number of tenths or hundredths. • Identifying the value of the digits in the answer as ones, tenths and hundredths. • Compare numbers with the same number of decimal places up to two decimal places. • Recognise and write decimal equivalents to $\frac{1}{2}$;$\frac{1}{4}$; $\frac{3}{4}$. • Find the effect of dividing a one- or two-digit number	• Add and subtract fractions with the same denominator and multiples of the same number. • Read and write decimal numbers as fractions (e.g. 0.71 = $\frac{71}{100}$). • Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents. • Round decimals with two decimal places to the nearest whole number and to one decimal place. • Recognise the per cent symbol (%) and understand that per cent	• Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$). • Identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places. • Multiply one-digit numbers with up to two decimal places by whole numbers. • Solve problems which require answers to be rounded to specified

				linear number system. • Add and subtract fractions with the same denominator, within 1.	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. • Reason about the location of mixed numbers in the linear number system. • Convert mixed numbers to improper fractions and vice versa. • Add and subtract improper and mixed fractions with	relates to "number of parts per hundred", and write percentages as a fraction with denominator hundred, and as a decimal fraction. • Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams. • Read, write, order and compare numbers with up to three decimal places. • Solve problems involving number up to three decimal places.	degrees of accuracy. • Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. • Divide proper fractions by whole numbers (e.g. $\frac{1}{3} \div 2 = \frac{1}{6}$). • Use written division methods in cases where the answer has up to two decimal places. • Recognise when fractions can be simplified, and use common factors to simplify fractions. • Express fractions in a

					the same denominator, including bridging whole numbers.	• Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}, \frac{1}{4}, \frac{1}{5}, \frac{2}{5}, \frac{4}{5}$ and those with a denominator of a multiple of 10 or 25. • Find non-unit fractions of quantities. • Find equivalent fractions and understand that they have the same value and the same position in the linear number system.	common denomination and use this to compare fractions that are similar in value. • Compare fractions with different denominators, including fractions greater than 1, using reasoning, and choose between reasoning and common denomination as a comparison strategy.

Measurement							
Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
• Explores differences in size, length, weight and capacity • Beginning to understand some talk about immediate past and future • Beginning to anticipate times of the day such as mealtimes or home time in meaningful contexts, finds the longer or shorter, heavier or lighter and more/less	• Enjoys tackling problems involving prediction and discussion of comparisons of length, weight or capacity, paying attention to fairness and accuracy. • Becomes familiar with measuring tools in everyday experiences and play. • Is increasingly able to order and sequence events using everyday language	• Compare, describe and solve practical problems for: – Lengths and heights (e.g. long/short, longer/shorter, tall/short, double/half). – Time (quicker, slower, earlier, later). • Measure and begin to record the following: – Lengths and heights. – Time (hours). • Recognise and know the value of different denominations of coins and notes. • Sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening.	• Find different combinations of coins that equal the same amounts of money. • Recognise and use symbols for pounds (£) and pence (p). • Combine amounts to make a particular value. • Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change. • Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); using rulers.	• Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ ml). • Measure the perimeter of simple 2-D shapes. • 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 using Roman numerals from I to XII, and 12-hour and 24-hour clocks. • Estimate and read time with increasing accuracy to the nearest minute;	• Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres. • Estimate, compare and calculate different measures, including money in pounds and pence. • Read, write and convert time between analogue and digital 12 and 24-hour clocks.	• Convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre). • Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres. • Calculate and compare the area of rectangle (including	• Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three 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.

full of two items • Recalls a sequence of events in everyday life and stories	related to time. • Beginning to experience measuring time with timers and calendars.	• Recognise and use language relating to dates, including days of the week, weeks, months and years. • Compare, describe and solve practical problems for: – Mass / weight. – time (minutes). • Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. • Compare, describe and solve practical problems for capacity/volume (full/empty, more than, less than, quarter). • Measure and begin to record the following: – lengths and heights – mass/weight – capacity and volume – time (hours, minutes, seconds)	• Compare and order lengths, mass, volume/capacity and record the results using >, < and =. • Choose and use appropriate standard units to estimate and measure mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using scales thermometers and measuring vessels. • Compare and sequence intervals of time. • Tell and write the time Including quarter past/to the hour and draw the hands on a clock face to show these times.	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. • Know the number of seconds in a minute and the number of days in each month, year and leap year. • Compare durations of events, for example to calculate the time taken by particular events or tasks. *Statistics* • Interpret and present data using bar charts,	• Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days. *Statistics* • Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.	squares) and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes. • Solve problems involving converting between units of time. • Understand and use equivalences between metric units and common imperial units such as inches, pounds and pints.	• Recognise that shapes with the same areas can have different perimeters and vice versa. • Recognise when it is possible to use formulae for area and volume of shapes. • Convert between miles and kilometres. • Calculate the area of parallelograms and triangles. • Calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic

		• Know the days of the week and months in the year.	• Know the number of minutes in an hour and the number of hours in a day. • Tell and write the time to 5 minutes.	pictograms and tables.		• Estimate volume (e.g. using 1 cm^3 blocks to build cubes and cuboids) and capacity (e.g. using water). • Use all four operations to solve problems involving measure (for example, length, mass, volume, money) using decimal notation, including scaling. *Statistics* • Complete, read and interpret information in tables, including timetables.	metres (m^3), and extending to other units such as mm^3 and km^3.

Geometry (Properties of Shape)							
Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
• Chooses puzzle pieces and tries to fit them in • Recognises that two objects have the same shape • Makes simple constructions • Chooses items based on their shape which are appropriate for the child's purpose • Responds to both informal language and common shape names • Shows awareness of	• Uses informal language and analogies, (e.g. heart-shaped and hand-shaped leaves), as well as mathematical terms to describe shapes. • Enjoys composing and decomposing shapes, learning which shapes combine to make other shapes. • Uses own ideas to make models of increasing complexity, selecting blocks needed, solving problems and	• Recognise and name common 2-D shapes including rectangles, squares, circles and triangles. • Recognise and name common 3-D shapes including cuboids, cubes, pyramids and spheres. • Recognise common 2D and 3D shapes presented in different orientations, and know that rectangles, triangles, cuboids and pyramids are not always	• Identify and describe the properties of 2-D shapes, including the number of sides and symmetry in a vertical line. • Identify 2-D shapes on the surface of 3-D shapes, for example a circle on a cylinder and a triangle on a pyramid. • Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces. • Compare and sort	• Draw 2-D shapes and make3-D shapes using modelling materials; recognise 3-D 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	• Complete a simple symmetric figure with respect to a specific line of symmetry. • Identify lines of symmetry in 2-D shapes presented in different orientations. • Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes. • Identify acute and obtuse angles and compare and order angles up to two right angles by size.	• Identify 3-D shapes, including cubes and other cuboids, from 2D representations. • Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles. • Identify angles at a point and one whole turn (total 360°). • Draw given angles, and measure them in degrees (°). • Know angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180^{o}). • Use the properties of rectangles to deduce related	• Draw 2-D shapes using given dimensions and angles. • Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons. • Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius. • Recognise angles where

shape similarities and differences between objects • Enjoys partitioning and combining shapes to make new shapes with 2D and 3D shapes • Attempts to create arches and enclosures when building, using trial and improvement to select blocks	visualising what they will build. *Pattern* • Spots patterns in the environment, beginning to identify the pattern "rule". • Chooses familiar objects to create and recreate repeating patterns beyond AB patterns and begins to identify the unit of repeat.	similar to one another.	common 2-D and 3-D shapes and everyday objects. • Use precise language to describe the properties of 2D and 3D shapes, and compare shapes by reasoning about similarities and differences in properties.	angles are greater than or less than a right angle. • Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.	• Draw polygons, specified by coordinates in the first quadrant, and translate within the first quadrant. • Identify regular polygons, including equilateral triangles and squares, as those in which the side-lengths are equal and the angles are equal. • Find the perimeter of regular and irregular polygons.	facts and find missing lengths and angles. • Distinguish between regular and irregular polygons based on reasoning about equal sides and angles. • Compare areas and calculate the area of rectangles (including squares) using standard units.	they meet at a point, are on a straight line, or are vertically opposite, and find missing angles. • Recognise, describe and build simple 3-D shapes, including making nets. • Draw, compose, and decompose shapes according to given properties, including dimensions, angles and area, and solve related problems.

Geometry (Position and Direction)							
Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Spatial awareness • Moves their bodies and toys around objects and explores fitting into spaces • Begins to remember their way around familiar environments • Responds to some spatial and positional language • Explores how things look from different viewpoints including things that are near or far away • Responds to and uses language of	*Spatial awareness* • Uses spatial language, including following and giving directions, using relative terms and describing what they see from different viewpoints. • Investigates turning and flipping objects in order to make shapes fit and create models; predicting and visualising how they will look (spatial reasoning). • May enjoy making simple maps of familiar and imaginative environments, with landmarks.	• Describe position, directions and movements, including half, quarter and three-quarter turns. • Compose 2D and 3D shapes from smaller shapes to match an example, including manipulating shapes to place them in particular orientations.	• Order and arrange combinations of mathematical objects in patterns. • 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 three-quarter turns (clockwise and anticlockwise).		• Describe positions 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. • Identify line symmetry in 2D shapes presented in different orientations. • Reflect shapes in a line of symmetry and complete a symmetric figure or	• 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.	• 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.

position and direction • Predicts, moves and rotates objects to fit the space or create the shape they would like					pattern with respect to a specified line of symmetry.		