St George and St Teresa Catholic Primary School

"We live it, love it and learn it"

Progression of Skills and Knowledge

Mathematics

National Curriculum Aims and Purpose	School Aims and Intent: Skills, attitudes and knowledge that we want all children to develop on their journey through our school
• 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	To provide children with a foundation for understanding number, reasoning, thinking logically and problem solving with resilience so that they are fully prepared for the future. It is essential that these elements of Mathematics are embedded throughout all strands of the National Curriculum. By adopting a Mastery approach, it is also intended that all children, regardless of their starting point, will maximise their academic achievement and leave St George and St Teresa with an appreciation and enthusiasm for Maths, resulting in a lifelong positive relationship with number. We want them to know that Maths is essential to everyday life and that our children are confident mathematicians who are not afraid to take risks.
Links to other curriculum areas	**Experiences every child should have**
Science – Data and statistics of investigations. **History** – Dates and times from the past: timelines. **Geography** – Navigational skills, four-grid references. **Computing** – coding, algorithms, calculations on spreadsheets **PE** – measuring distances, counting scores.	Children will make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems in a variety of contexts.

Opportunities to develop Catholic Social teaching, Catholic School Pupil Profile Virtues and British Values

Catholic Social Teaching:	Catholic School Pupil Profile:	British Values:
Including, but not limited to: **Solidarity** – studying and celebrating mathematical practices from a variety of countries and cultures, including from a historical perspective: symbolic systems,	Including, but not limited to: Grateful for their own gifts, for the gift of other people, and for the blessings of each day; and generous with their gifts, becoming men and	Including, but not limited to: **Democracy** - We take into account the views of others and learn about democracy through voting when collecting data to analyse.

games and puzzles, calculation methods, architecture and design etc. **Option for the poor** – recognising the difference between rich and poor. Participation in the coin line event for whole school raising funds for Father Hudson's. **Dignity -** God is present in every human person, regardless of economic standing.	women for others. **Explaining methods to peers during partner work.** Attentive to their experience and to their vocation; and discerning about the choices they make and the effects of those choices. **Using the skill of reasoning to find the most efficient method to reach a solution when problem solving.** Compassionate towards others, near and far, especially the less fortunate; and loving by their just actions and forgiving words. Faith-filled in their beliefs and hopeful for the future. Eloquent and truthful in what they say of themselves, the relations between people, and the world. **Recognise how mathematical skills can be used and applied in the world around them.** Learned, finding God in all things; and wise in the ways they use their learning for the common good. Curious about everything; and active in their engagement with the world, changing what they can for the better. **Ask 'how' and 'why' questions to extend mathematical reasoning and understanding.**	**The rule of law** - Children follow class rules safely during tasks and activities to benefit everyone, as well as understanding the consequences if rules are ignored.. **Individual liberty -** We work within boundaries to make a safe and personal choice from a given selection during practical activities. **Mutual respect** – Children behave appropriately, allowing everyone involved the opportunity to work to the best of their ability. Also, they take turns, sharing equipment, reviewing each other's work respectfully and working collaboratively on projects whilst helping others.

	Intentional in the way they live and use the resources of the earth, guided by conscience; and prophetic in the example they set to others. **Explain mathematical processes using CPA (Concrete, pictorial, abstract) approach.**	

Opportunities to develop and use Building Learning Power in our curriculum	
Reciprocity 	Children are encouraged to work independently and with partners during a lesson. Group discussions will take place to develop mathematical language and reasoning.
Resourcefulness 	Ask and answer questions to further mathematical understanding. Use classroom concrete resources around them to help with their learning. Make links across different mathematical topics (multiplication and division – use of inverse)
Reflectiveness 	Revisit and review previous learning in the 'Flashback' tasks at the beginning of each Whiterose lesson. Participate in 15 minutes of arithmetic tasks regularly each week, in addition to the daily Maths lesson.
Resilience 	Approach problems with a 'can do' attitude. Try a variety of methods to reach a solution.

Skills and Knowledge Progression in Mathematics at St George and St Teresa Catholic Primary School

Year group	Cardinality and counting	Comparison	Composition	Pattern	Shape and space	Measures
Nursery	- Take part in finger rhymes with numbers -Say some numbers in sequence - Count in everyday contexts, sometimes skipping numbers – '1-2-3-5 - Develop fast recognition of up to 3 objects, without having to count them individually ('subitising').	-Compare amounts, saying 'lots', 'more' or 'same' - Solve real world mathematical problems with numbers up to 5.	- Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5 - Compare quantities using language: 'more than', 'fewer than'.	- Notice patterns and arrange things in patterns. - Talk about and identify the patterns around them. For example: stripes on clothes, designs on rugs and wallpaper. - Extend and create ABAB patterns – stick, leaf, stick, leaf.	- Build with a range of resources. - Complete puzzles - 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'. - Understand position through words alone – for example, "The bag is under	- Compare sizes, weights etc. using gesture and language - 'bigger/little/smaller', 'high/low', 'tall', 'heavy'. - Make comparisons between objects relating to size, length, weight and capacity. - Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then…'

	- Recite numbers past 5. Say one number for each item in order: 1,2,3,4,5. - Experiment with their own symbols and marks as well as numerals - Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle'). - show finger numbers to 5 - Recognise coins: 1p, 2p, 5p, 10p - Pay amounts of money up to 10p using 1p coins				the table," – with no pointing. - Describe a familiar route. Discuss routes and locations, using words like 'in front of' and 'behind'. - Select shapes appropriately: flat surfaces for building, a triangular prism for a roof, etc. - Combine shapes to make new ones – an arch, a bigger triangle, etc.	
Reception	**Counting**: - saying number words in sequence. -tagging each object with one number word -knowing the last number counted gives the total so far **Subitising:** -recognising small quantities without needing to count them all -Numeral meanings **Conservation:** -knowing that the number does not change if things are rearranged	-More than/less than -identifying groups with the same number of things -comparing numbers and reasoning -knowing 'one more than/one less than' relationship between counting numbers	**Part-whole:** -identifying smaller numbers within a number (seeing groups and combining to a total) -inverse operations -a number can be partitioned into different pairs of numbers -a number can be partitioned into more than two numbers **Number bonds:** -knowing which pairs make a given number	-Continuing patterns -Copying patterns -making patterns -spotting repetition	-Developing shape awareness through construction -Identifying similarities between shapes -Showing awareness of properties of shape -describing properties of shape	-Recognising attributes -Comparing amounts of continuous quantities -Showing awareness of comparison in estimating and predicting -Begin to use time to sequence events - Begin to experience specific time durations

Year group	Autumn term	Spring term	Summer term
Year 1	**Place Value (within 10)** -Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number - count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens - given a number, identify one more and one less - use the language of: equal to, more than, less than (fewer), most, least - identify and represent numbers using objects and pictorial representations including the number line - read and write numbers from 1 to 10 in numerals and words.	**Place Value (within 20)** -Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number - count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens - given a number, identify one more and one less - use the language of: equal to, more than, less than (fewer), most, least - identify and represent numbers using objects and pictorial representations including the number line - read and write numbers from 1 to 20 in numerals and words.	**Multiplication and division** -count in multiples of twos, fives and tens -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 **Fractions** -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

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	Addition and subtraction (within 10) - represent and use number bonds and related subtraction facts within 10 - add and subtract one-digit and two-digit numbers to 10, including zero - read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs - solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = * - 9 **Shape** -recognise and name common 2-D and 3-D shapes, including: * 2-D shapes [e.g. rectangles (including squares), circles and triangles] * 3-D shapes [e.g. cuboids (including cubes), pyramids and spheres].	**Addition and subtraction (within 20 and 100)** - represent and use number bonds and related subtraction facts within 20 and within 100 - add and subtract one-digit and two-digit numbers to 20, then to 100, including zero - read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs - solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = * - 9 **Length and height** -compare, describe and solve practical problems for: * lengths and heights [e.g. long/short, longer/shorter, tall/short, double/half] * mass/weight [e.g. heavy/light, heavier than, lighter than] -sequence events in chronological order using language [e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] -measure and begin to record the following: * lengths and heights **Mass and volume** -measure and begin to record the following: mass and volume	**Position and direction** -describe position, direction and movement, including half, quarter and three-quarter turns. **Place Value (within 100)** -Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number - count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens - given a number, identify one more and one less - use the language of: equal to, more than, less than (fewer), most, least - identify and represent numbers using objects and pictorial representations including the number line - read and write numbers from 1 to 10 in numerals and words **Money** -recognise and know the value of different denominations of coins and notes **Time** -tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. -measure and begin to record the following: time (hours, minutes, seconds) -sequence events in chronological order using language [e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] -compare, describe and solve practical problems for: time [e.g. quicker, slower, earlier, later]
Year 2	**Place value** -read and write numbers to at least 100 in numerals and in words -recognise the place value of each digit in a two-digit number (tens, ones) -use place value and number facts to solve problems **Addition and subtraction** -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 representations, and mentally, including: * a two-digit number and ones * a two-digit number and tens * two two-digit numbers * adding three one-digit numbers	**Money** -recognise and use symbols for pounds (£) and pence (p); 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 context involving addition and subtraction of money of the same unit, including giving change **Multiplication and division** -count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward	**Statistics** -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 totalling and comparing categorical data **Fractions** -recognise, find, name and write fractions 1 / 3 , 1 / 4 , 2 / 4 and 3 / 4 of a length, shape, set of objects or quantity

	-show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot -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 -solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change -recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. **Shape** -identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line -identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces -identify 2-D shapes on the the radius surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] -compare and sort common 2-D and 3-D shapes and everyday objects	-recall and use multiplication and division facts for the 2, 5 and 10 multiplication 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 multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs -solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts **Length and height** -compare and order lengths, mass, volume/capacity and record the results using >, < and = -choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); **Mass, capacity and temperature** --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 rulers, scales, thermometers and measuring vessels	-write simple fractions e.g. 1 / 2 of 6 = 3 and recognise the equivalence of 2 / 4 and 1 / 2 . **Position and direction** -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 anti-clockwise) -order and arrange combinations of mathematical objects in patterns and sequences **Time** -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. -know the number of minutes in an hour and the number of hours in a day. -know the number of minutes in an hour and the number of hours in a day. -compare and sequence intervals of time
Year 3	**Place value** -count from 0 in multiples of 4, 8, 50 and 100; -find 10 or 100 more or less than a given number -compare and order numbers up to 1000 -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) -solve number problems and practical problems involving these ideas. **Addition and subtraction**	**Multiplication and division** -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 and progressing to formal written methods -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 and progressing to formal written methods -estimate the answer to a calculation and use inverse operations to check answers -solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects	**Fractions** -count up and down in tenths -recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators -recognise that tenths arise from dividing an object into 10 equal parts and in dividing one – digit numbers or quantities by 10. -compare and order unit fractions, and fractions with the same denominators -recognise and show, using diagrams, equivalent fractions with small denominators -add and subtract fractions with the same denominator within one whole (e.g. 5 / 7 + 1 / 7 = 6 / 7) **Money**

	-add and subtract numbers mentally, including: * a three-digit number and ones * a three-digit number and tens * a three-digit number and hundreds -add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction -estimate the answer to a calculation and use inverse operations to check answers -solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction **Multiplication and division** -recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	**Length and perimeter** -measure, compare, add and subtract: lengths (m/cm/mm) -measure the perimeter of simple 2-D shapes **Fractions** -recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators **Mass and capacity** -measure, compare, add and subtract: mass (kg/g); volume/capacity (l/ml)	-add and subtract amounts of money to give change, using both £ and p in practical contexts **Time** -compare durations of events, for example to calculate the time taken by particular events or tasks -estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight (appears also in Telling the Time) -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; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as 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 **Shape** -draw 2-D shapes and make 3-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 angles are greater than or less than a right angle -identify horizontal and vertical lines and pairs of perpendicular and parallel lines **Statistics** -interpret and present data using bar charts, pictograms and tables -solve one-step and twostep questions [e.g. 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.
Year 4	**Place value** -count backwards through zero to include negative numbers -count in multiples of 6, 7, 9, 25 and 1000	**Multiplication and division** -multiply two-digit and three-digit numbers by a one-digit number using formal written layout	**Money** -solve simple measure and money problems involving fractions and decimals to two decimal places.

	-find 1000 more or less than a given number -order and compare numbers beyond 1000 -compare numbers with the same number of decimal places up to two decimal places -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. -recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) -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 units, tenths and hundredths -round any number to the nearest 10, 100 or 1 000 -round decimals with one decimal place to the nearest whole number -solve number and practical problems that involve all of the above and with increasingly large positive numbers **Addition and subtraction** -add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate -estimate and use inverse operations to check answers to a calculation -solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why **Measurement – area** -find the area of rectilinear shapes by counting squares **Multiplication and division** -count in multiples of 6, 7, 9, 25 and 1 000 -recall multiplication and division facts for multiplication tables up to 12 × 12 -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 -recognise and use factor pairs and commutativity in mental calculations	-recognise and use factor pairs and commutativity in mental calculations -estimate and use inverse operations to check answers to a calculation -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 **Length and perimeter** -measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres -convert between different units of measure (e.g. kilometre to metre; hour to minute) **Fractions** -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 -solve simple measure and money problems involving fractions and decimals to two decimal places. -recognise and show, using diagrams, families of common equivalent fractions -add and subtract fractions with the same denominator -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 -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 - **Decimals** -compare numbers with the same number of decimal places up to two decimal places -round decimals with one decimal place to the nearest whole number -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 -solve simple measure and money problems involving fractions and decimals to two decimal places.	-estimate, compare and calculate different measures, including money in pounds and pence -estimate, compare and calculate different measures, including money in pounds and pence **Time** -read, write and convert time between analogue and digital 12 and 24-hour clocks -solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days -read, write and convert time between analogue and digital 12 and 24-hour clocks -solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days **Shape** -identify lines of symmetry in 2-D shapes presented in different orientations -complete a simple symmetric figure with respect to a specific line of symmetry -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 **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, tables and other graphs. **Position and direction** -describe positions on a 2-D 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

		-recognise and write decimal equivalents of any number of tenths or hundredths -recognise and write decimal equivalents to 1 / 4 ; 1 / 2 ; 3 / 4	
Year 5	**Place value** -9, 25 and 1000 count forwards or backwards in steps of powers of 10 for any given number up to 1000 000 -read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit -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 -recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents -round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000 -solve number problems and practical problems that involve all of the above **Addition and subtraction** -add and subtract numbers mentally with increasingly large numbers -add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) -use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy -solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	**Fractions** -recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents -compare and order fractions whose denominators are all multiples of the same number -identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths -read and write decimal numbers as fractions (e.g. 0.71 = 71 / 100) -add and subtract fractions with the same denominator and multiples of the same number -recognise mixed numbers fractions and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (e.g. 2 / 5 + 4 / 5 = 6 / 5 = 1 1 / 5) -multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams **Decimals and percentages** -read, write, order and compare numbers with up to three decimal places -round decimals with two decimal places to the nearest whole number and to one decimal place -recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents -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 as a decimal fraction -solve problems involving numbers up to three decimal places -solve problems which require knowing percentage and decimal equivalents of 1 / 2, 1 / 4 , 1 / 5 , 2 / 5 , 4 / 5 and those with a denominator of a multiple of 10 or 25. **Perimeter and area** -calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm 2)	**Shape** -use the properties of rectangles to deduce related facts and find missing lengths and angles -distinguish between regular and irregular polygons based on reasoning about equal sides and angles -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 o) * angles at a point on a straight line and ½ a turn (total 180 o) * other multiples of 90 o **Position and direction** -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 **Negative numbers** --interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero **Converting units** -use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling. -solve problems involving converting between units of time -convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) -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 **Measurement** -estimate volume (e.g. using 1 cm 3 blocks to build cubes and cuboids) and capacity (e.g. using water) **Algebra** -use the properties of rectangles to deduce related facts and find missing lengths and angles

		and square metres (m 2) and estimate the area of irregular shapes (also included in measuring) --measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres -calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm 2) and square metres (m 2) and estimate the area of irregular shapes **Statistics** -complete, read and interpret information in tables, including timetables -solve comparison, sum and difference problems using information presented in a line graph **Multiplication and division** -count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 -multiply and divide numbers mentally drawing upon known facts -multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 -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 number using the formal written method of short division and interpret remainders appropriately for the context -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 factors and composite (nonprime) numbers -establish whether a number up to 100 is prime and recall prime numbers up to 19 -recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3) -solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes -solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign -solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	

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Year 6	Place value -use negative numbers in context, and calculate intervals across zero -read, write, order and compare numbers up to 10 000000 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 -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 -solve number and practical problems that involve all of the above **Addition, subtraction, multiplication and division** -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 -use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy. -solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why -perform mental calculations, including with mixed operations and large numbers -associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3 /8) -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 short division where appropriate for the context 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 -use written division methods in cases where the answer has up to two decimal places -identify common factors, common multiples and prime numbers -use their knowledge of the order of operations to carry out calculations involving the four operations	**Ratio** -solve problems involving similar shapes where the scale factor is known or can be found -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 [for example, of measures, and such as 15% of 360] and 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 **Algebra** -express missing number problems algebraically -find pairs of numbers that satisfy number sentences involving two unknowns -enumerate all possibilities of combinations of two variables -use simple formulae -generate and describe linear number sequences **Fractions, decimals and percentages** -compare and order fractions, including fractions >1 -identify the value of each digit in numbers given to three decimal places -solve problems which require answers to be rounded to specified degrees of accuracy -use common factors to simplify fractions; use common multiples to express fractions in the same denomination -associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3 / 8) -recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. -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. 1 / 4 × 1 / 2 = 1 / 8) -multiply one-digit numbers with up to two decimal places by whole numbers -divide proper fractions by whole numbers (e.g. 1 / 3 ÷ 2 = 1 / 6) -multiply one-digit numbers with up to two decimal places by whole numbers	**Geometry:** **Shape** -recognise that shapes with the same areas can have different perimeters and vice versa -compare and classify geometric shapes based on their properties and sizes and 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 **Position and direction** -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.

	-use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy -solve problems involving addition, subtraction, multiplication and division **Converting units** -calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm 3) and cubic metres (m 3), and extending to other units such as mm 3 and km -solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate -convert between miles and kilometres	-multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places -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 -associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3 /8) -use written division methods in cases where the answer has up to two decimal places -use common factors to simplify fractions; use common multiples to express fractions in the same denomination **Area, perimeter and volume** -calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm 3) and cubic metres (m 3), and extending to other units such as mm 3 and km 3 . -solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate -recognise that shapes with the same areas can have different perimeters and vice versa -calculate the area of parallelograms and triangles -calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm 3) and cubic metres (m 3), and extending to other units [e.g. mm 3 and km 3]. -recognise when it is possible to use formulae for area and volume of shapes -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 **Statistics** -interpret and construct pie charts and line graphs and use these to solve problems -calculate and interpret the mean as an average	
SEND Support	Inspired by a Mastery approach to Mathematics: 1. The concrete-pictorial-abstract (CPA) approach enables children to develop a secure understanding of maths. Teachers will encourage the use of concrete objects to build children's understanding, allowing them to see, feel and explore the numbers.		

	2. Set the maths in a real-life context helps motivate and engage all children. Find opportunities to draw out maths every day inside and outside the classroom. 3. Work buddies, group work and lots of mathematical discussions is encouraged, taking the time to explore new concepts and consolidate previous learning.

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Mathematics Curriculum Plan

Year Group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery	Colours Matching Sorting	Numbers Subitising Pattern	Number Subitising Height	Length Mass Capacity	More/fewer One more/less 2D and 3D shapes	Number composition Night and day Positional language
Reception	Getting to know you Just like me	It's me 1,2,3! Light and dark	Alive in 5 Growing 6,7,8	Building 9 and 10	To 20 and beyond First, then and now	Find my pattern On the move
1	Place Value Addition and subtraction (1-10)	Place value (1-20) Shape	Addition and subtraction (1-20) Place value (-50)	Length and height Weight and volume	Multiplication and division Fractions Position and direction	Place value (100) Money Time
2	Place value Addition and subtraction	Addition and subtraction Shape	Money Multiplication and division	Length and height Mass, capacity and temperature	Fractions Time	Statistics Position and direction
3	Place value Addition and subtraction	Addition and subtraction Multiplication and division	Multiplication and division Length and perimeter	Fractions Mass and capacity	Fractions Money Time	Shape Statistics
4	Place value Addition and subtraction	Area Multiplication and division	Multiplication and division Length and perimeter	Fractions Decimals	Decimals Money Time	Shape Statistics Position and direction
5	Place value Addition and subtraction Multiplication	Division Fractions A	Multiplication and division Fractions B	Decimals and percentages Perimeter and area Statistics	Shape Position and direction	Negative numbers Converting units Volume

6	Place value Addition and subtraction Multiplication and division	Fractions Converting units	Ratio Algebra Decimals	Fractions Decimals Percentages Area, perimeter, volume	Statistics Shape Position and direction SATS	Themed projects and problem solving activities